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Environmental and Social Impact Assessment of the CBG Mine Expansion Project

Chapter 5 – Socioeconomic Baseline Study

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ABBREVIATIONS AND ACRONYMS

(Note: Text in square brackets [] is a translation of a French term for which there is no official English version.)

°C:	Degrees Celsius
AFD	Agence Française de Développement [French development agency]
AIDS:	Acquired immune deficiency syndrome
AIP:	Annual investment plan
AMC:	Alliance Mining Commodities Ltd.
ANAİM:	Agence Nationale d'Aménagement des Infrastructures Minières [national agency for mining infrastructure development]

- APA:** Laboratoire Archéologie et Peuplement de l'Afrique [African archeology and settlement laboratory]
- APAÉ:** Association des parents et amis d'élèves [parents and friends of students]
- ARV:** Antiretroviral
- BAP:** Biodiversity action plan
- BEPC:** *Brevet d'études du premier cycle du second degré* [middle-school leaving certificate]
- BGÉE:** Bureau Guinéen d'Études et d'Évaluation Environnementale [Guinean bureau of environmental studies and assessment]
- BM:** Banque Mondiale / World Bank (WB)
- BPII:** *Bonnes pratiques industrielles internationales* / Industrial international best practices
- C/P:** Frontline fishing camps and ports
- CA:** *Chiffre d'affaires* [revenues]
- CBG:** Compagnie des Bauxites de Guinée
- CCME:** Canadian Council of Ministers of the Environment
- CCNUCC:** *Convention-cadre des Nations Unies sur le changement climatique* / World Bank United Nations Framework Convention on Climate Change (UNFCCC)
- CDD:** *Contrat de durée déterminée* [contract of defined length]
- CDI:** *Contrat de durée indéterminée* [contract of indefinite length]
- CÉCI:** *Centre d'études et de coopération internationale* / Centre for international Studies and Cooperation
- CECIDE:** Centre du Commerce International pour le Développement [international trade center for development]

CEDEAO:	Communauté économique des États de l'Afrique de l'Ouest / United Nations Economic Commission for Africa (UNECA)
CFB:	Chemin de Fer de Boké [Boké railroad]
CITES:	Convention on International Trade in Endangered Species
CMG:	Chambre des Mines de Guinée [Guinean chamber of mines]
COD:	Chemical oxygen demand
COPC:	Contaminant of potential concern
CoPSAM:	Comité Préfectoral de Suivi des Activités des Miniers [prefectoral mining activity monitoring committee]
CPC:	<i>Contaminant potentiellement préoccupant</i> / contaminant of potential concern (COPC)
CPD:	Comité Préfectoral de Développement [prefectoral development committee]
CPÉ:	<i>Consultation et participation éclairées</i> / informed prior consent (IPC)
CR:	<i>Commune rurale</i> [rural commune]
CRD:	<i>Commune rurale de développement</i> [rural development commune]
CSA:	Centre de santé amélioré [improved health center]
CSO:	Civil society organizations
CSR:	Corporate social responsibility
CU:	<i>Commune urbaine</i> [urban commune]
CVÉ:	<i>Composante valorisée de l'écosystème</i> / valued ecosystem component (VEC)
dB:	Decibel
dBA:	A-weighted decibel
dBZ:	Decibel relative to Z

DEP	Direction Préfectorale de l'Éducation [prefectoral directorate for education]
DPUHC:	Direction préfectorale de l'urbanisme de l'habitat et de la construction [prefectoral directorate for housing and construction]
DUDH:	<i>Déclaration universelle des droits de l'homme</i> / Universal Declaration of Human Rights (UDHR)
ÉDG:	Électricité de Guinée
EIA:	Environmental impact assessment
ÉIE:	<i>Étude d'impact environnemental</i> / environmental impact assessment
ÉIS:	<i>Étude d'impact social</i> / social impact assessment
EITI:	Extractive Industries Transparency Initiative
EPA:	Environmental Protection Agency (United States)
EPI:	Extended Program on Immunization
EPT:	Ephemeroptera, Plecoptera and Trichoptera (types of aquatic insects)
ESCOMB:	<i>Enquête de surveillance comportementale et biologique sur le VIH/SIDA</i> [HIV/AIDS behavioral and biological surveillance survey]
ESIA:	Environmental and social impact assessment
ESMP:	Environmental and social management plan
ETAE:	<i>Eaux tropicales de l'Atlantique Est</i> [tropical waters of the Eastern Atlantic]
FEL 1:	Front-end loading – preliminary economic assessment
FEL 2:	Front-end loading – prefeasibility study
FEL 3:	Front-end loading – detailed engineering study
FPIC:	Free prior and informed consent
GAC:	Guinea Alumina Corporation

GdG:	<i>Gouvernement de la Guinée</i> / Government of Guinea (GoG)
GDP:	Gross domestic product
GES:	<i>Gaz à effet de serre</i> / greenhouse gas (GHG)
GHG:	Greenhouse gas
GIEC:	Groupe d'experts intergouvernemental sur l'évolution du climat / Intergovernmental Panel on Climate Change (IPCC)
GIS:	Geographic information system
GNF:	Guinean franc
GoG:	Government of Guinea
GPS:	Global positioning system
GRI:	Global Reporting Initiative
GTP:	Ground truth point methodology
Ha:	Hectare
HAP:	<i>Hydrocarbure aromatique polycyclique</i> / polycyclic aromatic hydrocarbon (PAH)
HFO:	Heavy fuel oil
HP:	Horsepower
HSE:	Health, safety and environment
IBA:	Important bird area
ICCPR:	International Covenant on Civil and Political Rights
ICESCR:	International Covenant on Economic, Social and Cultural Rights
ICMM:	International Council on Mining and Metals / Conseil International des Mines et des Métaux

IFC:	International Finance Corporation / <i>Société Financière Internationale</i> (SFI)
IFI:	International finance institutions / <i>institutions financières internationales</i>
ILO:	International Labor Organization
IPCC:	Intergovernmental Panel on Climate Change
ISQG:	CCME Interim Sediment Quality Guideline
IST:	<i>Infections sexuellement transmissibles</i> / sexually transmitted infections (STIs)
ITIE:	Initiative pour la Transparence des Industries Extractives / Extractive Industries Transparency Initiative (EITI)
IUCN:	International Union for Conservation of Nature / Union internationale pour la conservation de la nature (UICN)
km:	Kilometer
km²:	Square kilometer
LA_{eq}:	Equivalent sound level (dBA)
LDIQS:	CCME Interim Sediment Quality Guideline
L_{eq}:	Equivalent sound level (dB)
m:	Meter
m²:	Square meter
m³:	Cubic meter
m³/h:	Cubic meters per hour
MDDEP:	Ministère du Développement durable, de l'Environnement et des Parcs du Québec, now called the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques [Quebec ministry of sustainable development, environment and parks,

now called the ministry of sustainable development, environment and the fight against climate change]

MDT:	<i>Matières dissoutes totales</i> / total dissolved solids (TDS)
ml:	Milliliter
mm:	Millimeter
MME:	Ministère des Mines et de l'Énergie / Ministry of Mines and Energy
MTPA:	Million tonnes per annum
MW:	Megawatt
N/A:	Not applicable
NEP:	<i>Niveau d'effet probable du CCME</i> / CCME probable effects level (PEL)
NGO:	Nongovernmental organization
NP:	<i>Norme de performance de la SFI</i> / IFC Performance Standard (PS)
NSP:	<i>Ne s'applique pas</i> / not applicable (N/A)
OAU:	Organization of African Unity
OCDE:	Organisation de Coopération et de Développement Économique / Organization for Economic Cooperation and Development (OECD)
OECD:	Organization for Economic Cooperation and Development
OIT:	Organisation internationale du Travail / International Labor Organization (ILO)
OMS:	Organisation mondiale de la Santé / World Health Organization
ONG:	<i>Organisme non-gouvernemental</i> / nongovernmental organization
ONU:	Organisation des Nations-Unies / United Nations
OSC:	<i>Organisations de la société civile</i> / civil society organizations
OUA:	Organisation de l'unité africaine / Organization of African Unity

OWINFS:	Our World Is Not for Sale
PACV:	<i>Programme d'appui aux organisations villageoises</i> [village support program]
PAH	Polycyclic aromatic hydrocarbon
PAI:	<i>Plan annuel d'investissement</i> / annual investment plan
PARC:	<i>Plan d'action de réinstallation et de compensation</i> / resettlement and compensation action plan (RAP)
PCB:	<i>Plan de conservation de la biodiversité</i> / biodiversity action plan (BAP)
PCS:	<i>Partenaires contre le SIDA</i> [AIDS prevention group]
PDL:	<i>Plan de développement local</i> [local development plan]
PEL:	CCME probable effects level
PEPP:	<i>Plan d'engagement des parties prenantes</i> / stakeholder engagement plan (SEP)
PÉV:	<i>Programme élargi de vaccination</i> / Expanded Programme on Immunization (EPI)
PGES:	<i>Plan de gestion environnementale et sociale</i> / environmental and social management plan (ESMP)
PIB:	<i>Produit intérieur brut</i> / gross domestic product (GDP)
PIDCP:	<i>Pacte international relatif aux droits civils et politiques</i> / International Covenant on Civil and Political Rights (ICCPR)
PIDESC:	<i>Pacte international relatif aux droits économiques, sociaux et culturels</i> / International Covenant on Economic, Social and Cultural Rights (ICESCR)
PK:	Point kilométrique / kilometer point
PM₁₀:	Particulate matter in air up to 10 micrometers in size
PM_{2.5}:	Particulate matter in air up to 2.5 micrometers in size

PMH:	<i>Pompe à motricité humaine</i> / manually operated pump
PNUD:	Programme des Nations-Unies pour le Développement / United Nations Development Program (UNDP)
PP:	<i>Parties prenantes</i> / stakeholders
PPV:	Peak particle velocity
PRCB:	Projet de renforcement des capacités de Boké [Boké rural community development project]
PS:	IFC Performance Standard
QSE:	Quality, safety and environment
RAP:	Resettlement and compensation action plan
RAP:	Rapid assessment program / rapid biological assessment
RSE:	<i>Responsabilité sociale des entreprises</i> / corporate social responsibility (CSR)
RTA:	Rio Tinto Alcan
SAG:	Société Aurifère de Guinée [Guinea gold corporation]
SDT:	<i>Solides dissous totaux</i> / total dissolved solids (TDS)
SEG:	Société des Eaux de Guinée [Guinea water corporation]
SEP:	Stakeholder engagement plan
SFI:	Société Financière Internationale / International Finance Corporation (IFC)
SIA:	Social impact assessment
SIDA:	<i>Syndrome d'immunodéficience acquise</i> / acquired immune deficiency syndrome (AIDS)
SIG:	<i>Système d'information géographique</i> / geographic information system (GIS)

SNAPE:	Service national des points d'eau [national water supply points service]
SO_x:	Sulphur oxides
SP:	<i>Sous-préfecture</i> [subprefecture]
SSC:	Species Survival Commission
SSE:	<i>Santé, sécurité, environnement</i> / health, safety and environment (HSE)
SST:	<i>Solides en suspension totaux</i> / total suspended solids (TSS)
STI:	Sexually transmitted infections
TDR:	<i>Termes de référence</i> / terms of reference (TOR)
TDS:	Total dissolved solids
TOR:	Terms of reference
TPE:	<i>Très petite entreprise</i> / very small business
TPH:	Tonnes per hour
TSP:	Total suspended particulates
TSS:	Total suspended solids
UDHR:	Universal Declaration of Human Rights
UICN:	<u>Union internationale pour la conservation de la nature</u> / International Union for Conservation of Nature (IUCN)
UN:	United Nations
UNDP:	United Nations Development Program
UNECA:	United Nations Economic Commission for Africa
UNESCO:	United Nations Organization for Education, Science and Culture / Organisation des Nations unies pour l'éducation, la science et la culture
UNFCC:	United Nations Framework Convention on Climate Change

- UniGE:** Université de Genève / University of Geneva
- UTM:** Universal Transverse Mercator
- VEC:** Valued ecosystem component
- VIH:** *Virus de l'immunodéficience humaine* / human immunodeficiency virus (HIV)
- WB:** World Bank / Banque Mondiale (BM)
- WHO:** World Health Organization / Organisation mondiale de la Santé (OMS)
- ZÉE:** *Zone économique exclusive de la Guinée* [Guinea economic exclusive zone]
- ZICO:** *Zone importante pour la conservation des oiseaux* / important bird area (IBA)

CHAPTER 5 – SOCIOECONOMIC BASELINE STUDY

5.1 Introduction

CBG was founded in the 1960s and has been exploiting bauxite since the early 1970s. In addition to its visible footprint on the physical and natural landscape of the Sangarédi region as a result of its extraction operations, it has also played a role in shaping the region's social landscape as a result of its operations and employees, as well as the attraction it holds for the town's large migrant population.

The baseline study must ensure an understanding of the social environment and provide a snapshot of it, so that at a later date the Project's impacts can be measured and its social integration assessed. It should be noted that the study was made in February 2014 and that the mine plan has evolved regularly since then.

This study therefore concerns the areas with priority Project issues identified during the scoping mission: the Sangarédi concession zone (Zone 1), the port area and the treatment plant in Kamsar (Zone 2) and the rail area used to ship ore from the concession to the plant (Zone 3). It focuses especially on the concession zone, which represents a priority issue for CBG.

5.2 Methodology for the socioeconomic study

The study of the socioeconomic environment was based on two main thrusts: a quantitative approach and a qualitative approach.

The quantitative approach first addresses the need to create a precise socioeconomic snapshot of the concession zone with reliable, quantified data.

The qualitative approach was also used at several stages of the study. First, it made it possible to fine-tune the household questionnaire, particularly the part on land. Traditional land law in the context of rural Guinea is very complex and, despite the team's knowledge of this matter, it was necessary to define certain aspects specific to the area and the ethnic groups concerned. The same holds for agricultural and extra-agricultural activities, vernacular terminology and local perceptions of the concepts covered by the household surveys (such as definition of a household and basic food). Second, the qualitative studies followed the household surveys to provide more information on matters such as traditional land rights, local culture, decision-making processes, village histories, power structures, agricultural calendars and cultural heritage sites.

5.2.1 Quantitative surveys

Quantitative surveys were conducted only in the concession zone (see the presentation of the study zones in 5.3.1). Their objective was to provide a statistical basis making it possible to consider potential impacts and also to assess the Project's impact during implementation, on the basis of identified indicators.

A decision was made to conduct the surveys only in the concession, given the importance of the issues and the Project's potential impacts on this zone. In addition, on the railroad route it is more difficult to obtain a statistically accurate portrait, given its linear nature; moreover, the increased train frequency had been deemed a less important issue in terms of social impact. The Kamsar area represented an issue of lesser importance in terms of impacts, and a quantitative study would have required a sampling effort that the significance of the impacts did not justify.

5.2.1.1 Population count and sampling

Issues related to the count

To obtain reliable demographic data on the concession zone, an exhaustive count was done in that area, including the entire town of Sangarédi and about 100 villages and hamlets in the rural communes of Sangarédi and Daramagnaki.

A count is an indispensable tool to obtain a representative sampling of the Study Area. If the count is to provide new demographic information (such as population size, breakdown by sex and age grouping, ethnic distribution and migration waves), it is important to have an exhaustive list of all the households, which is a reliable way of randomly drawing the households that will form the sample to be surveyed.

The villages in the area were not all part of the 1996 national census (RGPH, 1996) and had not been the subject of specific studies since then, so it was impossible to compare our results with any other study. Even so, the reliability of our method ensured that all the statistics presented in the report are highly representative.

Method used for the count

The count method used a questionnaire for each household; the questionnaire covered basic demographic data and also ensured we would be able to locate the household again for the household survey campaigns, if it was drawn for the sample. Considerable training was given to all interviewers who took part in this stage. During their training, a great deal of time was spent on what to say during the surveys: each interviewer had to be able to answer any questions and to reassure the households about the use of the demographic data, which is an important consideration in order to increase data reliability and to create a climate of communication with the populations concerned. At this stage, the interviewers' training concerned the objectives of the study and the various successive phases, as well as the traditional data-collection concepts that applied to the count.

The questionnaire was intentionally short, because the objective was to complete the task as quickly as possible so as not to inconvenience the interviewees. The counting campaign was followed by the household surveys, so it was not necessary to have a long list of information at that stage. Because many people have the same last name, it was important to use tools other than a simple survey of the first

names and surnames of household heads so that we could re-contact the households drawn at random for the sample: the person's second name, maps of the villages and a coding system for roads and houses were also used. An identifier code was created for each household. It was a combination of a geographic code and a household code. By tracking the interviewers' itineraries and using the household code, we were able to identify the households in the sample drawn for the household survey campaign. The count sheets, the household survey questionnaires and the code grid can be found in Annexe 5-1, Volume I, annexes 1 to 3.

Limitations of the count

A few infrequent occurrences may have given rise to a margin of error, namely the interviewees' understanding of the final purpose of the count. Even though the initiative was explained in a uniform manner, some respondents may have been mistrustful and taken the precaution of not providing all the requested information (for example, out of concern that the survey related to income and other taxes). Even so, training was provided to all interviewers so that they could establish a relationship of trust with the households, answer people's questions and provide reassurance about the use of the demographic data, translate technical terms from French into Fulani and Fulani into French, etc.

5.2.1.2 Household survey

Method used for the household survey

The sampling carried out in the concession zone involved an orderly random draw without replacement to ensure that the data collected during the household survey were as representative as possible. The sample represents 5% of the households counted.

Even though many questions were relatively standard, others concerned specific aspects of the Study Area and were vital for a sound understanding of local strategies. It was therefore necessary to use the first portion of the qualitative studies to develop the questionnaires and also the code grids. A test phase was carried out for the questionnaire. The tests took place near the Study Area in a village whose characteristics made it possible to ensure not only that the

questionnaire was suitable for the area but also that the trained interviewers understood it and used it properly.

The interviewers' training focused mainly on their understanding of the questions and their translation ability. During the survey campaign, all sheets were monitored for consistency in the field and then reread when the interviewers returned from the field, with return visits to the interviewees, as necessary. It was very important to ensure that all the interviewers answered the questions uniformly. This training and monitoring ensured that the data obtained were highly reliable.

The household surveys provided information on demographics, migration, health (including use of modern and traditional medicine and vaccination coverage), education, access to land, agrarian practices, extra-agricultural activities (such as fishing, hunting and wage earning), demands on natural resources, access to services, housing, conveniences and food practices.

Where there is no reference to a specific source, all the statistics for the Study Area in this report are drawn from the household survey campaign or the population count campaign conducted by us.

Limitations of the household survey

A household's monetary income gives little indication of its actual wealth. The data collected went further, while remaining relative, but yielded uniform estimates. The method involved calculating the number of consumption units per household according to the Oxford scale,¹ which takes into account the number of members in a household and their ages.

The reference period covers the 12 months of the preceding year and is based on the cultural calendar, extending from December 2012 to December 2013. All income in kind was denominated in Guinean francs according to the price of agricultural products on local markets in the median month between the two harvest periods. A household's degree of monetization, its economic strategies and the share of the different types of income were also detailed.

5.2.2 Qualitative surveys

The qualitative portion was based on four main thrusts. The first was a study of village histories and of power. It was essential to gain detailed knowledge of decision-making processes and, above all, of key decision makers in order to understand the makeup of the region. The second was geared to a study of the land. The third concentrated on a study of cultural heritage sites. Such data are all difficult to collect with household surveys and are common to the population subsets in the Study Area; it was therefore more relevant to take a qualitative approach to them. Lastly, the fourth thrust focused on archaeology.

It is clear that many of the points covered are related, and there was a great deal of overlap between the various thrusts, not only in the development of the methodology but also in the data interpretation, as shown by the numerous instances of overlapping information noted on return from the field. The resulting discussions led to the formulation of new assumptions that could be verified in the ensuing days.

5.2.2.1 *Study of village histories and decision-making powers*

Some sociocultural realities of societies prove to be complex: for example, the structure of lineage-based powers is closely related to a society's concepts of nature and the supernatural. Studying sociocultural power structures requires a qualitative and empirical field approach to the following subjects: migration histories and the creation of lineages (first occupiers and outsider lineages), genealogy of founding lineages and decision makers on the village level. All these aspects enabled us to understand the social organization of the areas to be studied.

Our tools consisted of interview guides (lineage histories, breakdown of administrative and institutional positions), genealogical surveys and informal surveys of informants identified by previous surveys. The purposive sampling concerned the three zones, and the villages were selected on the basis of configurations identified during the scoping study with help from local informants.

5.2.2.2 *Study of land tenure*

The household surveys could provide only very general information on the complex matter of access to land; thus an understanding of access to, and allocation of, land required a more qualitative approach. For land law, the main objective was to determine the various rights, which often overlap in the context of rural Guinea, as a function of the various territories in the area. Accordingly, the study of land tenure had three main objectives:

- to describe the land tenure configurations in the footprint areas of CBG's Expansion Project;
- to identify the main land-related issues that CBG could be confronted with during its Expansion Project; and
- to develop tools to identify referent individuals (resource persons) for each type of area (typology of resource areas).

To conduct the land study, three distinct areas were established according to criteria determined during meetings with local informants during the scoping study. The case studies carried out made it possible to cover a large, albeit nonexhaustive, number of situations:

- the concession zone: The body of the study concerns the concession zone, where two case studies were carried out. The selected villages, Boulléré and Parawi, have different settlement histories and diversified types of spatial organization. Studying them made it possible to describe land configurations that contrast with each other but are characteristic of the area;
- the town of Sangarédi: The urbanization of the town of Sangarédi has come about as a result of the evolution of the land tenure systems identified during the case studies. We therefore deemed it relevant to spend several days studying Sangarédi's urban area; and
- the railroad siding to PK14 in Kamsar: A rapid study was carried out in this area. The case studies carried out around Sangarédi did not allow for an in-depth understanding of the town of Kamsar, which has distinct settlements and landscapes. We therefore carried out a special study there to identify the land issues specific to the port and plant zone.

5.2.2.3 Survey of cultural heritage sites

Objectives of the study

The first objective of the study was to inventory and to locate cultural heritage sites for all the villages in the concession zone and to determine who uses them and who has authority over them. The inventory was the first step toward putting in place mechanisms to take into account local practices associated with the sites during implementation of the Expansion Project, in compliance with IFC's international Performance Standard 8, which stipulates that clients "*protect cultural heritage from the adverse impacts of project activities and support its preservation.*" By *cultural heritage* IFC means all "*tangible forms of cultural heritage, such as tangible moveable or immovable objects and sites having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values and unique natural features that embody cultural values, such as sacred groves.*"

Thus cultural heritage involves values (and the related definitions) that belong to highly varied societies and collectivities. From the standpoint of methodology, the entire issue of studies of cultural heritage in a private context hinges on the difficulty of ensuring these values are comparable to those associated with UNESCO's concept of heritage and IFC's definition of cultural heritage.

The objective of our report is to provide CBG with keys enabling it to understand what constitutes local cultural heritage in order to be able to respect the form and logic of it. The value of such a study is that it can help CBG make the right choices concerning future developments and strategies for communicating with and approaching the communities concerned.

The study will also serve as the basis for an assessment of the impacts that the Project will have on the sites and the practices associated with them and will provide advice to CBG regarding initiatives to minimize adverse impacts. Among other things, it will involve proposing a mode of communication and an approach. For that, it is first necessary to agree on several definitions. In terms of cultural heritage, we were especially interested in what constitutes a sacred site and what can be considered a tradition.

Methodology

Our method involved counting and georeferencing all the cultural heritage sites in the concession zone. Despite the goodwill surrounding this matter, working on these issues is still an extremely delicate task. Sites of cultural interest may be secret. It was therefore very important to have a precise and proven method to obtain exhaustive information in a short time. It is fairly difficult for foreigners to obtain information on a large portion of such sites. Surveying villagers is especially problematic because they are being asked to reveal their secrets to help protect them more effectively. The members of cultural heritage team were therefore selected for their mastery of the language spoken in the Sangarédi area and their detailed knowledge of animistic practices.

It quickly became apparent that many sites were involved. We georeferenced them, with the exception of sites that were inaccessible or required a ritual to access them, but we studied only those that were in a buffer zone of 500 m around future mining areas. We divided them into different types and assessed their degree of importance from the standpoint of use value. Lastly, we obtained information on their destructibility or displacement potential to gain an idea of how complex it would be to process them.

The study of cultural heritage sites was accompanied by a study of the history of the settlement of the region and of the local power structure; the studies proved to be closely connected and provided an enlightening comparison.

The sites concerned were the subject of an ethnographic survey, which made it possible to propose a typology and to assess their degree of importance from the heritage standpoint so as to produce an indicator of how complex it would be to process them. The study of sacred sites was accompanied by a study of the history of the settlement of the region and of Sangarédi and of the local power structure; these studies also proved to be closely connected and provided an enlightening comparison.

5.2.3 Complementary qualitative surveys

5.2.3.1 *Fishing*

Special attention was paid to the fishing sector in the coastal area around Kamsar and the mouth of the Rio Nuñez as far as the entrance to the ore-carrier channel. Fishing is the main source of income for the populations in proximity to the plant and the mineral port.

Semi-structured surveys of various actors in the fishing industry were carried out in the target localities of Kamsar, Taïdy and Taïgbé. They were rounded out with the collection of bibliographical data. This specific thematic study was carried out in close cooperation with the Sylvatrop marine biology teams responsible for the study of the biological environment.

5.2.3.2 *Infrastructure and public services*

An initial complementary survey concerned the infrastructure and services available in all the villages. It was designed to provide basic information on each type of infrastructure and related service and to geo-locate such infrastructure, or at least to specify the types of infrastructure available in the villages concerned.

As for urban infrastructure, the study more specifically examined differences in the population's access to such services, from the standpoint of CBG's workforce and the rest of the population. For the last point, the study concerned the towns of Sangarédi and Kamsar.

5.2.3.3 *Archaeology*

Before any activity to develop and exploit bauxite takes place in the Study Area, it is important to assess the impact that the Project could have on cultural heritage so as to develop a program to protect and safeguard sites and artefacts. The first stage of this impact assessment was to carry out an inventory. Systematic surface prospection was carried out in the area of CBG's Expansion Project. The archaeological work focused on the concession zone.

Taking into account the time available and the geographic priorities, a decision was made to concentrate prospection efforts on the sites closest to CBG's proposed operating areas.

The various stages of the study follow the protocol for preventive archaeological interventions:

- analysis of cartographic and photographic documents to identify the various environments in the area;
- fieldwork that included surface prospection of the area by the team on foot and collection of any archaeological remains; and
- expertise pertaining to the discoveries and their scientific contextualization.

All the sites discovered were recorded methodically: the name was recorded along with the GPS coordinates and a descriptive summary of the land, as well as of the material encountered, which was photographed and referenced.

5.3 Administrative context and governance

The analysis of the administrative context and governance provides an understanding of the institutional framework within which CBG's Expansion Project will take place, as well as the historical construction of the framework. Accordingly, we studied:

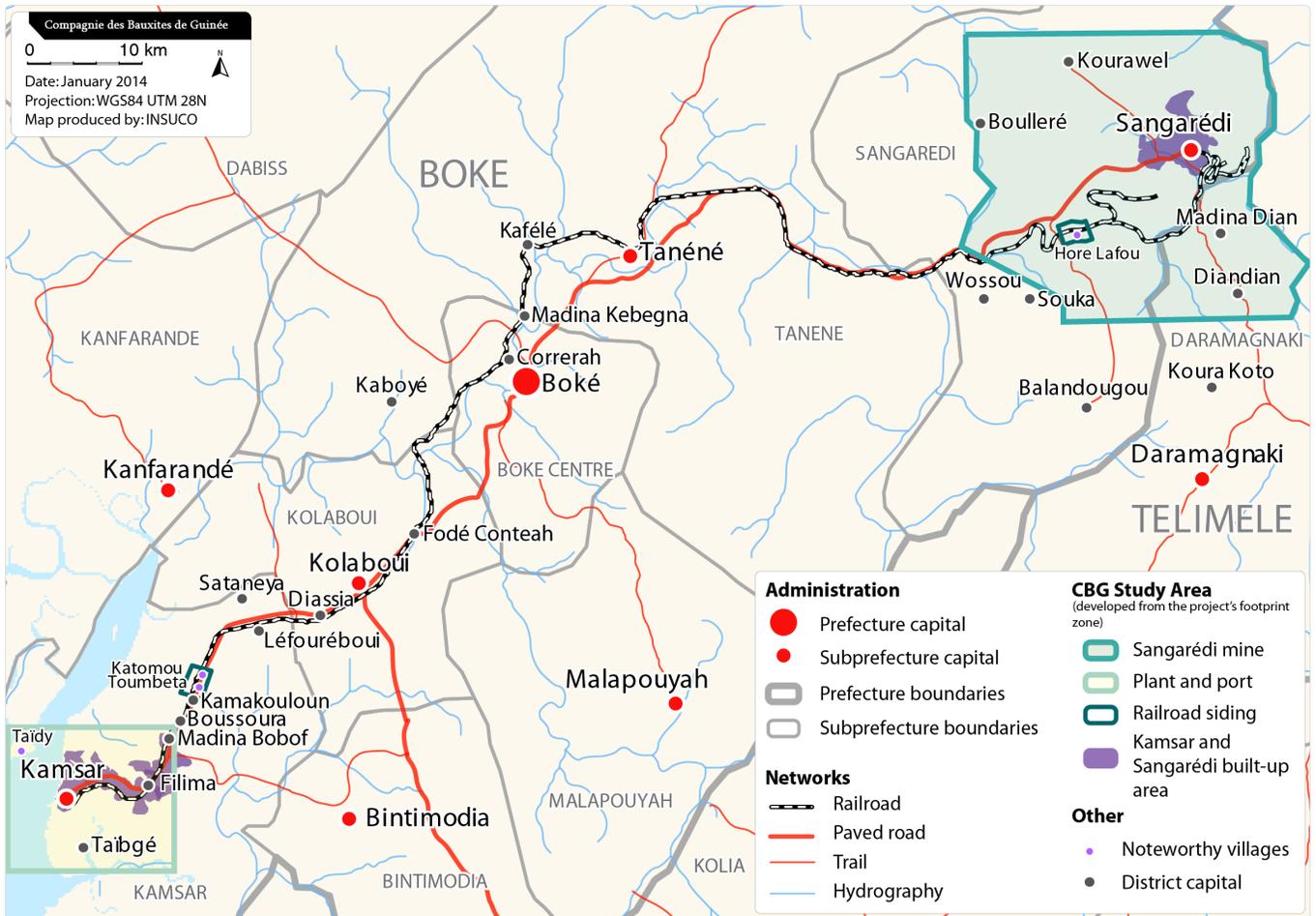
- the presentation of the zones;
- the administrative divisions and institutions;
- local powers in the example of the concession zone;
- civil society and the various support programs: the example of the concession zone; and
- Boké prefecture in the national context.

5.3.1 Presentation of the zones

CBG's Expansion Project involves three distinct geographical zones (Map 5-1):

- **Zone 1: The concession**, which consists of the mine's extraction areas, mining haul roads, loading area and classification yard. It was the main zone studied. All the qualitative and quantitative surveys were carried out in this zone.
- **Zone 2: The port and the plant**, in Kamsar. The Expansion Project calls for an increase in plant activity without any increase in the space occupied. Even so, dredging activities are planned for the port along with a significant increase in ore-carrier traffic. Qualitative studies were therefore carried out in this zone. Special attention was paid to fishing, given the risks of potential impacts (cf. scoping study).
- **Zone 3: The railroad** connecting Sangarédi to Kamsar. With the scenario of 27.5 million tonnes per annum (MTPA), the Expansion Project involves the eventual doubling of rail traffic. This zone includes many villages along the existing track. Only a targeted study of a railroad section where a siding will have to be added (land study) was carried out in this zone. The baseline study did not cover this zone directly, but it will receive special attention in the study of potential impacts. The increase in train traffic could have a significant impact on the villages near the track (noise, disruption of traffic,

etc.), but the issues in this zone are less significant than those in the concession zone. Noise and traffic disruption will affect only those villages directly on the railroad track. In contrast, more people live in the mining concession, where activity is more intensive and covers a larger area, and their resources will be affected in a lasting manner (loss of land, displacement of sacred sites, immigration, etc.).

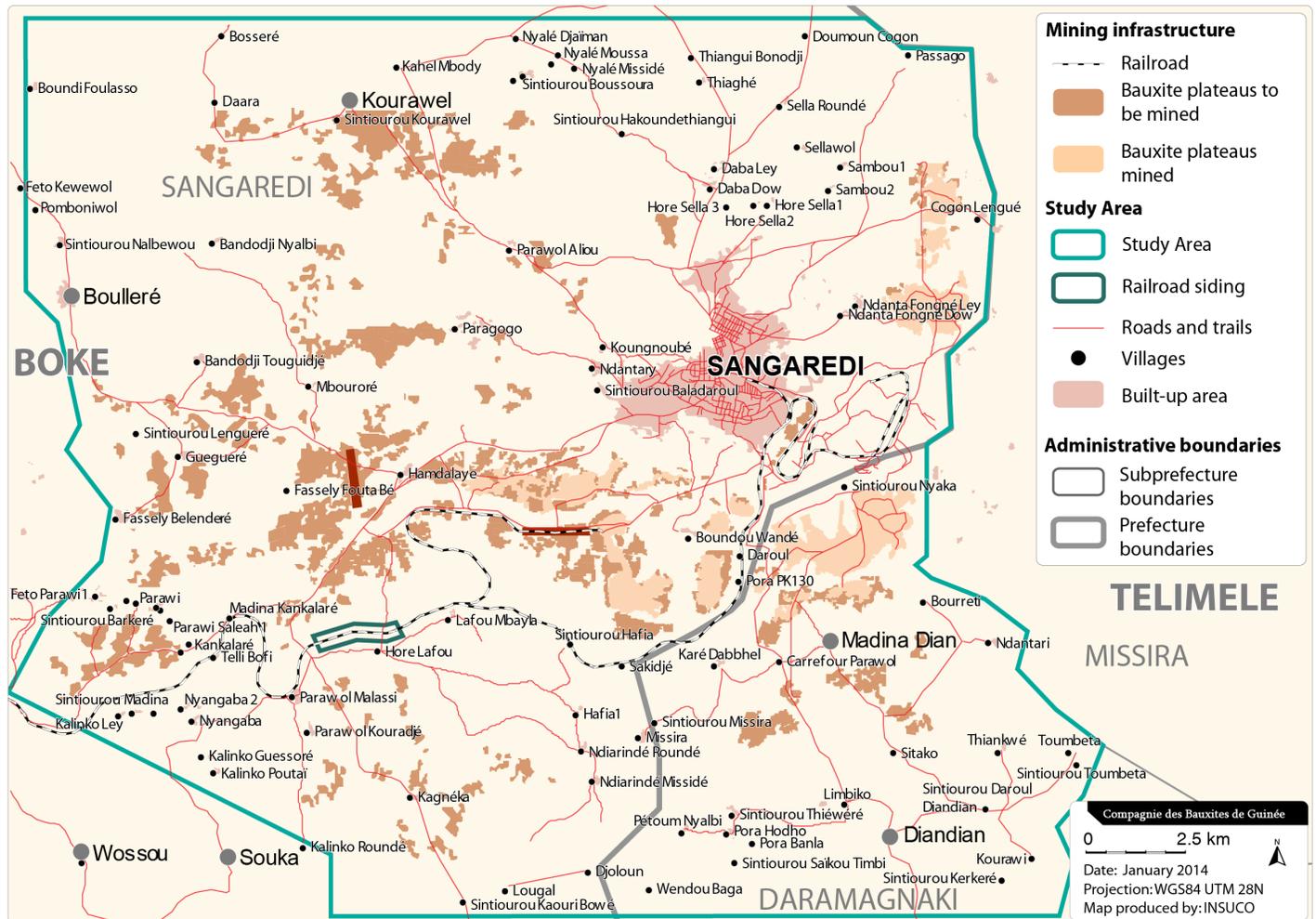


Map 5-1 Administrative map and location of CBG's Expansion Project

The first study zone consists of a rural portion and an urban portion (

Map 5-2). The town of Sangarédi presents a specific context in terms of impact study, so the baseline study was expanded to include CBG's functioning, role and interaction with the population.

The rural portion straddles two rural communes, Sangarédi in Boké prefecture (Boké administrative region) and Daramagnaki in Téliélé prefecture (Kindia administrative region).



Map 5-2 Mine concession study area

The rural portion consists of about 100 villages and hamlets in 10 districts (two in Daramagnaki and eight in Sangarédi), and the urban portion is divided into four districts.

5.3.2 Administrative divisions and institutions

5.3.2.1 *Devolved power*

Prefecture

The prefect is appointed by a decree of the President of the Republic from public servants belonging to levels A and B of the civil service and senior officers from the army, the gendarmerie and the police. He must reside in the capital of the prefecture. Under Decree 081/PRG/SGG/87, he is a representative of the President of the Republic and of each member of the government: in that capacity, he is responsible for enforcing laws, regulations and government decisions, as well as for ensuring public order in the prefecture. According to the decree, the prefect assists the populations with decentralization, namely the constitution of their decentralized communities.

Moreover, the prefect oversees all the entities in the subprefecture, whether they are subject to deconcentration or decentralization, namely the rural communes (formerly rural development communes) and the urban communes as well as the rural districts and the urban quarters that they consist of, respectively. The prefect is assisted by two general secretaries of the prefecture; the one is responsible for decentralized communities and the other for administrative matters. Thus theoretically the prefecture supports decentralization structures through the appointment of a secretary responsible for decentralized communities. The two general secretaries are appointed by a decree of the President of the Republic from public servants belonging to levels A and B.

Subprefecture

The subprefect is appointed by an order of the Minister of Territorial Administration and Decentralization from public servants belonging to levels B and C and officers and noncommissioned officers of the army, the gendarmerie and the police. This appointment by the Minister is the result of the reorganization of the ministries by the Government of President Alpha Condé in January 2011. Under Decree 081/PRG/SGG/87, the subprefect must reside in the capital of the subprefecture. The subprefect is assisted by an assistant subprefect, who is also a public servant. The assistant subprefect is appointed by an order of the Minister of the Interior and

Decentralization on the same conditions as the subprefect. Even though we will not detail the functions of the subprefect, which are based on those of the prefect on the level of the subprefecture, it is necessary to specify that the boundaries of the subprefecture correspond to the boundaries of the rural commune. The two entities are supposed to cooperate closely.

Like the prefecture, the subprefecture rarely plays a role on the district level. Even so, it may play a role in conflict management. Moreover the subprefecture is often closer to the authorities on the micro-local level (district or sector) and it is therefore better equipped than the prefecture to manage conflicts, including those between herders and farmers.

In July 2012, it was proposed that three rural communes be combined under the administration of a single subprefecture. The terms of the implementation of such a reform were still not fully known by the deconcentrated entities consulted during the study.

Lastly, it should be noted that there is no equivalent of the subprefectoral level for urban communes. Boké urban commune therefore depends directly on the prefecture on the administrative level.

5.3.2.2 Decentralized power

Rural communes and urban communes

Administrative decentralization began in the Republic of Guinea on December 22, 1985 (Condé, 2003) with the creation of a Secrétariat d'État responsible for decentralization, but rural development communes did not become widespread until early in the 1990s. Since 2011, the rural development communes have become rural communes (CRs), even though the legislation governing them has not really changed.

The rural communes and the urban communes are decentralization entities of the State and are independent in terms of their budgetary management and development decisions. The boundaries of the CRs are most often based on those of the subprefecture.

The Local Governments Code, which sets out the organization and responsibilities of the decentralization bodies, was revised by the Ministère de la Décentralisation in 2008. Even though the draft decrees accompanying it could not be ratified by the Assemblée Législative as a result of various political events that followed its development, the revised Local Governments Code is the reference currently used by Guinea's decentralization bodies.

The Community Council manages various matters by deliberation on the level of the CR. It establishes the development program for the entire CR with funds from the community (obtained from taxes and fees), but also with borrowed funds, if necessary, or, if the opportunity arises, support funds (provided by NGOs, cooperation bodies or even private investors).

The Community Council is therefore responsible for drawing up and, as necessary, amending the CR's budget. Similarly, it is involved in setting and collecting income taxes and local taxes and fees, within the limitations set by the State's laws and regulations. If, in practice, the Council is not really involved in setting tax rates (they are uniform from one CR to another), it collects most of the income tax paid by citizens. Under the Local Governments Code, about 75% of the income tax collected locally must return to the CR. The Council therefore normally has funds it can use before it borrows funds or uses support funds. Even so, previously a large portion of the rural commune budgets came from collection of the minimum local development tax. This tax was deemed unfair by the current President of the Republic and was abolished on January 1, 2011, but the State has not yet made up for it, and abolishing it has created a considerable shortfall in the communes' budgets.

The Community Council is theoretically involved most often in the creation of infrastructure. It is responsible for developing and maintaining public thoroughfares and squares, as well as tracks connecting the districts in the CR/subprefecture. It is also responsible for resource management. In this capacity, the CR manages firefighting and the setting of bushfires. It is also responsible for adjusting the regime and the terms of access and use for water points of all kinds. It also creates and develops transhumance paths for livestock within the CR.

Consideration is now being given to combining three rural communes into a subprefecture (see above), and some of the most extensive and/or populous communes are expected to be divided into several rural communes.

Districts and sectors

Even though the district is officially recognized from the administrative standpoint, that is not the case of the sector, even though it represents an extension of local administration. Its role, especially in the Study Area, is closely related to that of local traditional and religious institutions, whose connections and implications are described below.

There are no districts in the urban communes, so the corresponding division bears the name of quarter, which itself is divided into sectors.

5.3.3 Local power: the example of the concession zone

5.3.3.1 Local administrative powers

The concession zone straddles two prefectures (Télimélé and Boké) as well as two subprefectures. When it comes to common territory shared by a subprefecture and a CR, it is the CR that is responsible for land management and community property. The subprefect is appointed in Conakry and therefore is usually not a native of the region. The president of the CR is elected by the population, however. The lower administrative level is the district for rural communes and the quarter for urban communes. It is represented by the district president elected locally; then comes the sector, represented by a sector chief, who is also elected locally.

In Annexe 5-2, Volume II, annexe 16 on powers and land, we list the administrative authorities for each village studied. The content is different, depending on whether the village considered is a district capital, a sector capital or a locality. We give the names of the district presidents only when the villages have district institutions; the same holds for the sector.

5.3.3.2 *Traditional and religious powers*

Decisions concerning land management and village matters are generally made by the founding lineage with input from the other lineages,² or by the founding lineage after mandatory consultation of all elders from the other lineages present.³

The various authorities and organizations with power are as follows:

- **Council of Elders:** The members of this council are selected, rather than elected, as a function of their age or their status in the lineage. The council is always overseen by the elder of the founding lineage when the founding lineage has all the traditional power in the village or by the oldest man in the village when decisions are made in common with all the other lineages in the village. To belong to the council, a man must fulfill the following criteria: be of good character, honest and able to defend the interests and resolve the conflicts of the village. The members' roles include management of social events (weddings, baptisms and funerals) and land disputes. In the Sangarédi area, they are also responsible for ruling on disputes between herders and farmers.
- **Mosque Council:** This council is overseen by the first Imam. It meets in the villages that have a mosque, but its members may be learned men from other villages that do not have a mosque. The members of this council are selected on the basis of their level of education at Koranic school. They are generally part of the Council of Elders and play fairly similar roles. Even so, if a matter cannot be decided by the Council of Elders, this council is called on to provide religious advice based on Sharia law.
- **Youth organizations:** The young people in the villages in the Sangarédi area have no organizations. They are rarely involved in decision making, except in the village of Hamdallaye, where they are very active and take part in work to develop the village (opening of roads, construction of mosques, funeral ceremonies, social mutual aid, etc.).
- **Women's organizations:** Women have no organizations in the villages in the concession zone. They are central to all field work (providing mutual assistance as a function of their social relationships), as well as to domestic and other work, but they never take part in decision making in their villages.

5.3.4 Civil society and support programs: the example of the concession zone

5.3.4.1 *Program to combat poverty*

The Project's study zones are all in Boké administrative region, with the exception of the portion of the concession that belongs to Daramagnaki rural commune in Téliélé prefecture in Kindia region.

Generally speaking, the strategic vision of Boké region as expressed in its latest *Stratégie de Lutte Contre la Pauvreté*, in 2006, is based on four main principles:

- to improve the use of space and natural resources;
- to promote multisector development that is balanced and integrated;
- to integrate the regional economy into the national economy;
- to promote gradual decentralization of development activities.

The plan is to implement this strategy through development of the institutional and human capabilities of decentralized structures, creation of basic infrastructure, diversification of agropastoral production, promotion and diversification of economic activities, and improved access to health-care and educational services, as well as sustainable preservation and management of natural resources.

According to informants met during the scoping study and the baseline study, some basic infrastructure has been built since the plan was developed. Even so, the other areas have seen little or no progress, and a tremendous effort is still required. The weakness of the implementation of the local development plan may be due to the political instability that Guinea has experienced in recent years.

Within the decentralization framework, local development plans are developed for each commune and then compiled for each prefecture every five years.

5.3.4.2 *Support programs*

We encountered very few NGOs or projects carried out by United Nations organizations in the Study Area.

Most of the projects taking place near Sangarédi and Kamsar are being carried out by mining companies, such as Global Alumina Corporation (GAC), Kabata, Russal, Hena Chine and CBG. GAC in particular is fairly well regarded in the communities as a result of the investments it has made and the effectiveness of its teams in the villages in its concession.

Apart from mining projects, some projects are being carried out in cooperation with the State on the national level, such as PACV, PGCMBT and PADER.

We also encountered very few national NGOs and no international NGOs during the study. Even so, we did note the presence of a Canadian NGO, the Centre for International and Studies and Cooperation (CÉCI), whose mission is to strengthen the development capabilities of disadvantaged communities. For a number of years, it has been working to improve expertise for local development plans and annual investment plans in the communes. It works with the technical services of the deconcentrated and decentralized powers in Boké region.

Among the national NGOs working in the Study Area, we met CECIDE, which provides counsel and advocacy services. It also works to strengthen the governance and transparency capabilities of the communities and populations. It also carries out lobbying and citizens' watch in the same area. Its funds come from calls for proposals (contracts awarded after tender calls) or partners from the same area who work with CECIDE on projects, enabling it to maintain complete independence vis-à-vis mine operators.

In the Sangarédi area, CECIDE has carried out awareness campaigns and works with three paralegals who are trained in governance, transparency and defence of people's interests. They have some knowledge of the Mining Code and the provisions concerning compensation and relocation.

Other national NGOs that are present in the area are referred to in the SEP, such as Initiatives et Actions pour l'Amélioration de la Santé des Populations (INAASPO), which works with Faisons Ensemble and Stop Palu.

The massive presence of private mining companies is the foremost development factor in the region, and a true countervailing power in civil society is lacking, as are development initiatives other than CBG's contributions.

5.3.5 Boké prefecture in the national context

Boké prefecture is in Maritime Guinea, or Lower Guinea. Located on the coast, west of the Fouta Djallon highlands, the region receives significant flows of water from the mountains and consists of fertile plains. It is generally better equipped than the other regions of Guinea in terms of infrastructure, not only from the social standpoint (schools and medical centers) but also from the commercial standpoint (port and plant).

Boké prefecture in particular has seen substantial investment since CBG arrived in the area in the 1970s. But mining is not the only sector that has invested in the region and wants to continue doing so, and Maritime Guinea and Boké prefecture have received special attention.⁴

Boké prefecture therefore has special importance from the national standpoint, given that it has the second-largest port in the country, a national hospital, significant agricultural and mining potential, considerable fisheries resources and university and vocational training centers.

The various mining projects under study and the investments referred to above show that Boké prefecture has the potential for significant economic growth. Even though it has received more investment from the private sector and the State, a maintenance strategy has to be developed for its infrastructure in order to preserve and upgrade it. In addition, the prefecture has a more dense demographic profile and will have to cope with increasing demand for social services.

On this level we have not detailed the positioning of Téliélé prefecture in the national context. The Project occupies only a very small part of it near Sangarédi, and the population is far more connected agriculturally and economically to Sangarédi than to Téliélé. Even so, Daramagnaki commune was the subject of specific studies during the baseline study and the impact study, as were Sangarédi commune and the surrounding villages.

5.4 Historical context

Gaining a historical perspective of, first, the Study Area and, second, the concession zone (the history of the settlement of Sangarédi) makes it possible to understand certain social dynamics as well as the relationships between villages. The history of the settlement of the Study Area is based partially on bibliographical research but was also reconstructed, like the history of the settlement of Sangarédi, from various open conversations conducted during the cultural heritage study in the various villages in the concession.

5.4.1 Influence of Fouta Djallon

In the Fouta Djallon region, the current settlement, consisting mainly of Fulas, was created by the encroachment of small groups (families and clans). The first arrivals, who were pagans, came from Ferlo, Bhunndou and Fouta Tooro. This first migratory phase lasted from the 11th to the 13th century. A second phase, also involving pagan Fulas (called the Pulli people in the literature), took place from the 15th to the 16th century. Generally speaking, the migrations were peaceful and took place with the agreement of the first occupiers; in most of Fouta Djallon, they were the Jalonkés, who, led by Koli Tenguella,⁵ conquered a good portion of the Fouta Djallon plateau during the second wave of settlement. A third and final phase, from the 15th to the 17th century, saw the arrival in Fouta Djallon of Fulas who had converted to Islam. This marked the start of the Fula hegemony, which, in 1725, led to the birth of a Muslim trading nation that some deemed theocratic and whose collapse was precipitated by the French colonial conquest. Its influence shaped the history of the settlement of the concession zone and the entire subregion and, more generally, that of Guinea and the surrounding countries.

5.4.2 History of the settlement of the Sangarédi area

From Boké to Gaoual, the geographic area between the Fouta Djallon highlands and Guinée-Bissau is a typical example of what Kopytoff⁶ called an “internal” or “interstitial frontier.” These sparsely inhabited and uncultivated places long served as refuge areas for exiled populations that left metropolitan settlements, such as the kingdom of Gabu in today’s Guinée-Bissau, Pita and Labé. The refugees, who left various places for various reasons (disadvantaged and marginal people looking

for land where they could settle, slaves from Fouta fleeing their Fula masters⁷ and the separation of Fula brotherhoods from theocratic Fouta⁸), arrived there and over the decades developed a society, a culture and an ethnicity.

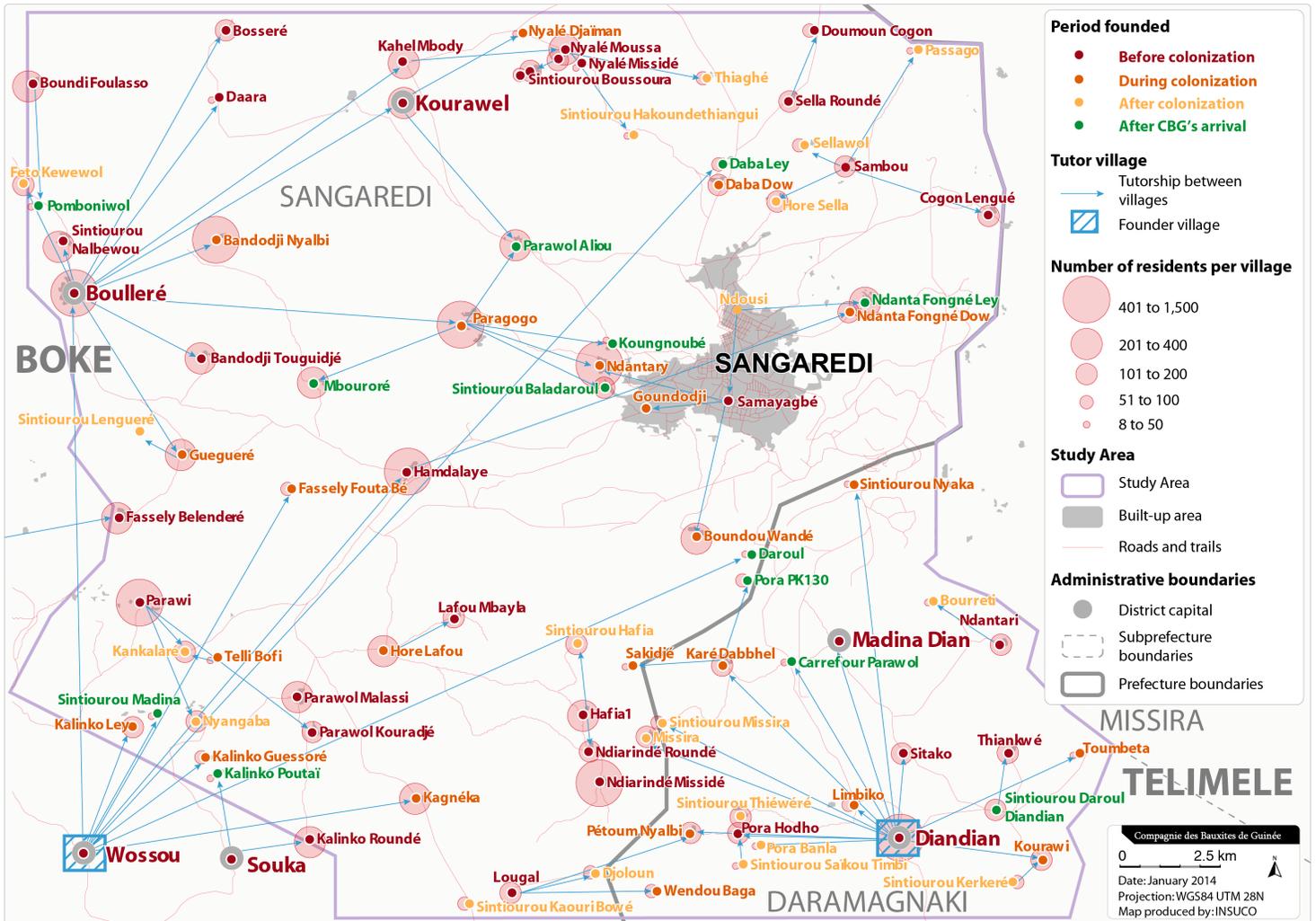
When the Fulas arrived, the Sangarédi area was not occupied by the Jalonkés, who lived farther north. According to our informants, the Landouma (present today in Tanéné, Dabis, Malapouya, Kolaboui, etc., as far as Koumbia) occupied the Sangarédi area before the Fulas arrived, as shown by the Landouma⁹ names of some rivers and villages. Even though the Landoumas coexisted with the Fulas in the region for about a century, they gradually left their territory for reasons such as the intensification of the Fula presence and their refusal to convert to Islam and to subject themselves to the Sharia law of the theocratic state of Fouta Djallon.

Sangarédi subprefecture is a region inhabited by migrants who arrived there mainly looking for land to graze animals¹⁰ and to grow crops,¹¹ or were simply passing through to obtain supplies of salt or kola nuts, but were asked by their hosts to stay.¹² The migrants came from various prefectures in Fouta Djallon, but primarily Labé, Pita, Tougué, Lélouma and Téliimélé. No anthropological or historical research has been done on the Study Area. According to surveys on the history of the villages, the presence of the Fulas (the population exclusively represented today) is of relatively recent date (second half of the 19th century) and closely related to the expansion of the theocratic kingdom of Fouta, and then – albeit to a lesser extent in the Sangarédi region – to its breakup.

Indeed, Wossou,¹³ the oldest village in the Study Area, was founded at the behest of the Alpha Ibrahima Diallo, the king of the theocratic state of Fouta and the father of Alpha Yaya Diallo, by Mama Karimou Bah, who went to the area to spread Islam and to conquer new lands. The village welcomed most of the population groups, which then settled in this previously unoccupied area. The first population groups that were offshoots of Wossou founded, in chronological order, the villages of Fillo Bowal N'Dantary, Diandian, Balandougou and Hamdallaye.

Map 5-3 shows the area's settlement dynamics. The oldest villages are often the largest and those that founded the other villages in their territories.

Map 5-3 Settlement history of the villages in the concession



For each of the first villages, it was the construction of a mosque that made them independent, enabling them in turn to become tutors when outsiders arrived and asked for asylum and permission to settle.

As the first settlement in the region and the representative of the traditional leaders of theocratic Fouta (Almamy), Wossou initially maintained its authority over all the villages that it hosted in the area, only to have it short-circuited by the arrival of European colonists. Wossou refused to cooperate with the white people, who then turned to the village of Boulléré, whose founders, unlike those in Wossou, welcome them warmly. Even though the villages of Wossou and Boulléré long formed independent territories (the second being subject to the authority of the first), the

colonial administration decided to combine them: starting in 1922, they formed a single canton whose center became Boulléré. From there, the village of Boulléré, like Wossou, became a parent village, which, after the territorial and administrative reorganization, hosted many villages in the area. The first villages hosted by the founders of Boulléré consisted of their slaves, whom they freed when the colonists arrived. They are Daara, Kahel M'body, Bandodji Touguidjé, Bandodji Nyalbi, Kourawel, Kahel Kourawel, Mooby and Tchiangalé.

Later, under the impetus of mining operations and the Guinean government, the area was reorganized, with emphasis this time on Sangarédi, which was designated a subprefecture, while Boulléré became the capital of one of its districts. Even so, the traditional authorities in Boulléré and Wossou still exercise a power that goes beyond the authority recognized by the current administration.

5.4.3 Conclusion

The histories prepared for the villages in the Study Area show that region's three main settlement phases were:

- the era of the theocratic state of Fouta Djallon, from 1725 with the founding of Wossou¹⁴ and until colonization, with prominent roles played by Alpha Ibrahima Diallo and his son, Alpha Yaya Diallo;
- the colonial era starting in 1922. The early years of the 20th century saw a densification of settlement in the region by Fulas who wanted to settle on land where they could combine herding and agriculture. A few decades earlier, the wars fought by Samory Touré had increased the slave trade. The first Fulas to settle in the Sangarédi area, including those of Boulléré and Wossou, purchased slaves, who were mainly from Upper Guinea and whose clearing of the land made a significant contribution to the development of their territories. Some of the slave owners wanted to secure their territory and sent their captives to other places, where they founded new villages.¹⁵ Independence put an end to slavery in 1958. The former slaves remained in the region and founded their own villages, some of which also engaged in tutorship and continued to have significant importance for all the villages in the area. Tutors are involved in land management and important village events, such as celebrations and rituals; and

- the period since the creation of CBG. With the exception of the town of Sangarédi, the creation of CBG in 1973 did not affect migratory movements to the concession's rural area. A number of villages were founded after that date, but these villages, including Daba Dow, Ndanta Fongné ley, Ndanta Fongné dow, Sintourou Daroul, Daroul and Pora Balla, were all founded by villagers who had been living in the area for a long time. Their creation was due to land pressures. Some villages were even founded after the destruction of villages as a result of the development of new operating areas for the mine and the relocation of populations. That was the case of the village of Loumba Diodho, which was destroyed in 1984 and whose occupants then founded the village of Ndanta Fongné Ley. Similarly, when the village of Wendou Diaoulé was destroyed in 2003, its inhabitants founded Ndanta Fongné Dow.

5.5 Social context

The baseline study provides a snapshot of the social situation in the concession zone before implementation of the Project. This analysis, developed from the quantitative study and the qualitative studies, is based on the following issues:

- demographics;
- education;
- health;
- access to water;
- sanitation;
- electricity; and
- religious and cultural infrastructure.

The social context of Kamsar is also described more succinctly, through the prism of the town's urbanization dynamics.

5.5.1 General introduction to the town of Sangarédi

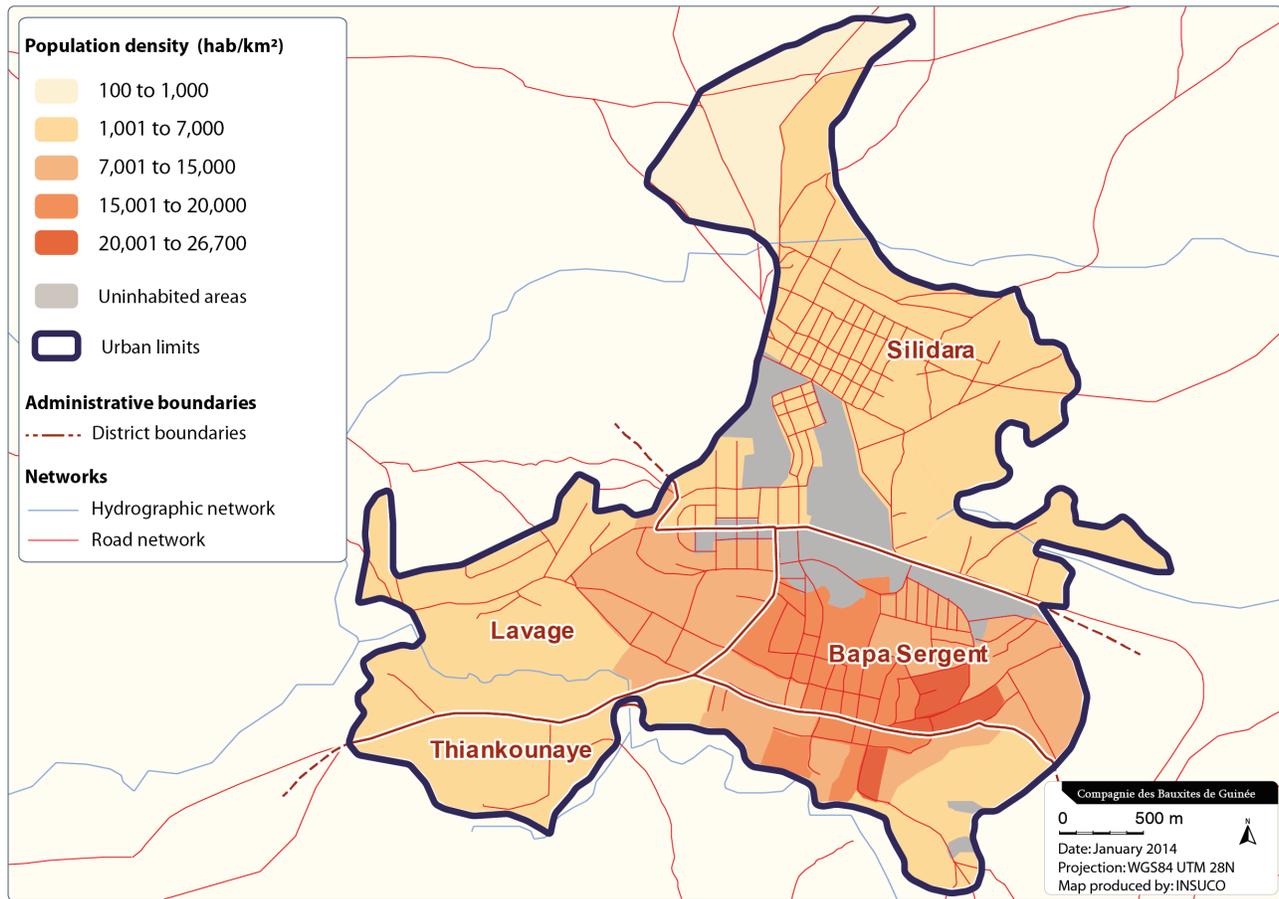
The name Sangarédi appeared in 1972 when the subprefecture was created. Even though the administrative reorganization was superimposed on the traditional territory, it had no impact on local spatial dynamics. The area continued to be a group of predominantly agricultural and sparsely populated villages whose relationships were governed by customary land law. It was not until CBG arrived that the landscape changed. The opening of the mine attracted many migrants seeking economic opportunities. They settled in the nearest village, namely Thiankounaye. Sangarédi has been growing constantly since then.

The main features of the study of Sangarédi's urban morphology¹⁶ are summarized below:

- The town's spatial organization follows a ring-shaped pattern. Economic activity, administrative activity and the main basic services are concentrated in the center of the town. Then come successively residential, artisanal and agricultural areas. There are, however, many areas reserved for CBG and the military on the edge of the town. It should be noted that the residences of CBG workers are located near the center in three of the four districts of Sangarédi, namely Lavage, Bapa Sergent and Silidara. Even though this has

a minimum impact on density, it has a great deal of impact on access to basic services. The district of Thiankounaye is still socially and spatially segregated from the others.

- Sangarédi's average density is about 5,600 hab/km². But there are large disparities between the urban districts, as shown by Map 5-4. Silidara has about 2,400 hab/km² but Bapa Sergent is six times more populous, with slightly more than 14,400 hab/km². Sangarédi's urbanization has been characterized by hyperdensification of its center because of spatial limitations. The boundaries of the built-up area have changed very little since the 2000s. Sangarédi is surrounded on all sides: to the east, the north and the south by areas reserved for CBG and to the west by the military camp. It therefore has no choice but to absorb the increase in the population within the existing built-up area. Even though the densification phenomenon has reached a limit in Bapa Sergent, it continues in Thiankounaye and Lavage, but not without raising many questions about land allocation and management.



Map 5-4 Population density in the town of Sangarédi

- Sangarédi’s demographic growth has created significant land pressure, which has resulted in two phenomena specific to urban areas: commodification (buying and selling) and formalization (administrative recognition) of land rights. The findings of the household surveys show that 45.6% of the households are owners, and a large majority of them have a block plan to secure their land. Only 7.5% of the households live free of charge on the land, a means of conveyance that is rather typical of customary land tenure management. It should also be noted that the rental market, which is also an urban characteristic, is highly developed in Sangarédi, with 42.5% of the households surveyed having used it to obtain lodging there.
- Sangarédi’s land tenure management has gone from a customary system to a statutory law system that applies to all the developed and undeveloped land in Sangarédi, except the southern part of Thiankounaye. Situated beyond the

lowlands, between the Tiapikhouré River and the area reserved for CBG, this area has no access (a rudimentary bridge is built every year after the rainy season so that pedestrians can cross it). It is isolated and attracts no one. The land is not undergoing the buy-and-sell process and its management is still customary.

- Land allocation in Sangarédi is not based on any planning logic. It has taken place as the town has urbanized. Only two areas in Lavage (Samayabé) and Silidara saw allotment in the mid-1990s after recurring land disputes between customary landholders and CBG. For lack of planning, the rural commune has practically no land left in reserve for the construction of public utility infrastructure (the sale of communal land is another reason).
- The areas reserved for CBG and the military area are now marked by survey monuments. Urbanization beyond them is theoretically prohibited. Even so, to maintain social peace, CBG occasionally tolerates the construction of new houses on the edge of these areas.

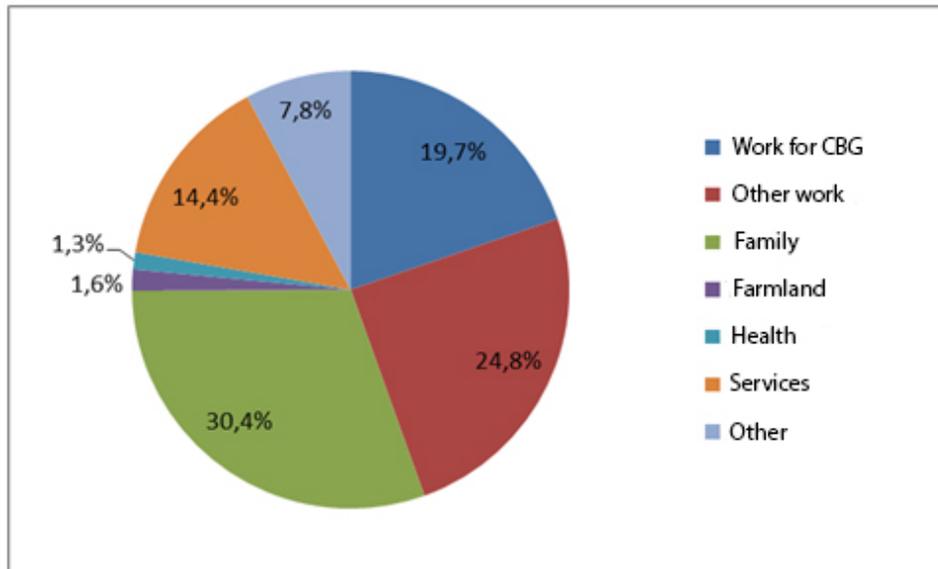
5.5.2 Demographics

5.5.2.1 *Breakdown of the population and demographic growth in Sangarédi*

An exhaustive census of the population in the town of Sangarédi determined that it has 53,789 inhabitants in 8,591 households. Even though this figure is relatively low in relation to existing estimates of as much as 120,000 inhabitants, it nevertheless indicates the town's demographic weight in relation to the rest of the Project's footprint (outside Kamsar). The urban/rural calculation gives a ratio of one rural dweller for more than three town dwellers. Sangarédi is the main center of settlement in the concession zone. Given that Guinea's natural increase rate (births minus deaths) has been stabilizing since the 1990s, Sangarédi's growth is due above all to migration.

About 74% of the household heads are not originally from Sangarédi. Of them, 52.8% settled there between 1970 and 2000, and 31.4% have arrived since 2000. CBG's arrival made Sangarédi especially attractive. Figure 5-1 shows that 19.7% of the households came to the area to work for CBG and 24.8% for other work opportunities.

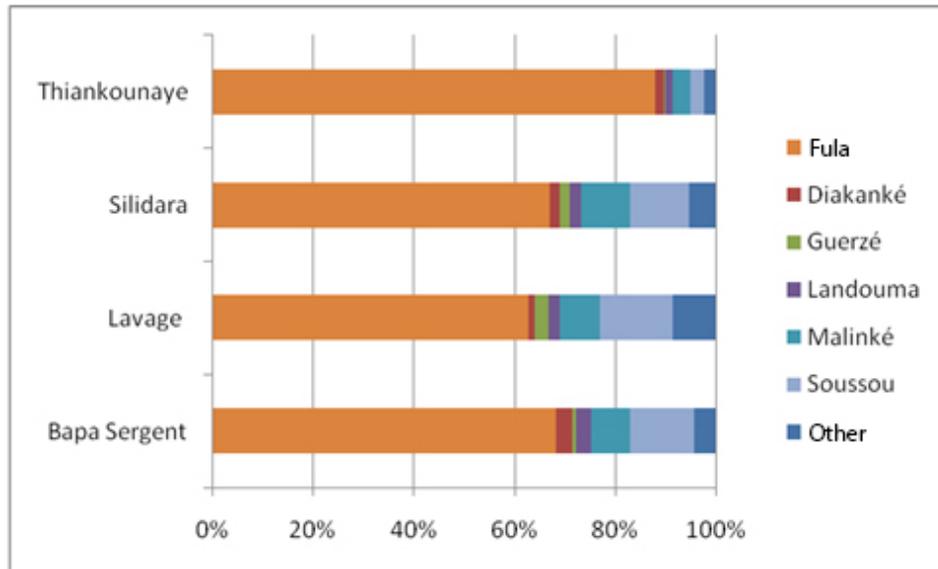
Figure 5-1 Reasons households move to Sangarédi



The urban portion of Thiankounaye district is an exception, however. As explained in the preceding point on the urbanization phenomenon, the town of Sangarédi expanded from the village of Thiankounaye. It is therefore logical that the households that arrived earliest are found in proximity to this original settlement (30%).

More than 70% of the people in the town of Sangarédi belong to the Fula ethnic group. This percentage is as high as 87.9% in Thiankounaye, because of its age. Despite the migrations of recent years, whose origins are more distant and diverse, a degree of ethnic mix has gradually developed, as shown by Figure 5-2. More than 11% of the population is Soussou, 7% is Malinké, etc. There are also households that are not Guinean, but Malian, Sierra Leonean and even Russian.

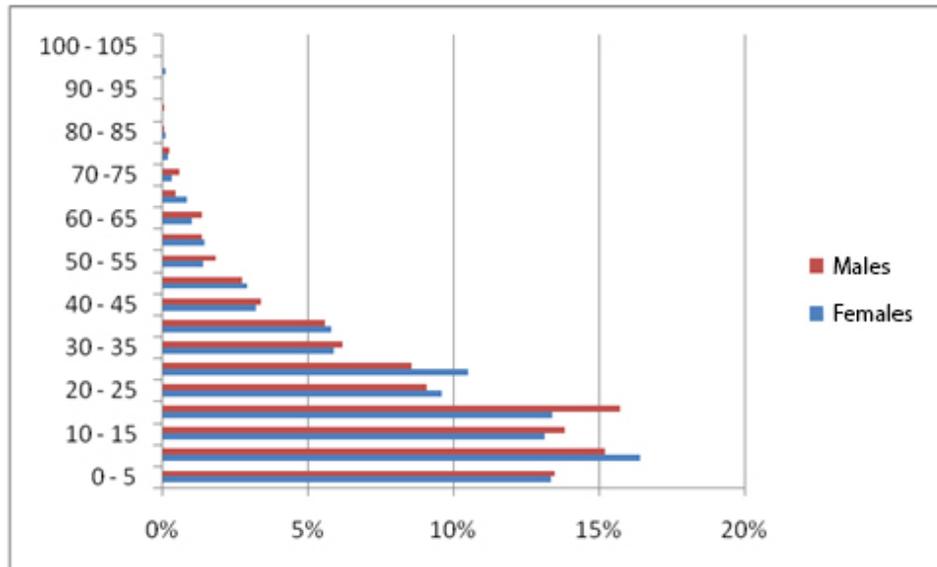
Figure 5-2 Ethnic breakdown of the town of Sangarédi by district



An age pyramid (Figure 5-3) was developed from the results of the household surveys. It should be noted that:

- Sangarédi’s population is young, with 42% of the people under the age of 15; and
- the proportion of men to women in the active population is about equal. CBG’s presence is a not only a pull factor but also a retention factor for the population. The active members of the population prefer to remain in the region rather than leave to look for opportunities elsewhere.

Figure 5-3 Age pyramid of the town of Sangarédi



In Sangarédi, the households are smaller than they are in the rural area, with an average of 6.3 persons per household. There are disparities between the districts, however. In Silidara, the average is more than seven persons, whereas in Bapa Sergent it is 5.6. The disparities are due to single-person households, primarily in the center of the town, where the economic opportunities are more numerous, as opposed to the periphery. The case of Bapa Sergent, where 20.9% of the households have only one person, is a perfect example.

5.5.2.2 Breakdown of the population and demographic growth in the rural area of the concession zone

We counted 2,258 households in the rural area of the concession zone for a total of 16,220 individuals, or 7.2 persons per household.

If we exclude the area occupied by the town of Sangarédi, we obtain a total area of 498.3 km² for the concession zone. The density of the zone is therefore 32.5 hab/km². This is a relatively high density for a rural area of this type; possibly the presence of Sangarédi and the paved road leading to it have contributed to the density of the settlement.

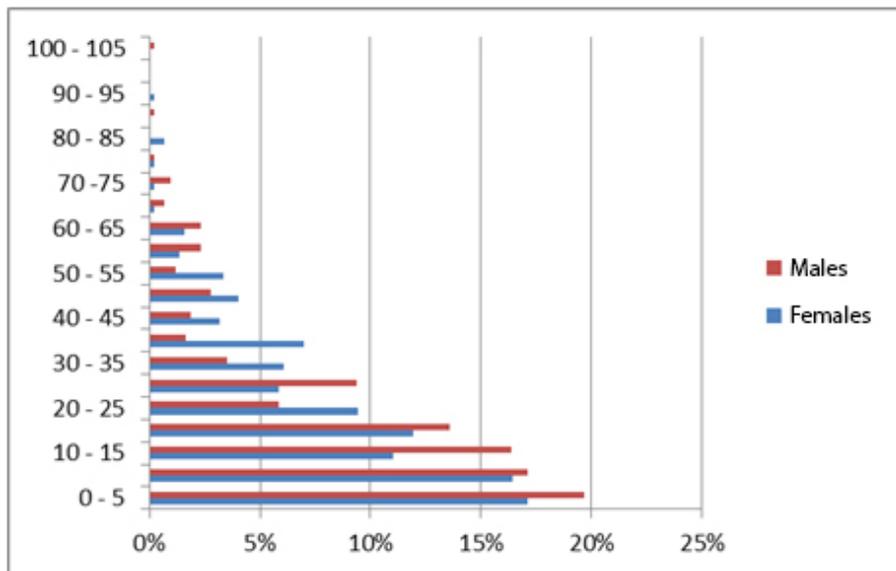
In this area, more than 91% of the members of households said they were born in the village, and 90% said their families were there before CBG arrived. Most of the

remaining 9% to 10% of the population arrived more than 10 years ago, and the great majority came from nearby villages. It can be seen that many hamlets have been formed recently by people from this area.

The area is therefore peopled mainly by natives who consider themselves Fulas. In fact, 99.3% of the households surveyed consider themselves Fulas, with the remaining 0.7% divided among the Balanté, Dioula, Diakanké, Landouma, Nalou and Soussou ethnic groups.

Even though, strictly speaking, the rural part of the concession zone does not seem to constitute an economic attraction zone, it seems to present the characteristics of a population retention zone. The demographic increase consisting mainly of natives indicates that people are not particularly interested in migrating.

Figure 5-4 Age pyramid of the rural area



The age pyramid (Figure 5-4) is based on the results of the household surveys. It can be seen that the proportion of men to women in the active population remains roughly the same. The presence of CBG and other mining projects that are in progress or under study may constitute population retention factors, with people preferring to remain in the region rather than leaving to look for opportunities elsewhere.

5.5.3 Education

5.5.3.1 *National educational system*

Guinea's educational system offers four types of education:

- preuniversity education (from grades 1 to 13, including primary school, middle school and secondary school) is provided by public schools but also by community schools for which the population is entirely responsible;
- university education;
- technical and vocational education covering most trades, although the training centers are distributed unevenly throughout the country. It is possible to enrol at some of the centers without the baccalaureate; and
- private education (including conventional private schools and Franco-Arab schools).

In addition to the four main types of education, there are also preschools (kindergartens) for children who have not reached school age, as well as reception and training centers for young women (Nafa centers) and literacy centers that provide informal education.

The Ministère de l'Alphabétisation et des Langues Nationales is responsible for the Nafa centers.

This informal education is rounded out by a large number of karamokos who teach the Koran, often in their own homes, to village children.

Guinea's educational policies emphasize access to primary education. The gross enrolment rate has risen despite the country's relatively limited means and budgetary restrictions. On the national level, improving the system presents major challenges that can be summarized as the need to increase school coverage in general, reduce significant geographic disparities, increase the quality of teaching and the number of teachers on all levels and restructure postprimary education to adapt it to the population's expectations and the country's needs.¹⁷

5.5.3.2 *Services and infrastructure for vocational and university education*

In terms of university and vocational education, the town of Boké is relatively well equipped in comparison with the other secondary cities in Guinea.

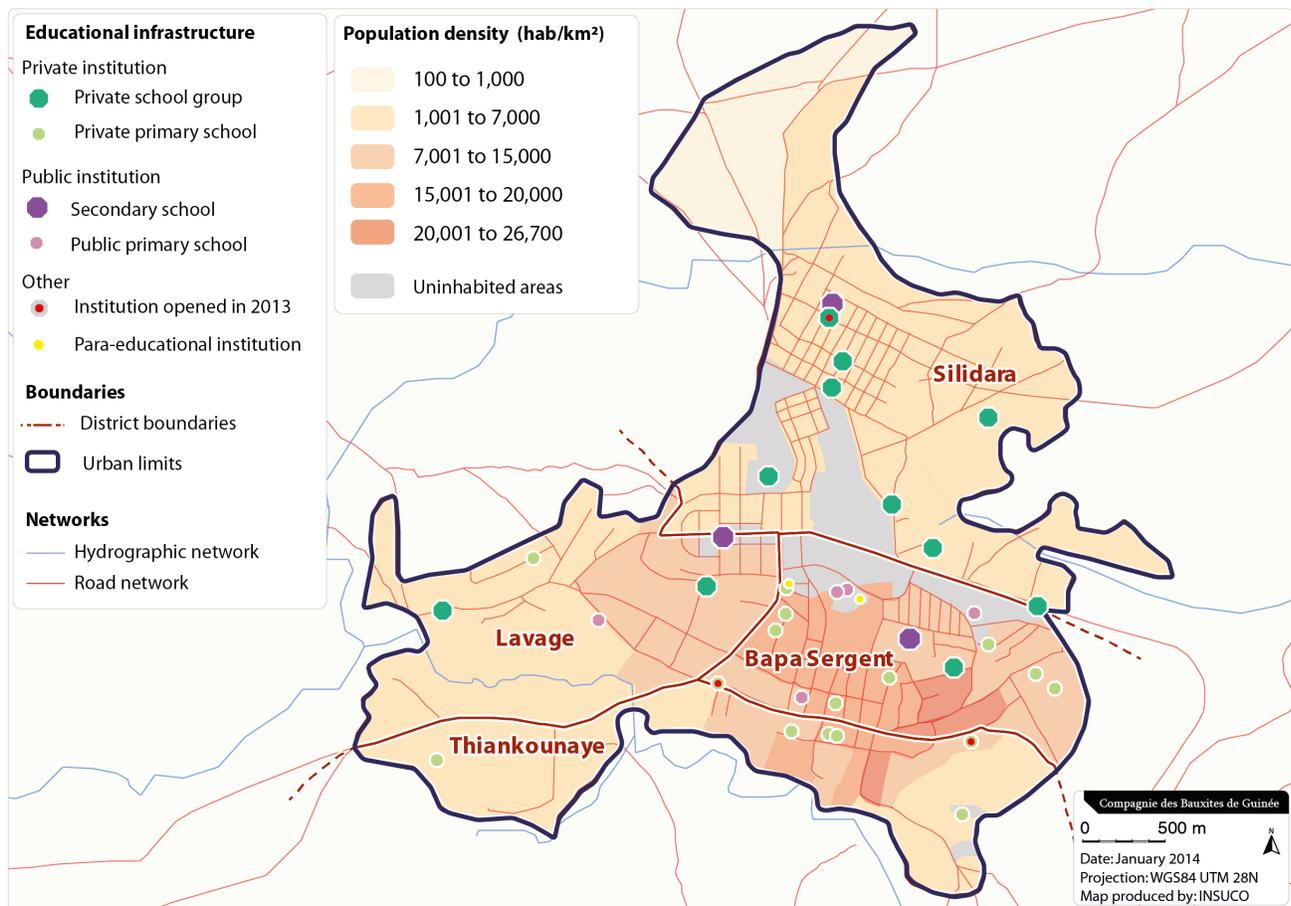
- **Centre de formation professionnelle de Boké (CFPB):** The CFPB offers level 1 training (in other words, after the BEPC, or middle-school diploma), level 2 (grades 12 and 13) and level 3 (after the baccalaureate). Level 1 includes traditional training in auto mechanics, boilermaking, masonry, carpentry, building electrics for construction work, etc. Levels 2 and 3 are subsidized by CBG. Level 2 leads to a certificate of vocational aptitude for mine personnel (mechanics, etc.) and level 3 leads to a senior technician's training certificate, referred to as a BTS (operators of vehicles, heavy equipment, etc.). Even though the first graduating classes appears to have found employment quickly, the latest graduates are having more difficulty on the job market.
- **École des soins de santé communautaire de Boké:** This is a regional school that recruits students on the basis of a national exam. It trains technical health agents in three years. The school seems to operate normally although it is currently housed in old buildings that need to be restored, if not rebuilt.
- **École normale des instituteurs de Boké:** The teacher training program lasts one year, and the graduates are monitored for two years. Apparently many of the young teachers do not receive a salary during that time, which generally discourages new generations of teachers. In addition, the instructors were on strike when the study was made because of salary arrears.
- **Institut supérieur des mines et géologie (ISNBG):** ISNBG was a branch of the Université de Conakry that was relocated to Boké by Ahmed Sékou Touré. It became a higher institute in 1986, with instruction provided by three engineering departments: geology, mining and metallurgical processing. Until last year, it also had a program for senior technicians in applied geology, mining and public works careers, metallurgical processing, topography and mining information technology. The program was suspended at the request of the Ministère de l'Éducation, because it was a vocational

rather than a university program. Each year the institute trains 300 to 900 engineers, who generally have more success on the job market in the field of geology than in mining. The institute receives a subsidy from CBG and, in addition to its training department, also has a research department.

5.5.3.3 Level of education and access in the town of Sangarédi

The details for each educational institution identified in the town of Sangarédi are given in Annexe 5-1, Volume I, annexe 11. Information such as number of students, teaching staff, ratio of girls/boys, etc., is documented. Map 5-5 shows the location of each educational institution in Sangarédi.

Map 5-5 Educational infrastructure in the town of Sangarédi



Preschool education

Preschools provide kindergarten classes for children aged 3 to 6. There were 16 of them in Sangarédi in 2012-2013. Most of the kindergartens are at least five years old and were created by private initiatives. The school fees range from GNF 15,000 to GNF 40,000 per child per month.

Even though the kindergartens accept relatively few children from the age category they serve, they are overcrowded, with an average of more than 52 children per class. The pedagogical content and the activities they offer are also very limited.

Primary education

There are five public primary schools in Sangarédi. Of the five schools, CBG built three, including the first in Sangarédi Centre early in the 1970s. Only Écoles Ambroise 1 et 2, in Bapa Sergent district, were built by the State. In 2012-2013, the five public primary schools had 4,569 students, of whom 46% were girls, attending six grades. According to our studies, there was an average of:

- 93.2 students per class;
- 53.1 students per teacher; and
- 4 students per table-bench.

In three of the five public primary schools, the double-shift system was introduced to offset overcrowding in the classrooms. In this way, some of the children from grades 2 to 5 (the teachers consider grade 1 and grade 6 to be crucial to the children's education) attend in the morning and the remainder in the afternoon. Even with the double-shift system, the public primary schools cannot always accept all the children who apply.

As a result of this shortage of school places, many private primary schools have been created in recent years. There were 18 of them in Sangarédi at the end of the 2012-2013 school year, or more than three times the number of public schools. Two of them are Franco-Arab schools¹⁸ and the others are secular. Not all have been accredited by the Direction Préfectorale de l'Éducation (DPE), either because they have not yet applied for accreditation or because their application is being processed.

The fees charged vary from one school to another and also depend on the grade attended. They can easily reach GNF 30,000 per child per month. Of the 18 schools, only 11 offer the full cycle from grades 1 to 6. As a result, many students must switch schools during this phase of their education, either to attend another private school or to return to the public system. The private primary schools had a total of 4,239 students in 2012-2013 with far better teaching conditions than in the public system. There are far fewer children per class (45.1) and per table-bench (2.2). There are also more teachers in relation to the number of students. Even so, not all have received Éducation Nationale training.

Table 5-1 summarizes the main characteristics of the public and private primary schools in Sangarédi and shows the deficiencies of the public system. The success rates for the primary school final exam (referred to as the CEP), which were excellent in June 2013 for private and public schools alike, do not reflect the differences in teaching conditions and caliber. After the disastrous CEP results of previous years, the exam administered in June 2013 was relatively easy according to various informants.

Table 5-1 Characteristics of primary education in Sangarédi in June 2013

	No. of schools	Full cycle	No. of students 2012–2013	Pct. of girls	No. of students / class	No. of students / teacher	No. of students / table-bench	CEP pass rate
Public	5	5	4,569	46.2%	93.2	53.1	4.0	92.2%
Private	18	11	4,239	47%	45.1	40.4	2.2	98.4%
Total	23	16	8,808	47%	61.6	46.1	2.9	94.5%

Secondary education

In 2012-2013, secondary education was provided in Sangarédi by nine institutions. Most of them are school complexes with both a middle school and a secondary school.

The Groupe Scolaire Général Lansana Conté and Collège Silidara were built by the rural commune in 1995 and 2000, respectively. The third public institution, the Lycée UNESCO, which comprises a middle school and a secondary school, was financed by CBG in 1973. The six other institutions are private and one of them is

Franco-Arab. The school fees for a private secondary institution generally range from GNF 50,000 to GNF 70,000 per child per month.

Table 5-2 gives the main characteristics of secondary education in 2012-2013, for public and private middle schools and secondary schools.

Table 5-2 Characteristics of secondary education in Sangarédi in June 2013

	No. schools	Full cycle	No. of students 2012-2013	Pct. of girls	No. of students / class	No. of students / teacher	No. of students / table-bench	Exam pass rate
Public middle	3	3	2,767	33.6%	72.8	35.0	2.8	83.9%
Private middle	6	5	1,123	45.1%	35.1	10.0	1.6	99.0%
Total	9	8	3,890	36.9%	55.6	20.4	2.3	88.4%
Public secondary	2	2	954	22.6%	63.6	14.9	1.4	58.5%
Private secondary	3	3	622	45.0%	28.3	8.3	1.4	93.4%
Total	5	5	1,576	31.5%	42.6	11.3	1.4	70.3%

It should be noted that:

- 71.1% of middle school students and 60.5% of secondary school students attend public institutions;
- very few girls receive their secondary education at public institutions;
- only one of every 2.5 middle school students continues studying at a secondary school; the others fail or drop out or, in the case of girls, marry and/or have an early pregnancy;
- the teaching conditions are better than at the primary level, but the disparities between public and private institutions are still present; and
- the success rates for the BEPC exam (more than 80%) and the baccalaureate (more than 50% and as much as 93% for private institutions) are excellent in relation to the national averages, which are 43.21% and 34.69%, respectively.

Photo 5-1 Seventh-grade class at Général Lansana Conté, a public middle school



The proliferation of private institutions is as much a response to the lack of public institutions as it is to the opportunity to start a business with the potential for rapid growth. When the 2013 school year began, three new private institutional educations, including a Franco-Arab school, opened their doors. Another school complex is also under construction.

Nonformal education

Sangarédi's NAFA center, the so-called second-chance school, opened in 2013. It is still operating despite many difficulties, including a lack of financial and physical resources and the end of its partnerships with UNICEF and two NGOs, Save the Children and PSI Guinée. In 2012-2013, the NAFA center accepted 29 girls for a two-year sewing program. Some of them have now rejoined the regular school system. A third year of training is scheduled to begin in January 2014.

A second nonformal institution, CFPPP, was created in 2013 as a result of Canadian cooperation. The objective is to provide educational assistance to children in great

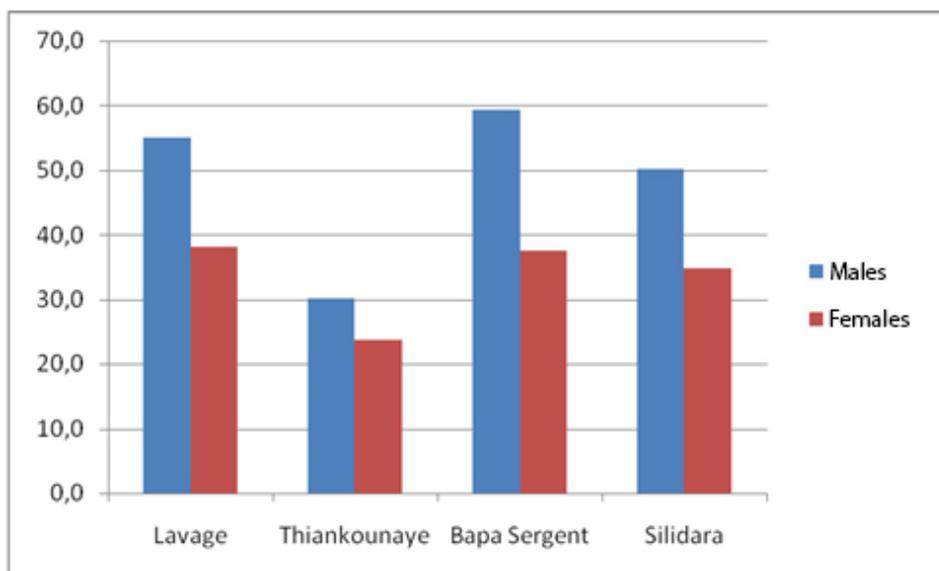
difficulty so that they can eventually rejoin the regular system. Grades 1 and 2 were offered in 2012-2013, with a total of 48 children enrolled, including 10 girls.

Educational practices and levels in Sangarédi

The enrolment rate refers to the proportion of children aged 7 to 13 who attend a formal educational institution. It includes children who attend public schools, private schools (whether denominational or not) and Franco-Arab schools. According to the household surveys, the enrolment rate is 95.6% in Sangarédi. There is no difference between girls and boys. All children are sent to school. This characteristic is specific to Sangarédi. It reflects the increase in the socioeconomic and educational level of the population as a whole.

The literacy rate is the proportion of people who are at least 7 years old (the theoretical age at which children begin primary school) and who know how to read and write a language. Generally speaking, for the French language the rate is fairly low in Sangarédi: 52.2% for males and 35% for females. On a more detailed scale, as shown by Figure 5-5, the French-language literacy rate is higher (59.3% for males) in Bapa Sergent district. It is also more than 50% in the Silidara and Lavage districts because of the presence of many CBG workers. Conversely, the rate is very low (30.1% for males) in Thiankounaye, where the poorest households live.

Figure 5-5 French-language literacy rate in Sangarédi



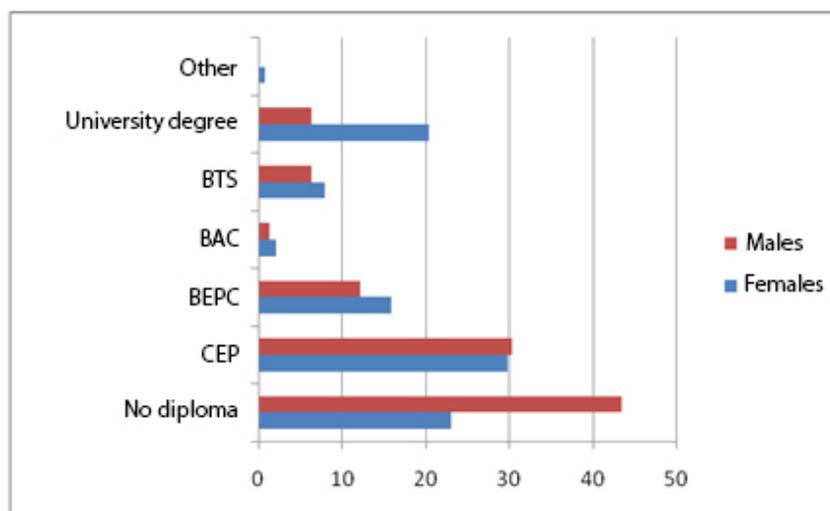
Apart from French, 25.4% of the population more than 7 years old has mastered the Arabic language.

According to the household surveys, 70.7% of males and 53.9% of females who are more than 7 years old attend or have attended school. As stated above, the percentage who can read and write French is far lower. Many people who have attended school are still not literate at the end of their education.

School attendance rates have little meaning if they are not correlated to the population’s level of education. Thus 23% of males and 43.5% of females over the age of 10 (whether or not they have attended school) have no diploma (Figure 5-6). This means that even though most of the people aged 7 or more have gone to school, many dropped out even before they finished primary school. In addition, 29.9% of men and 30.8% of women ended their education after they obtained the CEP, and 15.9% of men and 12.2% of women after the BEPC, but only 2.1% of men and 1.7% of women after the baccalaureate.

Those who obtain the baccalaureate usually go on to higher education. Indeed, 20% of the men who have attended school have a university degree and 6% a BTS. These rates are due to the arrival of a highly qualified socioprofessional cohort and the career opportunities that CBG offers. It should be noted that, once again and for the same reasons, Thiankounaye district is the exception: only 5% of the men have a university degree.

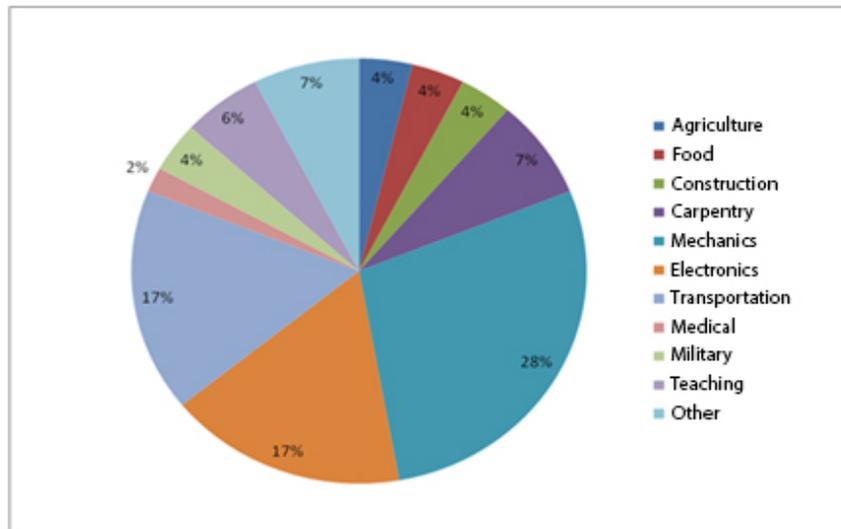
Figure 5-6 Level of education in Sangarédi



5.5.3.4 Complementary training and apprenticeship

About 5.8% of the males and 1.4% of the females aged 7 or over in the Study Area have done an apprenticeship or taken vocational training during their lives.

Figure 5-7 Training and apprenticeship in Sangarédi by trade

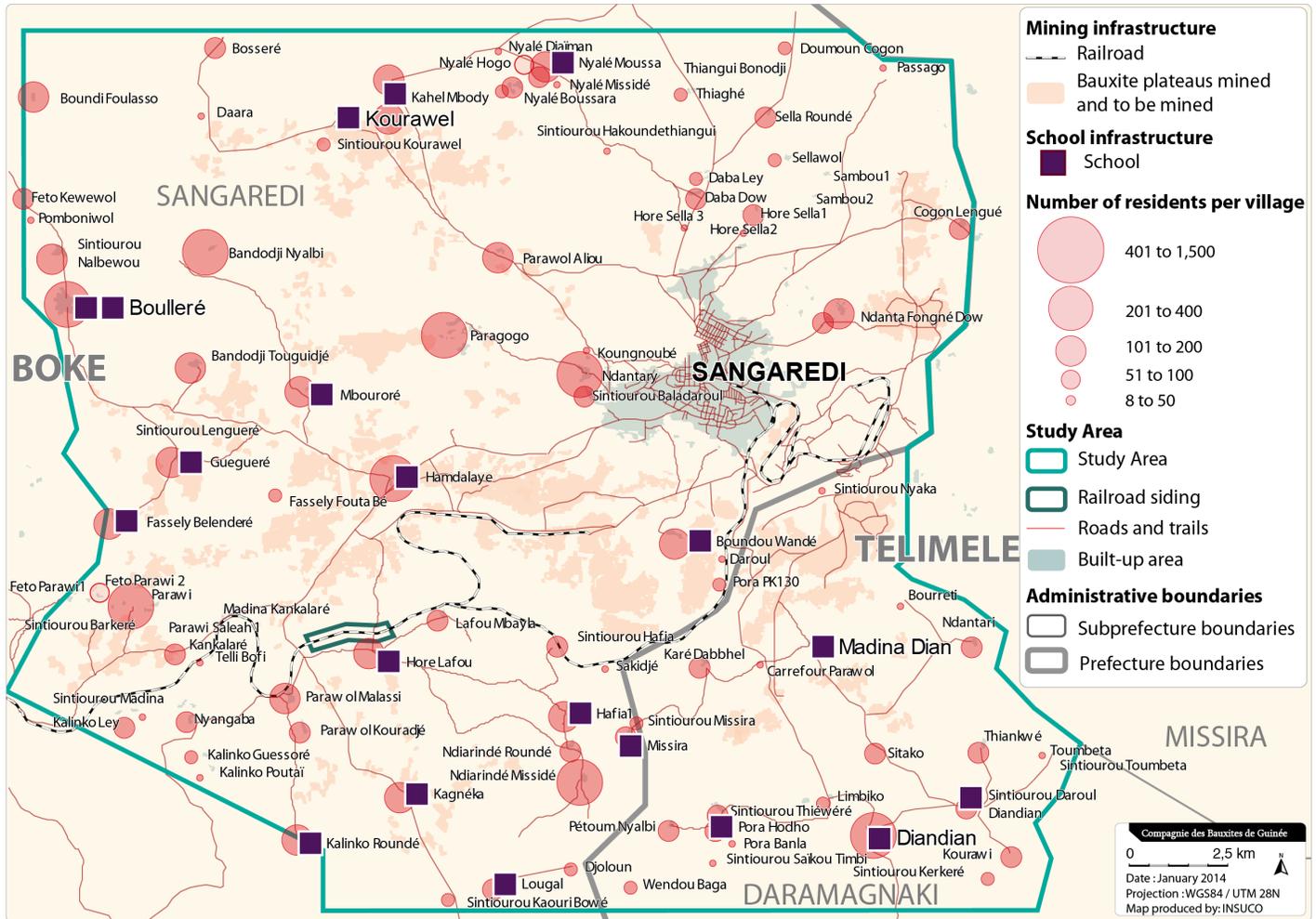


The trades with the largest number of apprentices, as shown by Figure 5-7, are mechanics (28%), electronics (17%) and transportation (17%).

5.5.3.5 Education level and access in the rural area

There are five schools in Daramagnaki commune and 12 schools in Sangarédi commune: more than half of them are community schools (11 out of 17). They are in the most populous villages and are fairly well distributed throughout the area, as shown by Map 5-6.

Map 5-6 Schools in the rural area



The ratios for the area as a whole are 2.4 students per table-bench, 30 students per classroom and 37 per teacher. These ratios are rather good for rural Guinea, but they are not indicative of the diversity of the statistics from one school to another. Detailed figures for the rural schools are given in Annexe 5-1, Volume II, annexe 12.

The community schools are often in a poor state (straw sheds without table-benches) and the teachers' educational training may be limited (they include mechanics, masons, etc.). Even so, the schools provide an important service to the population, enabling children in the most isolated areas to acquire the basics of French, arithmetic, reading and writing.

Very few of these schools have children who take the exam to continue on to grade 7 (middle school). Most of the schools are not accredited by the DPE, so their students cannot apply. As a result, community schools are limited to the first years of primary education. Children who want to continue must switch to a public school (as is the case, for example, of the school in Hamdallaye).

Generally speaking, the communities are fairly involved in education, as can be seen from the many community schools and the communities' assumption of responsibility for furniture at all the schools visited (including the schools built by CBG, which does not supply furniture).

Figure 5-8 Community school in Kagnaka



On the basis of the count, the household surveys and the conversations carried out, we can calculate an estimated enrolment rate of 78.9% for the entire rural area in the concession zone. This figure is unusually high for rural Guinea (in relation to other studies made in Guinea by INSUCO) and shows the importance that the population places on children's education.

It should be noted that there are differences between the figures we obtained and those provided by the DPE. The figures used for the calculations are those resulting from discussions in the schools with teachers. It should also be noted that the DPE openly expresses a degree of disdain for rural community schools, which may seem out of place, given the effort made by the populations to compensate for the deficiencies of the State (source, INSUCO 2013).

5.5.4 Public health

5.5.4.1 *National health system*

Guinea has a so-called integrated health-care system; in other words, national health programs are administered at all health centers, and a referral system is in place between the various levels as a function of the available expertise and technical facilities. The system has three main levels:

Health centers and posts

Health posts: They treat simple cases, with advanced prevention and communication carried out by community agents. They are overseen by a chief of post and report to a health center. The management rules are the same as for the health centers described below. They are generally attached to a district.

Health centers: They are generally found at the subprefecture level. They normally provide prenatal consultations, primary curative care and family-planning services, and implement the Extended Program on Immunization. They have a primary obstetrics and gynecology department, a laboratory that carries out basic analyses and a point-of-sale for drugs. They are under the direction of a chief of center and are co-managed by the hygiene and sanitation committee of the commune where they are located. The hygiene and sanitation committee consists of members from the commune and the chief of center, who together determine the budget as a function of funds received from the health posts and centers, and funds provided by the commune from its budget.

Prefectoral hospital and regional hospital

In addition to the services listed above for the health centers, the hospitals offer surgery, pediatrics, an emergency department and a more complete gynecology and obstetrics department. The scope of the services offered depends of course on the equipment and personnel available. The hospital is a deconcentrated structure of the State, overseen by a director. For each hospital, a contract of objectives and means is set by the State and the prefectoral health services, on the basis of average occupancy rate (bed occupancy rate and rotation frequency) and availability of drugs.

National hospital

The third level consists of national hospitals. Guinea has two, both of them in Conakry, the capital. They serve as university hospital centers with various specializations and represent the top level of the hierarchy of health-care services.¹⁹

Access to health services is still limited because of the dearth of infrastructure that is effectively operational and equipped with qualified personnel, but also because travel, consultation and drugs are expensive for families with very modest incomes.

Guinea's health policy has been based on the Bamako Initiative since 1987 and involves collecting a fee from users and involving them in the management of the health posts and centers through such mechanisms as the hygiene and sanitation committees set up in each rural commune.

It must be noted that the government's efforts have not really led to mass provision of health care or an improvement in its quality.

5.5.4.2 Services and infrastructure

ANAİM hospital

This hospital was built by the former Office des Aménagements de Boké (OFAB) and is currently owned by the Agence Nationale de l'Aménagement des Infrastructures Minières (ANAİM), which the hospital is named after. It therefore has a mixed public-and-private status: CBG responsible is for its functioning, and its staff report to the Ministère de la Santé but are paid according to CBG's pay scale.

Its very complete technical facilities are superior to those of many national hospitals. It includes the following departments: pediatrics, general medicine, surgery (abdominal, visceral and orthopedic), maternity, intensive care and reanimation, emergency, a polyclinic, a laboratory, medical imagery, dentistry and a pharmacy. It also has an administrative department (reception, management, maintenance, etc.).

It has a staff of more than 200, including about 20 physicians and about 60 technical health agents.

Patients are admitted in three ways:

- by the emergency department for corresponding cases;
- by the polyclinic, which does an adult triage and a pediatric triage, treats the simplest cases and refers the other patients to the appropriate department; and
- in some cases, by a direct consultation with the hospital's medical staff (less frequently).

Patients fall into two categories:

- beneficiaries: ANAİM and CBG employees as well as their immediate families, which are limited to spouses and directly related children under the age of 18 (children over 18 who are enrolled in school or university are also eligible for services). The cost is covered 100%; and
- the rest of the population: Other than those who arrive at the emergency room, these patients are admitted after payment of an advance. The hospital rates are different from those of public hospitals and are lower than most of the large private clinics in Conakry.

Beneficiaries are identified by their employee number from a list that includes each family along with a photo. This patient-management system presents a number of limitations, and people who are not eligible try to negotiate with beneficiaries to receive care free of charge.

Patients referred from hospitals and health centers are subject to the same system. The hospital also accepts patients transferred from Conakry, who are usually well-to-do people who need treatment for orthopedic trauma.

The hospital's waste is sorted and sent to an incinerator.

The main pathologies observed at the hospital are:

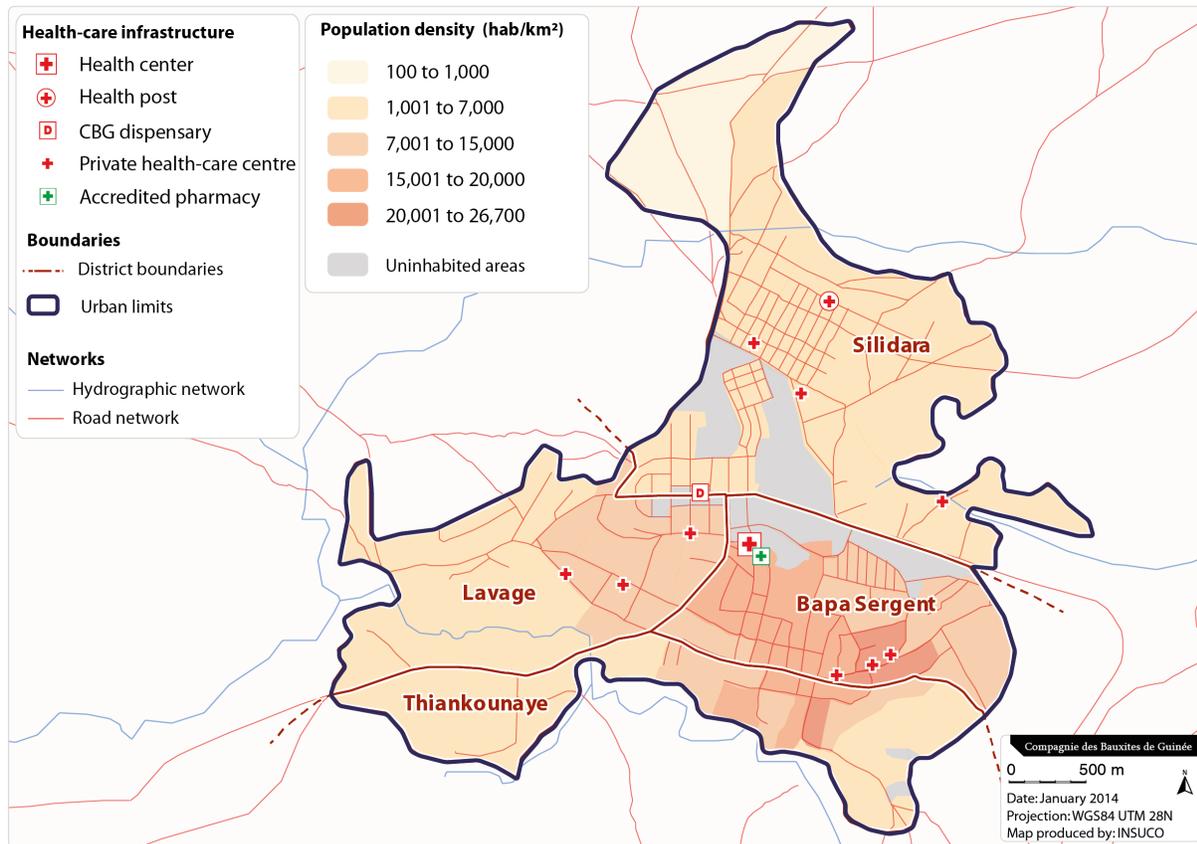
- malaria;
- pulmonary diseases (including acute respiratory infections and tuberculosis);
- HIV/AIDS (associated with other pathologies); and
- digestive diseases and diarrhea.

According to a physician interviewed, apart from HIV/AIDS, which is generally related to concentrations of workers and foreigners, the pathologies observed are not directly related to mine operations.

5.5.4.3 Access to health care in the town of Sangarédi

Sangarédi has two public health-care establishments (a health center and a health post), the CBG dispensary, which is similar to a hospital, and nine private medical practices (including one providing traditional medicine) (Map 5-7). Detailed information on health-care infrastructure is given in Annexe 5-1, Volume I, annexe 14.

Map 5-7 Health-care infrastructure in the town of Sangarédi



Public establishments

Sangarédi’s improved health center was built early in the 1980s by the State and later renovated and expanded, partially by CBG. It is managed by a physician and its staff consists of four physicians and 14 other medical employees (nurses, technical health agents and midwives), several of whom are volunteers.

The services offered are general medicine (primary curative care and first aid), pediatrics, gynecology (particularly prenatal consultations) maternity, emergency, surgery and laboratory analysis. It also has an HIV/AIDS detection and treatment center, a family-planning center (access to contraceptives) and a nutrition center (although very few patients use it).

Three of the technical health agents at Sangarédi’s improved health center are responsible for applying and coordinating the Extended Program on Immunization.

They also handle public awareness. According to our surveys, 41% of children in the urban area have been vaccinated.

Curative primary consultations cost GNF 1,000 for children under the age of 5 and GNF 2,000 for children over the age of 5 and adults. The prices are considerably higher in the case of hospitalization, as shown by Table 5-3.

Table 5-3 Hospitalization costs

Hospitalization	Type	Cost in GNF
	Pediatrics	30,000
	Without adult intervention	50,000
	With intervention	120,000
	Private rooms (daily rate)	10,000

Patients can also obtain medication from the improved health center’s pharmacy on presentation of a prescription, subject to availability.

Despite a recognized level of competence, the working conditions for the entire staff are difficult in relation to the needs of the local population. Only 19 beds are available, there is a constant lack of equipment, etc.

To avoid overcrowding the center, PACV (the village support program) built the Silidara health post in 2011, to act as a branch of it. According to its own statistics, the health post treats about 400 patients a month. The services it offers are limited to general medicine and first aid (minor emergencies), and it is managed by only three technical health agents. Other patients are referred to the improved health center. The cost of a consultation is GNF 1,000 for children and adults alike.

CBG dispensary

Everyone has access to the dispensary, albeit on different conditions. CBG workers and subcontractors as well as their families (spouse(s) and children) are covered by the company. Only a minimum contribution is deducted from workers’ earnings. The remainder of the population may also access the dispensary’s health services, but must pay out of pocket. The cost is about GNF 8,500 for a general-medicine consultation, GNF 17,500 for a specialized-medicine consultation and more than GNF 200,000 for a hospital stay.

Five physicians, 7 nurses and 13 other health-care professionals work at the dispensary. The services available are general medicine, pediatrics, gynecology, surgery, emergency, endoscopy, radiology, cardiology and dentistry.

The dispensary has no maternity ward. Women must go to the improved health center to give birth.

Once a month, specialized physicians (ophthalmologist, neurologist, ear, nose and throat specialist, orthopedist, etc.) come from Kamsar and Conakry to offer consultations in Sangarédi. This service is mainly for CBG employees and subcontractors. In particular, it is used for the health checkups that all employees are obliged to undergo at the start of their contract or on their return from vacation.

On average, the dispensary provides consultations to about 20 patients a day and hospitalization for about 300 a month. If the dispensary is not able to treat patients, it refers them to the ANAÏM Hospital in Kamsar.

Private medical practices

Given the inadequacy of the public system and the increasing requirements of the population, health care has become a lucrative business. There are nine private medical practices in Sangarédi, including one practicing traditional medicine (Table 5-4). Three-quarters of them are less than five years old and half of them practice without State accreditation. These medical practices almost all have a physician on staff. Even though the services are much the same from one practice to another, the conditions on which they treat patients differ. The best-equipped centers, which are also the most expensive, are naturally used by the more well-to-do.

Table 5-4 Main characteristics of nine private medical practices

Establishment	Physician	Other medical personnel	No. of beds	Services	Child rate GNF	Adult rate GNF	No. of patients per month
Hafia +	1	2	12	5 GM/P/S/G/Lab/E	10,000	10,000	150
Bowé	1	1	4	GM/Lab	3,000	5,000	250
Médina	1	5	7	GM/P	2,000	5,000	120
Camp infirmary	0	3	3	GM/P/D/E	0	0	150
CB7 Sangarédi	1	1	6	GM	3,000	5,000	150
Medinet's office	1	2	2	GM	1,500	3,000	NR
Lamena +	1	3	3	GM/P/Lab/E	8,000	8,000	350
Aribat Boubacar	1	3	9	GM/P/G/Lab/E	5,000	5,000	NR
Christophe	0	1	4	Traditional practitioner	0	0	100

GM: general medicine P: pediatrics S: surgery D: dentistry E: emergency Lab: laboratory analysis

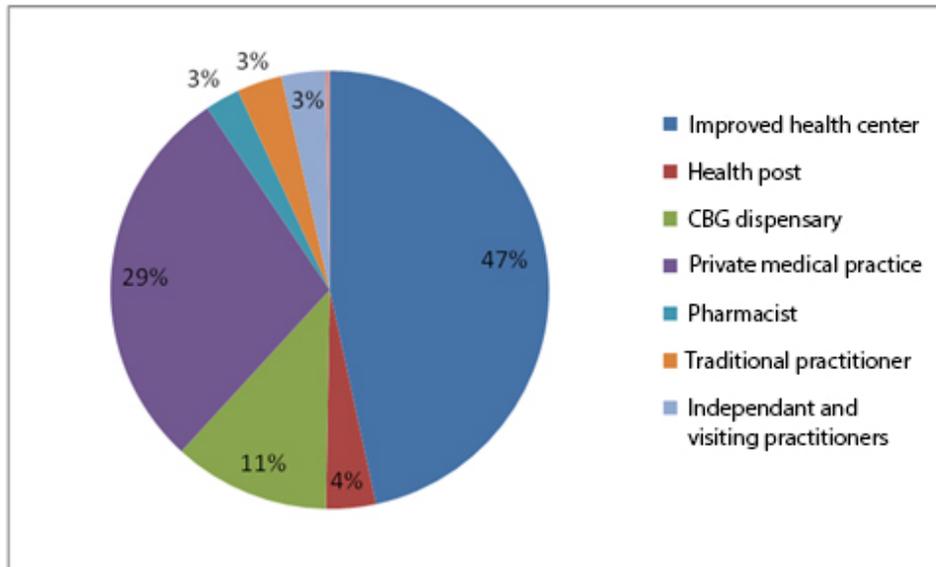
Having studied how public health-care establishments function, we shall now analyze the strategies used by households as a function of the services offered in the area (public and private).

General practices for access to health care

According to the household surveys, slightly more than one-third of the population of Sangarédi was ill in the previous three months. Of that number, 87.7% used a health-care service and 96.6% purchased medication.

Figure 5-9 shows that 47% of the people who obtained a consultation went to Sangarédi's improved health center, 29% to a private medical practice and 11% to the CBG dispensary. It should also be noted that, even though the know-how of traditional healers has always been recognized in the region, very few households use their services for an initial consultation.

Figure 5-9 First consultation in case of illness



A more detailed analysis of the findings, however, shows significant disparities between the districts. They are due to both the location of the health-care establishments and the socioeconomic level of the populations.

The residents of Thiankounaye have no private medical practices in their area. As a result, 58.7% of them went to the improved health center and 7% consulted independent or visiting practitioners. In contrast, the people living in Lavage and Silidara have several private medical practices, but they are a long way from the improved health center. They therefore tend to go to establishments in the first category, in proportions of 36% and 31%, respectively. Lastly, the inhabitants of Bapa Sergent (14.8%) and Silidara (12.7%) consult the CBG dispensary most often, because many CBG workers who live among them have almost free access to the dispensary.

As for access to drugs, the populations' behavior shows the same trends, but in smaller proportions. People who were sick in the previous three months obtained drugs from a pharmacy (24%) or from the establishment they consulted. As well, 13.4% of them said they make their own drugs (pharmacopeia).

The purchase of drugs from unaccredited vendors is minimal in the concession zone. Even so, this market continues to increase throughout the zone. It has two characteristics: the proliferation of unaccredited pharmacies and peddlers selling so-

called pharmaceuticals, whose origin, composition and expiry date are often uncertain. The products they sell are often expired or come from other countries, such that the purchasers cannot read the label to determine the dose.²⁰

5.5.4.4 Access to healthcare in the rural area

In the rural part of the concession zone, there is no health-care infrastructure apart from that in Boundou Wandé. It should be noted that the health post was built but has never been put into operation.

Proximity to the town of Sangarédi and connections between the villages and former villagers who have moved to Sangarédi may be the reasons for this situation. The largest villages could have health-care infrastructure (a health post), but it would probably be difficult to find qualified personnel willing to live in a village that is so close to an urban center.

5.5.5 Access to water

5.5.5.1 Access to water in the town of Sangarédi

Hydraulic infrastructure (CBG and other)

About 4,000 m³ of drinking water is pumped and treated each day by CBG at the Cogon dam. The water losses between Cogon and Sangarédi are estimated at 20%. Of the remaining 80%, half is reserved for the town. Thus 1,600 m³ is distributed each day to the inhabitants of Sangarédi through a system of pipes.

A user who wishes to connect to the CBG system must submit a request to the company and provide the necessary material (pipe with a diameter of 15, 25 or 30 mm, etc.). Frequently, several households will combine their resources to obtain a connection. In such a case, a connection is made between the CBG pipe and that of the individuals, with a manhole used for control purposes. In theory, apart from the installation cost, a connection to the system is free, with the work done by CBG technicians. In practice, however, the service is often provided in return for an informal financial contribution of varying amounts (source, INSUCO 2013).

Drinking water from the CBG tap is free. Even though the water is supposed to be available 24 hours a day, it is often cut off. For example, CBG turns off the distribution system for two hours every day to remove mud from the filters at the water intake point. Moreover, the flow is often very weak.

Because 1,600 m³ of drinking water is distributed to the population of Sangarédi and the minimum consumption threshold per person per day is set at 20 L (Millennium Development Goals and national standard), CBG should be able to meet the needs of 80,000 people. But that is definitely not the case. According to the household survey results, only 37.2% of the households in Sangarédi are connected to CBG's drinking water system, whether officially or clandestinely.

On a smaller scale, it can be seen that there are pronounced disparities between the districts. The people living in Bapa Sergent are those who are most connected to CBG's distribution system with a rate of 79%. In Lavage and Silidara, the connection rates are 42% and 36%, respectively. In Thiankounaye, however, only 4.4% are connected to the system. No CBG infrastructure (retention pond or manholes) has been built in proximity. The cost of a connection (pipes) is apparently too high. These people are obliged to obtain drinking water in another way.

Apart from CBG's drinking water system, Sangarédi has:

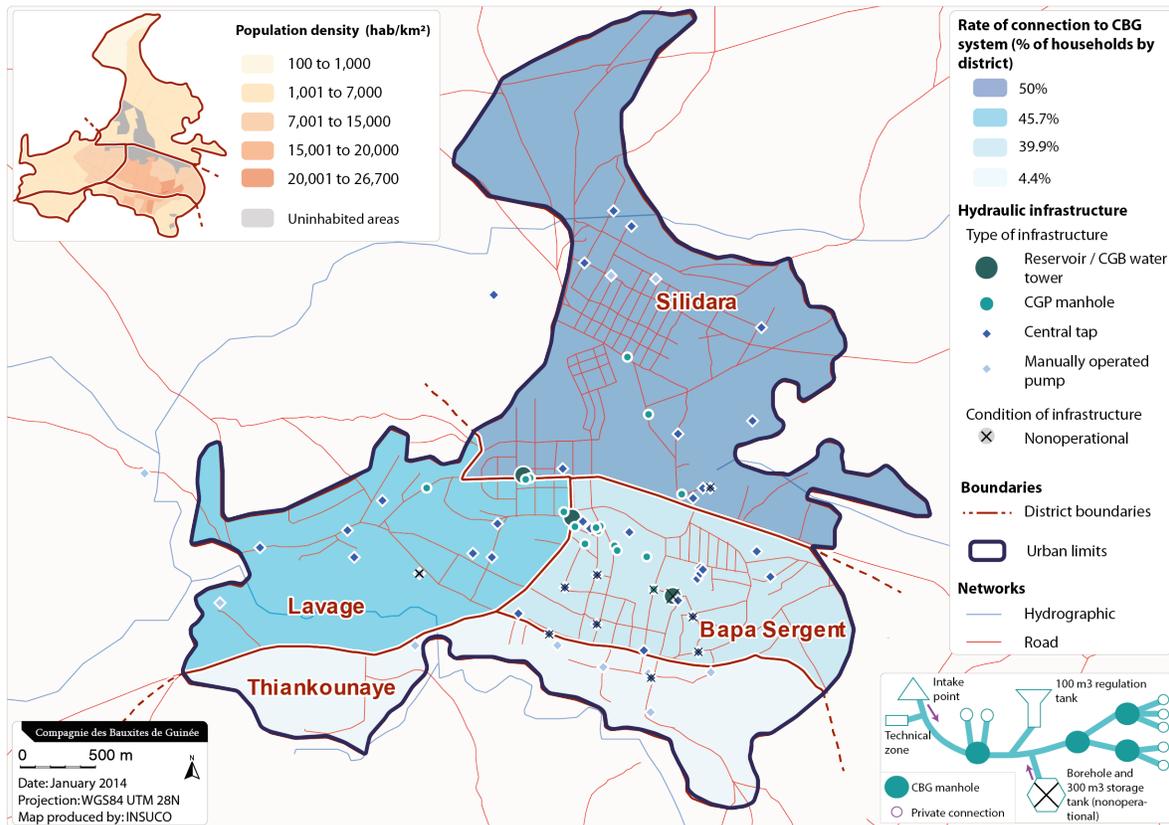
- 42 central taps, of which seven were built by the rural commune but no longer function and 12 are on school grounds and therefore reserved exclusively for students. The population therefore has access to only 23 central taps. They were constructed as a result of private initiatives. The water they provide is free, but is usually available only a few hours a day;
- nine manually operated pumps (MOPs) (also boreholes), of which one no longer works and another is on school grounds. This water is also free. Contributions are occasionally requested, however, if the pump breaks down;
- many traditional wells in family concessions.

Photo 5-2 A central tap, a MOP and a traditional well in Sangarédi



Map 5-8 shows the location of all drinking water infrastructure as well as the populations' supply practices, as explained in the following section.

Map 5-8 Water connection and infrastructure in the town of Sangarédi

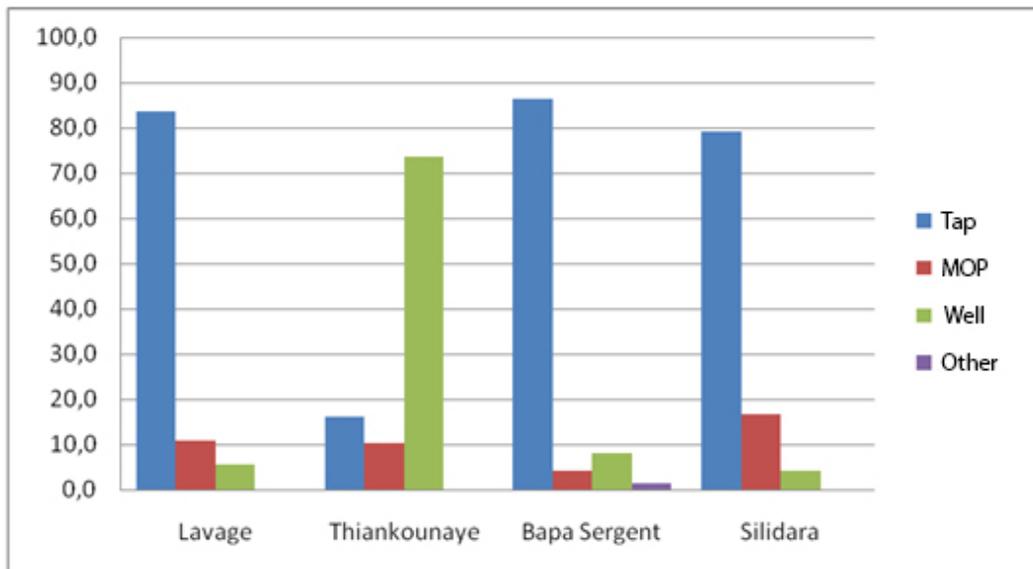


In November 2013, Guinea Alumina Corporation offered to provide 24 MOPs for Sangarédi subprefecture. Nineteen will be installed in the town, with 4 in Lavage, 4 in Thiankounaye, 7 in Bapa Sergent and 4 in Silidara. The local authorities have already decided where they will be located.

Drinking water supply practices

Generally speaking, the people are aware of the importance of good-quality drinking water and prefer to obtain it from a safe supply. Thus, in Sangarédi, 86.3% of the residents in Bapa Sergent, 83.7% of those in Lavage, and 79.2% of those in Silidara use tap water. The rates of connection to the CBG system are far lower (Figure 5-10). Instead of obtaining water in their concessions, people get it in another way, either from a neighbor with a CBG tap or from public taps.

Figure 5-10 Drinking water supply sources

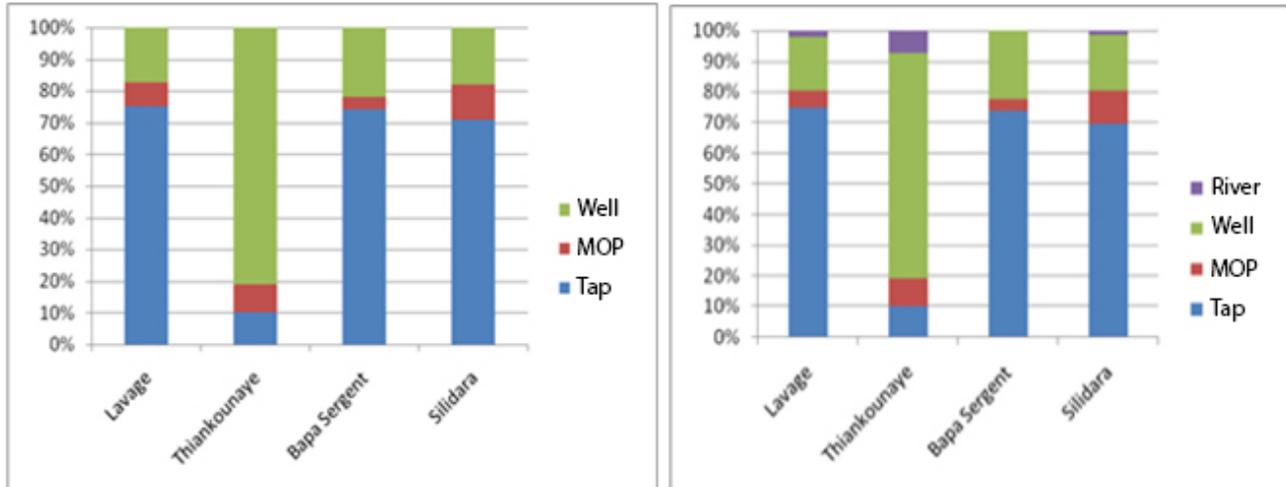


It can be seen from Figure 5-10 showing the various drinking water supply sources that Thiankounaye district stands out. The CBG distribution system does not reach the district, which has only two central taps and four MOPs to serve a population of about 10,500 (in other words, infrastructure suitable for 1,750 people). The congestion and social tension that occur at these water points oblige people to obtain water elsewhere, despite greater sanitary risks. As a result, 73.5% of the households in Thiankounaye use water from traditional wells.

Other domestic uses of water

Apart from drinking, water is used for bathing and household tasks (washing clothing and dishes). The graphic comparison (Figure 5-11) shows that the populations’ behavior does not differ with respect to these two uses and shows the same trends as for the drinking water supply, although in lesser proportions. This phenomenon is due to the availability of free water as well as the awareness that, for sanitary reasons, clean water is required for these purposes.

Figure 5-11 Water supply sources for bathing and laundry/dishes



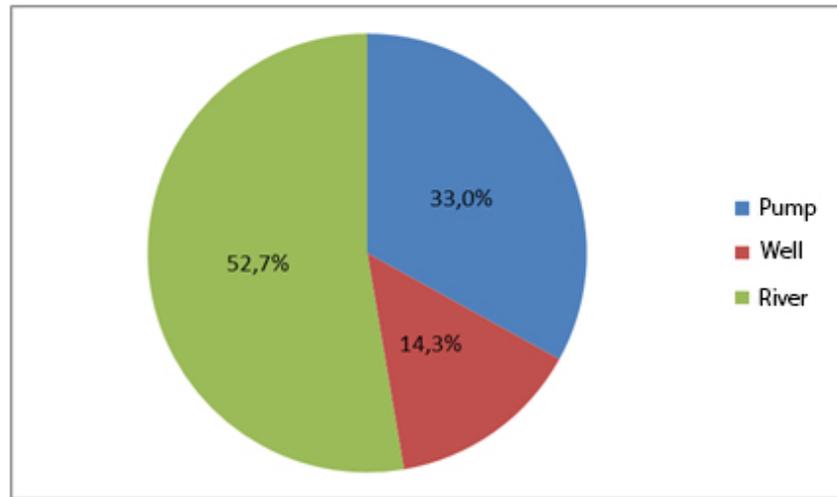
From an analysis of Figure 5-11, it can be seen that:

- Thiankounaye district, which is not connected to CBG’s distribution system, is once again the exception. The inhabitants use traditional well water for bathing and household tasks;
- traditional wells are used more for bathing and household tasks than for drinking water. The many traditional wells in the concessions enable the people to make trips to the taps only for their supply of drinking water; and
- a small proportion of the inhabitants go to rivers and ponds to do their laundry and wash their dishes. They represent 7.5% of the inhabitants of Thiankounaye because of the proximity of the Tiapikhouré River.

5.5.5.2 Access to water in the rural area

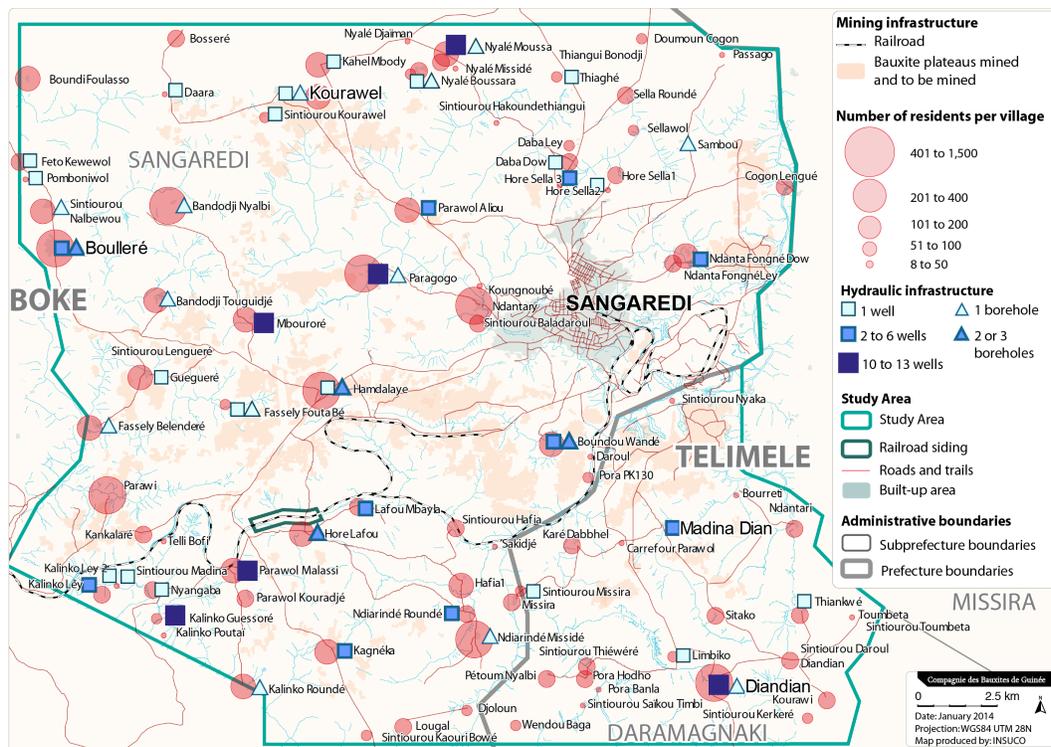
Access to water in the rural part of the Study Area (Figure 5-12 and Map 5-9) shows that more than half of the villagers obtain water from rivers and ponds, especially in Daramagnaki commune (77.8% of the households questioned).

Figure 5-12 Water-supply methods



Moreover, 43% of the households questioned said they were satisfied with their water supply source.

Map 5-9 Water supply infrastructure



It should be noted that, in the localities that are closest to Sangarédi and the mine, degradation of the watercourses is significant (source, INSUCO 2013). In particular,

near the Ndangara mine, the edges of the terraced plateaus allow water and mud to flow directly into the watercourses (Boundou Wandé).

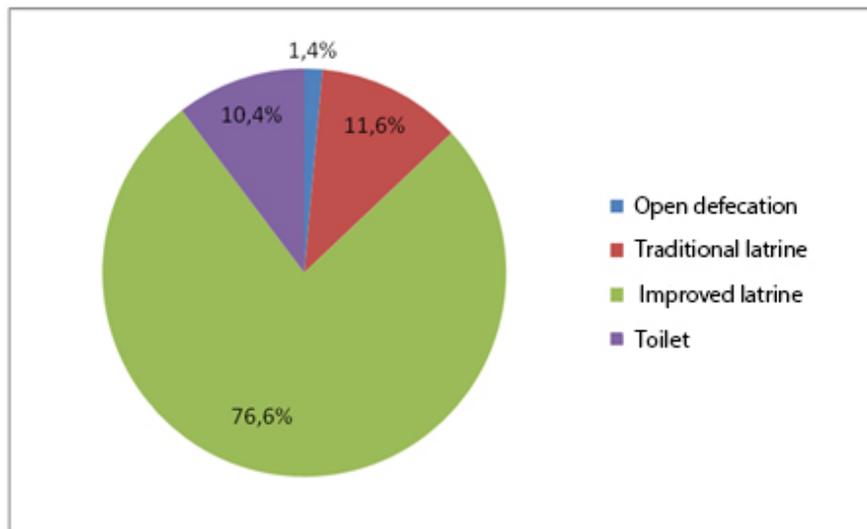
5.5.6 Sanitation

5.5.6.1 Sanitary conditions in the town of Sangarédi

Sanitary conditions

In the town, as a result of the acute shortage of space and the high risk of epidemics, such as cholera, the sanitary practices have changed significantly in recent decades. Today, 10.4% of the households questioned said they use toilets, 76.6% use improved latrines (a concrete septic tank with a permanent shelter) and 11.6% use traditional latrines (a simple pit with or without a roof) (Figure 5-13).

Figure 5-13 Use of latrines in Sangarédi in 2013



Even so, the latrines' impact on public health needs to be put in perspective. The improved latrines are generally poorly designed or poorly located (such as on a slope or near a water source). The risk of contaminating the soil, the water table and therefore the water itself continues to be significant. In addition, many households share the same latrine. Such overuse causes the septic tanks to fill up quickly. To date, there is no business that pumps out the tanks in Sangarédi or in the concession zone. Once a tank is full, the inhabitants have three options. They can hire a company based in Conakry to empty it, at a very high cost (more than

GNF 700,000 for one trip). They can empty it manually, but then they must decide what to do with the excreta. Or they can condemn the tank and construct a new one – an option that is ill advised in areas with a high population density.

The situation is very different in the CBG workers' towns, where there is an "all-to-the-sewer" system. It works by gravity in the heights of Sangarédi and by pumping in Bapa Sergent. The wastewater is transferred to the CBG treatment plant and treated in 12 mixing and dosing tanks and several polishing lagoons. Even so, the lack of maintenance raises many questions about pollution of the soil and nearby watercourses.

Photo 5-3 A gutter in Sangarédi

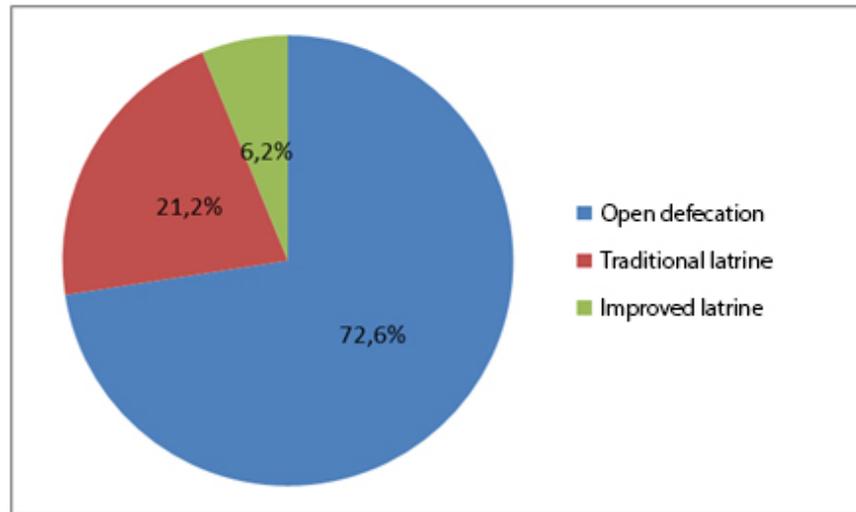


As for collection of rainwater, many gutters have been built in Sangarédi. Because of the town's topography, they discharge their contents into the Tiapikhouré River at Thiankounaye without any treatment. The gutters are widely used as waste receptacles.

5.5.6.2 *Sanitary conditions in the rural area*

The rural area has very little sanitary infrastructure (Figure 5-14). Open defecation is usually practiced.

Figure 5-14 Sanitary facilities in the rural area



In most of the hamlets, this practice is not really a problem from the sanitary standpoint. But when the density of area starts to rise and the population increases, it may ultimately create risks for the largest villages.

5.5.6.3 Waste management in the town of Sangarédi

CBG has installed 27 waste containers in Sangarédi: 2 in Thiankounaye, 8 in Bapa Sergent, 5 in Lavage and 12 in Silidara, particularly in the workers’ towns. The waste is collected by a refuse truck three times a week in the workers’ towns and twice a week elsewhere in the town. It is taken to a dump outside the town before being sorted. Some of it is incinerated, some is recycled (plastic bottles) and the remainder is left in place.

Apart from the collection organized by CBG, there is no waste-management system. Waste is thrown into the gutters or disposed of in the open, even though such practices are hazardous for the environment (pollution of soil and watercourses), for people (cuts caused by rusty metal) and for grazing animals (choking on plastic bags). The authorities occasionally provide officially designated places for waste and prohibit unauthorized dumping, which is subject to fines.

5.5.6.4 *Rural waste management*

There is no waste management in the rural area. Garbage is thrown into a part of the bush near the village. This practice does not seem to create a major sanitary problem because of the low population density.

5.5.7 Electricity

Thanks to CBG, the town of Sangarédi is an exception in Guinea in terms of access to electricity. The system, which dates from the mid-1990s, was put in place as a result of requests from local leaders to supply the town's main places of worship. Today, a large portion (more than 85%) of the urban population is connected to it, officially or clandestinely. Even so, as a result of Sangarédi's demographic and spatial growth, the power distribution system has deficiencies that CBG cannot cope with.

5.5.7.1 *CBG's system*

All the electricity used in Sangarédi is produced by CBG's two generating stations. The first dates from the commissioning of the CBG mine. Even though it is fairly old and only one generating set out of three works, it continues to provide electricity to CBG's technical zone and it supplies a second generating station, as needed. The second station, which dates to 2007, has two sets with a maximum capacity of 3.7 MW/hour, with each serving different areas: the one supplies CBG's facilities (technical zone, water catchment and treatment, wastewater treatment, etc.), while the other serves the town of Sangarédi. Ultimately, CBG plans to close the old generating station and upgrade the new one with a third set.

Most of the system connected to the new generating station is buried to avoid lightning, which is attracted by bauxite. Only the facilities that require frequent maintenance (substations and numbered boxes) are on the surface. The topology of the system is arborescent.

In the city, a 6 kV current is sent from the new generating station to two main substations (A and B). They serve as transformers for the direct connection of specific users, such as the CBG dispensary, the artisanal area of Lavage and several private users. They are also connection points to secondary substations.

In this way, substation A serves six secondary substations in the quarters of Silidara and Lavage, while substation B is connected to three secondary substations in the quarters of Bapa Sergent and Thiankounaye. If a secondary substation is too far from the main station, a junction box is used to protect the connections.

The secondary substations serve as transformers to which alternating-current splitter boxes are connected.

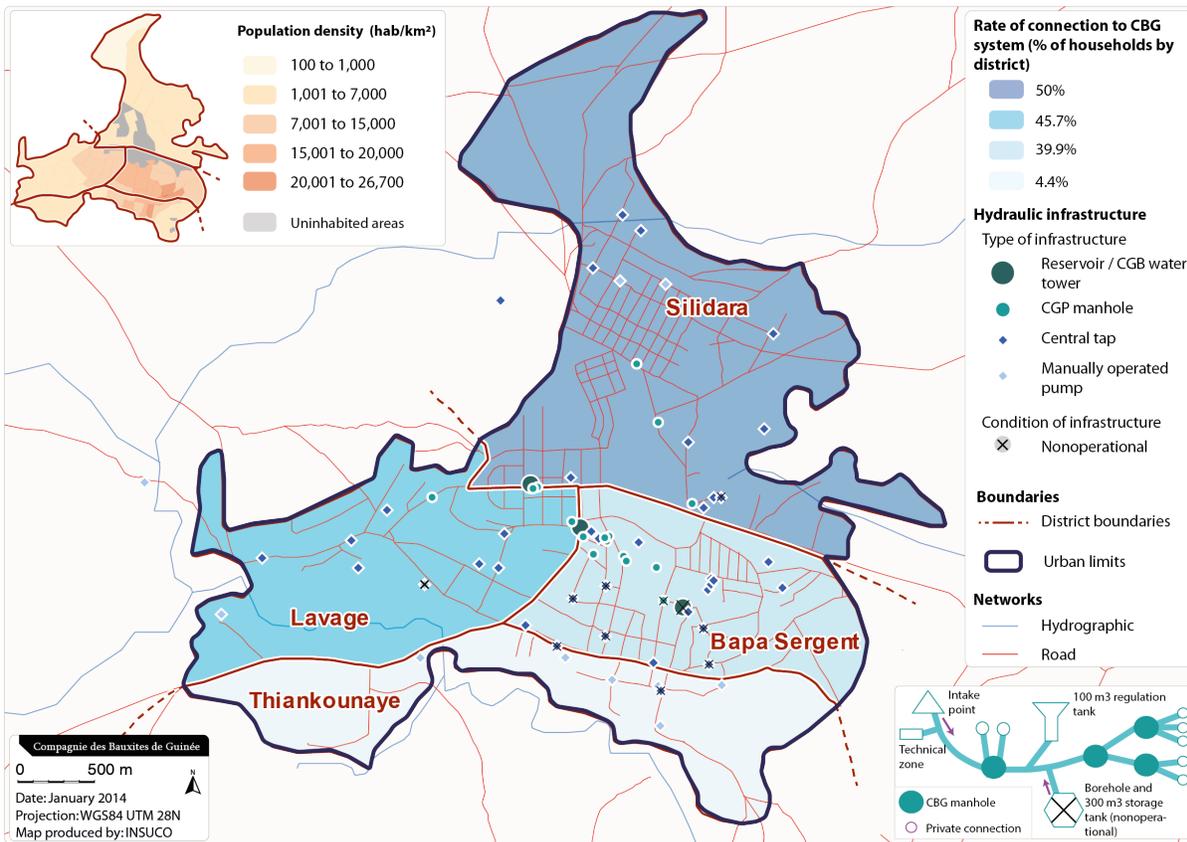
Photo 5-4 Typical CBG boxes



There are 124 of these boxes, with 80% of them in the CBG workers' towns and the remainder scattered throughout the town. They are managed by CBG and all are numbered. They are the connection points between individuals and CBG.

Map 5-10 shows the location of all CBG's electrical infrastructure as well as the connection rates for the population, as explained in the next section.

Map 5-10 CBG’s power system and connection in the town of Sangarédi



5.5.7.2 Private connections to the system

A user who wants to connect to a numbered CBG box must submit an application to CBG’s water and electricity services department and provide the necessary equipment, including cables, circuit breakers and a box.

Given the cost of the equipment – a minimum of GNF 30,000 for one meter of standard cable – , several households will frequently pool their resources to pay the cost of the connection. The new box will serve as a connection between CBG’s box and the individuals’ circuit breakers.

In theory, with the exception of the installation cost, a connection to the network is free, with the work done by CBG technicians. In reality, however, the service is often contingent on a financial contribution whose amount varies. The higher the voltage and the farther the line is from the CBG box, the more costly the connection.

In addition, the surveys showed that independent electricians also have access to CBG's numbered boxes, through CBG crews or resource persons in the quarter, and can connect individuals to the network.

To a certain extent, it appears that a household's connection to the network depends on its relationships in the quarter and its ability to pay for the necessary equipment. A connection to the network in the center of town makes it possible to run several electrical devices, but a connection in the periphery is often limited to lighting.

The arborescent typology of the system and the numbered boxes may seem relatively complex. The fact that there is apparently no control over or monitoring of the grid indicates that CBG is fairly tolerant of unofficial connections. It takes action, however, if the numbered boxes are overloaded, especially when there are many connections to a single box. In such a case, two solutions are possible: usually it removes all the unauthorized circuit breakers and those that exceed the authorized consumption, but it sometimes increases the box's total capacity in return for a payment.

5.5.7.3 System management

Today, only 18 users are customers of the CBG system. They are mainly contractors working for the company, banks, mobile telephone operators and private companies, which ensure the necessary maintenance is performed for their connection. These users are exempt from power cuts caused by load shedding.

In 2003, CBG added prepaid meters to some of the numbered boxes, through its subcontractor SMS-Kakandé, which was responsible for the grid at that time. The purpose of the meters was to limit unauthorized connections and to start a user-contribution system for management of the grid. According to CBG personnel, the system was rapidly discontinued because of disagreements over how it was to be managed.

Strictly speaking, there is no management system that can monitor connections, establish the grid's capacity or determine current and forecast consumption.

5.5.7.4 *Electricity coverage and breakdowns*

The system described above enables a good portion of the town to be connected in some manner to CBG's grid. This observation was confirmed by the household surveys; 87.5% of the interviewees answered yes to the question "Do you have access to CBG's power system in the place where you live?" Thiankounaye quarter is the exception, however. Only 66.2% of its households are connected to the CBG system. According to representatives of the quarter, there are two reasons for this situation: the equipment required for the connection is too expensive because the CGP boxes in the area are few and far between, and Thiankounaye has very few CBG workers who can facilitate the connection formalities.

Even though Sangarédi has an unusually high coverage rate for Guinea, the system seems to be less and less adapted to the population's needs. It is both overused (in terms of the number of connections) and overconsumed.

The system's saturation results in increasingly frequent malfunctions (load shedding, outages, etc.), and CBG is unable to provide sustainable solutions. Of the 80 MW that CGB generates on average each day, only 20% is used to power the industrial zone. The rest is used to serve the town. In other words, most of the output goes to the population, either in the town at large or in the workers' towns.

Given the lack of system management, the grid is faced with many technical constraints and ever-increasing demand from the population. For example, at about 6:30 p.m., when the daily peak occurs, Sangarédi consumes 4.5 MW to 5 MW. But the output from the new generating station that will supply the town is 3 MW to 3.4 MW.²¹ CBG connects the functioning set in the old generating station to the new one for several hours to meet peak demand. If problems occur, it has no choice but to shut off power to a portion of the town to avoid overloading the system. Load shedding is carried out by the substations, theoretically in turn, although the outlying areas, such as Lavage, are affected most often.

5.5.8 Cultural and religious infrastructure

5.5.8.1 In the town

In Sangarédi, we identified infrastructure related to three religions, namely Islam, Roman Catholicism and Protestantism. Table 5-5 details the infrastructure type and number for each denomination.

Table 5-5 Religious infrastructure in Sangarédi in 2013

Faith	Infrastructure type	Number
Islam	Almadjadja ²²	16 of which 1 is under construction
	Mosque	17 of which 6 are under construction
Roman Catholicism	Church	1
Protestantism	Church	1

In addition, there are four cemeteries in Sangarédi, including three in Lavage. The cemeteries are used by all the religions.

As for cultural and sports infrastructure, Sangarédi has:

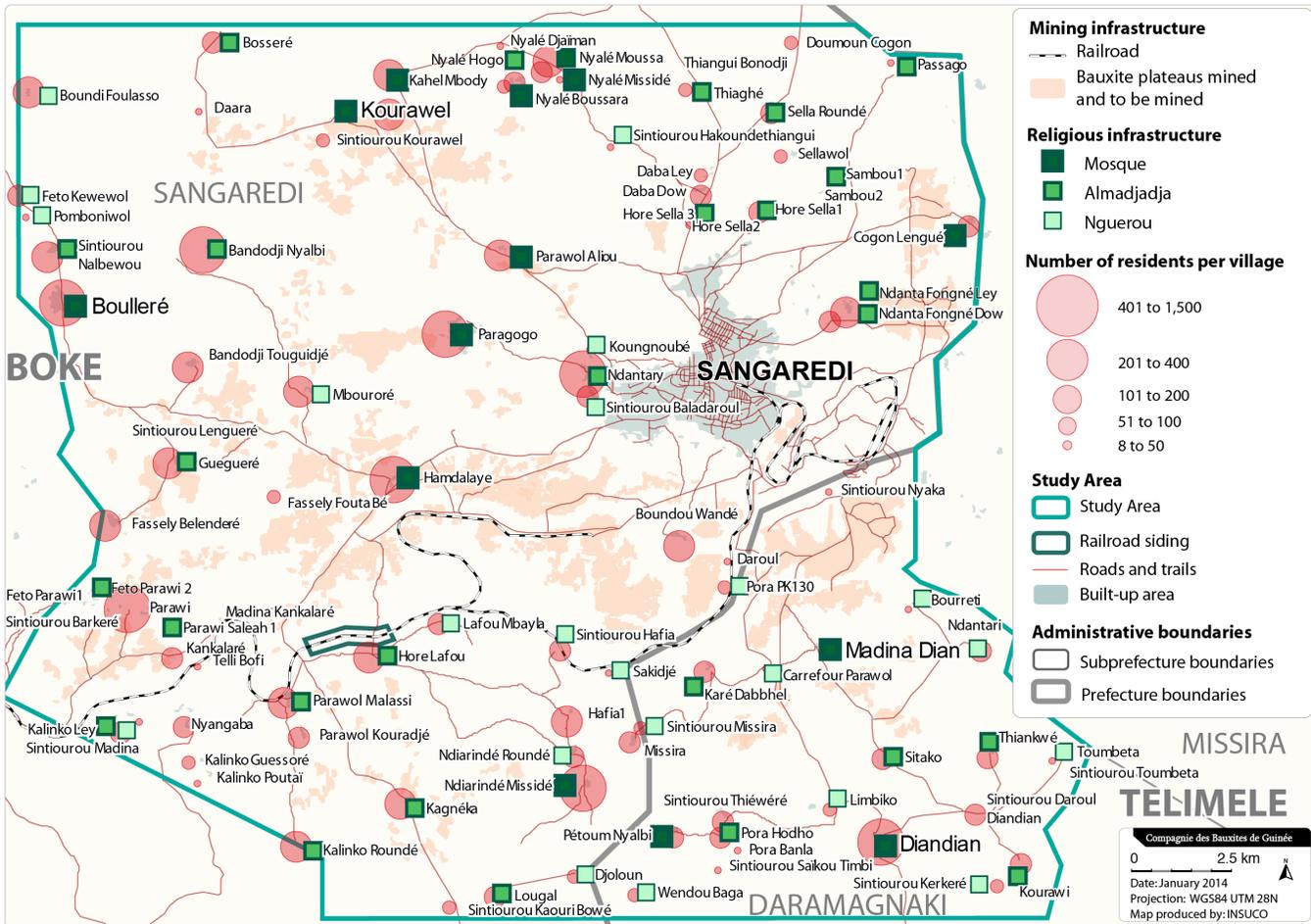
- a cultural center for young people called the Maison des Jeunes; and
- a stadium and several nearby sports courts (basketball, volleyball, bocce, etc.).

This infrastructure is in the center of the town in Bapa Sergent district. All the facilities were built with CBG financing, and the company's permission is required to use them.

5.5.8.2 In the countryside

In the rural area, 100% of the population is Muslim. We identified three types of religious infrastructure: *ngerous*, which are graveled, open-air prayer areas; *almadjadjas*, prayer areas that are covered but do not have the prestige of a mosque because they are small and often built of mud and thatch; and mosques proper.

Map 5-11 Religious infrastructure



Map 5-11 shows the mosques in the most populous villages, but also in the oldest, which are those that have greater political and land-related power. Religious infrastructure denotes power and often reflects a village’s financial health (means are required to build a mosque) and its political importance: not all villages can aspire to have a mosque even though they may have the financial means.

5.5.9 Urbanization dynamics in Kamsar

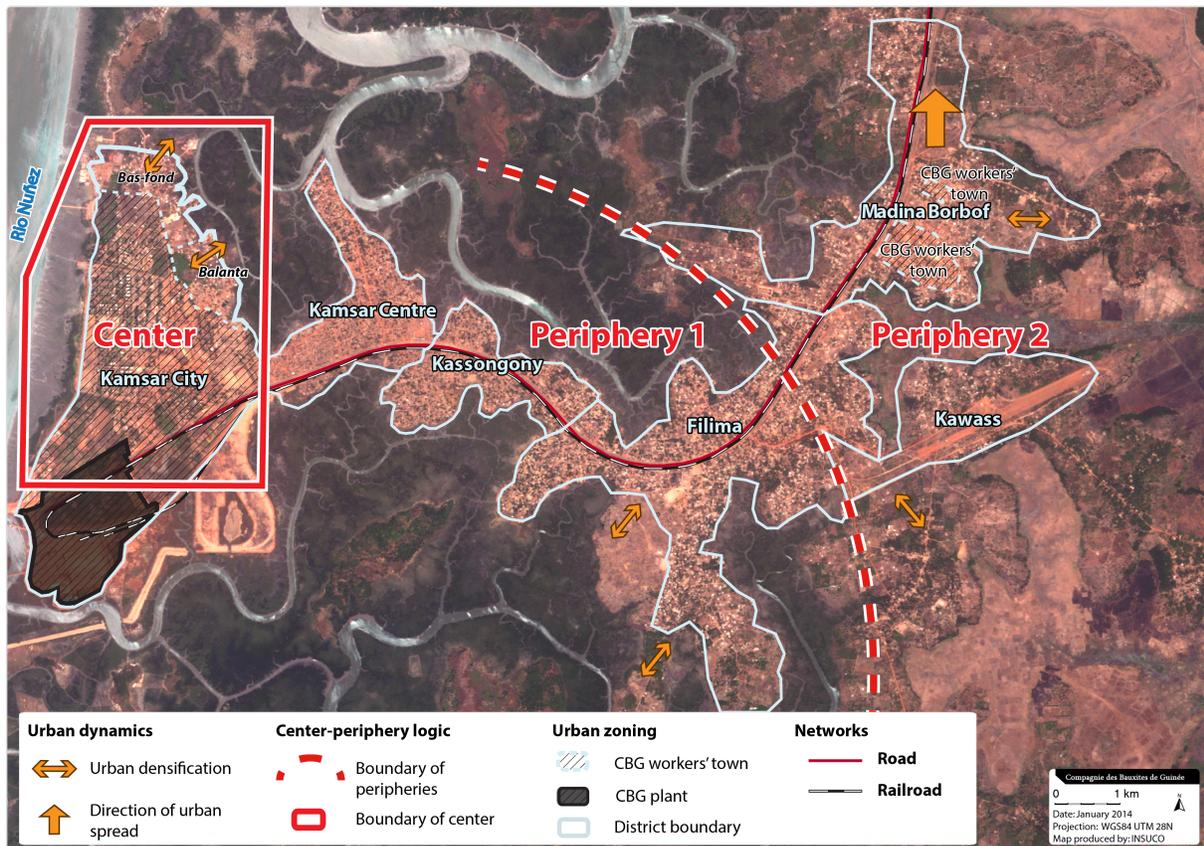
5.5.9.1 Urban dynamics

Kamsar’s urbanization is recent and rapid, stemming from CBG’s arrival early in the 1970s. In 40 years, the spatial organization of the village and the agricultural land has given way to a city of more than 300,000 (according to INSUCO’s 2013

estimates based on the 1996 census). Kamsar’s expansion has always been determined by its geographic location; mangrove to the north and the south make construction impossible, so it has expanded from west to east, in a linear fashion.

At the outset, CBG located its facilities on most westerly side of Kamsar to have direct access to the sea. It also built workers’ housing in that area. The natives who were displaced from the area moved to the edges of the workers’ town because of the advantages it offered (economic opportunities, infrastructure, etc.). This process intensified as large numbers of economic migrants arrived in waves. Today, Kamsar extends more than 10 km along the railroad track and the national highway, but its development has been anything but uniform. It is based on a center-periphery spatial organization model in terms of its economy, land tenure management and access to basic services (**Map 5-12**).

Map 5-12 Urban dynamics in Kamsar



The center of Kamsar is Kamsar Cité district. This is CBG's industrial area; in addition to the plant, it has the town's main economic activities and its main providers of services (banks, administrative offices, etc.). Most of the commuting is to Kamsar Cité and is facilitated by a developed road system that is in good condition. Moreover, the area was subject to allotment, so public and private space is clearly defined, and basic infrastructure and networks have been constructed.

The people who live in the center are mainly CBG workers and government employees, as a result of an agreement between CBG and the State. Kamsar Cité therefore has good living conditions and a relatively high socioeconomic level. The Bas-fonds and Camp-Balanta areas are the exception, because they are not under the remit of CBG. When CBG arrived, it did not clearly demarcate its reserved area, and no zoning was done. The land near the workers' towns quickly began to see construction and the sale and purchase of land by customary land holders. Today, as a result of the haphazard development of this area, there is little access to basic services and considerable poverty.

Kamsar's center-periphery model is, moreover, gradual. It is possible to distinguish two types of periphery. The first includes the districts of Kamsar Centre, Kassongony and Filima. It arises directly from the polarity of Kamsar Cité. It is characterized by varied economic activity, land tenure based on statutory law, dense housing and basic, although poorly functioning, infrastructure. The second periphery consists of the Madina Borbof and Kawass districts (the Manoyiré area near the airport) and is quite different. It is more of a rapidly changing rural area. The activities are primarily agricultural, although they are becoming more diverse, land tenure is based on both customary and statutory law, and the area is gradually becoming more dense, although basic infrastructure is still lacking.

It should be noted that, apart from Kamsar Cité, the town has seen two allotment processes: the area from Hamdallaye to Filima in 1996 and that from Kayenguissa to Madina Borbof, which began in 2002, but was never completed. CBG was to have used it for the construction of houses to be sold or leased to its employees. Given that no compensation was offered, the residents opposed the project. Ultimately, only a few houses were built on a clearly demarcated parcel of land.

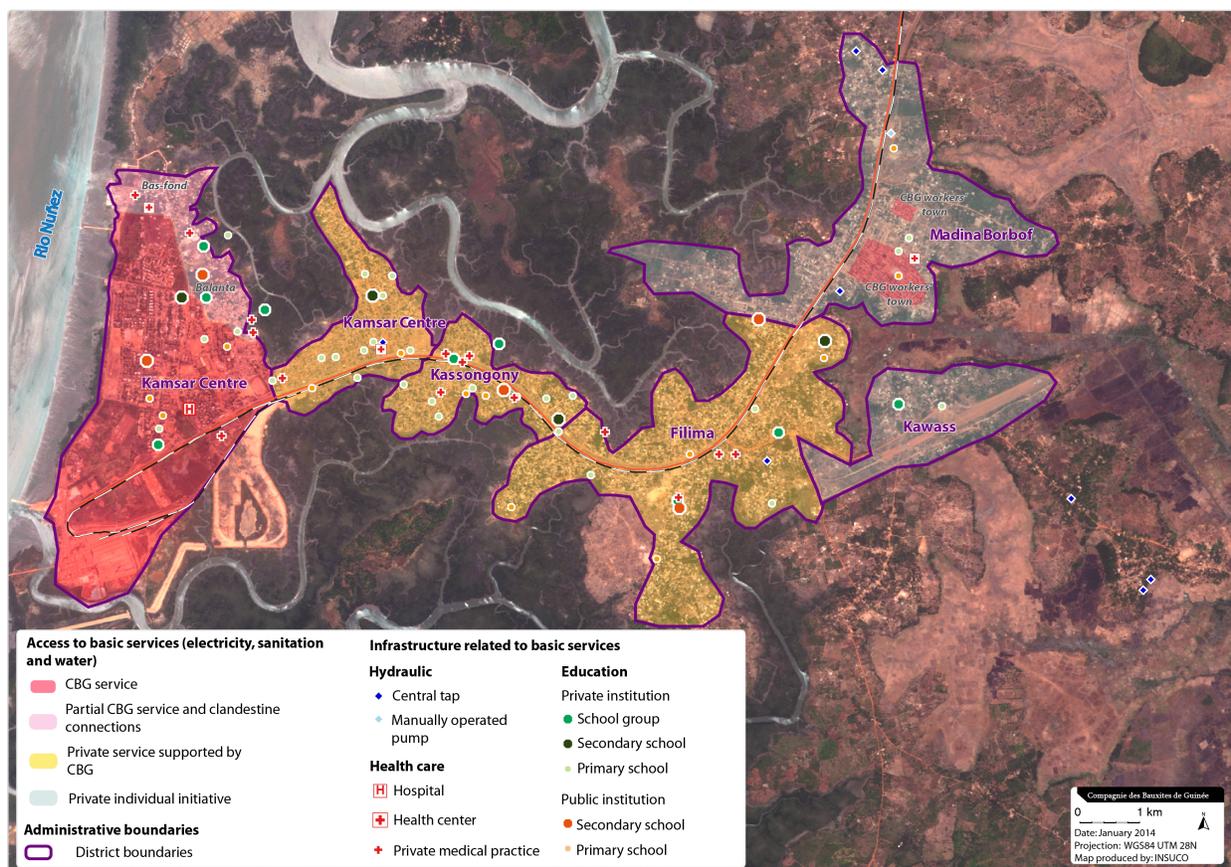
As already explained, the disparities between the center and the periphery take the form of access to basic services, even though the infrastructure coverage rate is

high in Kamsar. In terms of access to electricity, drinking water and sanitation, the disparities are correlated above all to the degree of distance from CBG’s facilities. As for education and health care, the disparities are related more to the population’s socioeconomic levels.

5.5.9.2 Access to basic services

The main services were identified and mapped (Map 5-13).

Map 5-13 Basic services in Kamsar



Access to electricity

CBG supplies electricity²³ free of charge 24 hours a day to all CBG workers’ housing as well as to private companies in Kamsar Cité (private companies have had free access since the bankruptcy of SMS-Kakandé, discussed below). The households’ peak consumption, which occurs at about 7:00 p.m., is still below GBC’s production

capacity (two generator sets are on standby). Even so, CBG intends to introduce a meter system in the short term. Households whose consumption exceeds a given amount will have to pay for their overrun. The objective is to limit waste and to promote energy saving. In no case is the objective to redirect power to other areas or to distribute surplus output. If CBG provides electricity to other areas, it does so only temporarily in order to preserve social peace.

In this way, CBG tolerates unauthorized connections in the Bas-fonds and Camp-Balanta areas of Kamsar Cité as well as in the Manoyiré area in Kawass.²⁴

As for the remainder of the city, in 2009 capital providers and CBG built and equipped a generating station with five generating sets to supply Kamsar Centre, Kassongoni and Filima with a prepaid-meter system. A three-party contract was signed between the State, CBG as a provider of technical assistance and SMS-Kakandé as system and distribution manager. But as a result of a legal dispute SMS-Kakandé withdrew and the service stopped. In October 2013, the President of the Republic required CBG to provide a minimum of four to five hours of electricity a day until the public authorities identified a new service provider. The agreement expired on March 11, 2014.

As for the Madina Borbof district, it benefits from the Kabata project undertaken by Alcan Alcoa in 2013 and managed by a private contractor. A generating set provides electricity to an area in a radius of 3 km. Households can connect to the system at a monthly cost of GNF 20,000 per light bulb and GNF 50,000 per electrical outlet. Power is available only from 7:00 p.m. until 11:00 p.m. This project is successful but is showing its limitations. The people think the electricity is too expensive and they would like to switch to a prepaid-meter system.

Access to drinking water

Each day CBG distributes more than 5,000 m³ of drinking water to its workers in Kamsar Cité,²⁵ an amount well above the population's current needs. The water is free and is available 24 hours a day. There is considerable waste, which CBG estimates to be 500 m³ a day, or 10% of the total volume distributed. Saving water in the workers' town would make it possible to supply larger volumes to the rest of the town. In 2012, for example, CBG decided to extend a drinking water pipe to the Bas-fonds and Camp-Balanta areas.

In 1996-1997, CBG also installed a mini drinking water system and 25 central taps in the area from Kamsar Centre to Filima. More than 1,500 m³ of water is piped there each day. For lack of management, the central taps break down, obliging the residents to resort to unauthorized connections upstream. In 2010, the commune signed a contract with TISAM to standardize and manage the system. Any new connection now costs GNF 280,000. The monthly payment ranges from GNF 15,000 to GNF 100,000 according to the socioeconomic level of the households and an assessment by company employees. Today, so many households are connected to the system that TISAM can no longer meet all the population's needs. Water is available only a few hours a day.²⁶

The other districts of Kamsar have no access to a drinking water system. They essentially obtain their water from traditional wells, even though the water quality is poor. Madina Borbof²⁷ and Kawass also have several MOPs (equipped boreholes) constructed by SNAPE. Because they are free (users pay only if the pump breaks down), these MOPs are overused and often sources of social tension.

Sanitation

In 2010, CBG delegated solid-waste collection in Kamsar Cité to two very small businesses, SOCAM and SONECI. The collected waste was taken to the landfill in Bendougou, 15 km from Kamsar. But, in November 2013, the local residents, who felt that they were being taken advantage of²⁸ (source, INSUCO 2013), blocked the entrance to the site. After negotiations between CBG and the population, the site reopened in April 2014. CBG also stores waste in one of its former pits in Tora Bora, Kamsar Cité. But this site does not meet sanitation standards, and the risks of pollution are high.

As for wastewater treatment, the workers' town is partially equipped with an all-to-the-sewer system and a treatment plant: the water is then partially reused to operate CBG's plant. But there is no catchment and treatment system for rainwater. The gutters in Kamsar Cité simply discharge their contents into the sea.

Sanitation in the other districts of Kamsar is almost nonexistent. Residents dispose of their solid waste in unauthorized dumps between the highway and the railroad track or in the mangrove. As a result of the town's increasing insalubrity and the related sanitation risks, several private initiatives involving groups of young people

and women have been created but have not had any impact for lack of financing and support from the population. The town of Kamsar has only two organizations involved in sanitation:

- the Centre for International Studies and Cooperation (CÉCI), an NGO that is the principal contractor for the health, hygiene and sanitation project initiated by Alcan Alcoa and the Agence Française de Développement (AFD). For four months, CÉCI will be responsible for installing waste receptacles along the railroad track, making the population aware of their use and organizing environment days when the population is asked to help collect waste in public places; and
- SOVIDFOS, a very small business created in November 2013 to put in place a pumping service in Kamsar. The sludge is dumped in a quarry in Madina Borbof.

Health

Kamsar's health-care infrastructure is fairly significant. It includes a hospital, a health center²⁹ and 17 private medical centers. Even so, access to health care is problematic and varies according to the population's socioeconomic level: the greater a household's financial means, the more likely it can obtain quality service.

As explained in part 4.4 on public health, access to the ANAÏM hospital is not the same for everyone. It is free for CBG's workers and contractors but is very costly for everyone else; patients sometimes have to pay an advance of GNF 1,200,000 only for a consultation with a doctor. As a result, the population prefers to go to the public health center in Kassopo or to the regional hospital in Boké.

The health center in Kassopo has all the services required by its status³⁰ and a competent staff (three physicians, six nurses, nine midwives, etc.). On average, it accounts for 100 births and 950 curative primary consultations a month. Even so, the facilities are deficient (only 15 beds and no electricity), which means that it operates on an ad hoc basis.

The number of private medical practices has increased in recent years. They are started mainly because they are a profitable business. The rates they charge are

therefore high. Even so, very few of these practices have true health-care expertise with accreditation from the competent authorities.

Education

The town of Kamsar has 49 primary schools, of which 15 are public, and 14 secondary schools, of which 5 are public (educational statistics for Kamsar are given in Annexe 5-1, Volume I, annexe 13). The education available is therefore above all private. Some private schools have no accreditation and are not officially recognized. Even so, this situation suits the DPE, because it decreases the number of students attending public schools. Households that can afford the monthly school fees sometimes prefer to send their children to private schools because they believe the conditions and teaching are superior. In fact, the private schools in Kamsar Cité offer education of very good quality (source, INSUCO 2013), mainly because of the involvement of parents who are aware of the importance of education.

5.5.10 Conclusion

The quantitative and qualitative studies have provided a snapshot of the social context in the concession zone. This analysis will make it possible to determine the social consequences of CBG's Expansion Project during the impact study.

Demographics

The population of the town of Sangarédi is considerable in relation to the rest of the Study Area. The population is relatively dense, but with hyperdensification in the center. This density is due mainly to migratory flows, probably related to CBG's operations. In the rural area, however, the settlement is older and preceded CBG's arrival.

The town's growth has placed considerable pressure on the land and has caused land management to shift from a customary system to a statutory law system.

The number of persons per household is lower in the urban area than it is in the rural area. The majority of the people are Fulas, and in the town 42% of the people are below the age of 15.

Education

The school enrolment rate in the concession zone is high. It ranges from 78.9% in the rural area to 96% in the town of Sangarédi. The primary schools have as many girls as boys. Even so, the literacy rate is still low (52.2% of boys and 35% of girls for the French language in Sangarédi) and the teaching conditions are often uncertain.

On the primary level, in the town of Sangarédi the public schools are overcrowded from kindergarten up, and in the rural area the community schools are staffed by teachers who often lack pedagogical training and can offer only the first few years of primary education. For these reasons, a private educational system is developing in the town of Sangarédi. Private schools now outnumber public schools, even though they are more costly and their success rate for examinations does not always indicate that the quality of the education they provide is superior. Because these schools tend not to offer the complete educational cycle, children are often obliged to change to another institution after a few years.

On the secondary level, the proportion of girls is lower, and one-third of the students drop out. Private education is also becoming more prevalent.

CBG has built several public primary schools and a secondary school in Sangarédi. It has also built public schools in the rural area but it does not provide furniture for them.

Public health

The analysis of the health-care system in Sangarédi shows significant disparities in terms of access to quality care. For example:

- of the nine private medical practices, only about half are accredited;
- the entire town has only 203 observation beds and regular beds, namely one bed for every 265 residents;
- as with education, health care has become an economic sector where private initiatives with limited expertise are proliferating; and
- access to health care perpetuates socioeconomic inequality. Apart from CBG's workers, who have a special system, access to quality service depends on financial means.

In November 2013, the NGO Faisons Ensemble distributed mosquito nets free of charge to the entire town of Sangarédi under one of the programs to combat malaria. The impact of this initiative still has to be assessed. According to the household surveys, during this period 86.7% of the households used mosquito nets (without knowing whether they were insecticide-treated and without knowing whether they came from the NGO), and there was an average of 2.6 mosquito nets per household.

In the rural area of the concession zone, there is no health-care infrastructure, except in Boundou Wandé. It should be noted that the health post built there has never been put into operation, which indicates significant deficiencies in the planning and management process.

Access to water

The conditions for access to water vary considerably from district to district as well as from the urban area to the rural area.

In the urban area, CBG provides 1,600 m³ of water each day. Even though the service is theoretically free, a person who wants a connection to the system must often make an informal financial contribution and must also pay for the necessary equipment. As a result, in practice, only 37.2% of the households are connected. Moreover, the disparities are very high from one district to another: only 4.4% of the residents are connected in Thiankounaye versus 79% in Bapa Sergent. Moreover, the service is often interrupted and the flow is weak.

Even though there are other water sources, such as central taps, MOPs and traditional wells, many of them are not operational.

In the rural area, most of the villagers obtain water from rivers and ponds, some of which have been polluted by the mine.

Sanitation

The sanitation conditions are mediocre, especially in the urban part of Sangarédi. For example:

- the latrines are overused and the septic tanks are rarely emptied because there is no company to perform this work in the region;

- the gutters are used as waste receptacles and their contents flow directly into the Thiapikouré River; and
- the waste-management system put in place by CBG is inadequate for all the town's waste, so a great deal of trash is disposed of in the gutters or in the open.

The CBG workers' towns are better equipped, with an all-to-the-sewer system, for example.

Access to electricity

The analysis of access to electricity shows a great deal of disparity between the citizens of Sangarédi and underscores the State's lack of involvement in a service that is generally its responsibility. The outcome is that:

- output initially intended for industrial production is now used mainly by the town;
- with no system for management and control, the grid cannot be adapted to needs and to basic safety standards;
- users do not pay for their consumption and therefore take advantage of the system, such as by leaving appliances on or engaging in commercial activities, which creates tensions concerning the service; and
- there is an urgent need to take the situation in hand to provide adequate service, meet increasing demand and ensure social peace.

Cultural and religious infrastructure

Sangarédi has religious infrastructure (places of worship and cemeteries) for the Muslim, Roman Catholic and Protestant religions. In the rural area, 100% of the population is Muslim and all the villages have a place of worship, but the presence of a mosque continues to be an indicator of a village's financial health and political importance.

Urbanization dynamics in Kamsar

Kamsar is a "new" town as a result of CBG's economic attractiveness. It has been growing constantly since the 1970s, but its development differs from one district to

another and has resulted in sociospatial segregation, especially in terms of access to basic services.

CBG has begun building 600 housing units in successive phases. The plan thus far is to use all the empty space in Kamsar Cité. CBG could also expropriate a portion of Bas-fonds and Camp-Balanta, given that its reserved zones are not clearly defined. Even so, the densification of Kamsar Cité is raising many questions about saturation of space, pressure on infrastructure and the need to preserve a climate of social peace. In contrast, the construction of new workers' towns by CBG in peripheral districts, such as Madina Borbof and Kawass, appears to present many advantages. It would reduce congestion in Kamsar Cité, promote development of the peripheral areas and create new interurban polarities.

5.6 Economic activity

The qualitative surveys discussed in this chapter cover a number of the economic activities carried out in the Study Zone:

- agriculture and herding;
- hunting and fishing in the concession zone;
- fishing in the port zone, which could be especially affected by additional bauxite production;
- gathering and logging; and
- mining.

With respect to these activities and the concession zone, it should be noted that:

- the road infrastructure is generally poor, apart from the paved road from Boké to Sangarédi. The villages are isolated and have very little access to markets. The transportation of goods is often organized by merchants from outside the area (town of Sangarédi);
- the most influential market in the area is the one in Sangarédi (Sundays), followed by the market in Boulléré (a smaller market that takes place on Tuesdays) and that of Tinguilinta (which is in Tanéné commune, Boké road, is held on Saturdays and is relatively important). There is no market for livestock; and
- the only truly active financial institution in the area is Crédit rural de Guinée. Its customers tend to be merchants rather than villagers. Previously, there were several Banques villageoises offices (a private initiative by Fria and Avocats sans frontières Guinée/Lawyers without Borders Guinea), but they are no longer in operation. According to the surveys, it appears that the main source of credit is usury by merchants, although quantitative data are not available.

5.6.1 Agriculture and herding

The description of agricultural and herding practices is given in Annexe 5-1, Volume I, annexe 9. It is based on surveys of farmers and herders throughout the concession zone.

5.6.1.1 Agriculture

Agriculture is the main activity in the rural part of the concession zone: 65% of the households consider it their main activity and 29% consider it their second activity. Thus 94% of the households questioned are involved in agriculture.

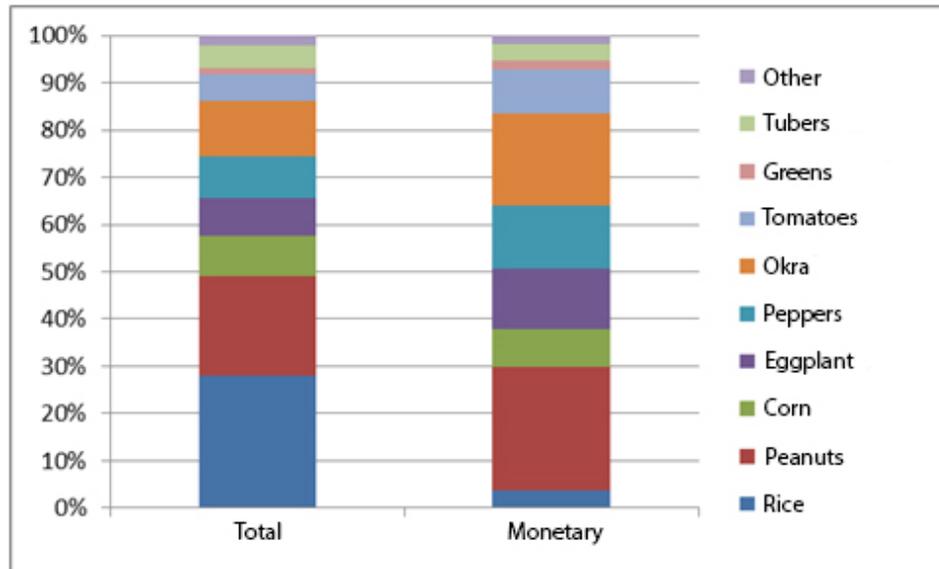
The main method is shifting slash-and-burn agriculture. It involves selecting parcels of land that are cultivated for one or two years and then left fallow. This type of agriculture requires a great deal of clearing and weeding but almost no tilling of the soil.

Photo 5-5 Uplands and a natural palm grove in a *djolo* in Kalinko Roundé



The main crop is rice, which is the population's basic foodstuff and is generally used for personal consumption. (Figure 5-15). Peanuts are the second crop in terms of land use and account for more than 15% of monetary agricultural income in the rural area.

Figure 5-15 Relative contribution of annual crops to total and monetary income



This type of agriculture is suitable for a low population density because it requires that land be left fallow for more than seven years to allow for regeneration of its fertility. It was noted that, in some places on the periphery of Sangarédi, the fallow period has been reduced to three years for lack of available space, and yields have fallen accordingly. This type of agriculture also requires a low individual appropriation of resource area. For the system to work, the land has to be extensive and access to it has to be regulated (cf. customary land tenure).

Proximity to the town, the population density and the taking-over/degradation of land by mining operations have reduced the space available for annual crops and increased the number of people who depend on them.

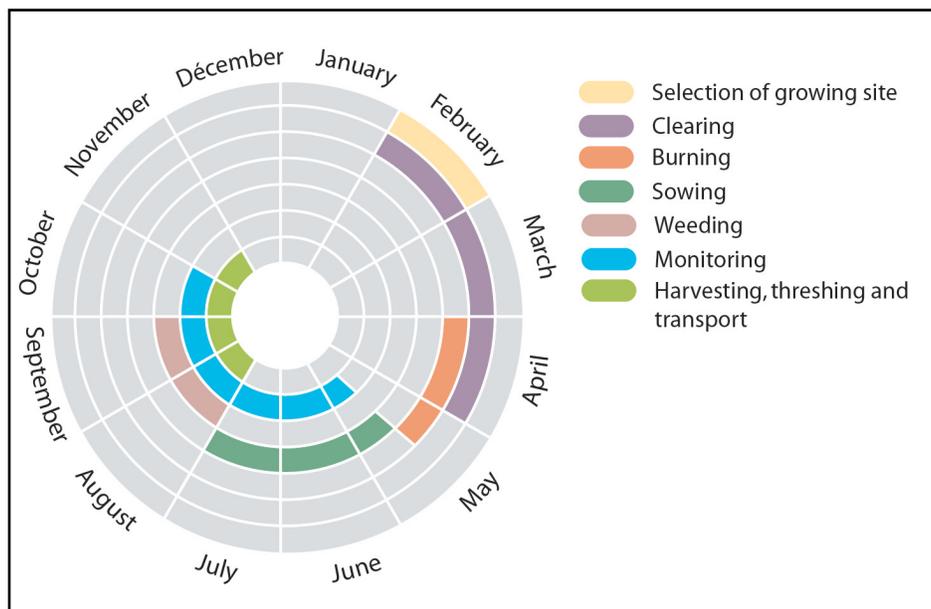
The area also has considerable market garden activity. The market gardening is fairly rudimentary and is generally carried out by women, who produce eggplant, okra, peppers and tomatoes, mainly for sale. These products account for more than 18% of household agricultural income and almost 60% of the annual monetary income from agriculture (Figure 5-15).

The phenomenon of individual appropriation of land generally involves plantations. It appears that 85% of the rural population has a plantation, and the output is usually intended for sale. The main crops are mangoes, oranges, bananas and cashews. Many households also have stands of oil palms. Most are natural but there

are also small local palm plantations and dwarf palms. Palms are of foremost importance in the area because they generate more income than peanuts do (more than 18% of the monetary income derived from agriculture).

Slash-and-burn agriculture is also the activity that takes up the most time during the year.

Figure 5-16 Slash-and-burn agriculture schedule



The other agricultural activities (market gardening and plantations) also extend throughout the year but require fewer people for shorter periods.

5.6.1.2 Herding

More than 83% of the rural population owns animals. Most have a few head of livestock or often chickens and small ruminants.

Herding is a fairly important activity in the region. The large herds circulating in the area may be subject to local transhumance, but also to more extensive transhumance extending far beyond the boundaries of the concession zone.

Photo 5-6 *Woro* in Pétoum Koloni



The first case usually involves village herds that are moved from village to village as a function of the agricultural season to avoid major crops during the rainy season and truck-garden areas during the dry season.

In the second case, we met many herders from Téliimélé prefecture who move through the northern portion of the Study Area to grazing land farther north toward Wendou Mbour (Gaoual prefecture) or toward the lower shore to pasture their herds on extensive alluvial plains.

Demographic and agricultural pressure and individualization of landholdings are making this activity increasingly difficult to practice in this extensive form in the concession zone. Recurring disputes between herders and farmers are an important issue in the current organization of the agrarian systems.

5.6.1.3 Soil fertility

As explained above, the main type of agriculture is shifting slash-and-burn. Fallow areas are the main means of restoring soil fertility. The substantial decrease in the fallow period as one approaches the town and the mine and the almost complete

disappearance of large trees cause lower yields, degradation of the soil and an increased risk of erosion.

As the herding of animals becomes increasingly constrained, the amount of manure produced is decreasing and cannot contribute as effectively to the restoration of fertility. The use of fertilizer is anecdotal in the cultivated areas of the zone.

Individualization of the right of access to parcels of land and the constraints that the system is starting to come up against are the first steps toward the inevitable changes to an agrarian system that is no longer adapted to a more dense population that wants to increase its monetary income.

5.6.1.4 Land use

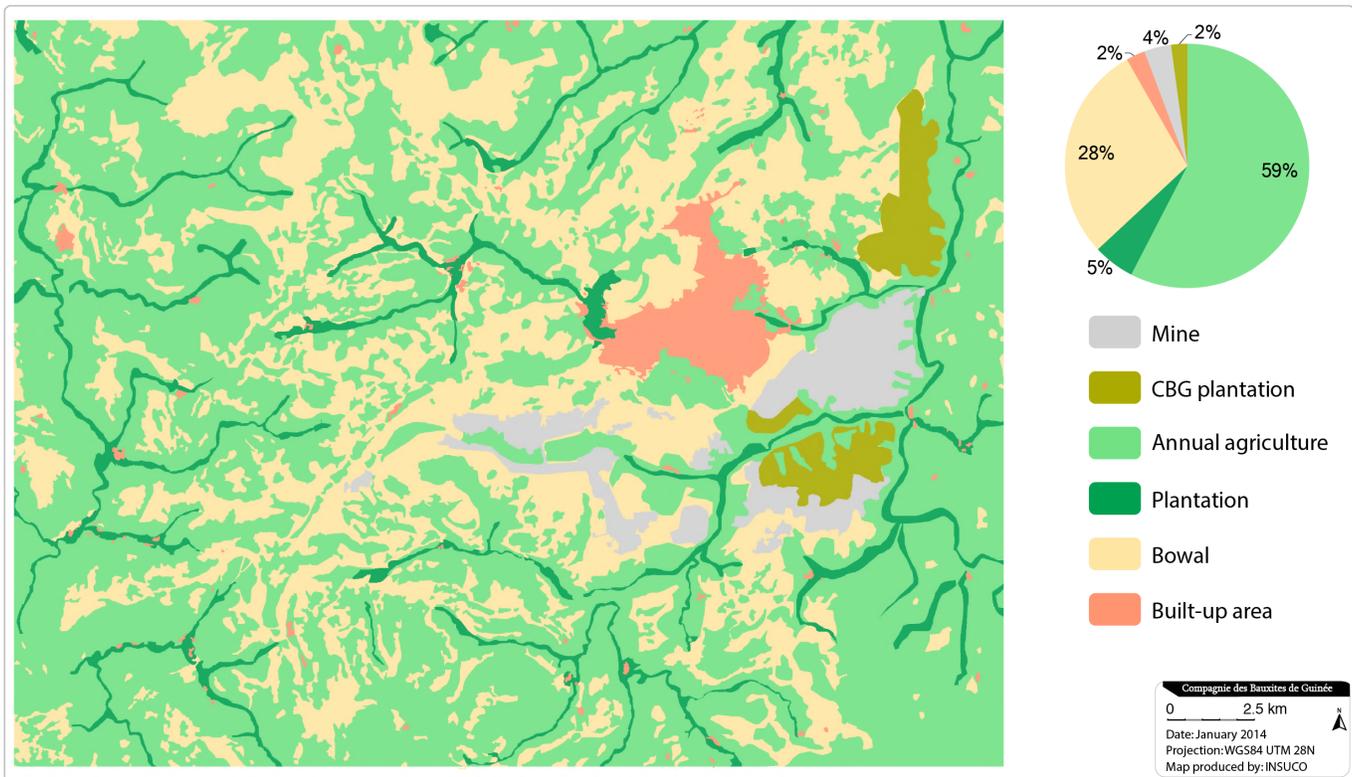
We tried to characterize the different types of land use in the concession zone to gain a better understanding of issues related to occupancy of the area and changes that could be made by CBG, another mining company or any factor that increases the population.

We used satellite images from 2010 to carry out polygonization of areas so as to measure their surface and assess their relative importance.

All land used for annual agricultural was combined in one category (it is not important to differentiate between the types of fallow land because all of it is used for the same purpose). The term “plantation” corresponds not only to land planted by villagers but also to areas where selective clearing has made it possible to keep natural oil palms with a view to their exploitation. That is why such areas are often encountered along watercourses.

We characterized the plantations created by, or for, CBG differently, because such land has a specific status: it is deemed to have been planted for villagers, but they have no administrative rights over it, and there is a strong risk that it will be mined again.

The information is therefore based on an interpretation of an image from 2010, even though we observed in the field that the land use shown on Map 5-14 has since changed. Even though the proportion of plantations, especially cashew trees, is far larger, we used the information available.



Map 5-14 Land use in the concession zone

Most of the land is used for annual agriculture. The current method requires an especially large area to maintain enough fallow land to renew its fertility.

Bowal represents the second largest amount of land, at 28%, and creates an issue for herding in terms of grazing land and transhumance spaces and corridors.

Plantations are used to grow cash crops. Their proportion has increased in recent years, bringing about a new agrarian system and new cash-related needs on the part of the population.

The first two types of land are those that are most subject to impacts related to CBG: agricultural land as a result of the degradation of uplands, and bowal because it is directly exploited for bauxite.

CBG’s mines and plantations occupied more than 6% of the total area in 2010. According to the mine plan provided by CBG and our cartographers’ calculations, done in January 2014, the Expansion Project, as considered for this study (27.5

MTPA starting in 2022), will ultimately occupy more than 10% of the area in the zone (Map 5-14).

The precarious nature of the balance of the agrarian systems makes the area very sensitive to modifications of agricultural space, and the fact that land is increasingly being used for plantations jeopardizes the production of subsistence crops, which are the main source of food.

5.6.2 Hunting and fishing in the concession zone

Hunting in the concession zone does not represent a significant source of income or personal consumption for households.

But one-third of the rural households engage in fishing, mainly for home consumption (73% personal consumption). There are only three main fishing techniques: line, net and net barrage (cf. Annexe 5-1, Volume I, annexe 9).

Mine operations, degradation of water quality and blasting are having a negative impact on fishing, and some villages have seen their catches reduced significantly (source INSUCO 2013).

5.6.3 Fishing in the port zone

The coastline is bordered by mangrove, leaving fairly extensive tidal zones, which are covered in places by sand or mud and occasionally rock.

Like all Guinea's coastal rivers, the Rio Nuñez receives considerable flows from continental tributaries (fresh water during the rainy season) and carries large amounts of organic debris, which is the main source of nutrition for the marine organisms of the country's continental shelf.

These natural attributes, combined with Kamsar's industrial expansion, have been conducive to significant development of artisanal fishing in the area and led to the creation of Port Néné in Kamsar, Guinea's second artisanal fishing port after Boulbinet. It attracts both artisanal and industrial fishers.

5.6.3.1 *Hierarchical typology of actors*

The decentralization of production sectors under the Local Governments Code involves various actors, such as occupational organizations, in the management and development of the fishing sector. In Kamsar rural commune, apart from the fishers themselves, the many actors include the Direction préfectorale des pêches, the Centre de surveillances des pêches, which is responsible mainly for oversight of industrial fishing, various cooperatives (21 cooperatives at the Kamsar wharf, but none in the rest of the Study Area) and companies in the fish trade.

5.6.3.2 *Study Area*

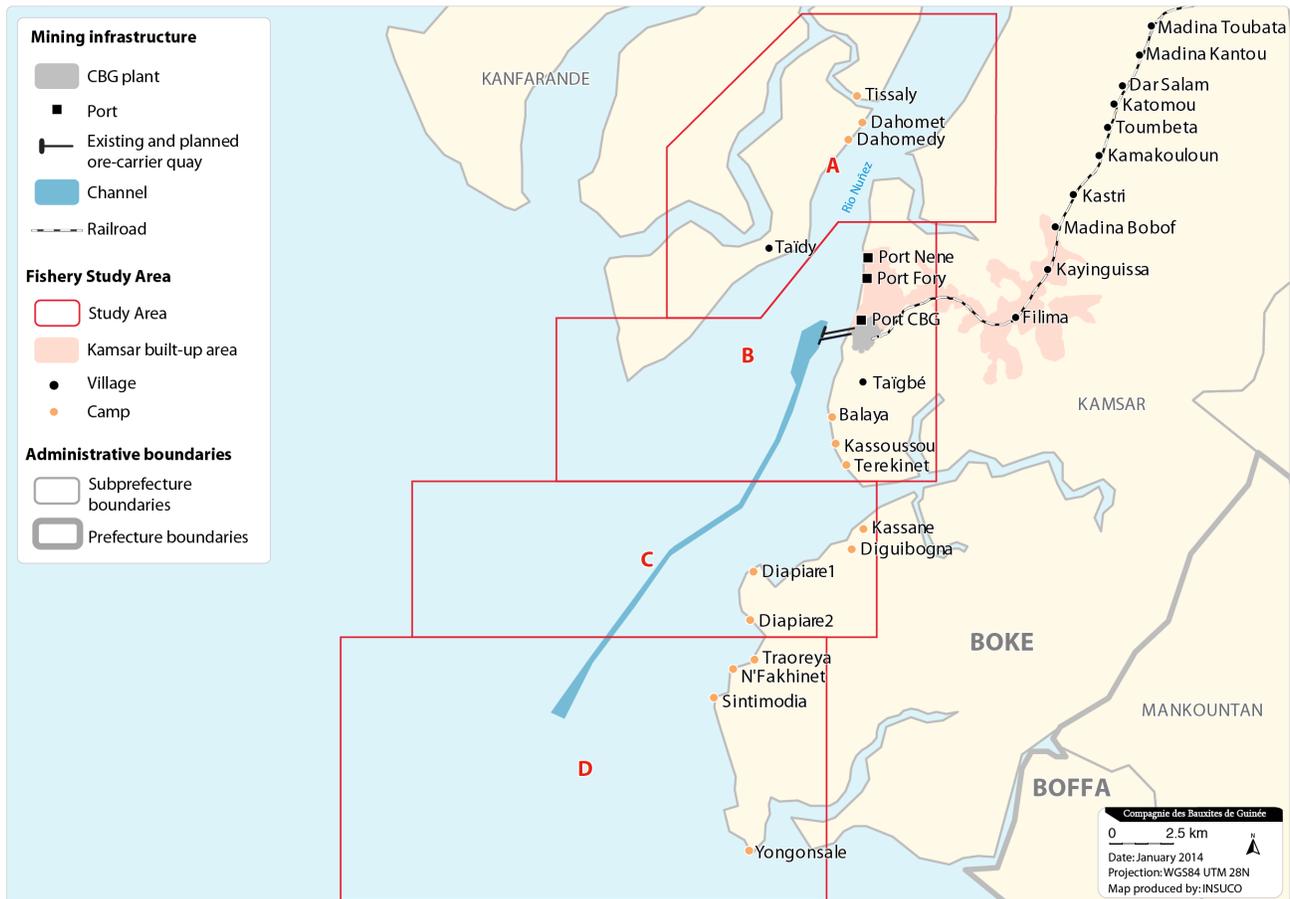
The Study Area (

Map 5-15) corresponds to the area where dredging will take place to double the area of the ship basin so that two ships can dock at the same time. It includes the villages and camps in:

- zone A at the mouth of the Rio Nuñez, including Taïdy and the fishing camps north of Kamsar (Dahomet). The Rio Nuñez extends more than 100 km inland;
- zone B, which includes the fishing ports in Kamsar Centre, the village of Taïgbé and the neighboring camps;
- zone C along the coast in the middle section of the channel (Dapiare); and
- zone D at the entrance to the channel farther offshore, including the villages south of Kamsar as far as Yongonsale point (Sintimodia and Yongonsale).

More-detailed results of the study are given in Annexe 5-1, Volume 1, annexe 8.

Map 5-15 Situation in the fishing Study Area



This portion of the Study Area was defined in such a way as to eliminate the well-equipped artisanal fishers usually found in the area beyond the dredging zone and those in the upstream portion of the Rio Nuñez. Even so, they are exposed to all the impacts of disruption of the fishing environment and the turbidity caused by tides.

The exhaustive count of the vessels in the localities in this area covered two main villages (Taïgbé and Taïdy), 10 camps and two ports in Kamsar, for a total of 307 vessels (all types included).

The number of *pirogues*, all types included, appears to be relatively high for a restricted fishing area. The two wharves in Kamsar (Port Néné and Port Fory) and the wharf in Yongonsale alone are used by almost half of the vessels.

5.6.3.3 *Typology of fishers*

Taïgbé and Taïdy: two native villages of Baga rice growers

The native villages of Taïgbé and Taïdy were settled long before CBG arrived in the area. They consider rice growing to be their main activity and they practice subsistence fishing with *monoxyles*³¹ in the channels and the areas affected by the tidal zones. Liberalization of the sector has prompted a large number of rice growers to take up fishing more seriously on a seasonal basis after the rice harvest and occasionally on a full-time basis.

In these two localities, fishers do not make substantial investments: the motorization rate is nil, and their investments in fishing inputs are fairly low but quite diversified (two boats per fisher and four types of net per fisher). Their strategy is to fish during favorable periods of the year for the subsistence of their households and to sell the surplus on the market.

No migrant fishers have settled in these two localities. Even so, some rice growers from the two villages move to fishing camps after the harvest.

This activity is therefore practiced mainly by rice growers-fishers who fish on a seasonable basis. Even so, there are some full-time fishers among them.

Migrant professional fishers in the process of sedentarization in the camps and ports of Kamsar

This group consists mainly of people from Boké and Boffa prefectures, but sometimes also Sierra Leone, in the process of settling in the area. Their arrival in the camp was often recent – some had been there only a few weeks (40% in Yongonsale and 10% in Dapiare) – , but most had been there for one to five years (60% in Dapiare). The oldest fishers in the zone settled on the Kamsar peninsula (50% have been there for more than 30 years). For the fishers who have recently arrived in the camps, settling/sedentarization is possible, depending on the quality and quantity of the fishing.

The fishers met in the camps and the port of Kamsar differ from the villagers in that their equipment is slightly better. Almost half of them (47%) have *salans*³² and 33% of their boats are motorized.

In relation to the villages, the camp communities use the same number of nets per operator (three on average, but not simultaneously). But the number of boats per fishers is lower in the camps than in the native villages. Their equipment is far more expensive (*salans* and motors) and therefore more advanced than that of the villages.

This group of fishers can therefore be considered professional fishers who are poorly equipped in relation to the large artisanal fishers.

Seasonal migrant rice growers-fishers

Rice growers from nearby villages migrate to the various camps. The seasonal migrants arrive in the camps and the ports after the rice harvest, generally after the rice harvest, starting in December, until the start of the salt-production season in February and sometimes until the start of the unfavorable fishing period (the time of the *dantèfoyé*,³³ a wind that blows from March until May). For a large number of them, fishing activities continue until the start of the rainy season and are only interrupted by the summer monsoon, accompanied by winds that precede the start of work in the fields.

Generally speaking, they are villagers (rice growers-fishers) from the surrounding localities who meet short-term economic needs. During the peak period, the number of migrants may be equal to the number of permanent residents in most of the localities.

Because of their geographic location and limited vessels, which are usually not motorized, the migrants tend to fish near the markets where they sell their catch. In this way, villagers from the north (upstream from the channel) fish near the Dahomet area and the Kamsar ports, and those from the south fish in the Yongonsale area as far as north Dapiare (middle area).

Fishers dependent on fish migration

The camps are also a transit place for many fishers. The time they spend in these conditions lasts no more than a week. Users of this type are therefore different from the seasonal migrants in terms of their short stays in the camp and their dependence on fish migration.

Photo 5-7 Dahomet camp (mouth of the Rio Nuñez)



All categories of fisher are subject to this practice, although it is more prevalent among fishers from Kamsar and includes artisanal motorized barks sometimes equipped with ice.

Women's role in fishing

In Maritime Guinea, fishing is a traditional activity for most households in the rural area. Women are involved in all links in the production chain: fishing itself, fish processing and marketing.

The raised, cone-shaped net (*tètèyèlè*) is commonly called a woman's net. Even though women's output is infrequently sold, it is used for home consumption.

In the urban areas, women who are not from fishing families are also involved in the market for both fresh and frozen fish. They purchase their supplies from

refrigerated centers and wharves to serve the various surrounding markets. The women smoke fish and then sell it from wharves in the country. The most ambitious women go so far as to finance production inputs by purchasing outboard motors and barks and they occasionally hire people to work for them.

The active role played by women can be seen from the many organizations (cooperatives of women engaged in fish smoking, wholesalers, associations, etc.) that they have been able to benefit from to develop their activities. Even so, the illiteracy rate is very high among women in fish smoking and wholesaling, and their lack of education prevents them from structuring their organizations more effectively and adversely affects their ability to manage capital and organizations or to promote their initiatives in the industry.

5.6.3.4 *Fishing in the development area*

The entire area is fished except the channel used by ore carriers. The fishing techniques differ as a function of the place and the fisher's equipment: the type of vessel (*monoxyle* or *salan*) and its mobility (motor or sail). Ideally, professional fishers want to catch fish with a high commercial value (referred to as "good fish" or "large species"). To do so, they must go farther out to sea, because such fish are becoming scarce near the coast.

Generally speaking, the strategy of these fishers is to travel as little as possible from their landing places to save time, fuel and effort. Even though we could not determine the boundaries precisely, we observed that:

- fishers in the camps (downstream and middle zones) go everywhere, even beyond the dredging zone;
- fishers from the port of Kamsar go to the area near the *bateau gare* (where ships wait for the pilot to come aboard), at the entrance to the channel, which is quite a long distance even for a 15 cv boat) and the upstream portion of the channel (mouth of the Rio Nuñez); and
- the fishers from Taïdy and Dahomet fish on the seaboard; they usually fish between the port of Kamsar and Sourigbé and go up the Rio Nuñez as far as Kanfarandé.

Fishing period and its duration

The strategy adopted by the fishers is to be able to fish at any time of the year. They can do so because of their diversity of fishing nets, which can be used during high and low tides (*bimbingni* and *mayengni*) and which enable semiprofessional and professional fishers to put out to sea every day.

During the peak fishing period after the rainy season, depending on the type of net used and the species targeted, fishers will put out to sea two or three times a day.

The only obstacle preventing them from going to sea is the weather conditions: sea winds (the *dantéfoyé* in February and the wind at the start and end of the rainy season) and intense rain during periods of high tide (August).

During the farming season, rice growers-fishers take advantage of calm periods to fish if the agricultural schedule allows.

5.6.3.5 Commercial channels by product type

The Port Néné wharf in Kamsar is the main market where the fish caught in the zone is taken. It also serves as a redistribution point to some markets in the country (the Boké market and partially that of Conakry) and some foreign markets (the dried salted fish market in Senegal, exports of frozen and smoked fish).

The vessel-owning fishers do not sell their catch. This situation brings other players into the commercial sector, with women playing an important role.

Fresh fish

Fresh products are sold mainly at the Kamsar wharf rather than in the fishing camps. When sales take place in the camps, they usually involve catch purchased by wholesalers.

As soon as independent fishers arrive at the wharf, they sell their catch to wholesalers or other buyers. Some wholesalers prefinance fishing inputs for a vessel owner to ensure they have a source of supply.

Fresh products can be kept only for a very short time, even when ice is used, and they are sold on a retail basis by women at the Kamsar wharf and in the

surrounding markets (Sahara, Boké, Koumbia, Gaoual, Sangarédi, etc.). Unsold fish is kept in a cold room or freezer for the following day or is smoked in a *tangalanyi* oven.³⁴

Smoked products

The smoking of fish, whether carried out in the camps or at the Kamsar wharf, is done by women.

At the Kamsar wharf, the women involved in fish smoking are well organized, and their business goes beyond products from the fishing zone. They collect products and supply a commercial network that may be national and even international, far exceeding the catch provided by the fishers in the estuary. They have benefited from the development, construction and equipping of sheds for fish smoking in the port of Kamsar. The ovens they use (*chorchor*) are referred to as improved because they allow for considerable savings of fuel.

In the camps, fish smoking is a traditional practice. The ovens, referred to as *banda*, have a very simple design – a grill supported by four brick or wood pillars. They consume a large quantity of wood, which is usually cut in the area by the women's husbands, except in Yongonsale, where there is a wood market. In the camps, the women involved in fish smoking do not belong to groups, and each operates independently.

Wholesalers who are not wives of fishers and are regarded as outsiders also live in the camps during the weeks of favourable tides. They smoke fish purchased there.

Most of the smoked products are sent to the Kamsar market each week. A boat from Kamsar calls at the main camps twice a week to collect the fish.

Other weekly markets in the surrounding localities are also targeted (Filima, Kolaboui, Boké, Kolia Sanamoto etc.). The wholesalers sometimes go as far as Conakry or Sangarédi. They sell their products on a wholesale basis (second wholesaler after the fishers). These products help supply Guinea's national smoked-fish network.

Dried salted fish

Dried salted fish is sold in Senegal (Yaoubé in the Tambacounda region) and generates an important source of foreign currency (CFA francs) for the fishers throughout the zone. The salting and drying process is carried out exclusively by men. Overall, 37.5% of fishers are involved in this activity. They use local salt obtained from salt producers in the surrounding communities.

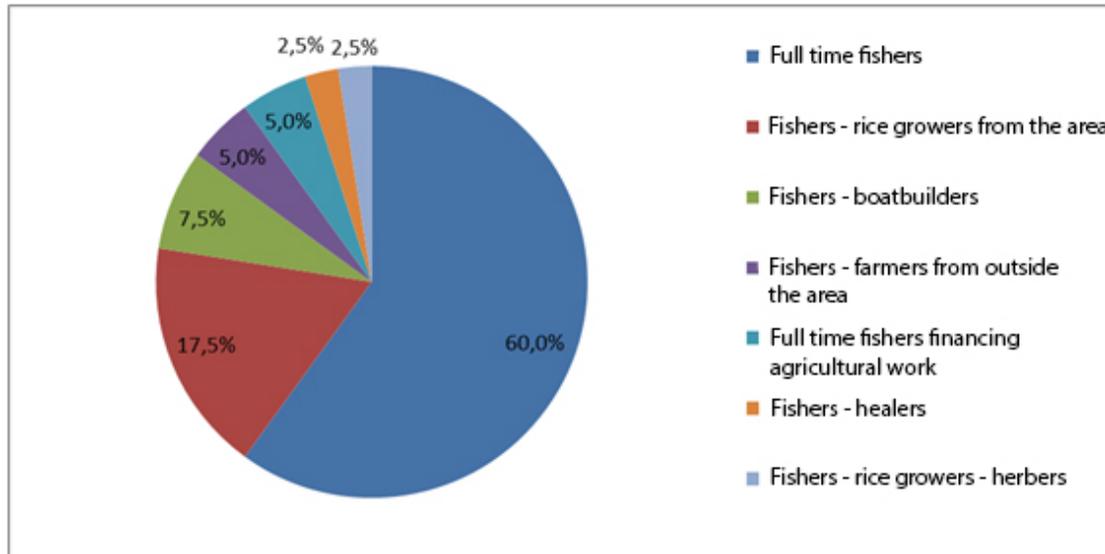
The fish species processed in this way are removed from the catch before the start of commercial operations. They are salted, dried and stockpiled until the quantity is large enough to be sold. This fish constitutes an inventory for most of the fishers in the zone. This practice enables them to obtain substantial revenue during one period of the year, namely GNF 8 million to GNF 15 million for each sales operation.

Occasionally, if the quantity is small, the fishers sell their output to buyers of dried salted fish from Kamsar or give it to a colleague who is going to the Yaoubé market in Senegal. But usually the fishers make the trip themselves because it gives them the opportunity to purchase inputs, such as nets and outboard motors, at a lower cost.

5.6.3.6 Fishers' other activities

More than half of the fishers surveyed in the zone are involved in this activity on a full-time basis (60% of the fishers sampled) (Figure 5-17).

Figure 5-17 Breakdown of fishers by other activity



The fishers who carry out more than one activity represent 40% of the sample. The various activities associated with fishing continue to be dominated by agriculture.

5.6.3.7 Conclusion

As part of CBG’s Expansion Project, the baseline study of fishing in the dredging zone was carried out to obtain a sound understanding of the issues related to the use of space shared by CBG and the local fishers so that the Project can coexist more harmoniously with the people who make their living from the resources in the zone.

The natural characteristics of the Study Area are conducive to diversity and considerable abundance of fish resources. It is an area of interest for a large community of fishers, of which the majority are sedentary and poorly equipped (limited ability to travel).

In the various communities, fishing is carried out as a function of physical and financial capabilities in various places in the zone so as to maximize the benefits of the activity.

Fish products supply a commercial network in which women play an important role.

From the qualitative study, it is not possible to quantify the revenues associated with fishing or to estimate the income generated by fishing or its importance for the community. It is therefore not possible to evaluate the amount of potential losses,

or financial compensation. Even so, the number of jobs that this activity creates and the importance of both fresh and processed products make it a key activity in the Study Area, and any disruption of it may give rise to important losses for the populations in terms of income as well as food security and may have indirect impacts well beyond the Study Area.

Most of the fishers are not equipped to travel long distances. Their vulnerability to degradation of the local environment is therefore considerable.

5.6.4 Gathering and wood harvesting

Gathering represents only a small fraction of households' total resources. Mostly the pods of the African locust bean are harvested in the zone.

In contrast, the collection of deadwood and the logging of trees for firewood and charcoal take place throughout the concession zone and more broadly throughout the Study Area (cf. Annexe 5-1, Volume I, annexe 9). The harvesting of trees for firewood and charcoal is carried out by villagers but also by professional crews that carry out only this activity. Such harvesting is far more extensive during the dry season because agricultural work is less time-consuming and households can dedicate more time to it, and also because brickmakers are more active during this season. There are a large number of brickmakers in the Sangarédi area on all the watercourses around the town.

All the output is sold in the nearby town of Sangarédi, which represents a market of 53,000 people. Large volumes are also used by the town's brickmakers and bakeries.

Large trees are rarely found near the town, and the closest forests are quite far from it. Timber is obtained in such forests by logging crews or villagers.

Even though such operations were previously based on species and use, it appears that the scarcity of the resource has now caused villagers and professional loggers alike to cut down all types of trees indiscriminately for all uses.

In the areas near the mine, villagers often no longer respect the traditional mechanisms designed to protect resources (protected forests, differentiated logging according to species, limitations on access, etc.). Given CBG's incursion onto the

land during surveys and the failure to manage rehabilitated land, the idea that “CBG will destroy everything here anyway” prompts people to exploit the resources far beyond their ability to regenerate. They even say, “CBG is coming, so we have to use up the bush.”

5.6.5 Mining industry

5.6.5.1 CBG

CBG has been mining bauxite since 1973 under an agreement signed in 1963. The area currently exploited covers mainly the plateaus of Ndangara and Boundou Wandé.

Its production is about 14 MTPA, which is transported by railroad to Kamsar and then exported by ore carrier after crushing and drying.

CBG has about 5,000 employees (source: CBG) and constitutes the main economic driver in the region. The company attracts many migrants hoping to find a job with it or in an area related to workers and their families. In Sangarédi, CBG has about 1,000 employees (source: CBG).

5.6.5.2 *Other international companies*

Boké and Téliélé prefectures have concessions with many mining projects. To date, only CBG is in operation. Even so, to gain a better understanding of the issues and to assess cumulative impacts at a later point, we listed the main projects near the Study Area.

Rusal is in Sangarédi commune, not far from DianDian, but its operations have not yet started and its implementation is still under study. A railroad track and a mining road would cross the current Study Area to the Kamsar area, where an ore terminal would have to be built for exports. Construction of a mining road on the edge of the village of Boulléré has already begun.

Global Alumina Corporation: The GAC project would involve extraction of bauxite west of Sangarédi (its conversion into alumina on site in a potential subsequent phase is under study), and then it would be transported by the same railroad as that used by CBG to a platform (port terminal) near CBG’s current plant in Kamsar.

GAC is starting to explore bauxite plateaus in the Wossou and Soucka areas, immediately south of zone 1 of the Study Area. GAC's proposed port would use the same channel as CBG. Ultimately, the port could become a service platform for the various mining projects in the area. An impact study was carried out for this project in 2008, and some aspects of the study are now being updated.

Henan Chine: This company is found south of the Study Area in Balandougou district. It is also present in Téliimélé subprefecture. The project calls for extraction of bauxite and its transport by conveyor to the coastline (to Bel Air, Boffa).

Kabata: The Kabata project calls for conversion of bauxite into alumina. This Alcan-Alcoa project would be built not far from Kamsar and would connect to the existing railroad at PK 14.

AMC: This company plans to extract bauxite in Gaoual prefecture. The bauxite would be transported by railroad to the Boké area, where a river port would be constructed to take the bauxite down the Rio Nuñez by barge. An offshore storage/loading platform would be constructed near Kamsar for exports.

5.6.5.3 *Artisanal mining sector*

The Study Area includes only a few operators that exploit sand, gravel, rubble and earth used to make bricks. There are no notable artisanal mining operations in the area.

5.6.6 Conclusion

The analysis of economic activity in the area shows that agriculture is predominant in the rural part of the concession. Annual agriculture, followed by bowal, occupies the largest amount of land, and 94% of the households engage in agriculture as a primary or secondary activity, generally shifting slash-and-burn agriculture. There is also considerable market gardening. As well, more than 83% of the rural population owns animals, but demographic and agricultural pressure, and individualization of landholdings, are making this activity more difficult to practice, giving rise to disputes between farmers and herders. These characteristics of the economy indicate the type of impact that expansion of the mining areas could have on the local economy.

In the port zone, fishing is a vital economic activity. A large part of the local economy – not only fishing but also fish processing and marketing – depends on it. Modification of the fishing environment as a result of more frequent traffic of vessels or dredging would therefore probably affect a large portion of the local economy.

Lastly, for the zone as a whole, mining operations represent about 5,000 employees, including 1,000 in Sangarédi. Boké and Téliimélé prefectures also have concessions for many mining projects (Rusal, GAC, Henan Chine, Kabata, and AMC) whose operations have still not begun.

5.7 Households' economic strategies

The following section on households' economic strategies concerns only the concession zone (the urban part of Sangarédi and the rural part). The figures used for the study come only from the household survey carried out in the concession zone. We examine in succession:

- the income structure of households and pluriactivity;
- wealth levels, conveniences and housing; and
- the breakdown of households by income level.

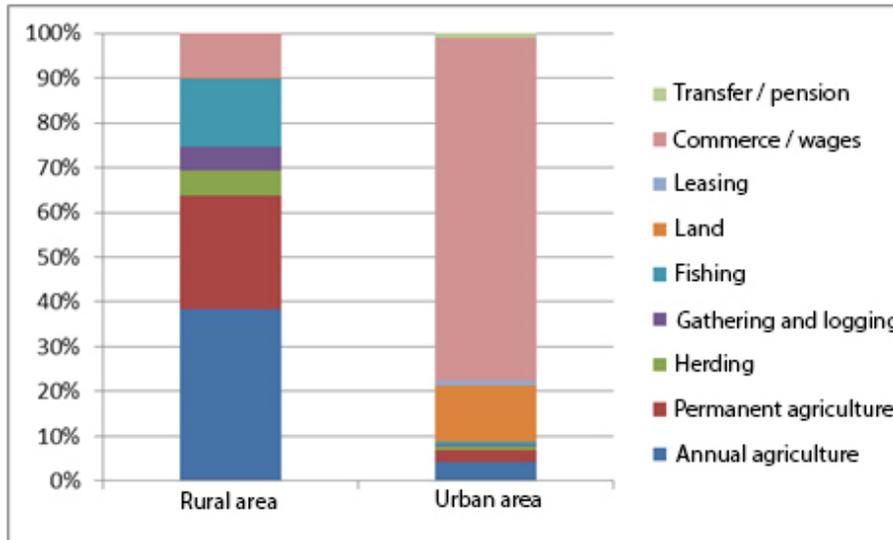
In the case of Kamsar, we considered fishing (cf. section 5.6.3, Fishing in the port zone) and observed that pluriactivity is a strategy used by many farmers and fishers throughout the year or seasonally.

5.7.1 Household income structure and pluriactivity

The income structure differs greatly from the rural area to the urban area (

Figure 5-18). The household survey made it possible to calculate an estimate of the average income per household and per consumption unit for each activity carried out by the household. Consumption units were calculated according to the Oxford scale, which takes into account the number of individuals and their age.

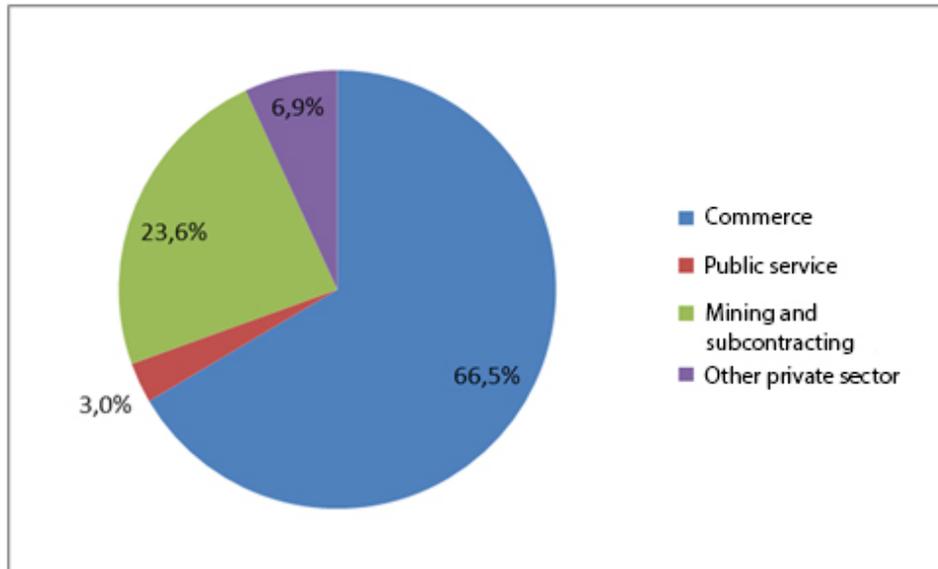
Figure 5-18 Contribution of various activities to household income



It can be seen that, in the rural area, agriculture represents more than 60% of household income, with annual agriculture accounting for almost 40%. Ever-greater numbers of plantations are found in the area, and perennial agriculture now accounts for 25% of income in the rural area. Most of the cashew plantations are not yet producing, so a very substantial increase in this type of income is forecast for rural households over the short term.

In the city, wage earning and commerce are the most important activities, representing almost 78% of total resources (Figure 5-19). This category includes commerce, the public service, the mine’s employees and subcontractors, and the other private sectors.

Figure 5-19 Relative importance in urban areas of commerce and wage earning



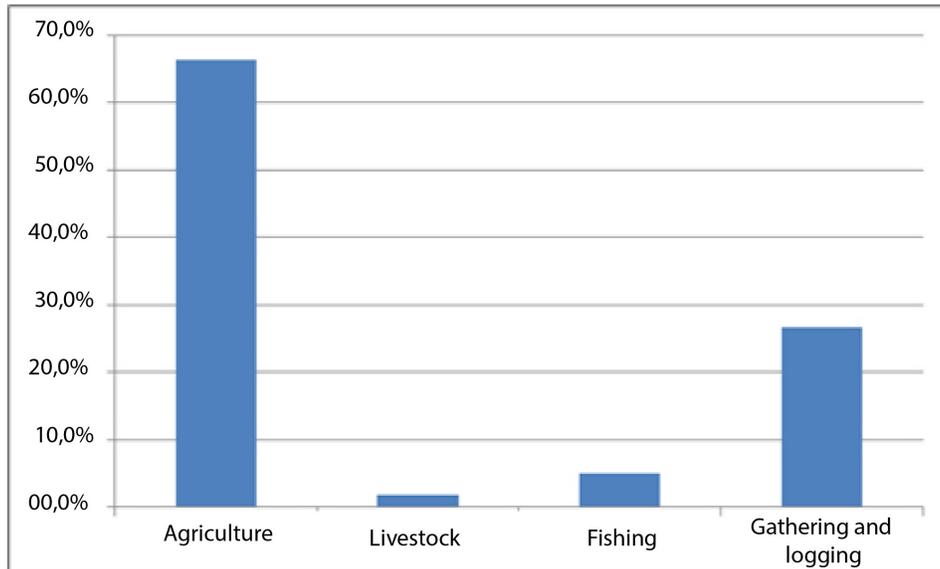
Commerce represents by far the most important activity in the area, followed by wages earned by mine employees and subcontractors.

The contribution of mine employment is high in relation to Sangarédi’s total population (about 53,000) and to the number of CBG jobs in the area (about 1,000). It is due more to the fact that earnings for the mining industry are higher than for the other categories, rather than to the number of households affected.

Even though in the town monetary income is by far the most important source, in the rural area personal consumption is far more important. For example, more than 66% of agricultural income is consumed directly by households (

Figure 5-20).

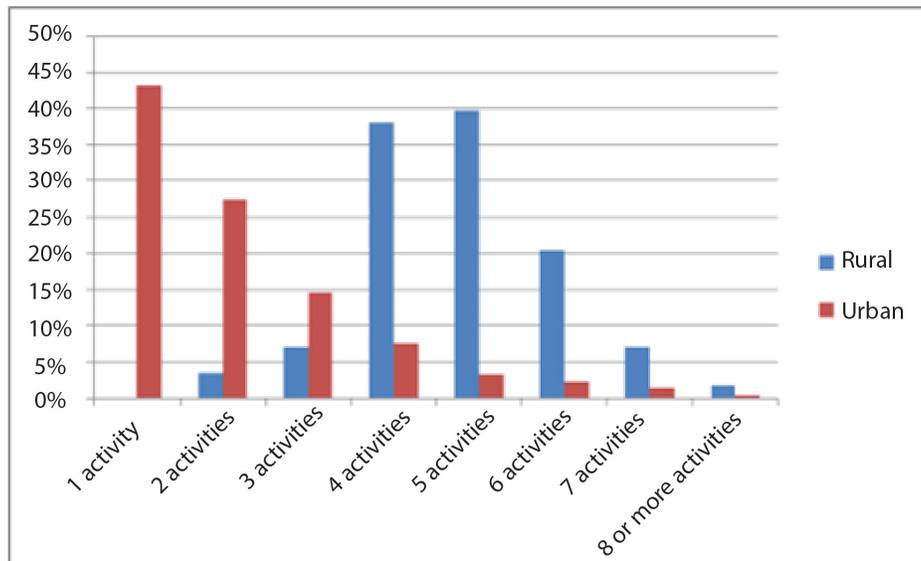
Figure 5-20 Percentage of personal consumption for various rural activities



The difference in behavior also involves the number of activities carried out on average by the households.

Figure 5-21 shows that, in the rural area, the strategy of having diverse sources of income is far more important, and that strategies to limit risks entail above all diversification of agricultural products and activities in general.

Figure 5-21 Number of activities per household (percentage)



In the town, in contrast, a high percentage of households engage in only one activity, mainly because of the large proportion of one-person households consisting of apprentices (drivers, mechanics, artisans, etc.) but also because the activities can be considered more secure (wage earning in the private sector, public service, etc.) and are rarely affected by climatic or other vagaries.

The concession zone is therefore characterized by two population types that come into contact and react differently. On the one hand, it has is a rural population that is geared to agriculture and whose resources are used mainly for households' personal consumption; on the other hand, it has an urban population earning primarily monetary income and engaging in a relatively small range of activities. In the urban area, it is likely that commerce and wage-earning activities are related mainly to CBG's operations (provision of services and local commerce) and to its employees. There is no strategy to achieve diversification in the Study Area through a range of economic opportunities.

5.7.2 Wealth levels, housing and conveniences

The indicators we used to evaluate the level of wealth are:

- average monetary income per consumption unit and share of monetary income;

- the housing quality index, which takes into account the quality of the walls and roof of a house according to a rating scale. For each house, a score is given for the type of material used for the outer walls and for the roof. The scores for the roofs and walls of all the houses are added, and then the total is divided by the number of houses to obtain the average. For wood walls, the score is 0, for adobe or mud brick it is 1, for baked brick, 2, for stabilized-earth brick, 3 and for cement brick, 4. For the roof, tarpaulin is rated 0, a thatch or straw roof is rated 1 and a sheet-iron roof is rated 2; and
- the household goods index, which takes into account a household’s ability to purchase goods that require a substantial monetary outlay and improve its standard of living. It may change from one year to another, as may the housing quality index. We therefore considered a certain number of items that involve an investment likely to improve the household’s convenience. The following goods were rated according to their average price: a radio, 0.3; a bicycle, 4; a telephone, 1.5; a mattress, 5; a television set, 3.5; a moped, 10; a car, 50; and a generating set, 12).

The housing and household goods indexes indicate a far higher degree of convenience in the town than in the countryside (Table 5-6). This information is corroborated by the higher daily average income per day and per person in the town.

Table 5-6 Wealth indicators: housing and conveniences

	Housing index	Convenience index	Daily income in U.S. dollars ³⁵
Rural area	2.4	2.7	1.1
Urban area	4.7	4.1	1.4

The difference between the town and the rural area is probably due to the difference in access to electricity and the relative isolation of the countryside, but also by the difference in income (over a year the difference represents a significant amount).

The disparities observed here confirm the first observations concerning income structure. On the one hand, we have a rural population that has few conveniences and is geared to subsistence agriculture, and on the other hand we have an urban population whose means are met only by monetary income (goods, housing, etc.).

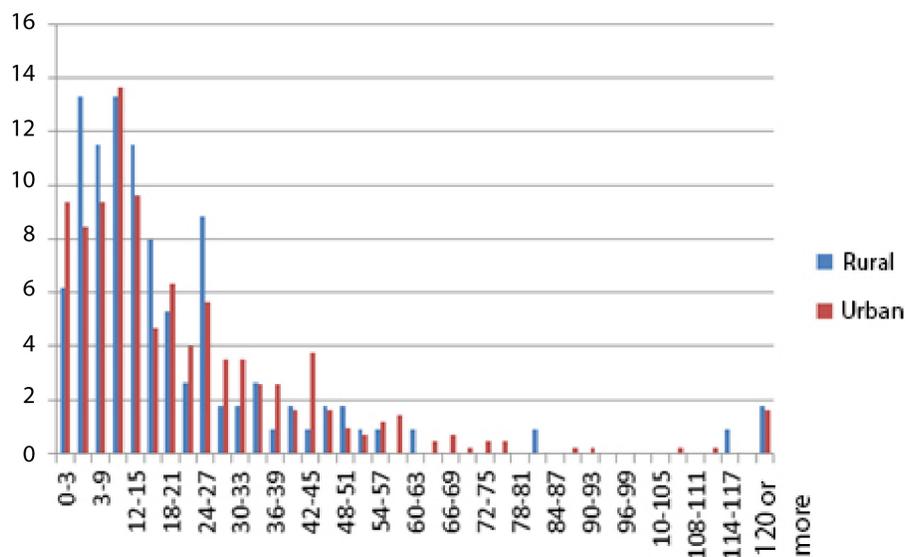
5.7.3 Breakdown of households by income level

The figures above represent averages for all households. They must not conceal a disparity that may be relatively significant between households, in the town and the countryside alike.

The rural and urban populations behave in the same way, according to a normal breakdown (Figure 5-22).

It can be seen that 87% of the households have an annual income of less than GNF 33 million in the rural area, versus 80% in the urban area, for a fairly homogeneous breakdown of the population.

Figure 5-22 Percentage of households by level of annual income (in millions of GNF)



5.7.4 Conclusion

The analysis of the households’ economic strategies identified two different populations, the one in the urban area and the other in the rural area. We noted:

- a considerable difference in the income structure between the rural area and the urban area. In the rural area agriculture predominates, whereas in the urban area commerce and wage earning are predominant. In Sangarédi, the share of income derived from employment with the mine is fairly significant. Even though it does not represent a large share of jobs, the related income is higher;

- in the urban area, income is primarily monetary, whereas income is used mainly for personal consumption in the rural area;
- most urban dwellers carry out one or two activities whereas most of the people living in the rural zone carry out four or five; and
- conveniences are more widespread in the town than in the countryside.

5.8 Land tenure

The purpose of the land tenure study was to determine the various rights, which often overlap in rural Guinea, as a function of the various territories in the area. For the land study, three separate areas were defined according to criteria determined at meetings with local informants during the scoping study: the concession zone, the Sangarédi area and the railroad siding at PK14, near Kamsar. The case studies made it possible to cover a large, albeit not exhaustive, number of situations.

The study of land tenure focused on an analysis of the related legislation and the operation of customary law in the area.

5.8.1 Legislation

5.8.1.1 *Land Code*

At the end of the colonial era, African States tended to make the law central to their strategies for modernization and national unification. The objective was clear: [translation] “to build a State whose monopoly over the management of society is both the purpose and the means of its creation, to introduce an innovation in the form of private ownership to allow African societies to transform themselves and to create widespread trading relationships” (Karsenty, A., 1998, p. 46).

The will to centralize land management, as was done in the colonial system, led to the adoption of codes recognizing the State’s sovereignty in this area. In the French-speaking countries, land generally belongs to the State unless it is registered. The purpose of this policy was to enable the State to promote economic development by making land accessible to efficient economic actors, to facilitate the use of land for infrastructure and to limit land speculation through administrative control over transactions (Lavigne Delville, Philippe, Toulmin, C., Traoré, S., 2000).

The 1980s brought a new approach in West Africa, namely privatization of land as a means of development. This modernization of land law was supported by international institutions: [translation] “Since the 1980s, international providers of funds have wanted to replace the so-called customary land tenure systems ... by a private-property regime to create a true land market” (François, A., 2003, p. 316). Most often, these policies try to clarify land tenure and to ensure holders have secure rights so as to encourage them to develop productive long-term strategies.

The Republic of Guinea has taken various approaches over the years. The First Republic was characterized by recognition of the State’s land tenure monopoly and the public’s strong involvement in land tenure management (Diop, M., 2002). The arrival of the New Republic and its 1992 land reform rehabilitated private land ownership. Guinea’s Land and Domain Code (*Journal officiel de mai 1992, Ordonnance n° 92/019 du 30 mars 1992 portant sur le code domanial et foncier, Conakry*) comprises 238 articles divided into six titles. It replaced the legislation that had been in effect since the First Republic and recognized the State’s monopoly over all the land in the country, with individuals having possession of the land as a result of assignment of limited duration, on the concession principle. The objective of the Land and Domain Code was to give individuals easier access to land and in that way to stimulate private investment.

The State also wanted to involve local populations by making the rural communes responsible for land management. Even so, the law applied locally in rural areas continues to be customary land tenure, such that the rural communes are rarely asked to register land or to carry out land management.

5.8.1.2 *Application difficulties*

To understand the reality of land regulation in rural Guinea, it is necessary to examine the current Land Code, in particular its recognition of customary land tenure. The Land Code, established in 1992, appears to have opted for a negation of local land rights (Ouedraogo, 2002) by deeming the State to be the only source of legitimate land tenure: to be an owner, one must have a title deed issued by the competent authority.

Article 39 of Title 1 concerning land ownership lists the owners who are recognized legally and are therefore protected by law and the competent authorities. The list

consists of holders of a title deed, occupants who are entered in the land register or have a permit to reside on or authorization to occupy land issued under the previous land law, and occupants who can demonstrate peaceful, personal and continuous occupancy in good faith. The last category (art. 39, para. 3) could be interpreted as the Land Code's recognition, or at least openness to, customary law. Under customary law, an occupant could cite prolonged occupancy of land, because [translation] "occupants who have demonstrated peaceful, personal and continuous occupancy in good faith" are also considered owners.

Even so, the restrictions set forth in this paragraph of section 39 should be examined for an understanding of the occupancy recognized by law. "Peaceful" implies that possession is not contested. "Personal" means that it must be exercised in the person's name by the person relying on acquisitive prescription. "Continuous" assumes that the enjoyment of the land has not been interrupted one or more times. Lastly, "in good faith" means that the owner must not have knowledge of the existence of a third person's ordinary rights to the land concerned.

Even so, traditional land law gives rights primarily to lineages. "Personal" excludes many customary use rights. As for individual customary rights, most concern land cultivated annually with little chance of the user's returning to the same parcel: the term "continuous" is therefore excluded. Moreover, prolonged occupancy is based on the Civil Code, which recognizes it only after 30 years. Finally, the Land Code provides that good faith may be evidenced by the possessor's productive use of the land. Such productive use should not be recognized as a presumption of good faith, because that would involve accepting any application from a user.

Generally speaking, the complexity of customary land rights is not conducive to a precise legal framework. Regardless, a person who succeeds in meeting all the criteria required by law and obtaining recognition thereof does not automatically have title to land. De facto possession does not confer full ownership: it merely entitles a person to seek the right of ownership officially. The possessor must then ask a judge to recognize his right of ownership before registering the land at his own expense.

Thus the Land Code makes no explicit reference to traditional land rights. In rural areas, users do not hold title to land or the documents prescribed by the previous land law, and they cannot claim recognition by law. Today, the impact of the Land

Code is very limited in rural areas, given that it is certainly more beneficial to be recognized as a holder by the community living in the territory concerned than by a State with so few means on the micro-local level that it cannot protect the rights of the holder of title to a property, if the customary authorities do not recognize such rights.

5.8.2 Customary law

5.8.2.1 *Key concepts for an analysis of customary land tenure: the variables of customary land tenure*

Bundle of rights

Individuals do not “own” land, but they enjoy certain rights over it or they are authorized to use its resources in certain ways. A distinction is made between “operational rights,” which directly concern a person’s action involving resources, such as exploitation or development, and “administrative rights,” which concern control over operational rights, such as coordination of exploitation, delegation, transmission or transfer – assignment or sale.³⁶ These levels of rights may be held by an individual (individual management) or allocated to/shared by a group (collective management). They are generally allocated among local social positions: within a related group (eldest/rest of the lineage), or between natives and outsiders, or between nobles and former captives.

The allocation of rights over resources organizes individuals or groups of individuals by giving them different types of land status. These different types of status affect not only their land and territorial relationships, but also their social and political relationships.

Resource areas

The concept of resource area includes variation in the use of space. Exploitation of land is carried out in different ways with seasonal variations or variations related to the means of exploitation (fallow land, concentration of pasture to fertilize the soil, etc.). Not only can the bundle of rights be applied differently from one resource area to another (between a plain and a hill, for example), but the same resource area can be used for various purposes and have different types of land status,

depending on the season. For example, a plain used by an individual to grow rice can after the growing season become grazing land subject to collective management by the village. All the uses and statuses of a space have to be taken into account to understand its land tenure configuration.

5.8.2.2 Levels of customary land tenure

Supravillage level (Project's footprint)

The supravillage context determines the organization and hierarchy of localities within a defined area. The first village settled in an area has the status of founder. This primacy gives it certain rights, including the right to decide whether to host newcomers and allow them to create a satellite village. From the outset, this process involves a system of land tutorship between the two villages, along with variable social and land-related obligations. The founders of the first village settled in an area have influence over a supravillage territory that extends beyond the boundaries of their village.

Village level

Settlement seniority implies the same relationship of land hierarchy between the lineages in a village community. In this case, the principle of tutorship determines the relationship between a founding lineage and the lineages that it has hosted. A hosted lineage may receive an assignment of rights to a plot of land or authorization to clear land within the village territory, but is subject to the authority, if only moral, of the founding lineage(s).

Lineage level

A lineage consists of several households that share a common ancestor, often the first occupier of the village. Its members share operational and administrative rights over patrimony that they manage collectively. Not all have similar access, because the bundle of rights over the lineage's land may be allocated according to various conditions.

Like the supravillage territory or the village territory, lineage constitutes a key socio-land reference for an understanding of the land configuration in an area. In

the concession zone and for each of the levels presented, these founding relationships are still in effect. As a result, identification of the founding processes is required for an understanding of the current socio-land configurations.

5.8.2.3 Land tenure configuration in the rural area around Sangarédi (CBG concession)

Land tenure hierarchies: power and territory

It is essential to distinguish villages from the satellite localities associated with them. The implications are many, from the social and political standpoints (in particular, to identify resource persons), but also to deal with land questions (for example, to select a relevant spatial unit).

The three profiles we have selected are:

- **profile 1: parent villages:** These are the first villages settled in an area. A founder (or a group of cofounders) invested in a previously unoccupied space, determined a territory where he created his patrimony and founded the village. Waves of settlement followed, with new villages respecting the principle of settlement seniority whereby the first occupier holds customary power. Customary land tenure is therefore based on a hierarchy; the supravillage territory include several villages, but one village is predominant. Its current representatives are responsible for managing intervillage matters;
- **profile 2: satellite localities resulting from a split:** When the population of the parent village becomes too dense, groups (usually households) leave it to found satellite localities near their agricultural land. Even though they form a distinct unit of residence (a hamlet surrounded by the area it exploits), these localities continue to be tied to the functioning of the main unit, from the social, political, religious and economic standpoints. The authorities in the parent village continue to be involved in matters related to land invested in by members of the satellite localities; and
- **profile 3: hosted satellite localities:** Newcomers may ask the authorities of a parent village for access to land within its territory. If there are no particular land pressures, it is in the interests of the parent village to welcome these outsiders: by allowing newcomers to settle beyond the land

that they regularly use, they can secure rights to more distant land with less certain tenure. The occupants of these hosted localities are assigned the right to these lands, which they may clear and freely use. Even so, they remain committed to a tutorship arrangement and recognize their hosts' moral authority over the land. The opportunities for them to meet are frequent (gatherings at the prayer place, discussion of social matters, settlement of land conflicts, etc.) and enable the representatives of the parent village to consolidate their power over the supravillage territory they administer.

A large portion of the villages identified in the concession zone are the result of the empowerment of satellite localities (whether they are due to division or hosted). The increase in their population and the development of infrastructure (roads, schools, mosques, etc.) constitute major factors that separate them from the parent village.³⁷ Satellite localities have gradually developed autonomy that is religious (independent prayer place), social (independent festivities and celebrations), land-related (land may be sold or assigned without recourse to the authorities in the parent village) and even administrative (some localities have become sectors if not districts, even though the parent village has no such title).³⁸

That being said, their autonomy is relative with respect to their tutors, who continue to be authorities for matters beyond the village framework or outside the usual subjects (intervillage disputes, construction of infrastructure, etc.). Respect for their moral authority is also a continuing principle; one need only observe the commotion caused by the death of one of the customary authorities to observe their degree of influence over satellite localities.

The administrative organization of the zone, which was divided into cantons during the colonial period, and then into districts, has been superimposed on the customary socio-land organization, but without jeopardizing the order established by the initial tutorship arrangement.

Seniority: a factor in the socio-land hierarchy

Order of arrival is a major determinant in the hierarchy of the localities in the zone. This principle determines the organization and hierarchy of the villages and the localities associated with them, and also the categorization of the lineages within a village community.

Whether a parent village or a satellite locality that has become autonomous is involved, socio-land history always has an individual or a group of individuals as the basis of its founding.³⁹ Investigations in the concession enabled us to determine two main periods that characterize the settlement of the villages:

- the founding period, during which ancestors invested in the land and created patrimonies; and
- the hosting period, during which new lineages settled in the territory (integration into the village community) or on its outskirts (hosting of satellite localities).

These two periods of settlement can be used to distinguish old lineages, whose representatives created the resulting patrimonies, from outsider lineages that settled when procedures for access to land were more restrictive. The outsider lineages were hosted through the tutorship system: the council of elders, formed by representatives of lineages from the founding period, agreed to designate one of its members as a tutor. He was responsible for hosting the outsider and transferring to him agricultural land taken from the patrimony of his own lineage. Tutorship was generally strengthened by an alliance between the outsider and a woman from the host lineage. These procedures were a means of ensuring his integration into the village community. He then had a right to clear the new land that he obtained from within the village territory.

Accepting outsiders and gradually hosting satellite localities on the edges of the village's land ultimately created a degree of land pressure. In principle, spinning off villages (by a split from the parent village or the founding of satellite localities) occurs only when the occupancy of the land reaches a critical threshold. Today, opportunities to invest in new space are scarce, if not nonexistent. In some villages, land saturation is quite apparent, and the agrarian system is reaching its limits. External factors are accelerating the process, such as mining operations, which require a great deal of land, and the urbanization of Sangarédi, including development of infrastructure and the market-oriented rationale spreading into the local economy.

In this context, new lineages can no longer be hosted. Descendants of the founders make loans to one another, but outsider lineages must lease land. Such practices

are very recent in the rural area and add an economic dimension to a social and land hierarchy that is already based on seniority.

Diversity of resource areas: typology

The case studies identified the main resource areas.⁴⁰ For greater clarity, we distinguish between agricultural land and pasture land. Later, we will consider them in a common fashion. The main resource areas are:

- **agricultural land:** The initial clearing of land is an individual act that conveys a complete bundle of rights to the person who carries it out. In this way, he receives operational rights (exploitation and development) and administrative rights (he coordinates its exploitation and may lend, lease or convey it). In the customary system, only the transfer to an outsider by sale or assignment requires the involvement of the founding lineage. This principle is due to the fact that the transfer is most often associated with the hosting of a newcomer to the village; his integration into the village community has to be handled by customary authorities. After the first clearing, individual exercise of the land right becomes collective as soon as it is conveyed by inheritance (allocation of operational and administrative rights to the descendants of the person who initially cleared the land);
- **valley floors (*ndantari*) and uplands (*djolol, djoli*):**⁴¹ These two spaces go hand in hand from the standpoint of crop rotation. They are the most coveted spaces, most of them have been invested in from the earliest days, and today they are subject to collective management according to lineage-based patrimonies. Both types of land are used for annual crops, but valley floors have flatter terrain and a damper climate that is suitable for plantations of perennial crops, such as avocados, bananas, pineapples, kola and various types of citrus fruit;
- **pockets of dense vegetation (*hounsiré*):** This type of land is found in the middle of bauxite plateaus. It tends to be used as a land reserve by lineages that do not exploit it until its members have increased in number (young adults, young households that want to become independent, etc.). Some *hounsiré* constitutes a village land reserve that has never been cleared. It represents the only opportunity for newcomers who are already involved in

the tutorship system to invest in land over which they will receive a complete bundle of operational and administrative rights;

- **pasture land:** In principle, grazing land is managed collectively by the village. This principle is due to the fact that clearing enables an individual to secure rights to land or to pasture that does not require clearing;
- **pockets of sparse vegetation (*donghol*):** This land is found in the middle of bauxite plateaus. In contrast to *hounsiré*, the soil is too poor to be used for annual crops. Even so, after it is used for several years in succession for the penning of livestock, it becomes enriched. The vegetation changes, as does the name of the land, and it eventually becomes *hounsiré*. The pocket of vegetation can then be cleared and incorporated into the patrimony of a lineage. In principle, as long as it is considered *donghol*, such land is managed by the village collectively. Even so, a specific lineage's proximity to the land or its regular investment in it by the penning of its livestock may secure it priority access once the land can be used as *hounsiré*; and
- **bauxite plateaus (*bowal, bowé*):** *Bowal* is used by herders who take their livestock there to keep it away from the villages during the growing season. Its use for transhumance is not enough to ensure that *bowé* becomes fertile. Apart from being used as grazing land, it is above all a place where villagers gather rock and straw to be used for construction. In principle, *bowé* is not subject to individual or lineage investment; it is under collective village management. Individuals from outside the village community must obtain permission from the customary authorities if they want to pasture their livestock on such land.

Exercise of rights to each resource area

Different land rights apply to each resource area. Table 5-7 summarizes the rights exercised by each level for each type of land as a function of its use.

Table 5-7 Exercise of rights to each resource area

	Land use	Village collective	Lineage collective	Intralineage collective	Individual
DJOLOL	Annual crops	Organizes crop rotation	All members of the lineage have operational rights. The eldest has administrative rights.	Operational rights (use and usufruct) and basic administrative rights (lending and leasing) on the plot of a brotherhood.	Operational rights (use and usufruct) and development rights
	Plantation with cash crops				Use rights and administrative rights
NDANTARI	Annual crops		All members of the lineage have operational rights. The eldest has administrative rights.	Operational rights (use and usufruct) and basic administrative rights (lending and leasing) on the plot of a brotherhood.	Operational rights (use and usufruct) and development rights
	Plantation with subsistence crops		All members benefit from usufruct. The eldest has administrative rights (organization of usufruct between the rights holders of the lineage).	The eldest of the brotherhood has administrative rights over the plot allocated to their mother (organization of usufruct between the rights holders of the brotherhood).	Usufruct rights
	Plantation with cash crops				Operational rights (income from sale) and administrative rights
HOUNSIRE	Land reserve (has never been cleared)	Part of a territory administered by traditional authorities who may host satellite localities			Clearing rights
	Annual crops		All members of the lineage have operational rights. The eldest has administrative rights.	Operational rights (use and usufruct) and basic administrative rights (lending and leasing) on the plot of a brotherhood	Operational rights (use and usufruct) and development rights
	Plantation with cash crops				Operational rights (income from sale) and administrative rights

	Land use	Village collective	Lineage collective	Intralineage collective	Individual
DONGHOL	Pasture	Resource area that is part of a village's territory	A lineage has priority access to <i>donghol</i> adjacent to one of its plots.		Clearing rights when the soil of the <i>donghol</i> become fertile (after fertilization)
BOWAL	Transhumance corridor	Resource area that is part of a village's territory			Right of passage for herds. A new claim has recently arisen with the development of cashew plantations, based on the status of <i>donghol</i> : priority access to <i>bowal</i> adjacent to the parcel exploited and administered
	Plantation with cash crops				Operational rights (income from sale) and administrative rights
BUILT-UP	Rural	Delegation of rights to concessions (inhabited area) as part of the hosting of an outsider. Moral authority.	The concessions (inhabited area) are part of the patrimony of a lineage.		
	Urban	The land chief has moral authority over the satellite villages hosted by his lineage. This status can overlap with an administrative position (district president, sector chief).	Lineages have assigned / sold portions of their concessions. They continue to be involved as tutors / vendors if land conflicts arise concerning the parcel assigned /sold.		Individual rights to a building plot purchased by a household

The customary land tenure system conceives of the individual exercise of rights only at the time of the initial clearing. As soon as the land is conveyed by inheritance, it becomes subject to collective management between the descendents of the first occupier. This collective management involves an allocation of rights on different levels, namely:

- **collective exercise between groups of brothers with the same mother:** Most often, the first occupier fragmented his land so as to allocate operational rights (use and usufruct) to each of his cospouses. One plot is also reserved for him. Conveyance by inheritance includes the allocation of operational and administrative rights between the groups of brothers on the plot that was exploited by their mother. All the brothers have operational rights and the eldest holds a portion of the administrative rights (he coordinates exploitation between his brothers and may lend parts of the plot); and
- **collective exercise between groups of brothers with the same father (different mothers):** Even when a plot of land has been fragmented among the sons of cospouses, the land continues to be subject to lineage-based collective management.⁴² All the descendents of the first occupier (without distinction between the cospouses) have operational rights (use and usufruct) on land cleared by a common ancestor. The eldest brother coordinates exploitation for the entire plot. He respects the initial fragmentation among the cospouses, but may ask for loans between the groups of brothers. He may also coordinate exploitation of the parcel reserved for the father. Lastly, he is the ultimate authority for matters involving assignment of land, including any sale of it.

Settlement seniority and improvements may lead to segmentation of the lineage between the descendents of each cospouse. The eldest of each group may benefit from gradual delegation of the administrative rights by the eldest of the lineage. The management of the right then goes from collective lineage-based management to collective management within a segment. On fragmented parcels, the eldest of the lineage has only a duty of information, with which his younger brothers comply.

The fragmentation of lineage-based patrimonies is a standard process enabling segments of the lineage to become autonomous, but recently such fragmentation has allowed the individual exercise of land rights. For about 10 years, cashew trees have been planted on most plots. By creating these plantations, the lineage-based

rights holders who initially had only operational rights to the land now have administrative rights as well. The parcels can no longer be reallocated and they are now subject to individual management.

This is the same phenomenon as that observed for the *bowé*, even though it is subject to collective village management. Members of the village community seek rights to the *bowé* next to the parcel they exploit (or next to their house), and some have even planted cashew trees to serve as markers of their individual appropriation.

5.8.2.4 Changes in land tenure in the urban and periurban areas of Sangarédi

The town of Sangarédi was created recently as a result of CBG's arrival in the region. The term *sangarédi*, meaning "old elephant," initially referred to *bowal* north of the town in today's Silidara quarter. It was the first area exploited by CBG, and its name came to designate the entire urban area on the periphery of the plateau and was chosen by the administration as the official name of the subprefecture. The urban footprint of the town of Sangarédi now takes in the territory of several villages organized according to the customary land tenure system described above. Statutory law has been superimposed on the preexisting land configuration, and some principles have been respected while others have given rise to land conflicts.

Tenure security in the customary system

We concentrated our study on the urban portion that corresponds to the current Lavage district, specifically the localities of Samayabé, Ndantari Goundodji and Paragogo.

Samayabé is recognized as the oldest village in the zone, having been founded in 1909. Its founders hosted localities on the edge of their territory, first Sefadou-Goundodji, from which came the locality of Ndantari, and then Paragogo.

The hosting process created tutorship relations with Samayabé. The hosted lineages were allocated land to which they received a full bundle of rights (operational rights and administrative rights). This relationship involved acceptance of their tutor's moral authority (participation in and contribution to the social life of the parent village, information from tutors for their hosting).

Whether tutorship involved hosting a lineage in the village community or hosting a satellite locality on the edges of the territory, it provided a system for occupancy of the land. Hosting new populations strengthens the political and land-related power of a village chief and also secures the edges of his territory. By taking the initiative of hosting, the tutor assigns rights to land that he does not have the capability to exploit, but over which he can extend his control. This logic of tenure security still prevails in rural areas that are not subject to land pressure.

Stages of urbanization

CBG's presence quickly caused densification of the zone. Even though the customary boundaries seem to have been absorbed by the urban expansion, localities such as Samayabé, Ndantari and Goundodji are still involved in defining customary territories.

The administration of land was conveyed by inheritance to the descendents of the founders. Until the 1970s, they hosted new lineages, and the customary authorities allocated to them arable land where they could plant perennial crops and build houses. CBG's presence changed the nature of the requests: newcomers no longer looked for arable land, but land to build on. Thus many plots of land were assigned simply on the basis of a few kola nuts.

From the 1970s to the 1990s, the villages' land reserves decreased considerably, because CBG froze the use of *bowé*, preventing access to pockets of vegetation (*hounsiré*), and to lineage and village land reserves, and also because hosting requests increased, which also entailed occupancy of the village's land reserves.

The villagers' subsistence could no longer be assured, so the lineages reorganized the system to allow for land decapitalization: patrimonies were fragmented among household heads to facilitate their sale. The customary land tenure system had to be eased in this way to facilitate transactions and to obtain the means to use an administrative instrument to secure land rights in a context that openly threatened them (formalization). The allocation of collective rights to patrimonies was thus reinterpreted as plots of land subject to the individual management of each household.

Reinterpretation and instrumentalization of customary law

Within a village, the tutorship system enabled outsiders to benefit from an assignment of rights to land. Aware of their new market value, the current representatives of the host lineages tried to renegotiate the assignment, most often on a financial basis.

On another scale, the tutor villages cited their customary status to appropriate parts of land that they had assigned a complete bundle of rights to. Hosted localities were thus obliged to give back a portion of their customary land, which was fragmented and sold without their knowledge. Thus, under the terms of customary law, the hosted localities complied with the moral authority of their tutors, and it was under statutory law that the tutors took advantage of this “recovered” land.

Through formalization, statutory law is becoming the new instrument of tenure security. But it is an instrument that serves the preexisting land hierarchy.

5.8.2.5 Special case of PK-14 (Kamsar area)

A study was done of the 1.8 km affected by the railroad siding between Kolaboui and Kamsar. This zone has very different characteristics from those observed around Sangarédi, and the findings presented here are from a rapid study rather than an in-depth case study, as was carried out in the concession.

Many ethnic groups are found around Kamsar, and PK14 is in an area under the customary authority of the Nalou people. We noted an ethnicization of land relationships, with variable degrees of land autonomy depending on the identity of the hosted groups. In contrast to what applies in Sangarédi, seniority is not the first criterion taken into account in the social hierarchy that determines access to land.

Three villages are affected by the project and all are Nalou. This identity gives them a complete bundle of rights over the land they occupy. Most often this involves patrimonies that form strips of land that make up the inhabited area (concessions), *kharé* (an area with plantations and market gardens) and a rice field on an extensive mangrove plain in proximity to the railroad track.

On this land, the rights are based in principle on collective management between members of the lineage, overseen by the eldest. For about 10 years, some plots

have been fragmented and sold to outsiders. This is the case of *kharé* in the footprint zone (Toumbeta territory), which was sold to a Kamsar resident who wanted to create a cashew and oil-palm plantation. In this case, the purchaser received a complete bundle of rights.

Several inhabited areas are affected by the Project, namely lineage-based concessions consisting of several households. The compensation plans will have to identify the eldest from each lineage in order to propose relocation solutions. It appears to be difficult to move inhabited areas too far because their entire cultivated area is currently near the inhabited area. Even so, the study made it possible to identify *kharé* as land reserve areas for housing. Possibly the concessions can be moved a few meters within these spaces. Even so, the impact of displacement of the built-up area, which will use land reserved until then for agriculture, will be considerable.

5.8.3 Conclusion

CBG will have to take into account a number of parameters during discussions of compensation and potential relocation in the concession zone. In rural Guinea, statutory law and customary law coexist, but customary law prevails. Several levels, which depend on the hierarchical organization of the villages, will have to be taken into account to deal with land matters: the supravillage level, the village level and the lineage. Rights of ownership, administration and land management are determined according to these levels. In the concession, a large portion of the villages are due to the empowerment of satellite localities, which split off from their parent villages. Even so, the tutors still play the role of reference authority.

In addition, CGB's operations have accelerated the densification of the town of Sangarédi. Expanding it to take in several villages whose organization is based on a customary land tenure system may give rise to conflict. This phenomenon will have to be taken into account during the Project.

5.9 Cultural heritage

The purpose of the cultural heritage study was to locate and inventory the cultural heritage sites in all the villages in the concession zone and to identify their users and the persons who have authority over them.

This study was done in several steps:

- sacred sites in a historical context;
- definition of a sacred site;
- typology of sacred sites;
- indicators of the degree of importance of cultural heritage sites; and
- indicators of the degree of complexity of the processing of cultural heritage sites.

The inventory is the first step toward putting in place mechanisms to take into account local practices associated with the sites during implementation of the Expansion Project.

5.9.1 Sacred sites in a historical context

As stated in the section of the report on history, the concession zone has two parent villages, Boulléré and Wossou, which in a sense can be considered the two architects of the settlement of the area, whose dynamics have constantly evolved since they were founded. They are referred to as parent villages not because residents left them to found other villages, but because the land on which the new villages were created comes under their jurisdiction.

Wossou, representing the theocratic state of Fouta Djallon, was the first village founded in the zone. As for Boulléré, it did not acquire true importance until the colonists arrived and it was designated the administrative capital. The tutorship system connecting the two parent villages to their satellite villages is still being replayed and updated. This is especially visible through sacred sites, which are carriers of a historic dimension and testify to the political and social dynamics and above all the strategies for access to land and resources.

During our investigations, only a few villages did not insist on the consent or the presence of their tutors in order to talk to us about their sites – tutors whom they still regard as the true authorities in respect of sacred sites. This observation brings

us directly to the heart of the issue posed by sacred sites: who is the occupant and holder of land that a man wants to cultivate, a stream where he wants to cool off or water his herd, a pond where women want to wash their laundry and dishes, trees whose fruit someone wants to pick or whose wood someone wants to cut, or land where someone wants to build a house and found a village? Whom should we ask to learn about the laws and the secrets of this coveted land so that it becomes viable and habitable? How does one go about making a place legitimate?

5.9.2 What is a sacred site?

In terms of landscape, sacred sites are most often noteworthy because of their morphological characteristics: a gallery forest, a grove, a rock or a tree with an unusual shape, an inexhaustible or hidden spring, a cave, a termite mound, etc. From this point of view, these places correspond directly to the definition of the materialization of cultural heritage as unique natural environmental characteristics incorporating cultural values.

Even so, the crux of the matter, and the misunderstanding, when communities, mining companies and international heritage authorities meet to discuss sacred sites lies in the definition of these unusual places that are bearers of social, historic and religious significance. A number of commonly acknowledged prejudices concerning them have to be scrutinized in order to investigate, process and determine the future of the spaces. According to these prejudices:

- a sacred site is a place to be preserved from the threat of development or transformation of the land where it is found; it represents jeopardized heritage that has to be wrapped in cotton wool; and
- the sacred nature of these places gives them an untouchable character because they are sacred and in a sense their destruction is a taboo subject; thus touching these sites would be an inevitable source of social disorder and discontent. In this sense, sacred sites are regarded as issues to be dealt with.

Even so, the symbolic representations of populations studied show that there is an entirely different way of thinking about and defining these sites. Thus:

- sacred sites are important only because they contribute to the survival of people who recognize them as such. Moreover, a place is not identified as a

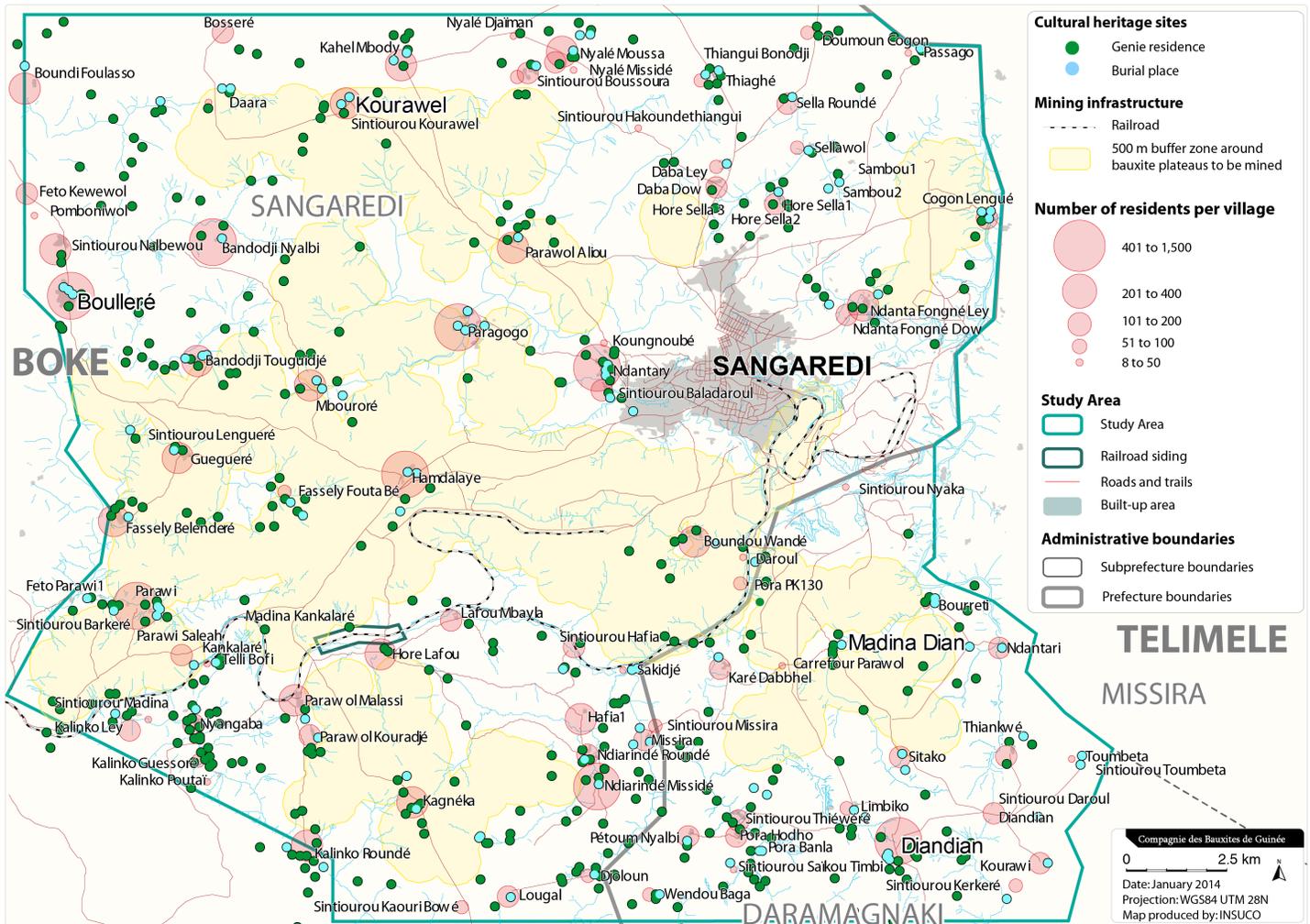
site until after people have gone to a territory and tried to settle there and use its resources.⁴³ A sacred site, far from being an immutable object and the witness of traditions that have remained intact (this type of museographic tradition does not exist) has no other meaning than to serve as a mirror of the area's social, historical and cultural dynamics. Thus the nature of sacred sites is fluid, because the practices that take place on them are deeply imbued in the life of their users and what we could call the social project of the village. The site is a system of production, social cohesion and power; it is a dynamic space that is constantly adjusted to people's needs and their modes of survival. Thus it has strong heritage aspects, also known as value. Our work involved updating these dynamics/logics that stem from a way of conceiving of the world and existence, in other words culture; and

- a sacred site does not constitute a closed object with well-defined boundaries. It is associated with a larger territorial space placed under its jurisdiction. As shown by the histories summarized in the descriptive sheets of the cultural heritage sites affected, it is a vital anchor point for this space. In other words, the sites of genie residences, each with its area and power, dot the territory and in a sense give each of its units a reputation; they provide a sort of map or reading that precedes the occupancy of a territory.

5.9.3 Typology of sacred sites in the Study Area

The known cultural heritage sites in Guinea are mainly sites of genie residences, burial places, initiation sites, places where objects regarded as fetishes are kept or archaeological sites.⁴⁴

Map 5-16 Cultural heritage sites



During surveys in the Sangarédi area, when respondents were asked to cite important places that they were afraid would be destroyed if their land were affected by the mine’s expansion, they referred exclusively to:

- burial places (*berdhè*); and
- sites of genie residences (*höddho djinna* or *Souhoun djinna*), which in this region, as in the rest of Guinea, represent the overwhelming majority of the sites identified. Consequently, because they reveal fundamental cultural and social values that any outsider who wants to settle there (or, like CBG, to be assigned new land) must understand, they occupy a large place in this report.

These values go beyond the realm of cultural heritage; they include all the social themes that INSUCO covered in the baseline study.

We determined two types of site, which we broke down into subtypes according to the site’s function and characteristics and the rituals that take place there.

Figure 5-23 Typology of cultural heritage sites



5.9.3.1 *Genie residences*

The Sangarédi area offers contrasting terrain characterized by bauxite plateaus (*bowé*) separated by valleys and many more or less permanent watercourses. Forests and streams are the preferred sites of genie residences. According to local beliefs, genies may respond in a kindly or malevolent fashion to the presence of human beings on the territory where they reside. The pact between genies and human beings is a sort of contract of mutual interest and mutual provision of services. As we have just seen, people need them to gain access to resources, power or special know-how.

- It is noteworthy that people invariably describe sites of genie residences as dangerous; these are the sites they thought it was most important to point out to us because more than anything they fear the spirits’ reactions, toward themselves and toward the mining company and its workers, in the event that their places of residence are affected by the expansion of the mining concession.

The sites of genie residences comprise two subtypes based on the nature of the relationships that people have with the sites and the spirits residing there, notably from the standpoint of the visits to them and the ritual practices that take place there so as to permit, among other things:

- the harvesting of the resources on the site, such as water, wood, fruit, plants and animals;
- the pact and cohabitation between people and the genies residing on the site, for their presence on the land is invariably deemed to have preceded that of human beings; and
- protection of the village and its occupants.

For the first type of site, two subtypes are proposed, namely:

- visited/with ritual practices; and
- not visited⁴⁵/without ritual practices

This practical typology emphasizes access to the land and its resources, because this issue concerns both the people who occupy the area and CBG, which would like to extend its operations to it. Moreover, the distinction between a site's accessibility and inaccessibility has implications for the degree of complexity that its processing will entail (displacement of entities and destruction of the site), which CBG will have to expect if it wants to occupy such land.⁴⁶

The land and its resources represent a patrimony that is common to the genies, to the people they have welcomed and to the mining companies – patrimony that they will have to share so that their cohabitation is conceivable and viable.

5.9.3.2 *Burial places*

The subtypes of the second category of sacred site depend on the degree to which they are visited or used (abandoned cemeteries versus active cemeteries) and also on the identity of the people who are buried there, namely their status and social and religious function. As with many Guinean and West African groups, the dead are not all buried in the same place: for example, founders may be separated from the other members of the community, scholarly elders may be separated from the nonscholarly and adults from children.⁴⁷

The six types of burial site are:

- current cemetery;
- former cemetery;

- elders' cemetery;
- Islamic scholars' cemetery;
- children's cemetery; and
- founders' tomb.

Even though Islam teaches that all are equal in the sight of God, one of the particularities identified in the region (and found in all of Fouta Djallon previously occupied by Fula animists who practiced the cult of the dead) is that in addition to the "cemetery for all" (men, women and children), there is a separate cemetery for elders. The relationships that the living have with these two categories of deceased are not the same, because they make requests to the oldest (the elders) through sacrifices or offerings (exactly as is done elsewhere in respect of genies), as in the traditional practice of ancestor worship. The various types of burial place are related to the practices that take place there. Elders and genies mediate between God and the living.

This distinction between burial places is, however, not predominant in the region, because it is regarded as contrary to the precepts of Islam, which prohibits any relationship other than that maintained with God. It is combined with another distinction (based on the same logic) more frequently made between burial places reserved for elders who are Islamic scholars and are often buried near a mosque and whose cult is closely subjected to the rules of Islam and elders who are not Islamic scholars and to whom the living may directly address their requests through sacrifices or offerings.

5.9.3.3 Historic aspect of cultural heritage

The two types of sacred site identified have a historic dimension and value. In all the villages in the Study Zone, the same configuration is found: before occupying the land, the founders asked the genies who were already present and who owned the land for permission to coexist with them and to use the resources under their jurisdiction. Moreover, a number of village histories refer to the powers of their founders who were able to negotiate permission to settle after others had failed to do so.⁴⁸ Conversely, other land had to be abandoned because the genies were hostile toward the people who settled there.⁴⁹ The strongest and most feared genies are associated with places referred to as haunted forests. Such places are not

visited at all, even though they were visited by men in the past, if they were opened (or will be visited again in the future if they are reopened) by an individual powerful enough to negotiate with the genies for permission to use them.

Similarly, burial places may date from the founding of the village and in all cases constitute places of remembrance. But for all, whether the deaths occurred recently or long ago, the informants' accounts are the same: what is important is the people's bodies, their souls and respect for their memory.

5.9.4 Indicators of the importance of cultural heritage sites

The ethnographic surveys of the population that we carried out on the cultural heritage sites that were identified within a 500 m buffer zone around the future mining zones had several closely linked objectives:

- to attribute to each site a degree of importance from the standpoint of its value to users, namely its function within the village's social project. Through the practices associated with these sites, their purpose may be to secure God's blessing for the deceased, protection of the village, successful harvests or positive outcomes for collective or personal projects or to maintain social peace and harmony. For the sites of genie residences, as stated, it may also be a matter of appropriating a piece of land and using the resources, such as water, wood, plants, fruit and animals; and
- to use this assessment of the utility of the practices associated with the site so as to create, for each of them, a descriptive sheet summarizing the relationships that their users have with these places. The degree of importance of the sites inventoried is stated in the sheets as well as the associated summary table.⁵⁰ A code is placed on the upper right-hand side of each sheet, with different colors denoting the three degrees of importance:

- Low importance
- Medium importance
- High importance

It should be noted that these degrees of importance are only indicators. They were defined for each site according to data collected during our surveys. Given the large number of sites identified, greater detail was not possible. More-detailed surveys may lead to a reassessment of the sites' importance.

Cemeteries are also designated as having a high degree of importance. As for genie residences, the most important are incontestably and invariably those belonging to the first subtype (*visited/with ritual practices*). The visited sites (because the genies living there have given people permission to enter their "homes" and have agreed to provide access to the resources they own) represent an especially important issue with respect to the survival of the people within the territory they occupy – territory that, as we have emphasized, is in this instance dotted with many sites of genie residences.

The genie residence sites that belong to the second subtype (*not visited/without ritual practices*) are less of an issue because, unlike the first, villagers cannot access them without taking the risk of incurring the anger of the spirits who reside there, because they have refused to cohabit and to collaborate with human beings. Their importance is due to the fear the genies inspire if the prohibition on accessing them is breached, for the repercussions could affect not only the villager but also the mine workers.

5.9.5 Indicators of the complexity of processing cultural heritage sites

The last objective of our study was to listen to our informants on a case-to-case basis and to talk about the reasons for their decision to agree to have their sites permanently disappear or, on the contrary, their desire to preserve them or even possibly resume their practices on the site or a replacement site with equivalent characteristics.

In the appended descriptive sheets on the affected sites, we include a category indicating whether the site is displaceable/destructible.

The population considers burial places to be the most important and, in all cases, destruction of them is generally difficult to contemplate or, in all cases, would entail negotiation and significant compensation.

As for sites of genie residences, in contrast to burial places, their degree of importance is quite distinct and independent of the degree of complexity that their processing involves: the *sites of genie residences visited/with ritual practices* are often those for which, ultimately it is relatively simple to negotiate, because the genies residing there already have close relationships with people (pacts involving sacrifices); in this sense they are within reach. Conversely, *sites not visited/without ritual practices* are less important from the standpoint of their usage value, but are more difficult to deal with because the genies residing there are hostile to the presence of people in their territory and inspire fear. The matter of their displaceability/destructibility is far more problematic, because communicating and negotiating with such entities is not a usual practice.

5.9.5.1 *Important comments*

Concerning the displaceability or destructibility of the affected sites, it should be emphasized that the main risk is to consider sites classified as less important (green code) easy to destroy, namely without negotiations or formalities. Indeed, all the sacred sites named by our informants, precisely because they were cited, are important and require special attention and processing: none of them can be destroyed without prior formalities that, depending on the case, involve one or more of the following steps:

- negotiation with the populations concerned, in particular with the persons responsible for the identified sites (their identity is given in the descriptive sheets on the affected sites);
- consultation with specialists in the occult to identify the sacrifices to be made; and
- identification of a replacement site where the genies can be accommodated or where the deceased could be reburied.

It will be necessary to respect all these preconditions for the processing of a cultural heritage site. Negotiation is the main issue: it will have to be carried out properly so that the negative impacts are minimized from the standpoint of the communities and respect for their religious practices.

5.9.6 Conclusion

Even though, the Sangarédi area has become increasingly saturated since CBG's arrival as a result of demographic, agricultural and mining pressures, we must emphasize that traditionally access to land has not been fixed. The customary and historical practice of tutorship, which is common to the occupants already settled and to newcomers, is still applied. As a result, very few occupants claim to be the true owners or holders of the land and the resources they use.

This situation implies that access to land is still possible; in any case, it is a known and usual process from the standpoint of local cultural values: a procedure already exists for someone who wants to settle or to enlarge his parcel of land. Thus, far from constituting places that pose a problem and represent a hindrance to, or a limitation on, development projects in the territory, cultural heritage sites are key historical anchoring points in the territory. In a sense, they constitute doors that are already open and working for the use, and the sharing, of the land and its resources.

According to this logic, nothing would seem a priori to oppose CBG's Expansion Project. That being said, the difficulty lies in the large amount of land that CBG would like to acquire, because the customary logic of access to land has thus far been carried out on a very small scale and in compliance with the sharing of resources and spaces between its various occupants.

5.9.6.1 An issue common to mining companies and populations: access to the land and resources

CGB must understand that even though the land and the resources associated with it come under the authority of human tutors (according to the system of parent villages and satellite localities), it belongs above all to genies whose presence is deemed to predate that of human beings. As a result, the genies, who are the true tutors of human beings, are vital interlocutors for new arrivals and/or would-be users. CBG will have to negotiate with the genies through established communities whose occupancy predates its arrival.

A mining company that wants to become a user of resources must understand this logic to ensure it has a legitimate position, in other words a position acquired

according to rules that all the occupants of the area had to comply with in order to settle, with respect to the communities with which it will have to coexist. Addressing the concept of heritage is not a matter of respecting a site because of a belief in genies or a tradition; rather, it involves understanding and respecting the sociological, economic and cultural logic underlying its use and ultimately taking the already trod path leading to the acquisition or use of new territory.

5.9.6.2 Key values to be respected

Investing in such sites without due regard for this local procedure could backfire on the occupants of the land, not only the mining company but also the nearby populations, in a direct or indirect manner. A number of procedures therefore have to be taken into account. To that end, CBG must understand various principles and local beliefs specific to the symbolic logic of the population with which it would like to coexist. This approach implies such matters as recognition of genies as holders of the land, and then recognition of the founding parent villages that have acted as tutors for the outsiders they have hosted on their land over history.

In short, CBG must respect these rules and above all the clearly expressed need for people to be acknowledged, informed and involved in the Expansion Project. The communities are hoping for an approach that differs from that taken when CBG arrived 50 years ago. What the communities are ultimately and justifiably asking for is to be considered and respected, because until now CGB has been a newcomer that has short-circuited the local procedures for access to land and resources and has acquired a poor reputation. Some villages, such as Hamdallaye, have for that reason refused to engage in any negotiations concerning the destruction of their sacred sites. CBG will have to make a tremendous effort to communicate, inform and collaborate in order to reverse this trend.

The negotiations will have to have a solid foundation, starting with recognition of the people's seniority on the land. For each village where CBG will want to negotiate the destruction of cultural heritage sites, it will have to consider its history and, above all, its founders, tutors and hosted people. This information is summarized in Map 5-3 Settlement history of the villages in the concession.

It will then be fundamental to understand that the negotiations should not involve strong-arming or a show of force. As much as possible, CBG will have to integrate

into the existing system of hosting and reallocation, sharing, cohabitation and agreement between the various protagonists and occupants of the land.

A great deal of attention must be paid to the values of agreement with, and respect for, tutors and elders, because these values involve a vital political effort in the lives of men; this is the key problem of a territorial group and the relationships between a man and his children. Rituals, sacred sites and pacts cannot be considered separately.

5.10 Archaeology

Evaluating the archaeological potential of CBG's future mining area took the form of systematic surface prospection carried out by a team consisting of an archaeologist and a national consultant. Given that the Study Area is characterized by considerable vegetation and the presence of *bowé*, the prospection phase had to be carried out in two complementary stages.

First, it was necessary to visit the selected villages in the Study Area to explain the reasons for the study in order to obtain consent from those responsible for the villages. Assistance from a villager was requested to facilitate the gathering of information and the identification of potential archaeological sites, such as former villages, iron forges, fragments of ceramics, caves or rock shelters and anything else that may have attracted their attention.

In this way, residents of the various villages led the team to caves, rock shelters and sites of former villages that were traditionally known to them or that they themselves had discovered during their activities in the bush. These meetings and discussions with them enabled us to assess their knowledge of the past.

Most of the sites they pointed out were stone structures that were designed to be used for housing and on the surface provided little or no quantitative information on archaeological material.

This fieldwork also involved an examination of the land leading to the stone structures, caves and rock shelters to determine other archaeological evidence. Given that the team comprised only two persons and the vegetation cover was fairly thick, this fieldwalking proved to be of extremely limited usefulness.

Second, the *bowé* was prospected more systematically according to the method described above. Because the land was fairly clear, this method gave more results. *Bowal* is a plateau characterized by flat hardpan, occasionally sloping slightly toward the center and with several instances of downcutting that become small streams during the rainy season.

The survey sheets were prepared by Laboratoire (APA) of Geneva and were completed as a function of each case and for each site (the model sheet is given in Annexe 5-1, Volume I, annexe 15). The sheet includes the name of the closest village, the GPS waypoint number, a brief description of the topography and vegetation, and the type of material found on the surface as well as references to general or occasionally detailed photographs, as in the case of structures that were once different types of housing.

As agreed with Laboratoire APA, only a few rare shards with unknown decoration and some representative pieces, such as lithic cores, were gathered. These objects are the basis of the preliminary findings discussed in the report. To permit a more detailed report, above all on the cores of the lithic industry, and only for that purpose, the export of the material was authorized by Musée National de Guinée and the Laboratoire APA of the Université de Genève-Suisse.

The archaeological analysis covers:

- the climate and environmental characteristics of the Study Area;
- the past climate and its impact on the archaeological evidence;
- the archaeological sites, the material discovered and its description;
- the archaeological material encountered; and
- the archaeology of Guinea.

5.10.1 Climate and environmental characteristics of the Study Area

The region has a marine subtropical climate influenced by the monsoon; it is hot and humid with a temperature ranging from 12°C to 40°C. The climate is characterized by alternating rainy and dry seasons of equal duration: the dry season extends from October to April and the rainy season from May to September, with May and June serving as a transition from the dry season to the rainy season and

September and October as the transition from rainy to dry. The region has many watercourses, lowlands, plains, valleys and plateaus.

The soils encountered in the Study Zone are mainly of two types: soils formed by *bowé* and ferralitic soils with or without stains, which may be shallow or deep, on uplands.

The archaeological study necessarily involves knowledge of the present and past environment. Today, as in the past, people live by adapting to the geographic characteristics of their environment; the material and food resources available determine their housing and way of life.

5.10.2 Past climate and its impact on archeological evidence

The dawn of the ancestors of anatomically modern man began several million years ago. Starting in the Miocene epoch, fossil remains show the start of forms that over time and as a result of climate change led to hominids and later to man.

Table 5-8 List of epochs

Epoch	Subdivision	Age in millions of years
Holocene		0.0118
Pleistocene	Late	0.126
	Middle	0.781
	Early	1.806
Pliocene	Gelasian	2.588
	Piacenzian	3.600
	Zanclean	5.332

This is exactly the interval in which paleoanthropology and archaeology try to find evidence to reconstruct man’s overall path.

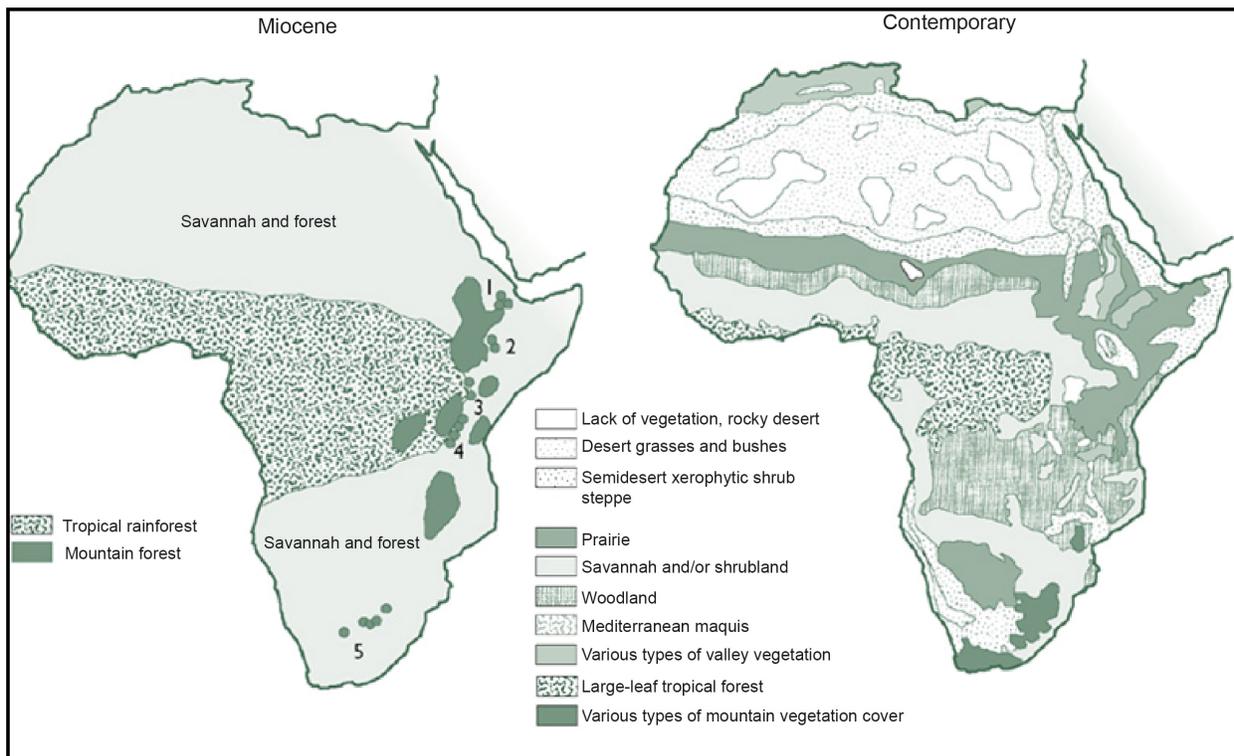
The response of living species to climatic variations is the main engine of evolutionary change (Verba 1985, 1988, 1996). By influencing the environment, climate change modifies the available food and material resources and, in so doing, the way of life. Even though the margins of tolerance for change vary from one species to another, generally speaking the quicker the change, the weaker the response by living organisms.

Reconstruction of climatic oscillations and climates of the past is done through the study of various elements, ranging from current animals (Nicolas 2012) to sedimentary cores taken from sea and lake floors. Generally speaking, each warm phase corresponds to an increase in vegetation and conversely there is a decrease during the cold phase, and both have impacts on sea level (Giresse et al. 2000).

Climate oscillations have characterized all epochs throughout human evolution, particularly over the past five million years. From the start of the Pliocene epoch to the present day, more than 20 oscillations of varying intensity between warm/cold periods have been identified. To summarize, we can say that the first event goes back five million years and caused a global cooling of the climate, the second occurred 3.5 million to 2.5 million years ago and caused the formation of the Arctic glacier, the third took place about 1.7 million years ago and the fourth goes back 900,000 years.

Even the Quaternary period has seen and continues to see climatic oscillations that alternate between arid and humid phases. In this sense, Africa’s current climate is in a transitional phase.

Figure 5-24 Climate change in Africa



The major glaciation in Europe, which goes back 18,000 years, is characterized on paleoenvironmental maps (Adams & Faure, 1998; Lézine et al., 2005) by a Sahara that was even more extensive than it is today, and the latitude where Guinea is situated saw a reduction in the forest mass and the advent of dry grassy savannah (Adams & Faure, 1998).

During the next period, about 8,200 years ago, the climate developed a high level of humidity, causing the transformation of the Sahara into savannah and the appearance of lakes and rivers in the Sahel (Gasse et al., 1990). In Guinea, once again, climate change brought about an increase in the forested area.

For land surfaces, the consequences of these climatic changes no doubt brought about constant variations in the level of the coast, with an accumulation of sediment related to erosive phenomena. We can easily conclude that archaeological sites were buried in several places in proximity to the coast, whereas in the higher areas, rivers and torrents reshaped the terrain and created incisions into valleys.

It has been widely established that, over the past 5,000 years, Africa's tropical climatic conditions have changed significantly, with a corresponding shift of human demographics (Oslisly 2012).

For that reason, surface prospection must take into account all past events. As we have already pointed out, in intertropical regions, the alternating dry and wet seasons create an accumulation of plant material that, combined with abundant precipitation, forms an acidic substrate in the soil, an environment that is conducive to multiple disintegrating factors, including destructive animals.

Unfortunately, such conditions are not conducive to the preservation of organic matter (human skeletal remains, teeth, charcoal and plant remains), which is an integral part of archaeological material but is often completely disintegrated. Occasionally, in very specific conditions, delicate archaeological material is preserved, as is the case of bones. For example, caves and rock shelters are suitable places for preservation because they sometimes offer protection from climatic agents. If we add anthropic activities to these factors, such as agriculture and structural changes to the landscape as a result of the extraction of minerals or the construction of infrastructure, the integrity of archaeological sites is seriously compromised.

Archaeological sites in tropical and equatorial Africa often yield only a portion of the possible archaeological objects, such as stone tools, which are the remains least affected by environmental agents; moreover, such tools and ceramics are often poorly preserved.

Photo 5-8 Entrance to a cave



Caves and rock shelters have played a very important role for man. They have always provided refuge for people or animals, sometimes serving as occasional or seasonal housing and even as places of worship. The rocky surfaces of their inner walls have occasionally been used by man to carve or to draw animals or symbols.

Each cave preserves the remains of its use as a result of filling caused by specific environmental conditions that have made it possible to preserve them. Almost all the caves show evidence of trampling of the earth. The earth comes partially from the disintegration of the walls and ceiling of the cave itself, or from the outside, and partially from the accumulation of various materials abandoned there by man and animals. The soil and materials that it contains constitute an Anthropozoic deposit, a

sort of archive that documents man's use of the cave. The deposit provides irreplaceable one-of-a-kind information.

5.10.3 Archaeological sites, material discovered and description

The sites identified during prospection were partially classified according to the description and division published by Huysecom (1987), which proposes four chronocultural categories: Paleolithic sites, Neolithic sites, protohistoric sites and undetermined sites. Paleolithic sites, which extend over a period of two million years, are very rare in Guinea. Neolithic sites are found mainly in the open, in rock shelters or caves. The protohistoric category includes sites dating from the age of metals, the era of the great West African empires and the more recent precolonial and colonial periods. Even so, in this work the last two are classified in a fifth category, historical. As for undetermined sites, they cannot be dated. An example is an area with mixed material or undefined evidence of stone remains that may be from any age.

The 14 days of prospection in CBG's expansion zone yielded the discovery of stone structures, foundations of former villages, religious sites, ceramics and chipped stone tools (see photos in Annexe 5-1, Volume I, annexe 15) for a total of 16 sites covering a period ranging from the Middle Paleolithic to the current epoch. The discovery of ceramics and lithic artifacts in a cave, given the importance of caves in the history of man from prehistory to the present, provided the opportunity to make a plan of the caves and rock shelters in the area (cf. Annexe 5-1, Volume I, annexe 15). As a result, 29 potential archaeological sites were added; they will be covered in a second phase because prospection of caves requires more time than surface prospection. For example, the cave that provided evidence of stone tools and ceramics required a half-day of prospection for the preliminary work alone.

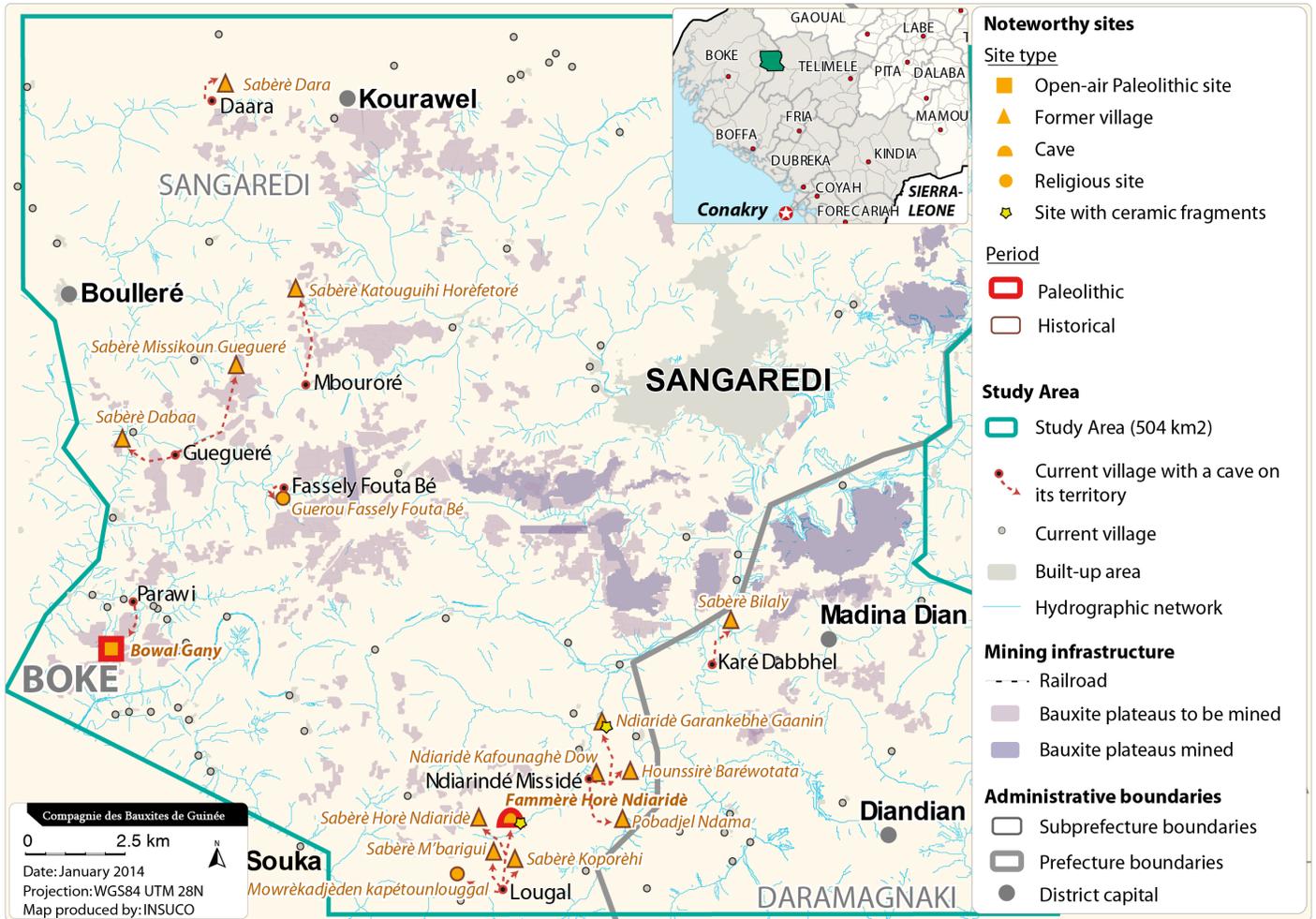
The most important site discovered during this mission was undoubtedly the open-air site on the edge of the Gany bowal, which was identified during prospection because of the high concentration of surface debitage. The term debitage refers to all material produced during the process of lithic reduction and the production of chipped stone tools. This collection includes different types of stone flakes and tools as well as debris and waste.

Photo 5-9 Site discovered on the Gany bowal



The discoveries made during the debitage period are:

- 12 visible (historical) old villages (blocks of stone arranged in a circle, a rectangle indicating traces of a house) along with one piece of ceramic;
- 28 caves and rock shelters;
- 1 cave with ceramics and a Paleolithic flake; and
- 1 open-air Paleolithic site.



Map 5-17 Noteworthy sites identified

Map 5-17 shows the sites visited. There are still many sites that should be researched, in particular the caves and rock shelters identified during the cultural heritage work. Even so, a map is given, as well as a list of the caves visited, in Annexe 5-1, Volume I, 15.

5.10.4 Archaeological material found

The material found consists mainly of ceramic fragments and lithic material, especially flakes and cores.

5.10.4.1 Ceramic fragments

The ceramics discovered consist of 10 pieces, of which seven are decorated. Even though it is difficult to make an in-depth study in such a short time, the fragments are very interesting and are quite different from the ceramics found in Mali and Senegal. In appearance they do not seem to have anything in common with Guinea's Niani ceramics and seem to be quite ancient. In-depth studies are required. The patterns show wide diversity even though their state of preservation is not the best. Observation of the profiles of the fragments, which correspond to a widely open upper edge, shows a single ceramic morphological typology, coupes.

Observation of the clay paste shows the use of a coarse degreasing content of mineral origin.

Photo 5-10 Example of a ceramic fragment found on the site



Different types of pattern were identified and are given in Annexe 5-1, Volume I, annexe 15.

5.10.4.2 *Lithic material*

The assemblage of lithic material (knapped stone) is represented by two discoveries, and one of them, after a brief analysis, clearly shows the Levallois technique,⁵¹ with bifacial discoid knapping.

- A sizable flake was found in the Fammère Horè Ndiaridè cave. It is difficult to specify the structure of the debitage from a single flake, even though the upper portion shows a degree of organization.
- An assemblage of lithic material was found in an open-air context on the edge of bowal. The deposit is characterized by 40 cores and 150 flakes; the cores were made with a quite pronounced Levallois technique, as confirmed by the many flakes that make up the rest of the material.
- The edges of the Gany bowal where the assemblage of lithic material was found is perfectly flat, and on the surface these lithic pieces have an obvious fortuitous placement, which would rule out the hypothesis of accumulation as a result of transport by water. The pieces were found mainly in the center of the area. Subsequent observation of the completeness of the lithic assembly is due to the homogeneous nature of its material – on first examination, dolerite. Given the importance of this discovery, which after an initial analysis seems to be from the Middle Paleolithic (Middle Stone Age), and unique in Guinea, the collection of informative lithic material was necessary (core as well as bifacial pieces). The material was concentrated in an area covering about 8 m² and the lithic pieces selected in this way require in-depth study that will have to be carried out by APA over a longer period than the time allotted for a preventive archaeological mission.

The study of the ceramic and lithic material collected during the surface prospection with the plan of the caves and shelters, as well as the identification of old villages, enabled us to partially document the material culture of past, recent and even contemporary populations in the region and more generally in Guinea. Even though the findings are only preliminary, they form a database of useful references in the event that further work is carried out in the region.

5.10.5 Guinea's archaeology

Bibliographic research on Guinea's archaeology immediately shows that there is very little information, thereby demonstrating that the knowledge is purely preliminary. In recent years, the commonly held idea that West Africa was populated very late is slowly receding, as a result of scientific missions geared to surveying its settlement history. Paleoanthropological and archaeological research has thus far been more developed in East and Southern Africa, undoubtedly because of more significant discoveries with a view to reconstructing man's evolution, leaving West Africa in the shadows. The few publications that are available, often written during the first part of the 20th-century by colonial explorers or collectors seeking their fortune, demonstrate a vision and a methodology that are a far cry from the practices used in recent years.

In Guinea, the most recent studies were done in the 1980s by Huysecom (1987), who counted a total of 135 archaeological sites in the country. In the 1970s, a Polish-Guinean archaeological mission was carried out in the northeast of the country. The work done by this team made it possible to situate in the country the former capital of the Mali Empire on the site called Niani, occupied from the sixth to the 17th century (Filipowiak, 1966; Filipowiak, Jasnosz & Wolagiewicz, 1968).

Prehistory defined on the basis of lithic material called Toubian (Delcroix & Vaufrey, 1939) leaves doubts as to its interpretation, such as associating successive microlithic components with large tools, such as bifaces or choppers (Davis 1954, Swartz 1980). It must be recalled that, in recent years, research in Mali, and more recently in Senegal, including research by Human Settlement and Paleoenvironment in West Africa, an international program started by the team of Prof. Eric Huysecom of the Université de Genève, is rapidly changing the scientific view of this part of the African continent (Huysecom 2012).

5.10.6 Conclusions

In archaeology, to think that a lack of evidence is definitive is to make a serious mistake; the study of a parcel of land often reserves many surprises. Even so, to talk about the existence of something without having found concrete traces of it is mere speculation.

Once again, the difficulties encountered in the field are related to the past and present environmental situation of Guinea and of the tropical and intertropical zone of West Africa. It is clearly difficult to find fragile archaeological material, but such discoveries are nevertheless possible.

The primary objectives of surface prospection were respected through the identification of archaeological sites, their precise location in the area and their preservation status. The classification proposed for the sites identified in the Study Zone is based on three values: **A (Important)**, **B (Medium Importance)** and **C (Little-No Importance)**.

Preventive archaeology must not be seen as a hindrance to projects that will benefit a country or to the use of mineral resources, which are necessary from the economic standpoint and would benefit all. Preventive archaeology is an exceptional instrument used to gather information on an archaeological site before its destruction. It may require several compromises but above all it entails respect for the context in which it is found, the natural environment and the neighboring communities.

The mission determined the archaeological potential of CBG's expansion area on the basis of the discoveries made. The remains of the old villages located in the Study Zone are in extremely poor condition because of anthropic and environmental action, and therefore do not represent a truly important heritage for Guinea, so **they are classified as having a value of C.**

In contrast, the two Paleolithic sites identified, in the cave and in the open, are of definite interest. **The open-air site represents an important discovery for Guinea because, to date, it appears to be the only evidence of the Middle Paleolithic found in the country and it therefore has a value of A.** For that reason, the Musée National de la Guinée approved the application to temporarily export the lithic objects found. They will therefore be subject to in-depth study in the months to come.

Even though the second Paleolithic site, found in the cave, is characterized by a flake, its level of importance has a **value of B.** The flake will also be among the objects exported.

Several ceramic shards found in the same cave on the Paleolithic site, even though their condition is not optimal, will provide the opportunity for future studies of Guinea's ceramics; after an initial analysis they appear to be unusual for the area and therefore have a **value of A**. These objects will also be exported.

Generally speaking, with the implementation of various precautions, the sites should not constitute obstacles to CBG's objective of expanding the area where it exploits bauxite. In fact, they give new impetus to archaeological research and will contribute to a greater awareness of Guinea's archaeological and cultural heritage.

5.11 General conclusions on the baseline study

5.11.1 Method

The baseline study was carried out in a very detailed manner in the concession zone, which includes the town of Sangarédi and the surrounding area, and in a less detailed manner in the area around Kamsar.

This choice was made because of the nature and scope of the work in the various zones, but also because of the time and budget allocated for the work. Given the Project's proposed spatial footprint, we believed it was important to obtain detailed information on the concession zone, which includes the town of Sangarédi. Such information has to make it possible to develop the impact study and the environmental and social management plan and to determine the indicators that will ultimately be used to monitor the Project's social integration.

No baseline study was done for the railroad zone. Its linear shape makes it difficult to obtain a sampling that can be analyzed, so the Project's impacts in this area should be assessed primarily on the basis of consultations with stakeholders.

The baseline study is fairly complete but could be complemented by information identified during the impact study. For example, a complementary study could be made for certain archaeological sites that seem to be of interest.

5.11.2 General

Generally speaking, CBG has had a social impact on the area. Its extraction operations and plant in Kamsar have attracted to the area around Sangarédi and Kamsar a large population that wants to work for the company or take advantage of the economic opportunities created by the presence of its employees.

Despite substantial social investments in schools and health-care centers and a certain level of convenience in the town of Sangarédi, such as far greater access to electricity than in many Guinean towns, CBG is burdened with a very poor reputation among the local population (cf. Chapter 6), which makes it difficult to obtain information and to make contact with people. This poor reputation seems to be due to a lack of communication about CBG's activities and the complete absence

of social integration of such activities (no environmental and social management plan, no compensation system, no complaint-handling system, etc.).

This poor reputation is due not only to CBG's lack of integration but also to the State's disengagement from the provision of basic services, despite the substantial tax on earnings paid by CBG, and a lack of communication and organization in the rural communes.

5.11.3 Concession zone

The concession zone includes a portion of the town of Sangarédi, with a population of 53,000 living mainly on commercial activities and services geared to meeting the needs of this population, and a rural population living on subsistence agriculture whose output is used mainly for personal consumption.

The urban area is highly dependent on CBG's operations in that its activities are for a local public attracted mainly by CBG's presence.

The rural population is the result of the migration of Fulas, who came from Fouta at the end of the theocratic empire. It has seen very little subsequent migration and its economy is based mainly on an agrarian system (shifting slash-and-burn agriculture), which is in the process of profound change and is being exhausted as a result of the demographic and land pressures. Land management is still based on customary law, and, even though the entire population is Muslim, animist beliefs persist.

5.11.4 Kamsar and the surrounding area

Kamsar and the surrounding area have a very high population density. The town of Kamsar especially has seen its demographics explode since CBG arrived. The discrepancy in terms of access to services between the workers' town and the rest of the town is becoming more pronounced and could lead to social unrest over the short term.

The coastal population that lives entirely or partially on fishing is vulnerable to any changes in the environment. The impacts that the Project could have on fishing would, however, go far beyond this population, and the contribution that this industry makes to the zone is important in terms of income and food security.

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5.2 Endnotes

5.3

¹ The number of consumption units is calculated according to the Oxford equivalence scale. The first adult counts as one unit and the others as 0.7. Children under the age of 15 count as 0.5. For example, income per consumption unit is the ratio between a household's disposable income and the household's number of consumption units.

² This is, for example, the case of the villages of Kourawel, Boulléré, M'Bondy Foullasso, N'Diarindé Missidé, Karé Dabel, Kalinko Roundé, Lafou Baïla, Passago, etc.

³ This is, for example, the case of the villages of Parawi, Madina Dian, Kogon Lengué, Danta Fongné Ley and Dowou, Nialé Moussa, etc.

⁴ *Rapport national d'investissement 2008 : l'eau pour l'agriculture et l'énergie.*

⁵ A Jalonké king who occupied Fouta before the Muslim Fulas arrived.

⁶ Igor Kopytoff is Professor of Anthropology at the University of Pennsylvania. His interests include social and political organization, and his research focuses on Africa and northern Asia.

⁷ See, for illustration purposes, the histories of the villages of Nyalé Moussa, Nyalé Boussoura, Parawi, Boundou Wandé, Bandodji Touguidjé, Kourawi, N'Dantary, Timbi and Toumbéta. It should be noted that Nord du Fouta, the area between Gabou and Labé, was a heavily traveled area for various types of trade, such as salt and kola nuts. Very quickly, the merchandise with the highest value (apart from precious metals) became slaves, who were almost exclusively sold by Mandingues (Mali Empire) after being captured in conquests. A second north-south route extending to Sierra Leone and running between the coast and Fouta was also used by caravans

carrying kola nuts, ivory, pepper from forests and precious metals delivered to the heads of rivers farther north.

⁸ See, for illustration purposes, the histories of the villages of Fassaly Foutabé.

⁹ For example, in the village of Paragogo there is a river called Thiapikouré after the former Thiapibè/Landouma occupants.

¹⁰ This is, for example, the case of the villages of Petoun Nyalbi, Wendou Baga (in Daragnaki subprefecture) or the villages of Hafia, Boundy Foullasso and Sambou (for Sangarédi subprefecture).

¹¹ This is, for example, the case of the villages of Laffou M'Baïla and Sambou.

¹² This is, for example, the case of the founders of the villages of Limbiko and Gondodji, who were passing through Gondodji and Samayabé, respectively, or of the village of Ndiarindé Missidé.

¹³ According to persons surveyed in Boulléré, the founders of this village encountered on arrival a village called MBondy Foullasso, which was founded by Fulas; it is the oldest village in the area. Our informants also referred to the village of Toumbéta (near Kourawel), which has the same name as a Landouma village.

¹⁴ According to various sources, the village was founded between 1683 and 1728, in the early days of the theocratic state of Fouta Djallon.

¹⁵ This is, for example, the case of the village of Kerkeré, founded by slaves of the founders of Diandian, the village of Doumoun Sellawol, founded by slaves from Sambou, and Filo Bowal, founded by slaves from MBondy Foullasso on the arrival of its founders in the area.

¹⁶ This includes an analysis of the landscape and the urban fabric but also the intraurban social organization.

¹⁷ *Le Système Éducatif Guinéen : Diagnostic et Perspectives pour la Politique Éducative dans le Contexte de Contraintes Macro-économiques Fortes et de Réduction de la Pauvreté*, The Development Research Group, World Bank, 2005.

¹⁸ A Franco-Arab school provides religious or nonreligious education, in French and Arabic. It is also referred to as a *madrasah*, an Arabic word that refers to a school, whether nondenominational or religious, regardless of faith.

¹⁹ *Pauvreté et accessibilité aux services de santé : le cas de la Guinée*. Mohamed Lamine Doumbouya, Enseignant-chercheur, Laboratoire d'économie de la firme et institutions, Institut des Sciences de l'Homme, Université Lumière Lyon II (France), mohamed.doumbouya@ish-lyon.cnrs.

²⁰ It should also be noted that there is considerable trade in fake medicines in Guinea, with the result that medication of doubtful effectiveness is found on the local market.

²¹ CBG plans to put in place two generator sets with 3.4 MW each to improve service. Load shedding will not be ruled out, however.

²² Small mosque built with local materials.

²³ A CBG power plant (12 generator sets) produces 6 kV high-voltage power, with 70% of its output used by the CBG plant and 30% by the workers' town in the Kamsar Cité district. The power distribution system in the district is similar to that in Sangarédi. It consists of substations, numbered boxes and private individual boxes.

²⁴ CBG has an electrical box at the airport and the mosque.

²⁵ Of total production, estimated at 11,000 m³, from two intake points: Sogolon (borehole) and Batafong (river).

²⁶ Officially, water appears to be cut off in the town of Kamsar from 12:30 p.m. until 4:30 p.m.

²⁷ Apart from the Kayenguissa area, which has direct access to drinking water facilities installed by CBG.

²⁸ The population apparently asked for compensation of USD\$58,000 to sell the land to CBG, which refused. Instead, CBG apparently built two classrooms in the Maladoya and Katakodi areas without consulting the local authorities.

²⁹ There is a second health-care center in the Kayenguissa area but it is no longer operational.

³⁰ The health center also has an operating room that has not yet been used for lack of a surgeon.

³¹ Dugout canoes created from a single tree trunk.

³² Boats made of boards.

³³ *Dantèfoyé* is the sea wind that blows during the salt-production period, from February until early May.

³⁴ A *tangalanyi* is a sawed-off barrel used by households to smoke small quantities of fish.

³⁵ Exchange rate: <http://usd.fr.fxexchangerate.com/gnf/>

³⁶ Alchian & Demsetz 1973 and Schlager & Ostrom 1992.

³⁷ The two villages selected for the case study have the status of parent village. They have produced many satellite localities, of which hundreds have become autonomous, whereas others are still hamlets of the parent locality.

³⁸ Some localities that become autonomous give rise to new satellite localities.

³⁹ The case of confounding seems fairly frequent in the area and may be due to several factors. Fula villages, such as Boulléré, are often the outcome of groups of nomadic herders who join together to form settlements. Moreover, the oldest villages were founded at the end of the 19th century, during times of troubles. The first settlement was not always definitive, because it usually involved temporary localities, and with the gradual integration of new individuals, the hamlets became true villages.

⁴⁰ Only the characteristics of resource areas are presented in this part. The reader should consult the annexes in which the resource areas are described in greater detail in a contextualized manner. Of particular note is the case of the village of Boulléré (case study no. 1), which was used for the construction of the typology, then validated with case study no. 2.

⁴¹ Singular, plural of the local term.

⁴² Here, lineage is considered a socio-land unit that corresponds to the descendants of the first occupier.

⁴³ See, for example, the appended site sheets.

⁴⁴ In this part of the report on cultural heritage, we discuss only this last category of site, which is covered in a separate section (section 5.10).

⁴⁵ We use the term “site not visited” rather than “site avoided” to refer to prohibitions associated with sacred places, mainly because their vegetation is not touched and access to them is governed by exceptional laws in relation to other types of space. One can avoid a place because of people one does not want to see, animals one does not want to encounter or terrain that is difficult to cross, without its being sacred.

⁴⁶ The matter of the processing of these sites is merely referred to in this report.

⁴⁷ Two children's cemeteries were identified in the zone but they are not part of this typology because they are not affected by CBG's Expansion Project.

⁴⁸ This is, for example, the case of the village of M'Bouroré.

⁴⁹ This is, for example, the case of the villages of N'Danta Pada (whose occupants then founded the villages of Daroul and Hafia), Sella Bantandjé (whose occupants then founded the village of Sella Roundé), as well as the village of Kahel M'Body, whose residents tried to settle on other land, from which they were chased by hostile genies. The same is true of the former village of N'Danta Fogné, whose residents left to settle in Mango houn and then in Daara, as well as for the village of Bosséré, whose residents previously occupied the village of Poudoukou.

⁵⁰ These documents (the site sheets and the summary table of inventoried sites) are appended. They provide a snapshot of these sites: a description of their shape and environment, history, persons responsible and indicators of the displaceability/destruction of the site and the level of complexity that such initiatives entail.

⁵¹ The term Levallois was already used in the 1860s to refer to wide, flat flakes discovered in the Levallois-Perret area of Île-de-France by the geologist Jules Rebourg. The Levallois technique allows for excellent control over the size and shape of flakes as a function of the needs of the flintknapper (maker of stone tools).

In Africa, the Levallois tradition began more than 285,000 years ago in an Acheulean context during the Kapthurin formation (Kenya). In Africa, the concept is still present on many sites dating from the recent and late Middle Paleolithic (Middle Stone Age) as far back as 30,000 years.

The use of this technique seems to mark a significant change in culture and proves increasing cognitive skill; the person who used this method had to be capable of

imagining the finished object and keeping that image in mind during the entire knapping process, which ultimately yielded a tool with the intended shape.