

Concept Note

Rehabilitating degraded and climate threatened forest landscape in Guinea

Guinea | AFD

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Concept Note

Project/Program Title:	Rehabilitating degraded and climate threatened forest landscape in Guinea
Country:	Guinea
National Designated Authority (NDA):	National Direction for Environment
Accredited Entity (AE):	AFD
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Notes

- ***The maximum number of pages should not exceed 12 pages, excluding annexes. Proposals exceeding the prescribed length will not be assessed within the indicative service standard time of 30 days.***
- ***As per the Information Disclosure Policy, the concept note, and additional documents provided to the Secretariat can be disclosed unless marked by the Accredited Entity(ies)(or NDAs) as confidential.***
- ***The relevant National Designated Authority(ies) will be informed by the Secretariat of the concept note upon receipt.***
- ***NDA can also submit the concept note directly with or without an identified accredited entity at this stage. In this case, they can leave blank the section related to the accredited entity. The Secretariat will inform the accredited entity(ies) nominated by the NDA, if any.***
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A. Project / Program Information (max. 1 page)			
A.1. Project or program	<input checked="" type="checkbox"/> Project <input type="checkbox"/> Program	A.2. Public or private sector	<input checked="" type="checkbox"/> Public sector <input type="checkbox"/> Private sector
A.3. Is the CN submitted in Response to an RFP?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, specify the RFP: _____	A.4. Confidentiality	<input type="checkbox"/> Confidential <input checked="" type="checkbox"/> Not confidential
A.5. Indicate the result areas for the project/program	<p>Mitigation: Reduced emissions from:</p> <input checked="" type="checkbox"/> Energy access and power generation <input type="checkbox"/> Low emission transport <input type="checkbox"/> Buildings, cities and industries and appliances <input checked="" type="checkbox"/> Forestry and land use <p>Adaptation: Increased resilience of:</p> <input checked="" type="checkbox"/> Most vulnerable people and communities <input checked="" type="checkbox"/> Health and well-being, and food and water security <input type="checkbox"/> Infrastructure and built environment <input checked="" type="checkbox"/> Ecosystem and ecosystem services		
A.6. Estimated mitigation impact (tCO₂eq over lifespan)	2.3 million T CO ₂	A.7. Estimated adaptation impact (number of direct beneficiaries and % of population)	650,000 (5% of total population)
A.8. Indicative total project cost (GCF + co-finance)	Amount: USD \$53,500,000	A.9. Indicative GCF funding requested	Amount: USD \$28,000,000
A.10. Mark the type of financial instrument requested for the GCF funding	<input checked="" type="checkbox"/> Grant <input type="checkbox"/> Reimbursable grant <input type="checkbox"/> Guarantees <input type="checkbox"/> Equity <input type="checkbox"/> Subordinated loan <input type="checkbox"/> Senior Loan <input type="checkbox"/> Other: specify _____		
A.11. Estimated duration of project/ program:	a) disbursement period: 4 years	A.12. Estimated project/ Program lifespan	4 years
A.13. Is funding from the Project Preparation Facility requested?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Other support received <input type="checkbox"/> If so, by who: _____	A.14. ESS category	<input type="checkbox"/> A or I-1 <input checked="" type="checkbox"/> B or I-2 <input type="checkbox"/> C or I-3
A.15. Is the CN aligned with your accreditation standard?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	A.16. Has the CN been shared with the NDA?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
A.17. AMA signed (if submitted by AE)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If no, specify the status of AMA negotiations and expected date of signing: _____	A.18. Is the CN included in the Entity Work Program?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
A.19. Project/Program rationale, objectives and approach of program/project (max 100 words)	<p>The Guinean environment is challenged by a high deforestation rate combined with increasing climate change impacts which are reducing soil fertility and jeopardizing the natural water system. Guinea is extremely vulnerable to the effects of climate change, as is the entire surrounding region that depends on the water resources that originate within Guinean forests. The project is executed by the Ministry of the Environment, Water and Forests with the support of AFD as an accredited entity. It aims to rehabilitate country-wide degraded landscapes by increasing the forest cover through conservation interventions and sustainable forest management practices. The project also develops technical strategies in rural areas including agroforestry, fuel and artisanal timber production.</p>		
B. Project / Program details (max. 8 pages)			
B.1. Context and baseline (max. 2 pages)			
1. Vulnerabilities and Impacts of Climate Change			

Guinea is known as the “water tower” of West Africa. Indeed, the Niger, Senegal, Gambia, Koulountou, Komba and Mano Rivers, which irrigate the entire region, all rely on Guinea as their water source. Moreover, the country has the sub region’s highest average rainfall, with more than 1200 mm annually. Despite this very favorable hydrological situation and high agricultural potential, the country is quite vulnerable to climatic events and resulting environmental impacts.

The following indicators threaten to undermine Guinea’s hydrologic system:

- Decrease in average annual precipitation (13% lower between 1970 to 2010 than 1922 to 1969); drought years are increasing in frequencyⁱ
- Reduction in the average annual flow of some rivers (17% less between 1970 to 2001 compared to 1922 - 1969).
- Increase in average local temperatures;

Projections for 2050 show rising temperatures in all parts of the country; a 31% decrease in rainfall; a 10% reduction in the surface area of mangrove forests; and a 30% reduction in river flow for the Niger Riverⁱⁱ alone (reference period 1961 to 1990).

It follows that there is a projected 10% drop in agricultural production between today and 2050. The population is anticipated to continue growing at a rate of about 3% per year. These climate and demographic changes will have a major impact on human welfare in Guinea:

- The decline in soil fertility due to alternating floods and droughts may force rural populations to implement inappropriate agricultural practices (agricultural nomadism, hill-side cultivation and deforestation of marginal land with steep slopes leading to intense erosion, free grazing of animals, overgrazing, lack of control of water resources and irrigation systems, agricultural clearing, etc.);
- In response to decreasing in soil fertility and subsequently reduced agricultural yields, rural populations may seek to increase their income by exploiting forest resources (timber harvest and charcoal production used for smoking fish in mangrove areas, salt extraction, brick making, parboiling rice, etc.). Reduced forest cover will drive more deleterious environmental impacts.
- Aridity and drought increase the risk of bush fires.

In addition to the listed climate factors, farmers have been shortening the fallow period (from 8-10 years in the 70s to 3-5 years today) due to the expansion of shifting cultivation. Reduced fallow periods leads to soil depletion, yield reductions and drives agricultural expansion into forest lands. In 2005, the National Agricultural Statistics Service (SNSA) estimated that 80% of annual crops were being cultivated hillsides with high sensitivity to erosion. Shortened fallow periods and cultivation on fragile land exacerbates land degradation and undermines production potential. At present, droughts and floods, which are occurring at an accelerated rate as a result of climate changes in Upper Guinea in recent yearsⁱⁱⁱ have already led to a decline in the availability of cereals. The National Climate Change Adaptation Plan specifies that variations in agricultural production and productivity attributable to climate change will be extremely pronounced, although this depends on the region and location.

2. Profile of GHG emissions

Guinea’s GHG emissions have been increasing since 1990, reaching 30,2 Mt CO₂ eq in 2014 (CAIT/WRI and EDGAR data bases – accessed in December 2018). Per capita emissions have recently crossed above 2Mt, i.e. the average national level recommended to maintain a 2°C pathway, but remain half of the global average.

The second national communication published by Guinea authorities in July 2018 estimates that national reached 54 Mt CO₂ eq in 2000. While global data differ depending on the sources, there is a consensus on the causes of the GHG emissions: the land-use sector represents 83% of total national emissions according to CAIT/WRI and EDGAR, and 97% according to the second national communication. Within the land-use sector, the bulk of emissions are attributed to widespread deforestation and the agriculture sector (in particular, rice cultivation activities). The main drivers of deforestation are identified as agriculture and the use of biomass for firewood.

3. National priorities

At COP 21 in Paris, Guinea presented its Intended Nationally Determined Contributions (INDC) to fight climate change. The project aligns with the main commitments outlined in the NDCⁱⁱⁱ :

- Implementation of measures necessary for the protection, conservation and management of ecosystems, revitalization of economic activities and strengthening of the resilience of coastal zone populations.
- Supporting the adaptation efforts of rural communities to develop agro-silvo-pastoral techniques which allow them to continue their activities while preserving the resources they rely on.
- Promoting sustainable forest management.
- Supporting the dissemination of technologies and practices that use less charcoal or are an alternative to wood energy consumption

- Protecting the quality and quantity of water resources.

The country's commitment to fight climate change was also underlined by the Minister of the Environment, Water and Forests during the Council of Ministers' meeting on 18 April 2018, in which she insisted that "*the degradation of the forest cover due to human activities and climate change, although persistent, has not yet reached its point of no return and it is possible to reverse the trend by actions of restoration and protection of watersheds.*"

4. Factors and constraints

The main challenges for the programme lie in a number of factors, including the need to enhance financial and human resources within the forest administration. 2100 agents currently form the staff of the forest administration and it is expected that this number will reach 4500 people, including 1200 young recruits. However, training on natural resource management remains low and very far from real needs.

In parallel with this capacity deficit, the country lacks scientific knowledge of the vegetation cover and its dynamics, including the rate of forest degradation. It stands that while local communities are directly threatened by the environmental impacts projected due to a changing climate, they are only marginally involved in sustainable forest management. The proposed project addresses these constraints directly by building capacity for sustainable forest management at the community level.

5. Forestry sector

Most Guinean forest production is carried out informally and often illegally.

National timber requirements calculated from available data for several countries and cities in the region indicate that Guinean urban demand (6 million inhabitants) for timber is in the range of 240,000 to 600,000 m³/year. This figure represents between 5 and 15 times the official production provided for by the sustainable management quotas^{iv} set up by the forestry administration. This partly explains the very serious degradation of forest resources throughout the country.

The timber sector contributes \$4 million to the rural economy^{vi}. However, this amount is 10 times less than the **charcoal / firewood sector**^{vi} contribution to rural income generation. According to the International Monetary Fund (IMF), 75% of Guinean households use wood for energy and a large proportion use charcoal, mainly in urban centers^v. Biomass consumption for energy purposes accounts for about 5.5 million tons of wood and also generates significant employment, mainly informally, both in urban and rural areas. Wood and charcoal use contributes significantly to the degradation of wood resources, primarily between Conakry and the Fouta Djallon massif, and increasingly within other regions of the country.

The first **forest plantations** date back to the beginning of the 20th century. The first state plantations were created in the 1960s. Several forest plantation projects were carried out under FAO initiatives in the 1970s-1980s and in connection with forest reserve development plans and/or the development of agroforests. The total area of state, private and communal plantations today is about 12,000 ha^{vi}. However, these plantations are usually lack a planting strategy and species-selection is often inappropriate for the environment. Other problems related to the plantations include lack of silvicultural maintenance, unclear land tenure arrangements, mismanagement by local communities, bush fires, etc

In addition to the plantations, there are 156 state-reserve forests which occupy 4.38% (1 186 611.4 ha) of the country's surface area. In addition there are 186 village reserve forests covering an area of nearly 38 500 ha. Finally, the **mangrove forests** of Guinea are endangered, amplified by their proximity to the capital, Conakry. They are cleared for planting crops (mainly rice) and also are cut down for wood used for scaffolding poles or firewood for smoking fish, parboiling rice and salt production. The mangrove area is therefore decreasing by about 4% per year^{vii}.

6. Agricultural sector

The loss of forested land is also linked to agricultural expansion, which has doubled in area over the past 38 years^{viii}. Fueled by population growth, the agricultural expansion rate has risen sharply from 1.3 %/year from 1975-2000 to 4.7 %/year from 2000-2013^{viii}. Agricultural development has not been homogeneous within the country; the most rapid expansion has taken place in the southern eco-regions, especially the forest zone, and in the Fouta Djallon massif. In these areas, the usage of the steep slopes of the plateaus for crop use and the practice of slash-and-burn agriculture have greatly increased the risk of erosion. Irrigated cropland has also doubled since 1975, particularly in the agricultural plains of the Niger Basin which is favorable to rice cultivation.

B.2. Project/program description (max. 3 pages)

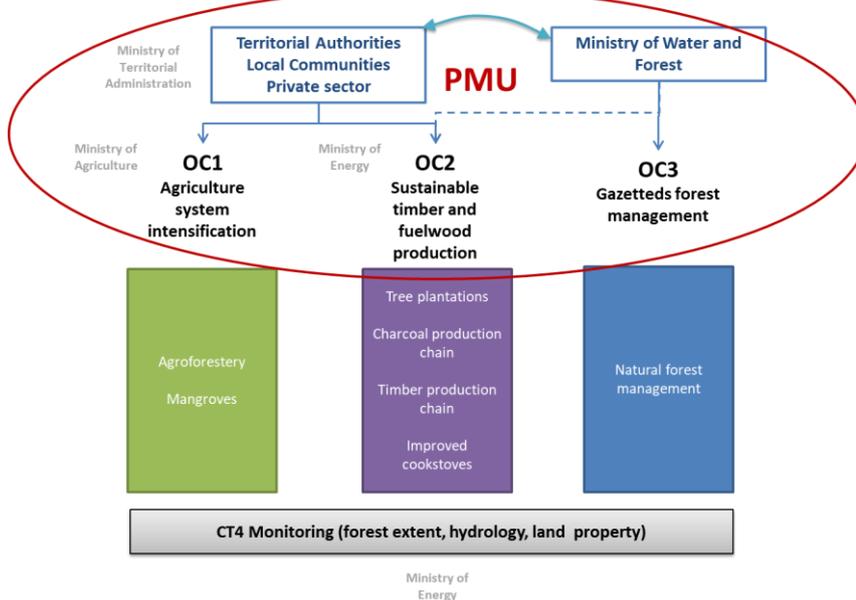
1. Objective

The Project's objective is to rehabilitate productive forest landscapes and protected areas within the Republic of Guinea to increase resilience of the hydrological systems impacted by climate change. The project also seeks to reduce forest and land degradation, which is a major source of greenhouse gas emissions, and to develop agricultural systems adapted to changing environmental conditions.

2. Project organization

The project will be organized around three major operational components and one transversal component (see

below). The entire Project will be managed by a Project Management Unit (PMU) that will coordinate the various partners; the Ministry of Environment, Water and Forestry of Guinea who is the Project Owner, and local authorities, local communities and private sector stakeholders as well as relevant Ministries (Ministry of Agriculture, Ministry of Livestock, Ministry of Energy, Ministry of Territorial Administration and Decentralization).



The Project Steering Committee will include representatives from all partner entities.

3. Project Implementation

The 4 components of the Project are detailed below. The first two operational components will take place in the rural domain outside the state's reserve forests, which are the most highly degraded. The planning of environmental activities for rural municipalities will be integrated into the existing Local Development Plans which have been developed under the Village Communities Support Program (PACV)^{ix} and taken over by the newly created National Agency for Community Funding (ANAFIC).

Component 1 (OC1) - Adaptation and intensification of agro-silvo-pastoral systems

The first component focuses on the development of an inclusive technical program that aims to increase agricultural yields while reducing cultivated areas (both slash-and-burn and fallow) and to reconstitute the protective forest soil coverage and thus, to mitigate erosion and improve water quality/quantity in the hydrological system.

- **Sub-component 1.1: Agroforestry**

Multiple agroforestry projects took place in the 1990s and 2000s^x, thus this sub-component will systematically review these experiences and build upon their strengths. It will aim to improve current agricultural slash-and-burn systems and lengthen agricultural fallow periods that harm the regeneration of secondary forests and the restoration of soil fertility. Different existing small scale agroforestry systems will be developed according to the agro-ecological zones of the country. Special emphasis will be placed on involving women and the extremely poor rural population in these agroforestry activities. For example, in the forest zone, recovery of former fallow fields or savannas planted with the introduction of perennial crops (trees of coffee, kola, cocoa) has taken place in association with food crops. In Middle Guinea, the project will focus on the rehabilitation of live hedges. It will also support the introduction of a mix of fruits / vegetables and tubers on heavily degraded soils spanning over 10,000 ha. The project will build upon and expand the existing training system for farmers, and it will also put in place monitoring and evaluation systems for innovative initiatives such as the Taungya system. The range of agroforestry techniques will be the subject of specific courses (Technical Assistance, development of training programs, and purchase of equipment) in the training curriculum of ENATEF and ISAV.

- **Sub-component 1.2: Mangrove Management**

Guinean NGOs such as Adam (with the support of the AFD^{xi}) will relaunch demonstrated initiatives that had been stalled due to a lack of funds. These include, in particular: sustainable mangrove management in the Bay of Sangareya, training of loggers, installation of improved smokehouses, reforestation of degraded areas, increase of rice productivity in sustainable farming systems integrated with mangroves, promotion of solar salt, etc.

- **Sub-component 1.3: Local Land Management Plans**

As an indispensable corollary of a climate change adaptation plan, the Project will support a participatory approach to the implementation of land and water management plans at the municipal and inter-municipal levels

as part of local development plans. This activity will also be financed by the National Fund for Local Development (contribution of the FNDL up to 2 million Euros).

Co-financing envisaged: Fonds Français pour l'Environnement Mondial - FFEM up to \$ 2.5 million USD

Component N°2 (OC2) - Sustainable Development of the Wood Sector

As described above, the charcoal sector is one of the main causes of deforestation and GHG production, with unsuitable techniques and extremely low yields. The objective of this component is to formalize the effective and sustainable production of firewood and timber, which takes into account the entire value chain, from the forest resource (plantations) to the final consumer (cookstoves). Particular emphasis will be placed on the participation of women and the poorest segment of the population at all stages of the sector.

Financing solutions will be implemented for sectoral stakeholders by mobilizing the Rural Credit of Guinea in order to facilitate access to microcredit and/or mesofinance with conventional banking institutions.

Finally, the development of software tools for organizing markets and for increasing the traceability of products from wood sources will be considered by the project in the form of a call for innovative initiatives and hackathons.

- **Sub-component 2.1: Plantations**

Under this sub-component, two types of plantations will be considered:

- Some plantations (mainly firewood) will be set up in the most degraded areas that best meet the objectives of charcoal production (proximity to routes and mainly to villages). The purpose of the plantations is to ensure the sustainable supply of domestic fuel and to reverse the trend of degrading natural forests. The full plantations are intended to increase the volume of wood of usable value in a smaller area. They will be set up first by local structures for managing forest areas created in the villages, but the investment of private stake holders to develop an integrated sector will be encouraged. The priority, in the beginning, will be to reforest mainly exotic species that have a proven interest in the production of charcoal (*Acacia auriculiformis*), on one hand, to ensure sufficient volumes to meet the demand, and on the other hand, to limit harvesting in natural forests. Their growth also helps ensure village communities to have a rapid replenishment of wood resources and the income from them.
- Some timber plantations include existing plantations which, for the most part, are degraded and which would benefit from improved management. Different types of plantations are envisaged, such as bamboo for poles and fences, acacia, teak, benzoin, gmelina or eucalyptus, etc.

Full reforestation (firewood and timber) is envisaged for up to 5 000 ha / year.

Some research programs will be set up to assess the reforestation potential of local species (versus plantations of exotic species that are generally used) for the production of charcoal or timber. Continuing and initial training (ENATEF and ISAV) will be organized to support the capacity building of the operators and nursery growers.

- **Sub-component 2.2: Value Chain Development**

Charcoal production sector

The project will be based on the formalization of a "charcoal" sector, through a revision of the legal and regulatory framework, taking into account the producers in small rural areas. The intervention will be directed through local management structures and supply of common tools through private artisanal investors. The approach recognizes the various stakeholders (operators, charcoal makers, transporters, etc.) and defines management rules appropriate to the target users (establishment of charcoal kilns, rural markets of wood with differentiated taxation depending on the production areas - sustainable or not - distribution of income among the various stakeholders, development of labels, etc.). Some technical training in the field will be organized for village communities, using external experts on selected topics such as carbonization and agroforestry issues. Finally, the controls that will be implemented by the forest administration will have to be specified (there is a need for an authorization issue system for production and transport, for example). This sector will be able to rely on various successful examples in West Africa, for example, Benin's communal management of degraded forests.

Timber production sector

The project includes support for a review of the legal and fiscal framework and a redefinition of the timber production strategy. Cutting down of the natural forest will gradually give way to the use of forest plantations in the rural area through the development of a privately-managed timber trade. The needs are numerous: financing of silviculture projects, tree nurseries, silviculture training and advice, development of supporting jobs. Emphasis will be placed on the training of those involved in silviculture jobs (pruning, management, tree nurseries, etc.), but also in logging jobs (felling, marketing, sawing, etc.). This work will be initiated in the thousands of hectares of existing but severely degraded plantations and will be extended to the whole country in partnerships with professional federations.

- **Sub-component 2.3: Improved Stoves**

The project will build on the approach of the NGO Guinea 44, which has been involved for 23 years in the development and distribution of stoves, including, in the last 10 years, improved Gold Standard (GS) certified

stoves in several regions of Maritime Guinea. The GS approach aims to develop a production line of improved stoves, adapted to demand, around a popular local brand. So far, more than 9,000 stoves have been marketed and the NGO^{xii}, with AFD support, is embarking on a large-scale distribution process in Maritime Guinea. The project will build on these dynamics to extend the distribution of these stoves and the consolidation of an economically viable production sector in all regions of the country. 5,000 improved stoves will be distributed each year across the country. Innovative marketing techniques combining stove and fuel will be tested and evaluated.

An accurate impact analysis will be carried out on the techniques implemented in terms of carbon emission and storage for this entire component.

Component 3 (OC3) -Sustainable management of reserve forests

This component will target some of the 156 forest areas that have been administratively classified as forest land and are managed directly by the forest administration, either directly by the decentralized offices of the Directorate General of Water and Forests, or by the offices directly under the Minister in charge of Forests, such as the Nzérékoré Forestry Center which manages the reserve forests in Forested Guinea or CEGENS (Environmental Management Center of Nimba Simandou Mountain). The entire area represents nearly 4.38% of the terrestrial area; which today is often in a state of advanced deterioration, subject to erosion and bad rainfall absorption. It is widely recognized that the co-management processes of these forests needs to be reviewed and better addressed by the forest administration to sustainably manage the massifs; reverse forest degradation; and improve the resilience of ecosystems confronted with the negative impacts of climate change.

The overall objective of this component is the invigoration and improvement of the concept of the co-management of reserve forests in Guinea. Sustainable forest management plans will be developed and implemented for 25 selected forests. All plans will be produced in a participatory manner and will be based on the comprehensive inventory of forest resources. The plans will be based on a set of studies on the status of these forests as well as a detailed thematic cartography. The community mobilization will involve recognizing the capacity of communities to propose innovative solutions that correspond to their own needs while respecting their customary rights over forest reserves. The approach acknowledges their right to use forest products and their required involvement in forest cover rehabilitation. The project will be designed to maximum sharing of the benefits that will be obtained from improved forest management and the development of related economic activities.

The Project will assist the Ministry of Forests with technical assistance and will participate in the development of the provisions of the forestry code. The project will also participate in the technical training of Nature Conservationists in addition to the PARSS3 project^{xiii} in its multiple dimensions of management and protection of classified areas: control and sanctions on the use of resources, knowledge and monitoring of the environment, support and advice for the sectors, communication for behavioral change and community mobilization (CCC), etc.

Transversal Component 4 (CT4) - Monitoring and Evaluation

Many projects and programs are significantly involved in improving knowledge and disseminating appropriate techniques to minimize environmental impact. The impacts of these projects or programs are, however, not followed up or rarely monitored when the project comes to an end; the results and impacts are only very slightly quantified. This project proposes to set up a very ambitious system of monitoring and follow-up of impacts of all operational components. The feasibility study will be fundamental in order to specify the elements of this component.

Sub-component 4.1: Forest Cover

The project aims to produce a set of updated forest cover maps of the four eco-regions of Guinea. These cartographic products will be based on the interpretation of satellite images backed by field verification and forest inventories. The Project will thus work in direct collaboration with OSFACO,^{xiv} which will provide free satellite imagery as part of its implementation. OSFACO will also provide accurate information on the changes of land use and the consequences in terms of forest area preservation. This component will aim to classify Guinean forests by type and composition (closed wet and dry forests, open forests, wooded savannas, arboreal or shrub savannas, mangroves, etc.) and will detail their level of degradation. It will rely on agro-ecological zoning funded by AFD that aims to develop a land cover database and monitoring (to be specified in the feasibility study).

In the long term, the Project will identify and monitor anthropogenic activities in the forest environment. The drivers of deforestation and degradation resulting in the loss of carbon stocks will also be determined; for example: firewood extraction, charcoal production, grazing in forests, etc.

The Project will finally implement a monitoring, reporting and verification (MRV) system. The MRV will be to provide data over the long term on the evolution of forest cover and its contribution, in emission or absorption, to the dynamics of greenhouse gases. The MRV is an indispensable prerequisite for the mobilization of REDD+ funds or payment of environmental services / results.

Sub-component 4.2: Hydrology

In partnership with the Organization for the Development of the Senegal River (OMVS), an observatory will be set up on the hydrological characteristics of the country's rivers. This simplified observatory will be based on the following principles: i) the organization of the collection and processing of data necessary for a systematic

monitoring of the watershed environment, which will be specified during the feasibility study by gathering the producers of data; ii) data processing and analysis to produce aggregated indicators and complete information on the environmental state in these watersheds. Some indicators will be defined based on those of the OMVS, mainly on the hydrological system, the climatology of the studied watersheds, and the improvement of the water quality and the hydro-agricultural installations.

Sub-component 4.3: Land

With the establishment of different activities, land ownership will evolve and take many forms through community spaces, territorial common areas, the development of various scale private forest plantations, the Taungya system, etc. Through the results of sub-component 4.1, the project will maintain an up-to-date geo-referenced database of all forest tenures in the areas impacted by the Project. The National Observatory of the Republic of Guinea could be the institution responsible for this work. This analysis will be partly taken into account in the context of the agro-ecological zoning that should have started in 2018 (to be specified in the feasibility study).

2. Theory of Change (see annex)

All of the Project's actions respond to adaptation options targeted in the National Adaptation Programme of Action by adapting local communities to climate change impacts.^{xv}. The project also supports climate change mitigation goals by reducing GHG emissions through reductions in biomass combustion and reforestation efforts

The Project will support national regulations, in particular the Forest Code of 1999, and the sovereign role of the forest administration within the classified forests. The Project will endeavor to work with community-managed forests and decentralized communities, which have already been classified in favor of forest groups. The project will also seek to define new forest areas as community-managed: municipalities, districts or villages, in accordance with the Forest Code, or in innovative ways that could lead to institutionalization. The project will focus on developing strong economic sectors in partnership with private structures of all sizes, from local microenterprises (loggers, charcoal producers, planters) to companies that may be national in scale (manufacturers of improved stoves, agroforestry production) and will focus on providing access to financing to stakeholders within forestry and agroforestry sectors.

4. Operational and financial risks

- **Low participation of stakeholders.** The risk of low engagement can affect all stakeholders involved in the project. The project's participatory approach is the only guarantee of success. Although discussions have underlined the general desire for change, this risk cannot be neglected. To ensure the widest possible participation, the project will build on the many achievements of the PACV, which provides a commonly accepted participatory framework that has been demonstrated at the community level. In addition, the project will operate in a number of phases, with the first phase to select pilot areas before disseminating the results more widely in later phases. The Project also includes a very important training and capacity building component that will help mobilizing stakeholders and develop formal and structured economic sectors.
- **The weak capacity of stakeholders could become a hurdle for change.** This institutional risk is potentially important because the general capacity level of stakeholders is low, both in basic and advanced knowledge. The project plans to focus on capacity building and multi-level training by strengthening existing curricula, developing continuing education and providing technical assistance.

B.3. Expected project results aligned with the GCF investment criteria (max. 3 pages)

1. Impact Potentials: This Project will meet the objectives of the GCF by:

i) Improving the capacity of rural people to respond to environmental changes that affect soil fertility and reduce agricultural yields and access to water. The project will support agriculture production, food security, and economic development, threatened by climate change.

Assuming that half of the country's rural population will benefit from the developments put in place over at least a decade, the project will benefit about 2,500,000 people. During the 4 years of project implementation, 500,000 people will see their social and economic environment improved.

ii) reducing carbon emissions by reducing deforestation, increasing forest and tree areas, maintaining existing natural forests, reducing the use of wood for charcoal production (1000 improved carbonization units will be distributed for the duration of the Project (5000 units planned for 2030 in Guinean NDC). At least 20,000 improved stoves will be distributed during the project cycle (out of 1 million units planned for distribution by 2030 in Guinean NDC).

During the 4 years of implementation, the Project will directly contribute to the reduction of CO₂ emissions related to improved firewood practices. Out of 23 Mt of CO₂ that Guinea is committed to mitigating by 2030 in its NDC in relation to energy production, the project could contribute up to a 10% reduction of national target. In addition, the project will increase forest carbon sinks through planned reforestation (20,000 ha over 4 years with an average of 60 tC/ha^{xvi} that is, 1.2 million tons of carbon).

2. Paradigmatic change: the purpose of this project is to transform Guinea over time. The rehabilitation of forest landscapes requires a long-term vision and sustained public policies. This is therefore the first phase of

implementing a long-term strategy of at least 20 years, which will change the habits of all stakeholders.

- **Scaling and Reproduction:** Guinea has had many project interventions in the different sectors mentioned in this note, but very few have gone beyond the local level and have been able to prevail at the national level and over time. However, there have been some successes such as the Village Communities Support Program (PACV), which will now form the basis of the proposed project. Existing funding channels created by PACV and taken over by ANAFIC will be used to integrate natural resources management into local development plans and annual investment plans for communities. It will be possible to cover a large territory with activities and funding. The Project also responds to strong demand from all stakeholders, recognizing that environmental degradation is beginning to have both national and international development implications. We can no longer envisage a project approach focused solely on a limited territory.
- **Knowledge and Learning:** Information about the agro-forest resource in terms of vegetation cover, production potential, carbon storage or degradation is almost non-existent. The Project will fill these gaps through the transversal component on monitoring (CT4) and various capacity building, training and research activities integrated into each of the operational components: Monitoring, Training and Research. The project will work with existing research and teaching structures such as ENATEF and the Institute for Advanced Agronomy and Veterinary Sciences (ISAV) of Faranah to mobilize students and faculty to take inventory and further develop their resources. The project will strengthen certain structures such as the Institute of Agronomic Research of Guinea (IRAG) which has not been involved in forestry research until recently. It will finally build on existing structures such as the ONRG and the OSFACO project of spatial observation. A learning platform will be set up to promote and disseminate the acquired knowledge of the project through the production of an atlas, the production of communication documents in local languages, awareness sessions in the villages, or the setting up of participatory IT tools, etc.
- **Contributions to create a favorable environment:** the proposed project is in line with Guinea' NDC. Through its comprehensive, transversal, integrated and long-term approach, it will establish a strategic and operational framework for the rehabilitation of the country's degraded landscapes. Indeed, the Project addresses all the factors that have led to the current situation: shifting cultivation, clearing land, unsustainable logging, energy production, extensive livestock farming, etc. In addition, it will promote the coordination and greater involvement of all stakeholders: central and decentralized administrations, local communities, and private sector.
- **Contributions to rules and regulatory frameworks:** The project will help steer the revision of the national regulatory framework; its guidelines are outdated and no longer relevant to the current national climate. The project will help define the rules for ensuring the recovery of the forest cover and its sustainable management, mainly in the rural area, outside classified forests. Regulatory changes are underway on decentralization in Guinea, on land issues. The management of forest resources must play an active role in these developments.
- **Innovative character:** The project objective relies on the direct involvement of the stakeholders on the ground in the management of natural resources both in the rural domain and in the classified forests. For example, local populations will be involved in participatory inventories that will be carried out in classified forests and in the definition of areas to be rehabilitated; the development of the value chains will target the small producers settled in the identified villages. Priority consideration of the private sector is also a crucial factor for success of the project at scale. The use of digital tools, the mobilization of start ups and the innovative ecosystem in Guinea will allow for experimenting with new resource management approaches at scale.

3. Potential for sustainable development:

- **Economic co-benefits:** The project will participate in the development of economic sectors in the field of agriculture and sustainable forest management and in the production of sustainable and profitable energy. The organization of these sectors will require the engagement of private partners at different scales: small producers and operators, processors, national and international investors. The promotion of agroforestry techniques will ensure an increase in agricultural yields and direct economic returns to the populations concerned. The Taungya system will make it possible to include households that do not have access to the land and to enable them to generate income.
- **Environmental Co-benefits:** The Project's activities aim, on one hand, to improve the adaptation of rural communities to the impacts of climate change, mainly in terms of reduction of soil fertility, and variability of water resources and, on the other hand, to ensure the restoration of degraded forest cover. This will increase the country's carbon storage capacity and reduce emissions from deforestation. In terms of biodiversity, the fight against deforestation and the maintenance of Guinean forest ecosystems will notably contribute to the protection of the largest population chimpanzees in West Africa.^{xvii}
- **Social co-benefits:** Guinea's rural communities will be the Project's first target. The social benefits will go together with the economic benefits described above. By setting up economic sectors in partnerships with local players, the project will actually improve their living conditions especially for women. The distribution of improved stoves, much less harmful than conventional stoves in terms of fine particle production, will

have a direct positive impact on the health of users. The environmental benefits will have their corollary in social terms with improved access to water and enhanced social cohesion through participatory natural resource management. Vulnerable populations will be targeted primarily for the development of agroforestry and will have access to land through the Taungya system^{xviii}.

Impact of Gender-Sensitive Developments: Guinea's National Gender Policy was adopted in 2011. It is essentially structured around five strategic axes. Namely: (i) access to basic social services; (ii) respect for human rights and the elimination of violence; (iii) access and control of resources and equitable sharing of income; (iv) improving governance and equitable access to decision-making spheres; and (v) mainstreaming gender in macroeconomic policy. The project's participatory and inclusive approach will mainly have an impact at the level of the 3rd axis. The development of the Taungya agroforestry system will be targeted at women and the poorest segment of the population. The development of specific credit products with financial institutions will particularly target women. In fact, by developing more efficient agricultural production strategies, the project will contribute to an increase in the incomes of women, who are the first to be involved in these activities. In addition, the firewood sector also sees a high proportion of women who will directly benefit from the improved production techniques put in place. Finally, the large-scale distribution of improved stoves will have a major impact on the activities of women who will be the main beneficiaries of these techniques by allowing them to financially benefit from reduced charcoal consumption and to save time by reducing the number of journeys to buy charcoal. The cookstove intervention will also improve their health by reducing the emissions of toxic fumes for the household. Additional studies on how to address the needs of women will augment knowledge of the impacts on this population and inform the project's gender action plan.

4. Needs of the recipients: A first study of the state of the forest sector was conducted by the MEEF based on AFD funds in January 2017, and completed by a second mission in January 2018. This mission helped to assess expectations and needs of all stakeholders. The priorities that have been expressed include:

- The need for human, technical and financial resources, in training the administration to fight against the degradation of natural resources;
- a reorganization of this same administration that is not adapted to current issues;
- a revision of the legal and fiscal framework necessary to strengthen the forestry economic sector;
- the importance of ensuring co-management of natural resources with the local population;
- the desire of these same communities to maintain their existing forest areas and fight against their degradation;
- the need to resolve land conflicts before addressing environmental aspects (for example when allocating agricultural land in the lowlands);
- the need for a long-term commitment at the national level and over the duration of any new intervention;

5. Country Ownership: Since 2015, the Guinean authorities and the AFD have been planning for wide-ranging support. The holistic and integrated approach of this Project was shared with the Forest Administration and all stakeholders during several workshops and meetings for the exchange of ideas between 2016 and 2018. These meetings have allowed for an increase in stakeholders and project ownership at the national, municipal and local levels. In addition, this Project responds directly to the country's commitments at COP21 and contributes to the goals set forth in the Nationally Determined Contribution and the National Adaptation Program of Action (NAPA). The Minister of Forests expressed full support for this approach during a meeting with the AFD in January 2018 and a letter in April 2018, validating the approaches to this note.

Confirming the country's commitment to fighting to climate change, Guinea has also appointed the National Directorate of the Environment, placed within the MEEF, as a national entity accredited by the Green Fund (see C.4). It is essential for the momentum initiated over the past two years to be maintained and for the local partners to be regularly informed of the progress of the preparatory work already underway.

6. Efficiency and Effectiveness: In pursuit of its commitments at COP21, Guinea is seeking external funding to support its ability to adapt to deleterious climate impacts on its land quality and water systems due to climate change. This Project proposes to set up a national strategy for improved resilience based on multiple demonstrated resource management techniques that have been tested in Guinea over the years, but which have never been nationally disseminated. In particular, the project will build on the work of the PACV to integrate the environmental component into existing Local Development Plans. This approach will make it possible to be operational very quickly and to ensure optimal efficiency of the activities undertaken in the field.

For a more detailed discussion of the importance and rationale for the GCF engagement, please refer to section C2.

C. Indicative Financing/Cost Information (max. 3 pages)

C.1. Financing by Components (max ½ page)

Please provide an estimate of the total cost per component/output and disaggregate by source of financing.

Component/ Output	Indicative cost (USD)	GCF financing		Co-financing		
		Amount (USD)	Financial Instrument	Amount (USD)	Financial Instrument	Name of Institutions
Operational Component 1 Agricultural intensification	20,000,000	9,000,000	Grant	6,500,000	Grant	AFD
				2,500,000	Grant	FFEM
				2,000,000	Loan	AFD
Operational Component 2 Sustainable timber and fuelwood prod.	27,000,000	19,000,000	Grant	6,000,000	Grant	AFD
				2,000,000	Loan	AFD
Operational Component 3 Forest management	2,500,000			2,500,000	Grant	AFD
Cross Component 4 Monitoring	2,000,000	1,000,000	Grant	1,000,000	Grant	AFD
Project Management Unit	2,500,000			2,500,000	Grant	AFD
Indicative total cost(USD)	54,000,000	29,000,000		18,500,000	Grant	AFD
				4,000,000	Loan	AFD
				2,500,000	Grant	FFEM
				25,000,000		

C.2. Justification of GCF funding request (max.1 page)

For decades, Guinea has been experiencing an increase in the effects of climate change and a related steady degradation of its environment and forests. Its water resources are under strain and agricultural yields are diminishing in response to climate change. Many projects have followed one other, sometimes with interesting results, but, as projections indicate that water and agricultural problems are set to get worse, an intervention at scale is needed.

Guinea has committed to reduce its carbon emissions, largely coming from land uses, but its forestry administration does not have the means to invest heavily in climate change mitigation interventions and focuses its limited resources on the management and adaptation of classified forests. The aim is therefore to involve local communities on a large scale (mainly outside the classified forests) in a series of environmental management activities including watershed management, productivity improvement, and reforestation. Strong private sector support will also be utilized to ensure that environmental management is pursued in an economically effective manner where sustainable environmental management will meet with economic effectiveness (even if financial system capacity to invest on forestry activities is limited). AFD is well positioned to work in these sectors, since it has been active in the country for 40 years and currently collaborates closely with the government and relevant authorities, as well as with other donors on agriculture, energy, and local development.

However GCF funds facilitate the mobilization of the co-financing, and such a project could not proceed without the funds that the GCF is able to provide as other sources of funding at this scale are not available.

GCF-financing can provide the long-term financing that will enable the project to establish the institutions and capacity needed to meet the project's goals and to support its overall ambition to grow the project's impacts well beyond the GCF-funding cycle. Without this long-term perspective, no project involving the local population and the forest management can be envisaged.

Grants are needed to make the activities viable as beneficiaries have low income levels and many of the activities are non-revenue generating. Moreover, AFD will provide loans for selected activities.

The GCF funds will be particularly oriented towards the local development aspects and the adaptation of local communities to climate change, integrating agroforestry in Component N°1, as well as aspects directly related to improving the efficiency of the firewood sector (Component N°2). Sustainable timber production will also mobilize

some of the funds for forest plantations and reforestation which can directly impact carbon stocks, but also to preserve land and optimize water resources in a context of climate change. AFD, given its experience, will focus on aspects related to the sustainable management of forest resources in Component N°1 (Mangroves), Component N°2 (plantations) and Component N°3 (sustainable management of reserve forests). The GCF will also participate in research that will be conducted to improve technologies and develop the reforestation of local species.

C.3. Sustainability and Replicability of the Project (Exit Strategy) (max. 1 page)

The Project is in the first phase of a long-term approach (at least 20 years). The MEEF mobilization, through its various international commitments, confirmed by the meetings with the Minister, has made it possible to confidently consider the national support for the Project. Several tools can be used to ensure that medium and long-term financing of the project will be secured:

- Private investment in value chains will be the primary source of project financing. In order to ensure continuous private investment, the project will utilize GCF resources to seed economic sectors within the local population. At a national level, a market for improved stoves will be developed which will pull the whole manufacturing chain towards improved production techniques. Finally, timber plantations will be initiated within the project, which will begin producing in 20 to 30 years and which can support economic development.
- Payment of water rights will also be a significant income source over time. Guinea has indeed embarked on an ambitious dam construction program (for example, the starting of the construction of the Koukoutamba Dam on the Bafing River and the Fomi Dam on the Niandan River during the period 2018-2019). However, during periods of low water, water volumes drop in dam reservoirs and may cause major disruptions in the energy and water supply. This project will help to participate in the proposed reforestation and landscape rehabilitation efforts to combat changes in water regimes currently observed as a result of climate change. In the long run, a mechanism of payment by results could be considered with users of river resources.
- Whether at the national level or at the more local level, the Project will allow the various stakeholders to use external financing under REDD to establishment a sustainable value chain for cooking energy, notably wood charcoal and for the sustainable management of classified forests. REDD can also be utilized for payments for environmental services (small producers rehabilitating degraded watersheds through reforestation or agroforestry). These types of financing will be utilized after the first project phase (i.e. after the first four-year cycle which is covered by this concept note). The proposed project will establish a favorable institutional framework for eventual use of REDD funds. In particular, the proposed project will clarify land tenure status and build capacity within local communities to establish and access legal, institutional and fiscal mechanisms to generate new public and private funding for environmental conservation.

C.4. Engagement among the NDA, AE, and/or other relevant stakeholders in the country

The NDA (National Designated Authority) is receiving institutional support through the UNDP (Readiness program) to develop the country's Green Fund intervention program, in which this approach is integrated. AFD works closely with the NDA on Green Fund intervention program as a whole.

The AFD was accredited by the Green Fund in November 2017 (Accreditation Master Agreement), and has been involved in the identification of the proposed program intervention since 2015. Extensive consultations conducted with the MEEF of Guinea as well as with representatives of the territorial and local communities, the civil society and the private sector, have reiterated the relevance of the integrated approach proposed by this project.

The AFD has been present in Guinea since 1979 and prioritizes its work in the country by active engagement with regards to: 1) contribution to rural development; 2) improvement of education and training; 3) strengthening of the private sector and 4) infrastructure development. AFD also supports Guinea through the Adapt'Action program for consolidation, implementation and monitoring of CDNs and assists in integrating CDN commitments into Guinean public policy.

D. Supporting documents submitted (OPTIONAL)

- Map indicating the location of the project/program
- Diagram of the theory of change
- Economic and financial models with key assumptions and potential stressed scenarios
- Pre-feasibility study
- Evaluation report of previous project
- Results of environmental and social risk screening

Self-awareness check boxes

Are you aware that the full Funding Proposal and Annexes will require these documents? Yes

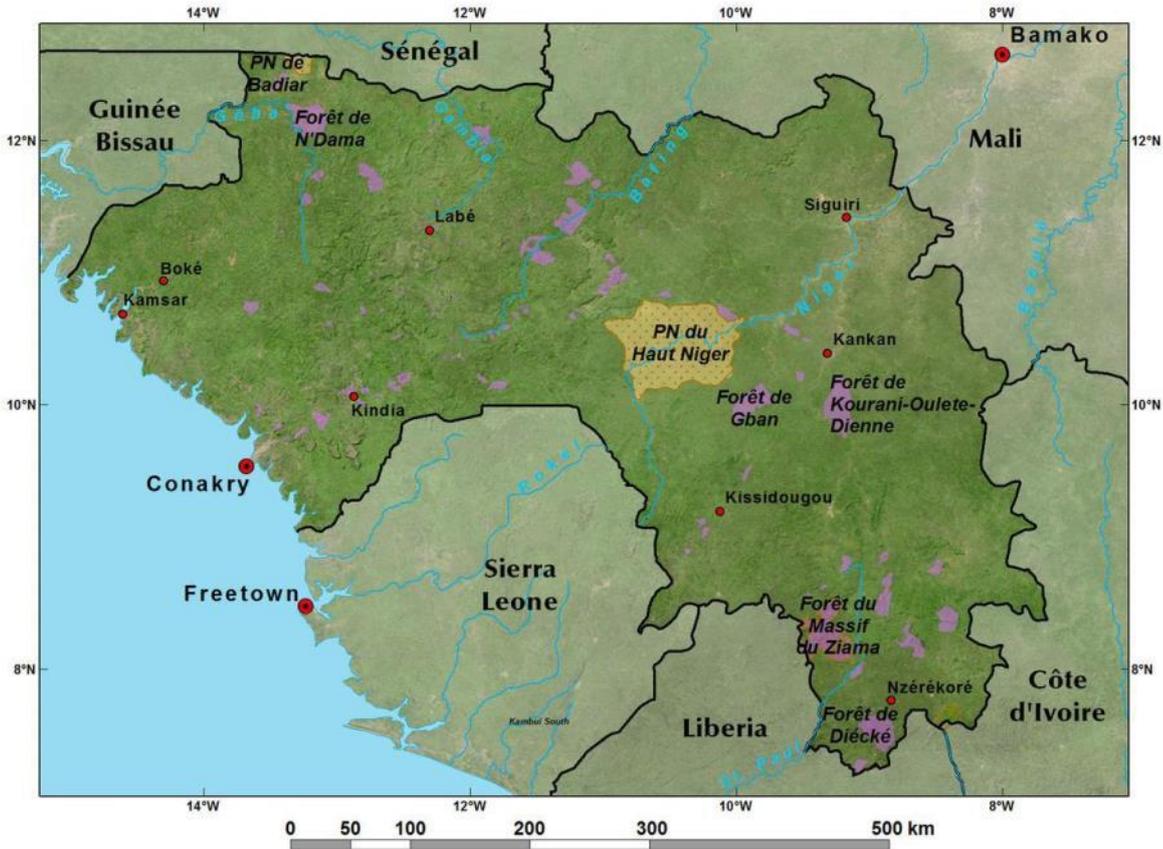
No

- ***Feasibility Study***
- ***Environmental and social impact assessment or environmental and social management framework***
- ***Stakeholder consultations at national and project level implementation including with indigenous people if relevant***
- ***Gender assessment and action plan***
- ***Operations and maintenance plan if relevant***
- ***Loan or grant operation manual as appropriate***
- ***Co-financing commitment letters***

Are you aware that a funding proposal from an accredited entity without a signed AMA will be reviewed but not sent to the Board for consideration? Yes No

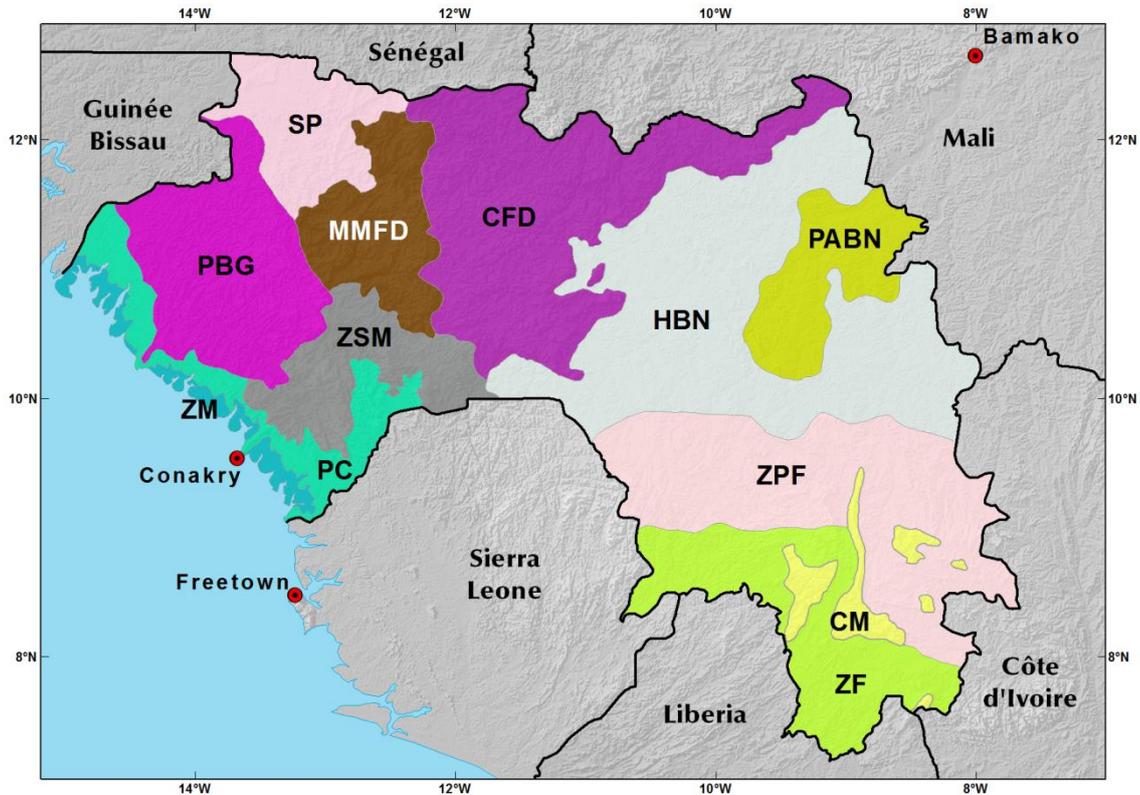
Annexes

Annex 1: Maps of Guinea



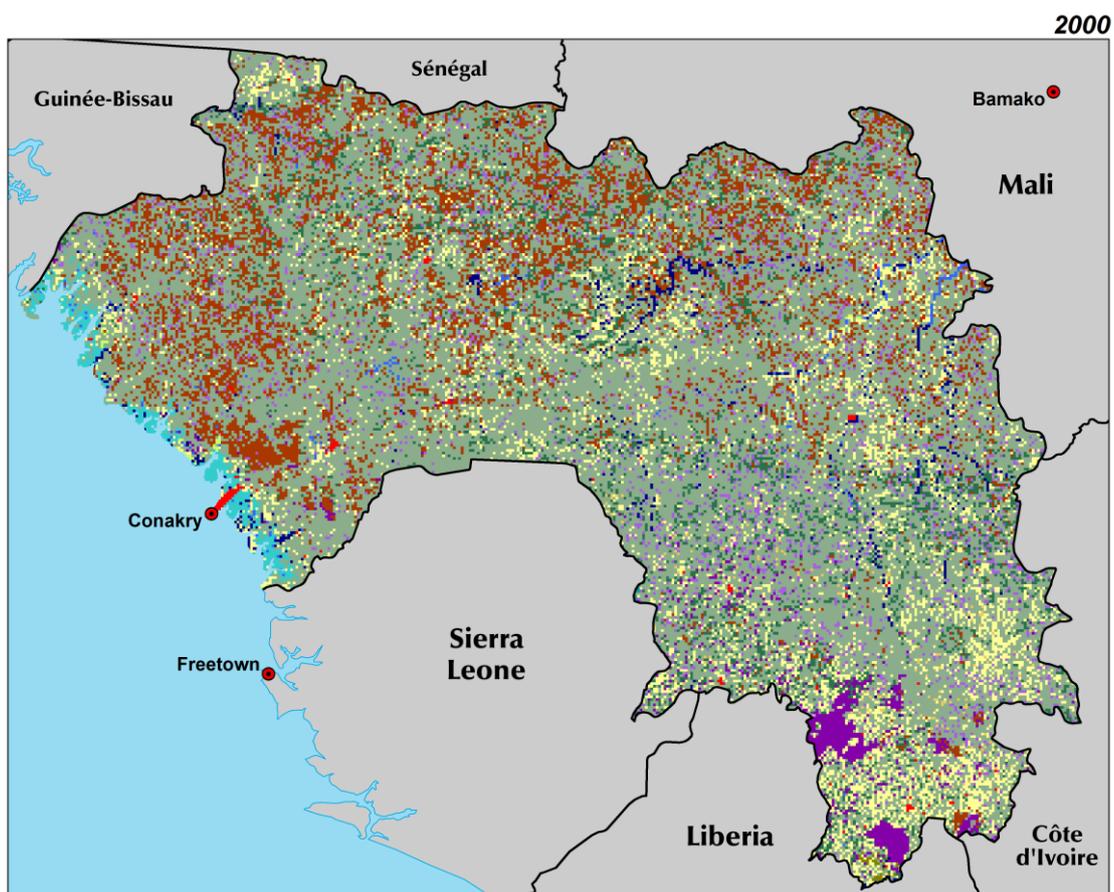
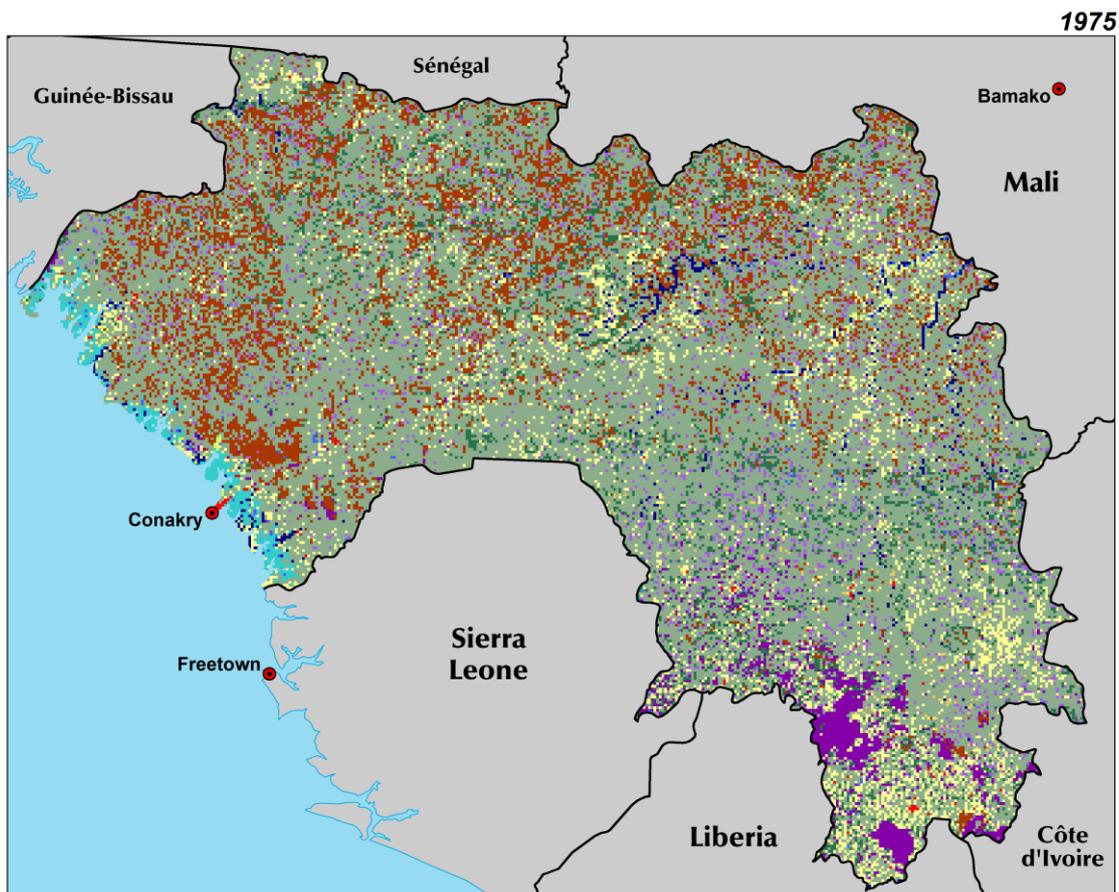
-  Réserve de Biosphère / Biosphere Reserve
-  Parc National / National Park
-  Réserve Naturelle / Nature Reserve
-  Forêt Classée / Forest Reserve
-  Capitale nationale / National capital
-  Autre Ville / Other City

Eco-regions of Guinea

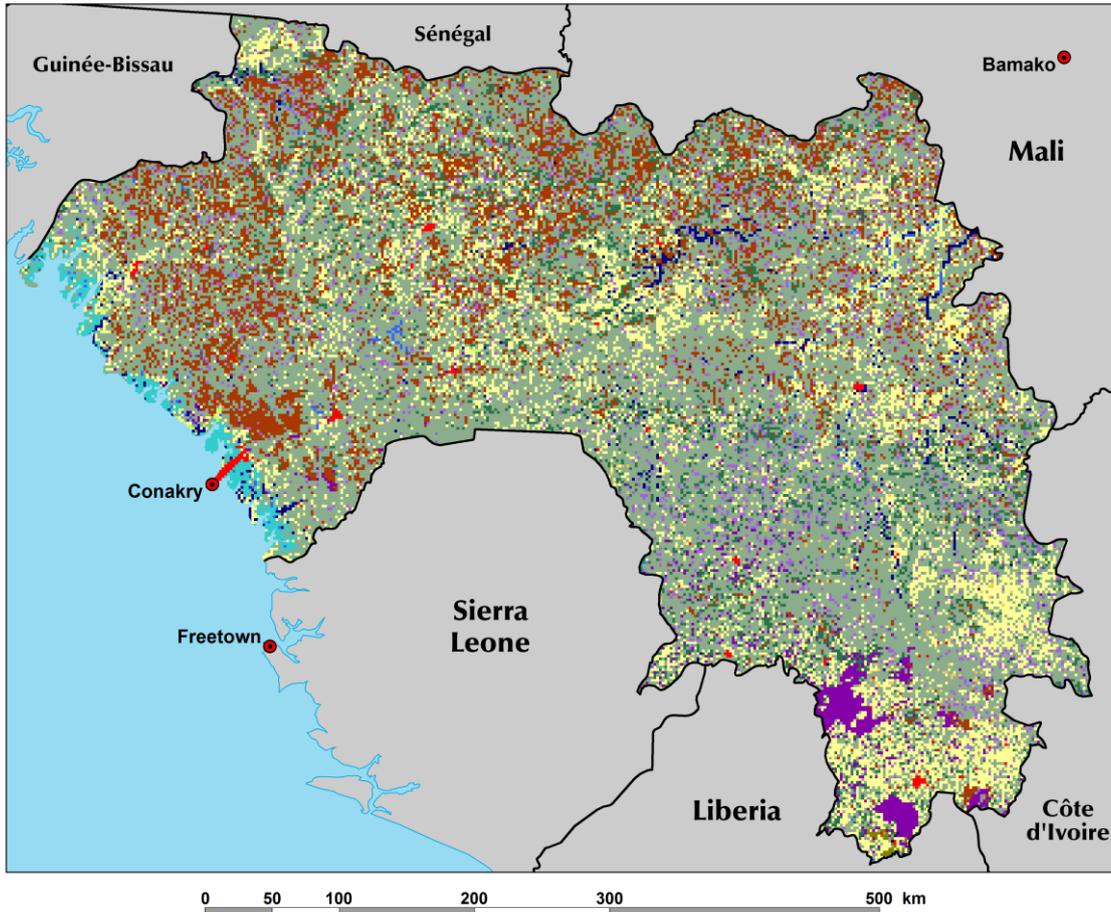


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|--|--|
| CFD Contrefort du Fouta-Djallon | PC Plaines Côtières |
| CM Chaines de Montagnes | SP Socle Précambrien |
| HBN Haut Bassin du Niger | ZF Zone Forestière |
| MMFD Massifs Montagneux du Fouta-Djalon | ZM Zone de Mangrove |
| PABN Plaines Agricoles du Bassin du Niger | ZPF Zone Pré-Forestière |
| PBG Hauts Plateaux de la Basse-Guinée | ZSM Zone de Savanes et de Montagnes |

Annex 2: Evolution of forest cover in Guinea (1975 –2013)



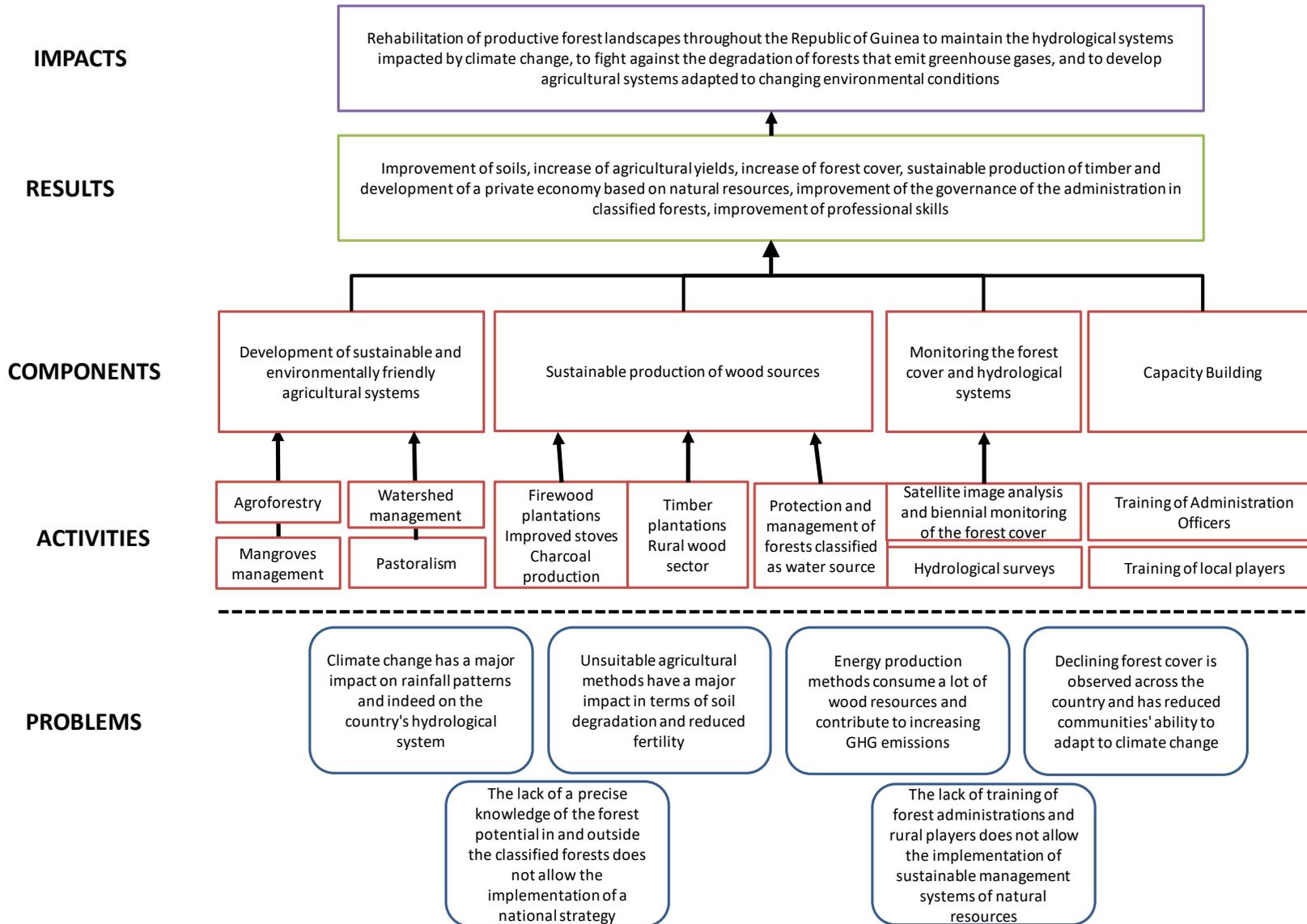
2013



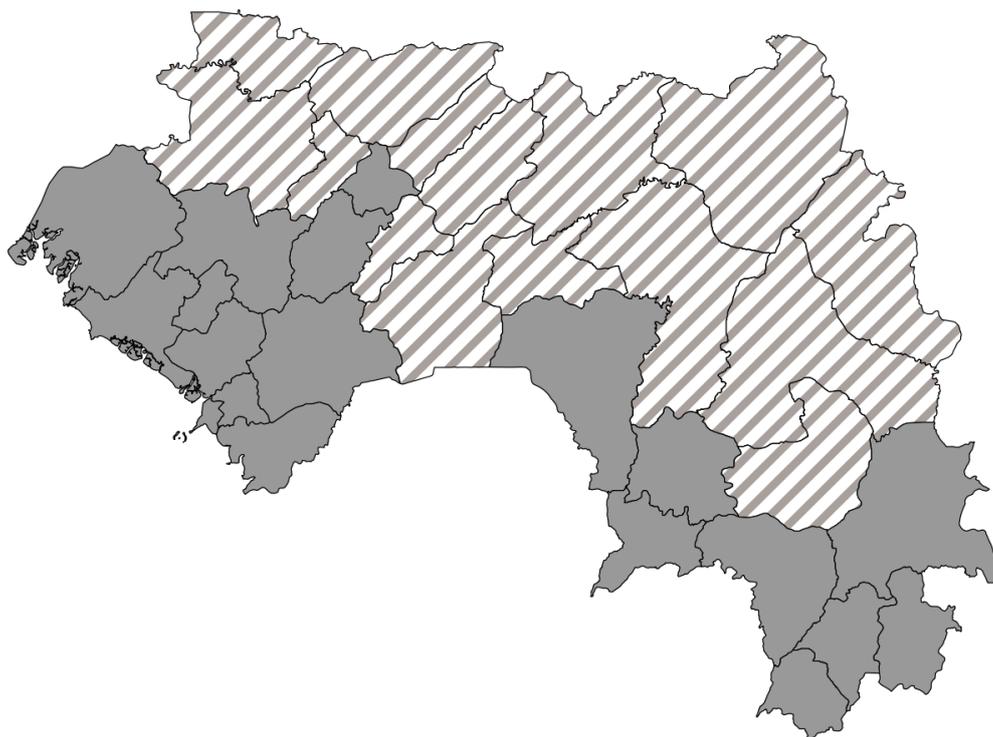
Occupation des Terres / Land Cover

- Forêt / Forest
- Forêt dégradée / Degraded forest
- Forêt galerie & formation ripicole /
Gallery forest & riparian forest
- Forêt claire / Woodland
- Mangrove
- Savane / Savanna
- Bowé
- Zone de culture / Agriculture
- Cultures irriguées / Irrigated agriculture
- Cultures des bas-fonds et de décrue /
Agriculture in shallows and recession
- Plantation
- Habitation / Settlements
- Sols dénudés / Bare soil
- Terrains rocheux / Rocky land
- Carrière / Open mine
- Plans d'eau / Water bodies
- Prairie marécageuse - vallée inondable /
Wetland - floodplain

Annex 3 : Theory of Change



Annex 4 : Intervention zone



Project intervention area including prefectures, shown in hatch, which will be subject to collaboration with partner projects mainly in the component 1

Annex 5 : The Modified Taungya System in Ghana's transitional zone

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Management of Ghana's modified taungya system: challenges and strategies for improvement

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Mirjam A. F. Ros-Tonen

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Abstract Since 2001, Ghana has introduced a number of forest-based strategies to improve the livelihoods of forest communities, restore the country's forest cover and address timber deficits. Among these strategies is the modified taungya system (MTS). Through a mix of qualitative methods, field observations, and a household survey among 146 MTS farmers from eight villages in the Tano Offin, Tain II and Yaya Forest Reserve areas in the high forest zone, this paper explores the challenges related to MTS management in Ghana. Results indicate that the lack of regular income from timber until tree harvesting, the delay in signing MTS agreements, the absence of a clear mechanism for sharing the 40 % timber benefits among individual farmers, restrictions on tree and crop species allowed under the MTS, and inadequate support and supervision from the implementing agency demotivate farmers to invest labour in farm maintenance. The study also reveals that the quality of partnership among the actors impacts on the

performance of the scheme: a co-management arrangement exclusively between the Forestry Commission and MTS farmer groups generated poorer results in terms of the quality of the timber stands, income-generating potential and motivation of the actors involved. The continued commitment of both participating farmer groups and coordinating agencies is key to the performance of the MTS. Lastly, the prospects for future income from timber revenues determine to a large extent farmers' commitment to tree maintenance in the MTS. Linking up with the concepts of interactive and landscape governance and partnerships, the authors make recommendations to overcome these challenges.

Keywords Modified taungya system · Agroforestry · Management challenges · Partnerships · Ghana

Introduction

Since Bene et al. (1977) coined the concept of agroforestry for a century-old practice of mixing tree and food crops with forest plants and/or animals, the taungya system appeared in overviews of agroforestry systems worldwide as a system that combines a stand of woody species and agricultural crops during the early years of plantation development (Nair 1985, 1991). Developed in Burma (now Myanmar) in the early 19th century and spreading over the rest of Asia

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NOTES

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- ⁱ FAO, 2012 - Trends in the hydrology of small watersheds in the Fouta Djallon Massif
- ⁱⁱ PANA, 2007
- ⁱⁱⁱ Intended Nationally Determined Contribution (INDC) under the UN Convention on Climate Change (CCNUCC), 2015
- ^{iv} MEEFF – AFD, 2018 - Survey on forest resources - Republic of Guinea
- ^v FMI, 2013 – Guinea: Poverty Reduction Strategy
- ^{vi} MEEFF, 2015 – Forest Statistics Yearbook 2004 - 2013
- ^{vii} ADAM, 2010 – Presentation of the International Workshop on Coastal Zone Management at BegMeil
- ^{viii} CILSS, 2016 - The Landscapes of West Africa: A Window on a World in Full Evolution. U.S. Geological Survey
- ^{ix} The objective of the Village Community Support Program is to provide rural communities in Guinea with the required capacities (human, technical, financial) to carry out the tasks transferred to them through decentralization. Three phases have been implemented since 2002: The first phase of the program (2000-09), financed by the World Bank, the International Fund for Agricultural Development (IFAD) and AFD, has covered 159 communities and financed more than 1000 micro-projects (education, health, agriculture, etc.); The second phase (2009-14) extended the coverage to the entire territory (304 rural communities). It financed the building of basic infrastructure, strengthened local governance and the level of competence of communities and accompanied the reforms concerning decentralization. The Village Community Support Program (PACV) has gradually become the national reference for local development and support to decentralization; the last phase (2015-2018,) intends to consolidate and sustain PACV achievements by setting up a national financing and technical support system for local authorities.
- ^x Program AGIR (2004), ESSOR (2004), PNGREN (2001), PGRR and PROGEFOR (1999-2002)
- ^{xi} Mangrove Rice Project: development of mangrove rice plains, spreading of solar salt, spreading of improved stoves, restoration and conservation of forest areas.
- ^{xii} Comm. of Guinea 44, 2018
- ^{xiii} PARSS3 is funded by European Union and operated by UNOPS. One of its goal is to provide training to the Nature Conservation Corps. The training mainly consists on security issues and fight against poaching, environmental damages and illegal logging.
- ^{xiv} The OSFACO (Spatial Observation of Forests of Central and West Africa) project aims to improve the knowledge of the past and current dynamics of land use and land-use change in several Central and West African countries, thanks to space observation tools. It is financed up to 6 million euros by AFD.
- ^{xv} PANA, 2007
- ^{xvi} AFF, 2014 - Perspectives of REDD+ in African Forest Plantations
- ^{xvii} UICN, 2004 – Chimpanzees of West Africa
- ^{xviii} Taungya system is a small holder agro-forestry system in the forest reserve, the system relies on the idea that farmers could inter-crop tree seedlings with food crops inside the forest reserves. The idea works by allowing farmers to cultivate on newly harvested plots as long as they would replant the forest trees and after some time, about three years of cultivation, the trees would be big enough to prevent further food crop farming and so the farmer would move out of the plot for other allocated forest plot. In Ghana or in Kenya, this was a practice that was very popular with squatter communities living around the forest as they were assured of forestland to raise food crops for their families.