




DEUXIÈME RAPPORT  
SUR L'ÉTAT DES  
RESSOURCES

GÉNÉTIQUES FORESTIÈRES DANS LE MONDE

**RAPPORT NATIONAL**  
**GUINÉE**



Ce rapport national a été préparé en contribution à la publication de la FAO, *Le Deuxième Rapport sur l'État des Ressources Génétiques Forestières dans le Monde*.

Les rapports nationaux comportaient deux éléments : (1) un questionnaire en ligne destiné à recueillir des données et des informations sur les ressources génétiques forestières ; et (2) un rapport écrit complémentaire. Pour les rapports écrits, les pays étaient invités à suivre la structure du rapport mondial ainsi que les lignes directrices de présentation adoptées par la Commission des ressources génétiques pour l'alimentation et l'agriculture lors de sa dix-septième session ordinaire en 2019.

Le contenu et les opinions exprimées dans ce rapport relèvent de la responsabilité de l'entité ayant soumis le rapport à la FAO. La FAO ne saurait être tenue responsable de l'usage qui pourrait être fait des informations contenues dans ce rapport.



## **ADDITIONAL REPORT**

### **SECOND REPORT ON THE STATE OF THE WORLD'S FOREST RESOURCES**

**REPUBLIC OF GUINEA**

May, **2022**

#### **ACRONYMS**

RGF: Ressource Génétique Forestière (Forest Genetic Resource)

D. DIAWARA : Djiramba DIAWARA

GDP: Gross Domestic Product

PANA: Plan d'Action Nationale d'Adaptation (National Adaptation Action Plan)

AP: Protected Area

APAC: Aboriginal and Community Heritage Areas and Territories

PAFT: tropical forest action plan

EFIR: Reduced Impact Logging

F. KONE: Falaye KONE

OECD: Organisation for Economic Co-operation and Development

PROGERFOR: forest resource management project

PGRR: Rural Resource Management Project

## Summary

Guinea comprises four natural regions. These natural regions each correspond to a type of climate, with its own particularities in terms of temperature, rainfall, soil, fauna, flora and relief. The hydrographic network is unevenly distributed between these four zones. These natural regions have the advantage of presenting very different climatic, hydrological and ecological characteristics.

The forest resources, which were once very important, are divided into several types of ecosystems that are distinct in both physiognomy and floristic composition. These include 250,000 ha of mangroves in Guinée Maritime, 700,000 ha of dense rainforests in Guinée Forestière, Moyenne Guinée and Guinée Maritime on mountain ridges, in depressions and galleries, 1,600,000 ha of dense dry forests and open forests in Haute Guinée and Moyenne Guinée, 1,636,000 ha of wooded savannahs in Haute Guinée, Moyenne Guinée and Guinée Maritime. In addition to these forest formations, there are other types of formations such as crops, fallow land, shrub and grass savannahs (PANA) of the Republic of Guinea, 2007, page. 115.

Forest formations fall into four main categories: mangroves, dense rainforests with 3 variants (ombrophilous, mesophilous and high altitude), dense dry forest and savannahs. Of the country's 156 classified forests, only 21 have approved management plans. It should also be noted that four protected areas have special status: Mont Nimba, the Ziama massif, the Badiar national park and the Haut Niger national park. In addition to classified forests, two categories of reserves have been created: Sylvo-agricultural reserves and partial wildlife reserves. Forest genetic resources (FGR) provide timber, firewood and utility wood. They are also used as sources of food, as medicines in traditional pharmacopoeia and as raw materials for handicrafts, making a major contribution to improving people's incomes.

Guinea's forestry policy was adopted by decree no. 056 /PRG/SGG/90 of February 5, 1990. It defined the forestry sector's development strategy for 25 years. According to the Code Forestier **L/N°/2017/060/an** modifying and completing **law I/99/013/an** on the forestry code of the Republic of Guinea, forests are classified into two (2) categories according to regime: protection regime and ownership regime. The reforestation policy of the colonial era was marked by two main actions: The "resinous of the Fouta Djallon plateaus" action 1939 - 1940: species used: *Pinus kashia*, *Pinus merkuui*, *Cypress*, *Thuyas*; ordinary reforestation: *Tectona grandis* and *Khaya senegalensis* in Kindia and Mamou along the railways.

To crown it all, a Guinean catalog of OECD-compatible Basic Materials is being set up. Initially, it will comprise 3 of the 4 possible categories: Identified Category, comprising 2 types of Basic Material: "Seed Source" and "Identified Stand"; Selected Category, comprising "Seed Stands" and later, Qualified Category, comprising "Seed Orchards" of family seedlings. Dr. A. NANSON 1998.

### 1.1. Presentation of Guinea

Guinea is a coastal country in West Africa. It lies between 7°05' and 12°51' north latitude and 7°30' and 15°10' west longitude. It is bordered to the east by Côte d'Ivoire and Mali, to the south by Liberia and Sierra Leone, to the west by the Atlantic Ocean and Guinea Bissau, and to the north by Senegal and Mali. It covers an area of 245,857 km<sup>2</sup>. In 1996, the population was 7,196,000. Based on an estimated population growth rate of 3.1%, in 2006 it stood at 9,765,125, with an average density of 40 inhabitants per km<sup>2</sup>.

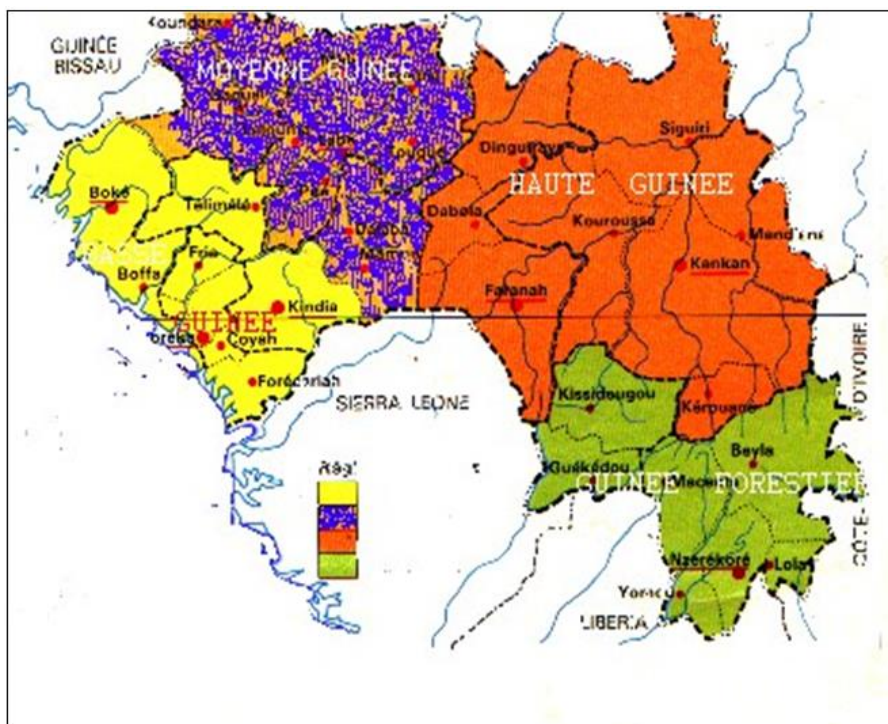
GDP at constant 2003 prices was GNF 5,590.09 billion. The real GDP growth rate was 4.18%, with inflation estimated at almost 40% in 2006.

Guinea is one of the most heavily watered countries in the West African sub-region. Most neighboring countries are dependent on the main rivers that originate here.

Guinea comprises four natural regions (Figure 1): Guinée Maritime or Basse Guinée, Moyenne Guinée, Haute Guinée and Guinée Forestière. These natural regions each correspond to a type of climate with its own particularities in terms of temperature, rainfall, soil, fauna, flora and relief. The hydrographic network is unevenly distributed between these four zones. These natural regions have the advantage of presenting very different climatic, hydrological and ecological characteristics.

### 1.2. Climate

Figure 1: Guinea's climatic zone

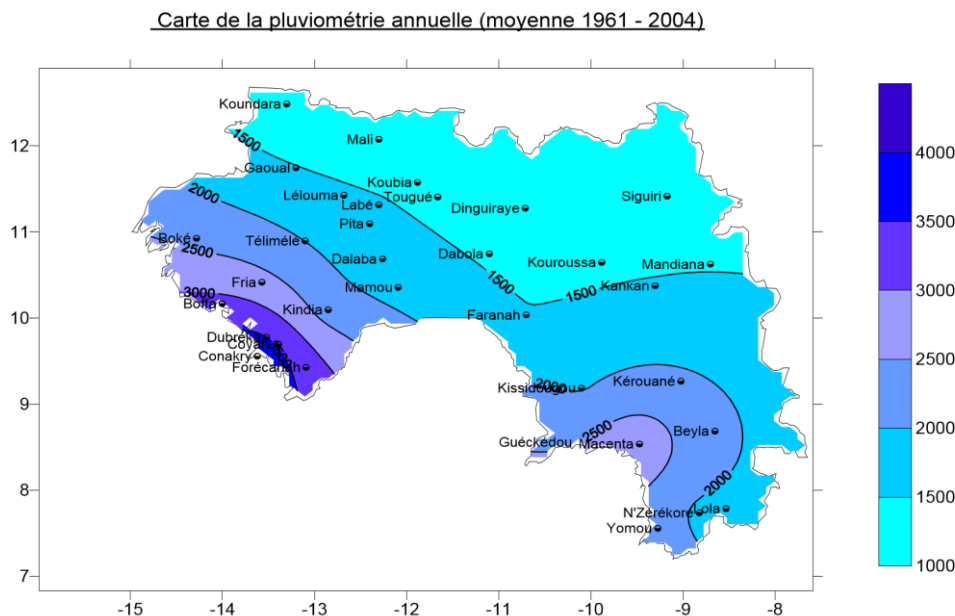


Guinea enjoys a humid tropical climate, characterized by the alternation of two seasons of unequal duration from north to south: the dry season, during which the harmattan rages, and the rainy season, governed by the West African monsoon. The rainy season lasts from 5 to 7 months (April-October) from north to south, with an average rainfall of 1,835 mm. The distribution of this rainfall is uneven in both space and time. It depends on latitude, topography and continental location. Maximums are located in the Conakry and Macenta regions, and minima in the northern parts of the country.

The climate of the Guinean coastal zone is the sub-Guinean (maritime Guinean) variant of the humid tropical climate. The rainy season begins in May and ends in November. Rainfall increases from north to south and from inland to the coast: Boké (2496 mm), Boffa (2891 mm), Dubréka (3617 mm), Conakry (4113 mm), Kindia (2120 mm), Forécariah (3128 mm). Fig. 2 shows isohyets in Guinea.

### 1.3. Rainfall

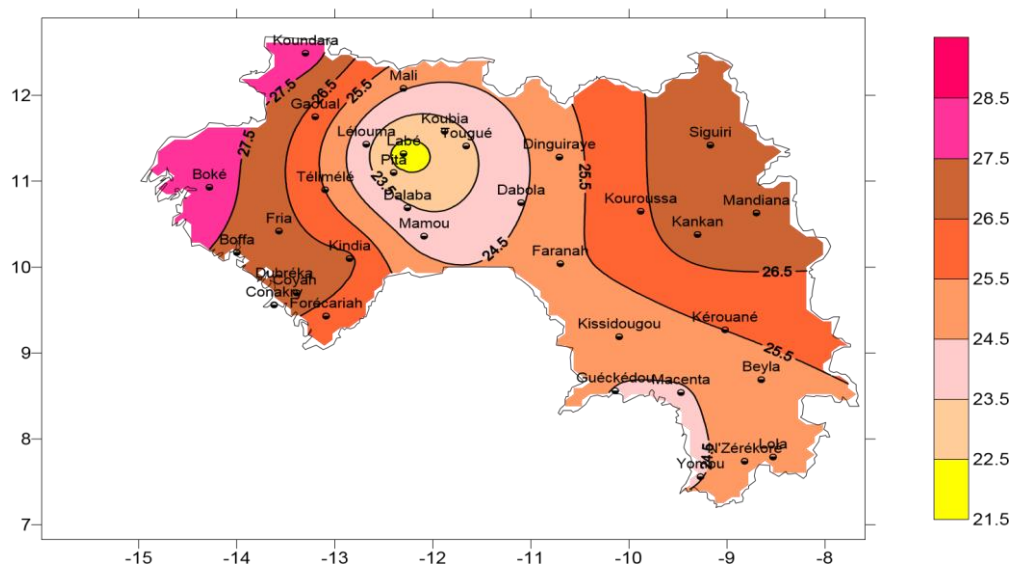
Figure 2: Average annual rainfall map (1961-2004)



La Guinée est en général un pays chaud et humide. La température moyenne la plus élevée (supérieure à

Guinea is generally a hot, humid country. The highest average temperature (over 30°C) is recorded in March/April in the northern zone, on the borders with Senegal and Mali, and the lowest, between December and January, is recorded in the heights of Fouta Djallon (10°C at Labé). The mean annual temperature map is shown in figure 3.

**Figure 3** : Carte de températures moyennes annuelles (1961-2004)  
Carte de températures moyennes annuelles (1961 - 2004)



In Basse Guinée and Guinée Forestière, average maximum humidity is high (over 90%). The air is drier in Moyenne Guinée and Haute Guinée, especially in the dry season, when the harmattan blows (less than 20% in January-February-March).

Sunshine is generally high, exceeding 2,000 hours per year. The lowest monthly values are recorded during the rainy season, when cloud cover is at its maximum over the whole country.

The agricultural population rose from 3,946,395 in 1988/1989 to 6,364,790 in 2000/2001, an increase of 5.1%. The area under annual crops rose from 773,290 ha to 1,370,145 ha in the same periods, an increase of 6.4%.

Livestock numbers include: 4,019,583 cattle, 1,874,520 sheep, 2,428,759 goats, 252,306 pigs, 4,528 horses and 6,218,649 head of poultry.

The number of artisanal fishermen is estimated at over 13,000. In 1998, their fish production reached 52,000 tonnes, of which 40,000 tonnes were smoked. The number of piroguers rose from 1,788 in 1989 to 2,561 in 1998.

The forest resources, which were once very important, are divided into several ecosystem types that are distinct in terms of both physiognomy and floristic composition. These include 250,000 ha of mangroves in Guinée Maritime, 700,000 ha of dense rainforests in Guinée Forestière, Moyenne Guinée and Guinée Maritime on mountain ridges, in depressions and galleries, 1,600,000 ha of dense dry forests and open forests in Haute Guinée and Moyenne Guinée, and 10,636,000 ha of wooded savannah in Haute Guinée, Moyenne Guinée and Guinée Maritime. In addition to these forest formations, other plant formations such as crops, fallow land, shrub and grass savannahs cover a total area of 11,400,000 hectares. Plan d'Action National d'Adaptation aux changements Climatiques (PANA) de la République de Guinée, Conakry, July 2007, pag. 115



## Part 2. State of forest and woodland diversity

### Chapter 2. Forest condition

Phytogeographical domains of the country. Forest formations fall into four main categories:

- mangroves,
- dense rainforests with 3 variants (ombrophilous, mesophilous and high altitude)
- dense dry forest and
- savannahs.

#### 2.1. Mangroves

The Guinean coast is low-lying, muddy and periodically submerged by the tide, although the coastal rivers contribute significant amounts of alluvial deposits. The pioneer species colonizing the sandbanks is *Rhizophora*, represented by three species: *Rhizophora racemosa*, *Rhizophora harrisonii* and *Rhizophora mangle*.

#### 2.2. Dense rainforests

A few hundred years ago, they probably covered more than half the country. They are divided into :

- Dense rainforest: Libero-Ivorian type, located in the south-east of the country (600.000 ha in the south of Guinée forestière), characterized by species such as *Heritiera utiles* (Niangon) and *Lophira alata* (Azobé) for the evergreen zones, *Triplochiton scleroxylon* (Ayous-Samba) and *Terminalia ivoirensis* (Framiré) for the semi-deciduous zones, with the appearance of *Khaya grandifoliola* and *Azelia spp*, towards the already slightly drier zones that constitute the bangs of the massif;
- The dense, semi-deciduous mesophilous forest that once covered the Fouta-Djallon foothills as far as the coast is now reduced to a few islands, galleries and relics in inaccessible situations (100,000 ha). The degradation of this mesophilic forest is leading to secondary formations of *Trema* and savannah in maritime Guinea, from which *Parinari excelsa*, *Cola cordifolia* and increasingly *Parkia biglobosa* are emerging.
- High-altitude dense forest formations are characterized by the dominance of *Parinari excelsa*, although there are wide variations depending on latitude, altitude and human influence. Dense dry forest This formation once covered most of the northern half of the country, with the exception of Fouta Djallon. The dominant species are *Parkia biglobosa* and *Pterocarpus erinaceus* with stands of bamboo. In the west, the main species are large legumes: *Pterocarpus erinaceus*, *Erythrophleum sp.*, *Afronesia laxiflora* and *Prosopis africana*.

### 2.3. Savannahs

Most of the savannah is the result of anthropogenic degradation of woodland formations. Covering most of the territory, the main formations are :

- The grassy savannahs of Guinea Forestière are located on the northern bangs of the dense rainforest.
- The xerophilous savannahs of the Guinea Maritime plains, where *Elaeis guineensis*, *Parinari sp.* and many low shrubs remain.
- The savannahs of lower and middle Guinea are still rich in woody plants such as: *Erythrophleum sp.*, *Daniellia sp.*, *Erythrina senegalensis*, *Cola cordifolia*.
- The savannahs of the Fouta-Djallon, above 900 m, often transition to herbaceous formations.
- Sudano-subhumid savannahs in the northeast of the country. The absence of thorny acacias reflects the distinctly Sudano-Guinean character of the flora. Table 1 shows the distribution of plant formations in terms of surface area.

Table 1: Relative importance of different plant formations in the country (Source: PAFT - Guinea 1988).

Training	Area (ha)	of territory
Mangroves	250 000	1,02
Dense humid forest	700 000	2,85
Dense dry forest and open forest	1 600 000	6,51
Wooded savannah	10 636 000	43,25
S/T Wooded formations	13 186 000	53,63
Crops	1 700 000	6,10
Fallows and shrubby savannahs	7 500 000	30,51
Other	2 200 000	9,76
S/T Other training	11 400 000	46,37

According to the Code de Forestier **L/N°/2017/060/an modifying and completing law 1/99/013/an on the forestry code of the Republic of Guinea.**

### **3.1 Forest classification by protection regime**

Depending on the protection regime, the national forest estate is made up of classified forests and protected forests, as defined in Article 1 of this law.

#### **3.1.1. Classified forest estate**

The State forest estate is made up of forest land owned by the State and classified for its benefit, as well as protected forests located on unregistered land and land without an owner.

#### **3.1.2. Protected forest area**

The protected forest area consists of :

- unclassified forests ;
- forests of natural persons ;
- the forests of private legal entities ;
- forests located on unowned land.

### **3.2 Classification of forests by ownership status**

#### **3.2.1. State forest estate**

The State forest estate is made up of forest land belonging to the State and having been classified for its benefit, as well as protected forests located on unregistered land and land without an owner.

#### **3.2.2. Forest estate of decentralized communities, districts and villages**

The forest estate of decentralized communities is made up of forest land belonging to these communities and having been the subject of a classification decree for their benefit.

#### **3.2.3. Forest land owned by private individuals and legal entities**

The forest estate of natural persons or legal entities under private law consists of :

- natural forests located on land over which they have ownership rights, in accordance with the Land and Property Code;
- forest plantations created on land registered in their name or on land occupied under a lease ;
- acquired forests.

#### **3.2.4. Rural community forest estate**

The rural community forest estate is made up of the forests of the protected forest estate belonging to one or more rural communities.

Sacred forests are a special type of rural community forest and must be registered with the Forestry Administration.

According to the Forestry Code, sustainable forest management means the management and use of forests, woodlands and trees outside forests in such a way and at such an intensity as to maintain their biological diversity, productivity, regeneration capacity, vitality and capacity to fulfil, now and in the future, relevant ecological, economic and social functions at local, national and global levels.

Sustainable management includes the following operations:

- multi-resource inventories of forests and woodlands, including timber and non-timber forest products of plant origin;
- ecosystem-based forest management, including participative (co-management) and integrated management and close-to-nature silviculture;
- Reduced impact logging (RILF);
- environmental and climate protection;
- conserving plant diversity ;
- monitoring, control and evaluation of forest operations according to certification standards and forest product traceability methods; transparent communication and governance.

#### **4.1. Rural resource management project (PGRR)**

Faced with this alarming situation, the Republic of Guinea decided to draw up management plans first for the Ziama and Diécké classified forests, and then for Mont Béro.

Since 1991, around 1,000 ha have been planted at Ziama, 600 ha at Diécké and 50 ha at Mont Béro, i.e. a total of 1,650 ha in 7 years, or 235 ha/year.

##### **4.1.1. Village Reforestation Project**

Following proposals from the government of the Republic of Guinea, the European Union has financed village reforestation programs in the southern region of Maritime Guinea since 1991. The general aim of these activities was to help reverse the trend towards degradation of the region's wood resources, by promoting the creation of village plantations.

Experience has shown that through processes tailored to local needs, awareness-raising among farmers, seedling production and monitoring of plantations, it is possible to create a significant tree-planting dynamic.

Between 1991 and 1999, almost 4240 ha (10,600,000 seedlings) were planted by villagers. Fast-growing species were the most widely planted, in particular Australian Acacia, followed by other species (*Eucalyptus*, *Gmelina arborea*, *Tectona grandis*, *Terminalia ivorensis*, *Hannoa klaineana*).

#### **4.2 Kouradi classified forest 3,000 ha**

Prior to the classification of the Kouradi classified forest in 1942 by the French African authorities, it had already been the subject of a local Arrêté de classement N°1161 A.E dated June 30, 1933. For topographical reasons, and due to a lack of clarity regarding the point of

origin of the Kouradi spring, i.e. the eastern boundary of the classified forest, the classification project was repeated. On July 1<sup>er</sup> 1942, the forest was reclassified as N°2292 SE.F by the Governor General, High Commissioner for French Africa.

At that time, there were 2 significant patches of savannah, while the rest of the classified forest was fairly densely wooded, especially in the west, north and east. The density of fuelwood species, such as *Terminalia guineensis*, *Prosopis africana*, *Erythrophium guineensis* and *Antiaris africana*, and service and timber species, such as *Khaya senegalensis*, *Prosopis africana*, *Azelia africana*, *Chlorophora excelsa*, *C. regia* and *Nauclea diderichii*, was remarkable in some parts of the classified forest.

In the 1940s, the existing natural forest was massively exploited, resulting in a degraded natural forest with almost no valuable species.

Today, the classified forest consists only of forest plantations (*Tectona grandis*, *Gmelina arborea*, a few clumps of *Cassia seamea* and *Anacardium occidentale*), old and recent fallow land, agricultural fields and a few small natural forest formations such as forest galleries.

## Chapter 5. Diversity status of arborescent and other woody plant species

**Reforestation trials in Sangareya Bay (mangrove management project from 1993 to 1997):**

### **I. Summary of reforestation trials from 1993 to 1997 :**

The cumulative results of 5 years of reforestation in Sangareya Bay give us the following situation:

#### **a) For *Rhizophora sp.*:**

The total reforested area is 39.94 ha, with 819,435 seedlings, with spacings ranging from 1m x 1m to 1.5m x 1.5m, and groves measuring 4m x 4m on a square plot.

#### **b) For *Avicenia sp.* :**

The total reforested area is 14.21 ha with 310,100 plants, at the same densities as *Rhizophora*.

### **II. Plantations in Guinea**

Conservation and restoration of forest resources, in situ conservation, ex situ conservation and genetic improvement. As for reforestation, until the First World War, forestry issues were mainly focused on logging. Loggers were required to reforest "with a number of seedlings of the same species or of a species as rich as or less than twice that of the trees felled". In Guinea, the reforestation policy of the colonial era was marked by two main actions:

- The "coniferous trees of the Fouta Djallon plateaux" project 1939 - 1940: species used: *Pinus kashia*, *Pinus merkuui*, Cypress, Thuja: *Pinus kashia*, *Pinus merkuui*, Cypress, *Thuja*;

- Ordinary reforestation: *Tectona grandis* and *Khaya senegalensis* in Kindia and Mamou along the railways.

Overall, at December 31, 1958, the department had reforested **2,213 ha**, including 835 ha of Teak, 615 ha of Cassia, 532 ha of Pine and 231 ha of Cashew.

Reforestation under the First Republic (1960 - 1984) was carried out through three successive development plans, followed by a period of hesitation. These were the three-year plan (1960 - 1963), the seven-year plan and the five-year plan (1974 - 1978). On the eve of the advent of the 2<sup>ème</sup> Republic in 1984, the Forestry Department estimated **the total area** planted at **8,505.423 ha**. This figure covers the period from 1953 to 1983. The main species used: *Cassia sieberiana*, *Gmelina arborea* and *Tectona grandis*. Realized by Ibrahima Kégnéko DIALLO, (1960-1963)

- 1984-1989: 2,113 ha, realized by F. KONÉ and Sitan Sékou TOURÉ 2018
- 1989-1996: 6,027 ha
- 1996-2001 : 95 381,73
- 2002
- 2003: 340 ha
- 2004: 110 ha
- 2005: 7,411,452.25 ha
- 2006 : 2 777,5
- 2007 : 269,1
- 2008 : 470,89
- 2009 : 281,31
- 2010 : 858,22
- 2011: 672.16 at 12/28/2011
- 2012-2013 Due to lack of funding, there was no reforestation campaign, only 3ha were planted by Joe Butter, a forestry operator.
- 2016: 489.51 ha
- 2017: 181.31 ha
- 2018: 600 ha
- 2020: 5,000 **ha**

The Republic of Guinea has 156 classified forests with a total area of 1,186,611.4 ha. Twenty-one (21) of these have approved management plans.

#### 6.1. Guinea's protected areas

According to the 10 AP METT summary sheets

1. Badiar National Park
2. Guinea-Bissau transboundary protected area
3. Guinea-Mali cross-border protected area
4. Haut Niger National Park
5. Kankan Wildlife Reserve
6. Kounounkan classified forest
7. Loos Islands Wildlife Sanctuary
8. Mount Nimba integral nature reserve
9. Tristao Islands Managed Community Nature Reserve
10. Ziama classified forest

It should also be noted that four protected areas have special status in Guinea: Mont Nimba, the Ziama Massif, Badiar National Park and Haut Niger National Park. In addition to classified forests, two categories of reserves have been created: Sylvo-agricultural reserves and partial wildlife reserves. Only one Sylvo-agricultural reserve was created during the colonial period. This is the Kéoulindougou - Kabako agro-silvicultural reserve in the Beyla cercle. As far as partial wildlife reserves are concerned, in February 1933, the colonial administration defined four parks for Guinea that have never been developed. These were Parc de Dinguiraye, Parc de Kankan, Parc de Boké and Parc de Koumbia. Generally speaking, the boundaries of most classified forests have now disappeared. Reforestation perimeters, sylvo-agricultural reserves and wildlife reserves now only exist on paper, making their rehabilitation a matter of urgency. Steps are underway to create two cross-border parks between Guinea and Guinea Bissau, and between Guinea and the sister Republic of Mali.

## **Panel 4 United Nations Decade on Biodiversity**

### Members:

Mr Muhammad Yaya Diallo

Ms. Bintou Kouyaté Conakry, October 2018

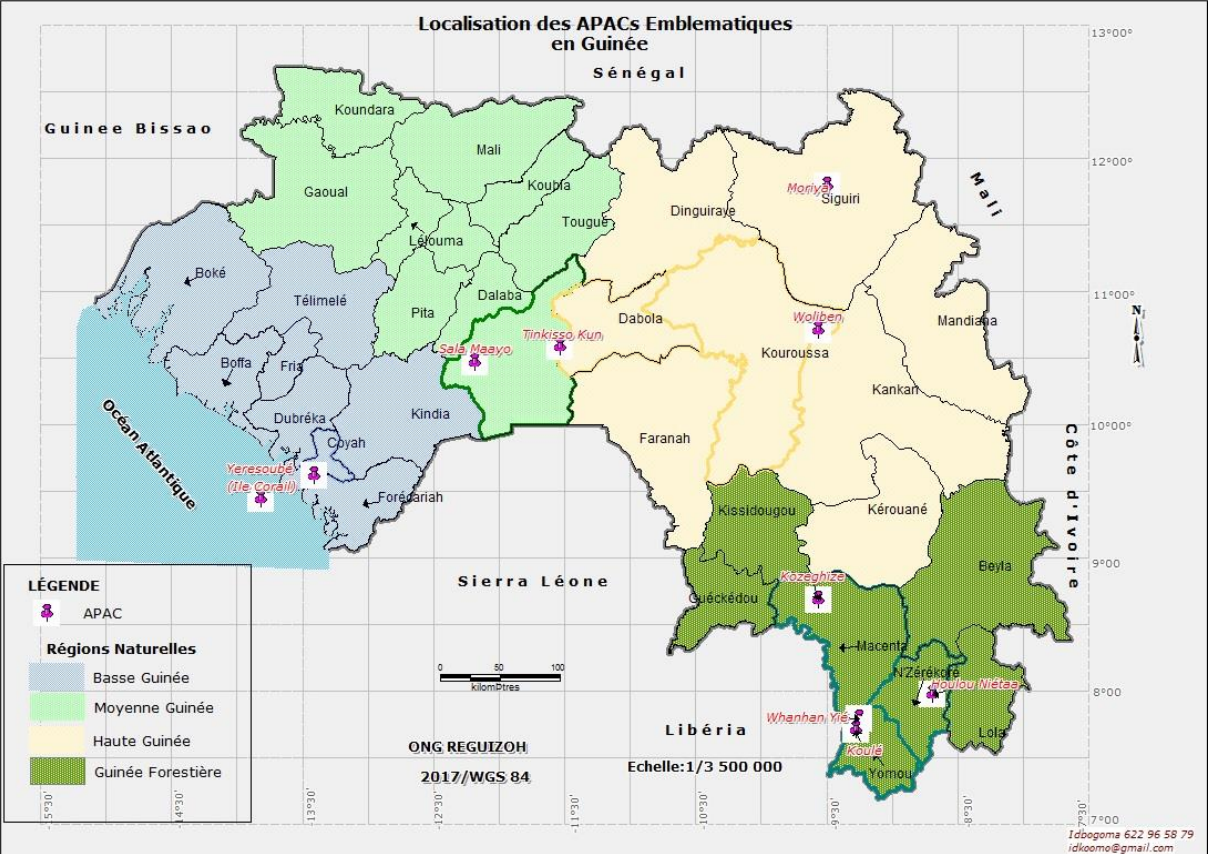
### **6.2. Indigenous and Community Heritage Areas (ICAs) in Guinea (ICAs)**

*10 APAC<sup>1</sup> (1,130 ha) have just been set up and are in the process of being legally recognized:*

1. *Touguissoury (Dubréka):* The local communities have succeeded in creating an 893 ha APAC by returning to a system managed by themselves in a sustainable manner. This will prevent unsustainable exploitation by individuals from outside the island, and improve vital perimeter protections for the reproduction of fish and other species vital to them.
  2. *Silia Wondi (5.21 ha):* this site is located in Coyah (Village Donea, SP de Wonkifong) and is dedicated to prayers and sacrifices organized by local communities for cultural, historical, ritual and survival needs.
  3. *Yélésoubé (3.75 ha)* is located in Kassa (. It is a place of worship and offering for a large part of the indigenous population and neighboring or distant populations to obtain blessings, advantages and privileges from the site's gods.
  4. *Salamayo (35 ha)* is located in Mamou (Moorodè village, Tolo sub-prefecture), and is one of the headwaters of the Senegal River.) Access to this site is regulated and reserved for ritual activities only.
  5. *Tinkisso Kun (36.18 ha* in the Sous-Préfecture of Dogomet) is a forest in the prefecture of Dabola. The indigenous Diallonké people of the Banköya locality are deeply rooted in ancestral traditions, customs and mores. For several generations, they have preserved forest heritages reserved exclusively for offerings.
  6. *Pond of Wolibèn (2.4 ha)* in Kouroussa (Balato village, Balato sub-prefecture), the region's indigenous populations give pride of place to sacred ponds, whose sacred nature helps preserve the natural and cultural landscape.
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7. Kowéghizé "Zavoï" forest (15.24 ha) in Macenta (Voloa village, Balizia sub-prefecture). Zavoï are forests strictly managed by tattooed men. This forest is managed by the indigenous population known as "LOMA". The forests are reserved for tattooing purposes only.
8. Soulouné ta (3 ha) in Nzérékoré (Soulouta village, Soulouta sub-prefecture): The Houlounée forest is a Hwaalöwö: "talking forest". The forest is managed by the community with a traditional management council under the authority of the wise men represented by the lineage of the founding family.
9. Hwanhan Yié sacred forest (1.21 ha) "Wind Mountain" in Yomou (Yalanta village, Bowé sub-prefecture): The Kpèlè community is involved in the management, led by the MONEMOU clan. The forest is fully protected. It is off-limits to non-tattooed men and women.
10. Bamakama medicinal plant reserve (134 ha): The Kpèlèè community, made up of the Islamicized KPOGHOMOU of Bamakama (Yomou), is involved in the management of these reserves. The products from these forests are used exclusively for phytotherapy, supported by Koranic verses. Apart from these medicinal functions, no other activity is permitted.



What's more, in Guinea, sacred sites and woods (forests, groves, cemeteries, etc.) have always been protected by indigenous populations under the watchful eye of traditional chiefs, who have decision-making power over all socio-cultural activities at village level. In this collective imagination, there is a direct association between the forest and occult forces.

For example, the Fötökhönè (in the Soussou language) - "bitter forests" or "impenetrable" - are domains of the devils or Djinn, protected in their entirety by customary rules overseen by a supervisory board;

- One of the most famous sacred ponds in Upper Guinea is the Baro pond (Kouroussa prefecture), where the CONDÉ clan has exclusive control and the Camara clan is the master of worship. These rights are passed down in patriarchal lineage according to the principle of seniority. Particularly important functions of the CONDÉ clan: setting the date and opening of the annual fishing season; protecting the water body to ensure conservation of resources; imposing fines on offenders.

Forest Guinea is the realm of sacred forests. Sacred rites are still very common here. There are four types of sacred forest: GnamouLöwo and WaaLöwö among the Guéré, Zawoï and Mamawaloï among the Toma.

- Gnamoulöwo (in Guéré): sacred tattoo and initiation forests for boys aged five and over. The duration of initiations could last, in some cases, up to two years. The Kounsikhönè (in the Soussou language): forest islands or gallery forests known as "bitter forest", sometimes, depending on the configuration of the site, "Fommè" or the "cave" or the "hole" or "Simöyirè" or place of initiation or exchange of magico-religious knowledge.
- The Yédökhödè (in the Soussou language) or "place where water is deposited", a place for sacrifices to ancestors and spirits.
- Berdhè (in the Pular language) are cemeteries or groves located at the edge of each village, where no other removal is allowed by others;
- Miriirè (in the Pular language): forest islets considered by local populations to be haunted by "evil spirits". Also known as "Fitaarè" or "dark forest" due to the dense plant cover of these forest islets, which gives them a twilight appearance. Also associated with other types known as Hounsiirè or "curse forest", considered "untouchable" by the natives.

- Bemba Sö Tou (in the Maninka language): forest islands where cults or rites are held for dead ancestors. Animals or plants living in these areas are considered symbols of the ancestors. Killing an animal or cutting down a tree is considered an attack on the spirit of the ancestors, which is why these areas were put under complete protection.
  
- Dankoun Sö Tou (in the Maninka language): forest islets where hunters or Donso perform rites and initiations. Each hunter becomes an agent in charge of protecting this forest island. It is forbidden to harvest plants in these areas, even though hunting was previously authorized.
  
- Dala, Dala kouna (in the Maninka language): profane or sacred, "bitter" ponds that serve to preserve the natural and cultural landscape. Often the property of a lineage or family with "water master" or "dala-tigiya" rights, expressing ownership of the waterhole with particularly important functions: setting the date for annual fishing; fencing off the body of water to ensure conservation of resources; imposing fines on offenders.
- For seven years to learn a trade. Forests forbidden to non-tattooed men and women, under the command of the irremovable Gnamou (devil) whose single cry causes the whole forest and its occupants to tremble.
- Waalöwö (in Guerzé language): "forests that speak". Clan forests, the exclusive property of a clan or tribe (Lamah, Loua, Haba, Kpoghomou, Balamou, Gamou etc.) for sacrifices in honor of ancestors. Access forbidden except during ritual ceremonies.
- Zawoi (in the Toma language): forests strictly managed by men who have demonstrated bravery at the time of their initiation. Strictly reserved for tattooing or "pologi", which is the real Toma school.
- Mamawaloi (in the Toma language) are forests run by women for the initiation of young girls. Strictly forbidden to men.

## 7.1. Camayenne Botanical Garden

### 7.1.1. History

Created in 1897 by the famous French botanist Auguste CHEVALIER, the Jardin Botanique de la Camayenne, formerly known as the Parc d'oiseaux de Camayenne, has served not only as a testing station for the experimentation and popularization of African and European fruit and horticultural species, but also for the breeding of the rarest African and Guinean animal species.

A veritable sanctuary for tropical agronomy, it has played a leading role in acclimatization and fruit production for mainland France.

Located right in the heart of the city, before 1958 it extended from the November 8 bridge to the outskirts of Dixinn, covering an area of 107.7 ha. Today, with the urbanization of the city of Conakry, it is confined to an area of some 7 ha. Wedged between the Cameroun cemetery and the Fayçal mosque.

Among the buildings that have significantly reduced its surface area are :

- PHARMAGUINEE laboratories;
- September 28 stadium;
- Gamal Abdel Nasser University, Conakry;
- Donka technical and classical high schools;
- Ecole Normale de Secrétariat;
- Donka Hospital;
- The High Commission for Youth;
- The party management school;
- Donka Islamic Center;
- Conakry's Grand Mosque;
- Cameroon cemetery.

The first trials in the garden involved banana trees and three pineapple varieties (Baronne de Rothschild, Conte de Paris and Pain de sucre) in 1898.

The results of these trials enabled the popularization of banana and pineapple seeds in the areas around Conakry (Forécariah, Dubréka, Coyah and Kindia etc.), in the production of which Guinea particularly distinguished itself before independence and a few years afterwards.

This was followed by experiments on specimens of rubber plants (*Hevea brasiliensis*, *Castilloa elastica*, *Manihota glaziowi*) and observations of local species (*Landolphia heudolotii* and *ivorensis*). All these species were tested at the Camayenne Botanical Garden and successfully popularized throughout Africa as raw materials for metropolitan industries.

Other species also followed, such as :

From a forestry point of view, we owe the knowledge of most of our local species and their silviculture to the Camayenne botanical garden, which has carried out the necessary experiments and popularized them throughout the country.

It also served as a leisure and tourist attraction for Conakry residents and foreign visitors to Guinea, and as a center for excursions and scientific research for students at the faculties of Biology and Pharmacy.

It makes an effective contribution to air purification and, despite its current state of disrepair, it now includes 104 listed species, the main ones being: Sapotillier, Abricotier des Antilles, Litchi, Royal Palm, Celery Palm, *Sabal palmeto*, Caryota, Washingtonia and others.

In addition, new species have been introduced, such as Jacaranda, *Peltoforum ferruginum*, *Carambolier*, *Acassia (manguium and auriculiformis)*, Niaouli, Terminalia (mantali and *ivorensis*), Mandan tree, Jambosier, Jacquier, *Carapa procera*, etc.

Animal species include monitor lizards, margouillats, toads, frogs, snakes, rats, mice, snails, parrots, butterflies, termites, ants and more.

Thanks to its highly conclusive results, the Camayenne botanical garden, unlike other test gardens, withstood the vicissitudes of war for a long time, until 1917, when it was closed for the first time.

It opened again in 1929, only to close again in 1939 due to the 2<sup>ième</sup> world conflict.

From 1943/1944, it was under the management of the Agriculture Department until 1956, when, for reasons of expediency, it was transferred back to the Water and Forestry Department, under whose technical management it remains to this day.

The Jardin Botanique de la Camayenne, as a technical intervention service of the Direction Nationale des Eaux et Forêts, is responsible for :

- Define a national policy for gardens and green spaces;
- Oversee the application of legislation and regulations concerning botanical gardens and green spaces, in conjunction with municipal services;
- Promote the creation of public gardens and green spaces;

- Manage and maintain the Camayenne botanical garden;
- Create and maintain nurseries for the production of ornamental, forest and avenue plants;
- To ensure the breeding and maintenance of different animal species in the garden;
- Experiment with and popularize exotic and local species;
- Supervise practical work for the various research centers in the garden;
- To make bouquets of sprays and wreaths for ceremonies. Alsény Conakry  
CAMARA 2013 Centenary of the Camayenne Botanical Garden.

### **The knight's garden**

- From 1913 to 1930, AUGUSTE CHEVALIER himself is said to have sent nearly 2,000 seed samples of plants of all kinds, from the Far East, the East Coast of the USA and a collection of Eucalyptus. But with the outbreak of the First World War, the trial was abandoned. It was resumed shortly afterwards, but poorly maintained until around 1930.
- The test station evolved into an arboretum, and new introductions included resinous species (pines) and many others such as benzoin, eucalyptus and bamboo.
- In 1966, Mr. Maudoux recommended new plantations of exotic pines whose growth and behavior were good both in their country of origin and elsewhere.

Introduced pine species :

- In Guinea (Dalaba - Pita), *Pinus khasya* and *Pinus patula*, introduced in the 1930s, are widespread.
- Others such as *Pinus merkusii*, *Pinus montazunae*, *Pinus oocarpa*, *Pinus caribaea*, *Pinus pinaster* *Pinus patula*, etc. have also been tried in Middle Guinea.

Finally, *Pinus khasya* ranks first in terms of success.

Next come *Pinus patula* and *Pinus caribaea*.

Donking SYLLA 1976, "État actuel, amélioration et extension des plantations de pins de Dalaba et Pita pour l'industrie d'allumette et de pâte à papier."

**L'Herbier de Sérédou** created in 1962 under the old Fora CAMARA and inaugurated in 2008 under the direction of Moussa DIABATÉ Institut Recherche Agronomique de Guinée SERG.

**The Jardin Botanique de Sérédou** was originally a fragment of natural old-growth rainforest, which **Roland Portères**, director of the Sérédou experimental station between

1939 and 1947, enriched by planting a variety of multi-purpose species brought back from his many missions. The Garden covers an area of 9.33 ha, subdivided into 311 blocks (20 m x 15 m = 300 m<sup>2</sup>) and is located on the edge of one of the last remaining primary rainforests in West Africa, the Ziama forest massif. A recent inventory counted 402 plant species planted in the Garden, of which 360 have been identified. These species belong to different biological types (trees, shrubs, bushes, lianas, epiphytes and herbaceous plants) and different ecologies (dense rainforest, secondary forest, savannah, forest gallery, lowland, rock...).

There are other Botanical Gardens in the country, all under the auspices of the Direction Nationale des Forêts et la Faune (DNFF) and unfortunately all in equally poor condition: the Jardin de Camayenne created in 1897 in Conakry, and the Jardin d'Auguste Chevalier in Dalaba and Pita, in Moyenne Guinée. We would like our project to serve as an example for other gardens, enabling us in the medium term to lay the foundations for a network of Botanical Gardens in Guinea.

### **Malwéta Arboretum in Sérédou**

#### **Arboretum P1 97- Malwéta - 14ha 08 :**

It is a living collection of 128 species, 122 of them local and 5 exotic, with 49 plants per Malwéta species in Sérédou. Dr A. NANSON

#### ***Tectona grandis* provenance trials**

CIRAD-Forêt (France) sent us three lots of teak seeds of three different origins, all from India. The lots were handed over to us on September 15 at Tindo préfecture de Faranah by Jean Marie Petit (1978).

- N° 88 / 7822 N 1kg
- N° 88 /7832 N 1kg
- N° 88/ 7833 N 2kgs

#### ***Gmelina arborea* seed plantations**

Two batches of certified *Gmelina arborea* seeds arrived at the same time as *Tectona grandis* seeds (1993), again via CIRAD-Forêt.

These lots correspond to two different provenances selected in Côte d'Ivoire and Senegal. They are named :

- 91/9270 N Ivory Coast
- 89 / 8487 N Senegal



The seeds from these two batches (100gr) germinated very well and quickly gave us several hundred excellent plants.

So, taking advantage of the work to install the Tecks, we added Gmelina seedbeds along the edges of T1 and T2.

Plot T1 : Gm.. 91 /9270 with Teak 88 /7832

T2 plot: Gm. 89 /8487 with Teck 88 / 7833

### ***Khaya grandifolia* seedlings**

Local seeds of this mahogany were collected during a training course in a village forest that boasts many remarkable trees (Deya forest, Sangardo sub-prefecture, Kissidougou prefecture).

The seeds germinated easily in the nursery and two to three dozen of these seedlings were scattered among the Tecks often grazed during 1<sup>ère</sup> season.

With the second season, there are several that have got off to a very good start. They haven't yet been the subject of attack, and should any of them prove successful in the future, we'll recommend keeping them, even if it means sacrificing a few Tecks.

### **Acacia test plots**

Seeds of 4 Australian Acacias of different origins were supplied to us in very small quantities by CIRAD-Forêt in January 1993.

- *Acacia aulacocarpa*: 3 provenances
- *Acacia auriculiformis* 4 provenances
- *Acacia crassicarpa* 3 provenances
- *Acacia mangium* 6 provenances

### **Citrus grafting park**

A citrus orchard has been set up to provide grafting material in the future.

In 1993, we planted 100 citrus trees and 45 in 1994, all purchased from the FAO project in Dalaba. For each species there are several provenances and several plants for each provenance.

The list is as follows:

Distribution plan and list of feet per line

Orange shamouti 10  
Orange Pineapple 10  
Valencia orange tree late 10  
Orange wash navel 10  
Hamlin orange tree 13  
Orange tree Trovita 18  
Mandarin tree Dancy 05  
Mandarin Fairchild 07  
Clementine mandarin 05  
Mandarin Beauty 05  
Mandarin tree Ponkan 04  
Mandarin tree Perchilit 07  
Mandarin tree Framont 10  
Pomelos Shambar 04  
Pomelos reablush 05  
Tangelos Ortanique 05  
Tangelos Murcott 05  
Lemon Villafranca 03  
Mexican Lemon 03

They were staggered at seven times seven meters. No manure or bottom dressing was added to the planting holes. They were only filled with top soil. Subsequently, they received regular doses of nitrogen and NPK fertilizer. Parcelles semencières et d'Essais, Jean Marie PETIT, Tindo, August 15, 1994, pag. 58.

**Sérédou medicinal arboretum**, set up in the 70s on IRAG land and since abandoned. An inventory of 3 ha will be carried out by our botanists, and species known for their use in traditional pharmacopoeia and found in our nurseries will be introduced into this arboretum. Mohamed DIABATÉ Jadin Botanique FOGÉFO PLUS 2018.

## Chapter 8. State of use

Forest genetic resources (FGR) provide timber, fuelwood and utility wood. They are also used as sources of food, either directly in the form of seeds, nuts, fruits, shoots and leaves that can be eaten raw or cooked, or indirectly as fodder for livestock, or as medicines in traditional pharmacopoeia and as raw materials for handicrafts. Various other uses, such as increasing land productivity, producing dyes (indigo, for example), and making cosmetics, contribute significantly to improving people's incomes.

### 8.1. 2. Food applications

Several "wild" species play an essential role in household food supplies, especially during the lean season (July, August). Their use varies from one area to another. During the dry season, for example, children and women criss-cross the Kounounkan classified forest in the Forécariah prefecture to extract "wild" tubers and gather *Beilschmiedia mannii* (Meisn.) Benth. nuts. These dried and ground nuts are sold at around 1,500 FG (750 FCFA) per kg on the market. The fruits of *Parinari excelsa* and *Detarium senegalense* are also sold throughout the country. *Xylopiya aethiopica* provides highly peppery seeds that are used as spices. The kernel of the *Vitellaria paradoxa* seed is used to produce "shea butter", the main lipid resource in Sudanian zones. The seeds of *Pterocarpus santalinoides*, *Sterculia setigera*, *Borassus aethiopum*, *Parinari curatellifolia*, *Piliostigma thonningii*, etc. are edible. So are the nuts of *Anacardium occidentale* and *Cola nitida*.

*Parinari excelsa* fruits have a sweet taste. They are collected from the ground for self-consumption and for marketing. The same applies to *Dialium senegalense*, whose fruits are very rich in vitamins. *Anisophylla laurina* produces tart almonds that are widely consumed in Lower Guinea, where they are sometimes canned. The pericarp and exocarp of *Raphia sudanica* fruits are edible. Several species such as *Adansonia digitata*, *Annona senegalensis*, *Anogeissus leiocarpus*, *Artocarpus altilis*, *Blighia sapida*, *Borassus aethiopum*, *Bridelia ferruginea*, *Bridelia micrantha*, *Cajanus cajan*, *Grewia mollis*, *Moringa oleifera*, *Piliostigma thonningii*, etc. are prized for their edible seeds. The young leaves of *Moringa oleifera* are used to make sauces and eaten raw as a salad. They contain 5 to 10% protein and are very rich in vitamins A and C, minerals, calcium and iron. Other essences whose leaves are edible include: *Adansonia digitata*, *Albizia zygia*, *Alchornea cordifolia*, *Ceiba pentandra*, *Daniellia oliveri*, *Pterocarpus santalinoides*, etc. *Moringa oleifera* flowers are used to make sauces. *Elaeis guineensis* is much sought-after for its oil. The sugar-rich sap of *Borassus aethiopum* is extracted in the form of wine.

### 8.1.3. Medicinal uses

It is estimated that nearly 80% of Guineans turn to traditional therapists for treatment. Species such as *Xylopiya aethiopica*, *Khaya senegalensis* and *Craterispermum laurinum* are widely used in traditional pharmacopoeia. Various organs (bark, roots, leaves, flowers, seeds) of "wild" plants are used in pharmacopoeia. The bark of the trunk and roots of *Lophira lanceolata* is used to treat coughs, gastrointestinal lung diseases and malaria. An infusion of the bark is used as a mouth lotion to treat toothache; it is also used internally to treat leprosy, and the decoction is still used to treat jaundice. An infusion of *Combretum micranthum* (quinquéliba) leaves in herbal tea form is commonly used for breakfast, after adding a few lumps of sugar. For its diuretic properties, the tea is also used against bilious fever accompanied by vomiting, and against liver disorders. The cold decoction of its roots is used as a vermifuge and wound lotion. A decoction of *Entada africana* roots is a stimulant and tonic. *Terminalia macroptera* seeds are used against migraine. *Uvaria chamae* seeds, crushed with *Piper guineense* seeds, are rubbed on the body to relieve rheumatism.

### 8.1.4. Uses as fodder

The forest species most commonly eaten by livestock are: *Vitex doniana*, *Vitellaria paradoxa*, *Uvaria chamae*, *Terminalia glaucescens*, *Sterculia tragacantha*, *Spondias monbin*, *Securidaca longepedunculata*, *Samanea saman*, *Rauvolfia vomitoria*, *Pycnanthus angolensis*, *Pterocarpus santalinoides*, *Pterocarpus erinaceus*, *Pseudospondias microcarpa*, *Phyllanthus discoideus*, *Newbouldia laevis*, *Khaya senegalensis*, *Gliricidia sepium*, *Dichrostachys glomerata*, *Daniellia oliveri*, etc.

### 8.1.5. Uses as firewood

Fuelwood is the country's main source of energy (probably more than 80-90% of the energy consumed). Collection frequency, duration and distances covered vary greatly throughout the year and from region to region. Frequencies vary from 1x/day to 2-3x/week, while collection times range from 1 hour to 4-6 hours. Distances covered are generally between 1 and 10 km. In villages close to main roads, in addition to self-supply, some farmers also sell fuelwood. In Upper Guinea, *Pterocarpus erinaceus* and *Terminalia glaucescens* are the species most commonly sold in towns. Charcoal is little used in rural areas, and the industry is much more developed in Conakry. The industry employs between 8,000 and 12,000 people, with sales estimated at between 2.5 and 3.5 billion Guinean francs (1.25 and 3.75 billion FCFA) in 1986.

### 8.1.6. Use as timber

Timber exploitation has been fairly intensive in recent years, especially following the closure of the diamond mines in 1985. The timber and charcoal market in Conakry is

estimated at around 7 billion Guinean francs (around US\$7.6 million) a year, providing work for 25-30,000 people if part-time activities are taken into account. Current national consumption is estimated at 105,000 m<sup>3</sup> /year according to the Office Guinéen du Bois. There are two operational sawmills and almost 5 outdated sawmills in the country. The N'Zérékoré sawmill employs 70 full-time and 4 to 10 part-time staff. Timber used to be sold by the rural population to pitsawyers and crosscut sawyers for the symbolic price of 10 kola nuts, but today it brings them a little more income since the adoption of the new forestry code in 1989, which makes them responsible for managing village forests.

### **8.1.7 Uses as service wood**

Handcrafted products such as baskets, vans, mats, bags, pestles, mortars, utensils and other utilitarian items are traded extensively throughout the country. The importance of these non-timber forest products to the national economy has yet to be assessed. However, oil palm (*Elaeis guineensis*) and raffia (*Raphia nobilis*), for example, make the people of Forest Guinea richer than anywhere else in the country. These products are sold in both urban and rural areas. The species used are: *Raphia sudanica*, *Raphia nobilis*, *Bombax costatum*, *Borassus aethiopum*, *Rauwolfia vomitoria*, *Ceiba pentandra*, *Hexalobus monopetalus*, etc. *Prosopis africana* wood is sought after by art craftsmen (sculpture, balafon keys, masks, etc.). Pagnes dyed with the coloring matter obtained from *Indigofera sp.* are highly reputed on the West African market.

### **8.2. Other uses**

Trees provide shade. Combined with crops, they increase land productivity. *Parkia biglobosa*, for example, fixes nitrogen. They also help combat erosion and protect the land (*Nauclea latifolia*). Fences, boundary hedges and windbreaks (*Pycnanthus angolensis*) are made using "wild" species. *Prosopis africana* wood is planted in the middle of the courtyard in concessions to designate a sacred point or to signify baraka. Extractions fall within the range of uses for woody species: *Syzygium guineense* bark is rich in tannin. The mutilation of *Sterculia setigera* bark results in the exudation of a gum widely used in cooking. Crushed *Piliostigma thonningii* roots provide dyes, etc. D.DIAWARA sept. 2018.

**9.1. Appendix Diagram of the Clonal Hybridization Orchard**

*Acacia mangium* x *Acacia auriculiformis*

Number of clones 18 *Acacia mangium* and 18 *Acacia auriculiformis*

Structure: foot-by-foot mix: 1 Acms (M), 1 Acau (A).

Blocks 6\*6 =36 plants Surface per Block= 900 m<sup>2</sup>

Spacing: 5m x 5m =25m<sup>2</sup> Orchard area without border 14,400m<sup>2</sup>

No. of blocks 4\*4= 16

Edge: *Gmelina arborea*, 4 lines at 2x2m

N of seedlings: 576 rootstock seedlings from raw material

N Acma : 288 rootstock diameter = 2 \* graft diameter

N Acau : 288 tried: head split grafting, lateral approach grafting, budding.

Graft supplier, from 5 years old, as old as possible

Tried horticultural cuttings, steeping, watering under the shade, spraying

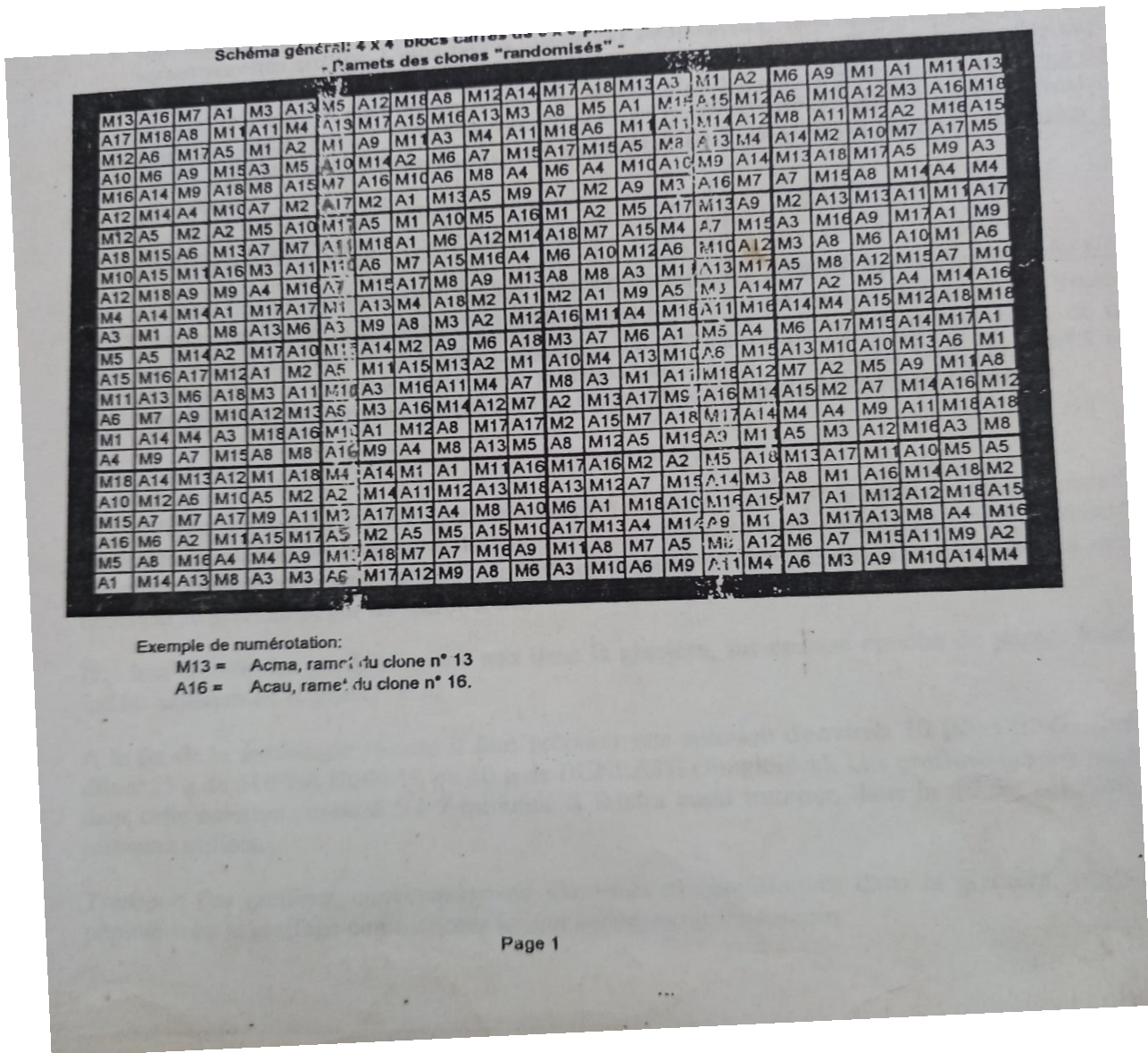
Timetable: pick up seedlings from the nursery in December and transplant in large bags.

Sow seeds in January in large bags.

If grafting has failed, start cuttings in April

For cuttings, harvest the most orthodox cuttings possible in the lowest part of the crown, but not on twigs that are too shaded.

Complete relining: after planting 1 year later.



General diagram: 4x4 square blocks of 6x6 plants at 5x5m Ramets of "randomized" clones

**Acacia magium and Acacia auriculiformis grafts**

- 1- Selection of 18 mother plants of *Acacia mangium* and 18 mother plants of *Acacia auriculiformis*.
- 2- First assumption: it is impossible to put 837 grafts in the cooler. Graft harvesting will be carried out on 9 plants per species and per harvesting session. There will

therefore be 3 months of graft harvesting sessions, on April 14, April 19 and April 22, 1999.

- 3- 2<sup>ème</sup> hypothesis: 837 grafts can be placed in the cooler. Graft harvesting will be carried out on 9 plants per species and harvesting session. There will therefore be 2 graft harvesting sessions, on April 14 and April 19, 1999.

***Acacia mangium*** :

As 8 *Acacia mangium* stands have been selected, the grafts will be harvested from the 2 best plants per stand, except for El. Konko Sory and the SFF section, where the grafts will be harvested from 3 plants. If the buds are harvested from 6 or (9) plants per harvesting session, a minimum of 72 buds per plant will have to be harvested, giving  $72 \times 6 = 432$  (or  $72 \times 9 = 648$ ) buds per session and a final total of  $432 \times 3$  (or  $648 \times 2 = 1,296$ ) buds, which will give rise to the grafting of as many plants in the nursery.

***Acacia auriculiformis*** :

As 6 stands have been selected, the grafts will be harvested from the 3 best plants per stand. If the grafts are harvested from 6 (or 9) plants per harvesting session, a minimum of 21 grafts per plant will have to be harvested, giving  $21 \times 6 = 126$  (or  $21 \times 9 = 189$ ) grafts per session and a final total of  $126 \times 3$  (or  $189 \times 2 = 378$ ) grafts, which will give rise to the grafting of as many plants in the nursery.

The grafts harvested from each stand must be tied, wrapped in newspaper and identified (thread flow, number of turns of thread, etc.). The identification will correspond to a number that identifies the stand and tree from which they were harvested. These data will be recorded by the grafter and the technicians.

As soon as they have been harvested, the grafts are placed in the cooler, on a thick layer of newspaper, which separates them from the ice.

At the end of the harvesting session, prepare a solution of about 10 liters of water and dilute 25g SUPER-HOMAI, or 10 g BENLATE (fungicides). The grafts are soaked in this solution for 5 to 7 minutes. Used newspapers should also be soaked in the same solution.

Transport of the grafts, suitably identified and packed in the cooler, to the nursery where grafting will begin the same day or the following day.

In the nursery, the plants should be arranged as follows:

***Acacia mangium*** :



The plants will be arranged in 18 rows with 72 plants per row. The remaining plants will be placed in rows next to each other, with any distribution.

Each line corresponds to plants grafted with scions from a single mother stock. If possible, the first line should correspond to plants grafted with scions from mother stock 2, and so on.

On each *Acacia mangium* line, plants will be grafted using 3 different systems, with 24 plants per system. In other words, 24 plants will be grafted using the lateral split system, 24 plants using the budding system and 24 plants using the lateral approach system.

***Acacia auriculiformis*** : Plants will be arranged in 18 rows with 21 plants per row. The remaining plants will be placed in rows next to each other, with any distribution.

Each line corresponds to plants grafted with scions from a single mother stock. If possible, the first line should correspond to plants grafted with scions from mother stock number 1, the 2<sup>ème</sup> line to plants grafted with scions from mother stock 2, and so on.

On each *Acacia auriculiformis* line, the plants will be grafted in 3 different systems, with 7 plants per system. That is, 7 plants will be grafted using the lateral split system, 7 plants using the budding system and 7 plants using the lateral approach system.

After grafting, the plants may not be moved until they have been verified by the project team. At this point, the successful plants will be individually identified and the steps will be programmed to graft the unsuccessful ones again.

### **Inoculation of *Acacia mangium* :**

*Acacia mangium* is a fast-growing species much in demand by planters. The main advantages of this leguminous plant are: very good development (up to 50m<sup>3</sup>/ha/year); the possibility of reconstituting soil fertility; and the production of wood of reasonable quality, which lends itself to several uses.

The Guinée Maritime region is often subject to fires, which represent the greatest threat to forest plantations, particularly in the early years of plant life. The risk of fire to forest stands is (among other factors) proportional to their capacity to reduce understory vegetation, which depends in particular on the density of crowns and therefore on the development of the trees themselves. This is why it is so important to work with plants that have a very vigorous initial development, so as to eliminate adventitious vegetation as early as possible, and thus increase the chances of successful planting.

With the aim of increasing the initial development of *Acacia mangium* seedlings, *the first inoculation trials were carried out in 1997, with the assistance of Dr Bernard DREYFUS (Director of the LSTM, Montpellier), in collaboration with IRD Guinea. During this campaign, 2,500 plants of this species were inoculated with a bacterial inoculum strain of Australian origin, Bradyrhizobium Aust 13c, selected for its ability to fix nitrogen.*

### **Inoculation of germinated plants :**

Nursery inoculations were carried out on plants approximately 2 to 3 weeks after germination. Inoculation was carried out using watering cans containing 10 l of water, into which 10 ml of culture was injected. Each watering can was distributed over 1000 bags.

### **Seed inoculation:**

In the second stage of seedling production, seeds pretreated by boiling (dormancy release) were inoculated. The drained and lightly dried seeds are immersed in the culture for around ten minutes before being collected in a colander and sown in the bags.

The 1998 campaign included 5 trials on *A. mangium* (strains Aust 13c, Aust 13c sec, undissolved alginate beads), Mistletoe PRV (local strain, isolated at the LSTM) and 2 trials on *A. auriculiformis* (strain PMA311/1 supplied with seeds by the supplier). In addition, around 115,000 *A. Mangium* plants were inoculated in 1998 with alginate inoculums supplied by the LSTM. All these trials are in place (with the occasional plot partially affected by fire). Dr A. NANSON.

### **RURAL RESOURCE MANAGEMENT PROJECT (RRMP)**

In 1995, the Sérédou forestry center and PROGERFOR completed the management plans for the two major classified forests in Forest Guinea (Ziama 120,000 ha and Diécké 60,000 ha). These were adopted in 1996, shortly before the Projet Gestion des Ressources Rurales (PGRR) was launched to implement them.

The forestry center has acquired a certain amount of experience in the problem of seed conservation (orthodox, intermediate and recalcitrant seeds) and the lifting of dormancy: for example, conservation of *Canarium*, *Cleistopholis patens*, *Maesopsis eminii* in stratification;

Breaking the dormancy of *Erythrophleum ivorense* and *Paramacrolobium leonard*: by scalding the seeds and leaving them in water until they cool. It should be noted that the Centre Forestier is endeavouring to find solutions to the difficulties posed by certain species: *Erythroxylum mannii*, *Entandrophragma p*, *Tieghmella heckellii* and *Kantou guerensis* etc. ...

Some plantations could be subjected to severe selective thinning to transform them into "selected seed stands", a selected OECD category. They could then serve as a source of quality seeds for reforestation. The genetic heritage of these species would then be definitively saved.

Similarly, some fine stands of exotic species (Teak, *Cedrela odorata*, *Gmelina arborea*, *Schizolobium parahyba*) or local species (*Terminalia superba*, *Terminalia ivorensis*) could also be selectively thinned and immediately transformed into selected seed stands. The thinning carried out by M. DUWQUET in a fine stand of *Cedrela odorata* serves as a guide.

All this has enabled us to set up a seed catalog that serves as a basis for seed collection, especially of important and/or rare species.

In advance, these seeds are listed and georeferenced respectively at Ziama: 1206 and Diécké: 950 as basic material.

To crown it all, a Guinean catalog of OECD-compatible Basic Materials is being set up. Initially, it will comprise 3 of the 4 possible categories: Identified Category, comprising 2 types of Basic Material: "Seed Source" and "Identified Stand"; Selected Category, comprising "Seed Stand" and, at a later stage, Qualified Category, comprising "Seed Orchard" of family seedlings. Dr. A. NANSON

## Chapter 10: Managing forest genetic resources

The country's forest genetic resources are conserved through reforestation, *in situ* conservation, *ex situ* conservation and genetic improvement. Sacred groves and agroforestry practices are among the traditional methods of *in situ* conservation.

**Forest plantations** There are 15 reforestation schemes in the country. They are located in the prefectures of Beyla, Forécariah, Guéckedou, Kankan, Kissidougou, Kouroussa, Labé, Mamou, N'Zérékoré and Pita. **Seed banks** At national level, there is no structure in charge of forest seeds. The material used for reforestation generally comes from unspecified populations that are sometimes unsuitable or degraded, or from the chance trade that forestry projects often establish with international structures. D. DIAWARA September 2018, former RGF focal point.

**National priority species** List of species deserving priority action

1 - *Azelia africana*

2 - *Borassus aethiopum*

3 - *Calamus deratus*

4 - *Carapa procera*

5 - *Combretum micranthum*

6 - *Detarium senegalense*

7 - *Indigofera sp*

8 - *Khaya senegalensis*

9 - *Milicia excelsa*

10- *Oxythenantera abyssinica*

11- *Parinari excelsa*

12- *Parkia biglobosa*

13- *Prosopis africana*

14- *Raphia (nobilis , sudanica)*

15- *Rhizophora mangle*

16- *Vitellaria paradoxa*

17-*Xylopi aethiopica*

D.DIAWARA, Sept. 2018

## Part 5: Skills and policies

### Chapter 11. Institutional framework for the conservation, use and development of forest genetic resources

National forestry policy: Guinean forestry policy was adopted by decree no. 056 /PRG/SGG/90 of February 5, 1990. It defined the forestry sector's development strategy for 25 years.

#### 11.1. Various regulatory provisions

In 1989, the Republic of Guinea adopted a Forestry Code, supplemented by its implementing decree, and a Wildlife Code and Hunting Regulations, both of which amend and supplement the Law of February 5, 1990. These two (2) codes were revised in 2017 and 2019 respectively.

In addition, there are several legislative and regulatory texts relating to the environment and natural resources that complement these two codes at national level (Table 3).

The forestry code has introduced the following innovations:

Refocusing the role of forestry agents on providing technical advice to local communities.

Subdivision of the forest estate into: State forest estate, decentralized community forest estate and unclassified forest estate.

The abolition of the forest ranger corps

Involving local communities in forest heritage management;

The creation of the national forestry fund. Taken as a whole, the various codes reconcile development requirements with environmental concerns, and give people greater responsibility for managing their forest heritage.

The Land Code goes further, recognizing individual private ownership of land and its negotiation and transmission.

The amendments to the Forestry Code submitted to the authorities for approval recognize both private forest land and individual and collective private ownership of plantations.

This will close the legal gap concerning private plantations that already exist throughout the country. To iron out existing discrepancies, a measure to harmonize published texts is needed. Their implementation also requires the preparation of complementary texts from time to time.

Development strategies are based on the following plans:

- The national forestry action plan (PAFN-Guinée) was conceived in 1988, and Guinean forestry policy was adopted by decree no. 056 /PRG/SGG/90 of February 5, 1990. It defined the forestry sector's development strategy for 25 years.
- The agricultural development policy letter (LPDA), whose priorities are: achieving food security, developing export crops, preserving and managing natural resources and promoting rural operators.
- The Environmental Action Plan (PNAE), the final document of which aims to: improve the quality of life, rationally manage and protect resources, protect against major risks, prevent and correct pollution and nuisances, safeguard and enhance cultural and natural heritage assets.
- The Energy Sector Study Program (ESMAP), whose long-term objective for wood energy is to achieve an ecologically sustainable balance between demand and supply of raw materials. Table 3:

Table Main regulatory provisions relating to FGR management

<b>Laws and regulations</b>	<b>Date of adoption, creation or ratification</b>
Ratification of the Convention on Biological Diversity (CBD)	February 9, 1993
Ratification of the CITES Convention	September 21, 1981
Algiers Convention or African Convention on the Conservation of Nature and Natural Resources	September 15, 1968
United Nations Framework Convention on Climate Change	March 1, 1993, revised 2002
Adoption of national forestry policy	1990
Environment Code	1987, revised in 2019

Code foncier et domaniale	1992
Water code	1994
Mining code	1986
Pastoral code	1995
Livestock and animal products code	1995

(D.DIAWARA) sept. 2018

## Chapter 12. International and regional cooperation on forest genetic resources

To conserve its ecosystems, the Republic of Guinea stands shoulder to shoulder with other countries in the region and the international community.

In terms of regional integration, programs are currently underway.

These include :

- Regional development program for the Upper Niger and Upper Gambia watersheds, involving 7 countries: Guinea, Gambia, Guinea-Bissau, Mali, Mauritania, Niger and Senegal;
- Natural resource management project within the framework of the Gambia River Development Organization, which includes Gambia, Guinea, Guinea Bissau and Senegal;
- The Mano River Union, whose operations were disrupted by the Liberian war. It comprises Guinea, Sierra Leone, Liberia and Côte D'Ivoire. An extraordinary summit of the Union's Heads of State was held in Conakry on June 4, 1998.
- CILSS, where Guinea is an observer.

SITUATION At the international level, Guinea is a signatory to the following conventions:

- Paris Convention or Convention concerning the Protection of the World Cultural and Natural Heritage (June 18, 1979);
- Algiers Convention or African Convention on the Conservation of Nature and Natural Resources (September 15, 1968);

- Washington Convention or Convention on International Trade in Endangered Species of Wild Fauna and Flora, CITES (September 21, 1981) World Conservation Union, IUCN (September 24, 1992);
- Convention on Biological Diversity (February 9, 1993);
- Ramsar Convention (March 18, 1993);
- United Nations Framework Convention on Climate Change (March 1, 1993)

(D. DIAWARA) 2018

Part 6: Challenges and opportunities

### Chapter 13. Recommended actions

The challenges are enormous, and as such, we could elucidate among others: Lack of inventory of forest resources; failure to exploit research results, etc. Nevertheless, there are also opportunities to experiment with "restoring landscapes and forests in Guinea", Faranah prefecture 2019;

We recommend :

- the creation of a National Forest Seed Center;
- the continued implementation of a forest tree improvement project;
- *according to the Aichi Biodiversity Targets*, my country must have 17% of its territory in protected areas.



## References

A list of references used in the text should appear at the end of the supplementary report. Any additional data or information may be included in an appendix. Contents

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