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Facilitating Financing for Sustainable Forest Management in Small Islands Developing States and Low Forest Cover Countries

An analytical report prepared by Indufor
for the United Nations Forum on Forests

Country Case Study: Mali

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**The views expressed herein are those of the author(s) and do not necessarily reflect the views
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ACRONYMS AND ABBREVIATIONS

AFD	:	French Development Agency
AMADER	:	Malian Agency for the Development of Rural Electrification
SIB	:	Special Investment Budget
WB	:	World Bank
CCD	:	Convention to Combat Desertification
CNESOLER	:	National Centre for Solar Energy and Rural Electrification
LA	:	Local Authority
CO ₂	:	Carbon Dioxide
PSU – RDS	:	Planning and Statistics Unit – Rural Development Sector
SFGPR	:	Strategic Framework for Growth and Poverty Reduction
SFFP	:	Strategic Framework for Fighting Poverty
DNA	:	National Directorate of Agriculture
DNCN	:	National Directorate of Nature Conservation
DNE	:	National Directorate of Energy
DNEF	:	National Directorate of Water and Forests
DNPD	:	National Directorate of Planning and Development
DNPIA	:	National Directorate of Animal Production and Industries
FCFA	:	Franc of the African Financial Community
FAO	:	Food and Agriculture Organisation of the United Nations
FFEM	:	French Global Environment Facility
FRA	:	Forest Resources Assessment
SFM	:	Sustainable Forest Management
Gg	:	Gigagram
EIG	:	Economic Interest Group
NRM	:	Natural Resource Management
kg	:	Kilogram
m ³	:	Cubic metre
MED	:	Ministry of the Environment and Decontamination
MEE	:	Ministry of Energy and Water
MEF	:	Ministry of Economy and Finance
mm	:	Millimetre
RM	:	Rural Market
NICT	:	New Information and Communication Technologies
MDG	:	Millenium Development Goals
NGO	:	Non-Governmental Organisation
CSO	:	Civil Society Organisation
P – RM	:	Presidency of the Republic of Mali
PADREF	:	Sikasso Regional Directorate of Water and Forests Support Project
PANA	:	National Action Programme for Adaptation to Climate Change
PDESC	:	Programme for Economic, Social and Cultural Development
PEALCD	:	Environmental Support Programme for Combating Desertification
PES	:	Payment for Environmental Services
NLFP	:	Non-Ligneous Forest Products
PFRS	:	Sikasso Regional Forestry Project
NRMP	:	Natural Resource Management Programme
GDP	:	Gross Domestic Product

NAP	:	National Action Programme
NEAP	:	National Environmental Action Plan
PNLCD	:	National Programme to Fight Desertification
PNPE	:	National Environmental Protection Policy
UNDP	:	United Nations Development Programme
PNVA	:	National Agricultural Extension Programme
TFP	:	Technical and Financial Partners
TIP	:	Triennial Investment Programme
Qm	:	Metric quintal or 100kg
REDD	:	Reduction of Emissions caused by Deforestation and Degradation
SMP	:	Supply Master Plan
DES	:	Domestic Energy Strategy
SRG / SRGB	:	Rural Management Structure / Rural Wood Management Structure
st	:	Stere or 1m ³ of wood
STP - CIGQE	:	Permanent Technical Secretariat of the Institutional Framework of Environmental Issues Management
SUKALA	:	Upper Kala Sugar Plantation
IUCN	:	International Union for Conservation of Nature
US\$:	United States of America dollar
HIV	:	Human Immunodeficiency Virus

In the present document: 1 US\$ = 500 FCFA
(This report is translated from French by Victoria Burns)

SUMMARY

Mali runs from the Sahara on the edge of the Guinean Forests to the Ivory Coast in the agro-climatic area of northern Guinea. Its pluviometry varies greatly in terms of both time and location, ranging from 100mm in the north to around 1200mm in the south. Mali has several open forest stands, as well as the remainders of a few closed forests, meaning that it has a low level of forest cover and has to resort to importing wood to meet its needs. With the exception of the northern parts of the country, needs for construction wood, heating wood and charcoal are met by national production.

Besides ligneous forest products, forest stands also provide environmental services and a significant amount of non-ligneous forest products which are either consumed domestically or exported. Their (largely underestimated) contribution to the formation of GDP over the 2001-2008 period was 13.5% for primary GDP and 5.01% for the overall GDP.

Despite this significance, forests are deteriorating as a result of the combined effects of climate change and the actions of mankind, with land-clearing through agriculture and the felling of heating wood and charcoal alone costing some 500,000ha per year, not to mention degradation as a result of mining exploitation and extensive breeding practices.

Failure to find appropriate solutions will result in the continuation of this deterioration as it is encouraged by climate change and increasing poverty among rural populations for whom the forest is a last resort when the land has nothing left to offer them. It will also continue for as long as the benefits of other means of exploiting the land are considered more profitable by both politicians and the various populations concerned.

Faced with this situation and the consequent inability of certain countries with a low level of forestry cover, such as Mali, to finance the forestry sector, notably through initiatives relating to the restoration and development of forest resources, the contribution of the international community is vital, particularly if we want the roles forest stands play in countries with low levels of forest cover to contribute to the overall balance of the environment.

The budget of the Ministry of the Environment, a key player in the financing of forest management in Mali, dropped from 10,785.498 million FCFA (21.57 million US\$) in 2000 to 9,185.729 million FCFA (18.37 million US\$) in 2008, only to rise again to 10,743.916 million FCFA (21.48 million US\$) in 2009. Whilst in 2000 the budget available to this Department accounted for 2.02% of the total budget (with 86% of this budget allocated to investment), in 2009 it accounted for barely 1% of the national budget (with 80% being allocated to investment). An increase can be noted in the share of this budget allocated to financing operating expenditure.

The financing of investment in the forestry subsector has changed in terms of both its level and its composition. Over recent years, the financing in terms of volume of investment in the subsector has increased from 5,818 million FCFA (11.63 million US\$) in 2005 to 6,609 million FCFA (13.22 million US\$) in 2007, before dropping to 4,079 million FCFA (8.16 million US\$) in 2009 (a drop of 38% between 2007 and 2009). The forest-related financing accounted for 5.64%, 6.16% and 4.05% of public investment in the rural economy sector (1.54%, 1.87% and 1.03% of total public investment) in 2005, 2007 and 2009 respectively.

The composition of the investment has also undergone some changes, with the share of internal financing increasing to 36% of financing in the subsector in 2009 (less than 20% on average between 2000 and 2005 and 24% in 2007). At the same time, external financing (consisting of grants and loans) decreased to 64% in 2009 as opposed to 76% in 2007 and 82% in 2008. Although the forestry situation is a matter of increasing concern for national public authorities, it has to be acknowledged that the poor coordination of initiatives (planning, negotiations, etc.) and failure to fully take into account the transverse nature of the subsector are restrictions on the mobilisation of external financing resources, among other things.

The financing of forest management therefore relies largely on contributions from external partners, and whilst the composition of external financing has not undergone any noticeable changes, grants have become an increasingly important factor, rising from an average of 62.8% of external funds in 2000 and 2005 to an average of nearly 71% between 2006 and 2009.

The forestry sector has significant funding needs, with the inadequacy of public resource contributions consequently increasing the financing gap from 2,166 million FCFA (4.33 million US\$) in 2008 to 2,352 million FCFA (4.70 million US\$) in 2009.

Improving the financing of SFM will essentially involve a reduction in poverty in rural areas (micro-finance and PES), the continuation of the transfer of resources and competences to local players and reinforcing the powers of the Forest Administration in observing, monitoring and assessing forest resources and in the recovery of charges and exploitation taxes. It is also important that additional and sustainable financing be secured through the use of new mechanisms (REDD and PES in this case).

It is essential, today, that we move from a situation where wealth can only be created by destroying natural resources to a world where the protection of natural resources is in itself a source of wealth.

INTRODUCTION

Although in small island States and countries with a low level of forest cover this cover is not significant on a global scale, forests and trees do play a large role in the well-being of local populations. Forests significantly contribute to the national economy of many countries through the trade, transformation and consumption of both ligneous and non-ligneous forest products.

The forests found in such countries are also important on a worldwide scale due to the role they play in the conservation of biodiversity, in particular native species and those with genetic variability. In many countries with a low level of forest cover, rural populations greatly depend on both ligneous and non-ligneous forest resources, whilst forests also provide many ecosystem services such as the protection of drainage basins.

During a special session held in 2009, the United Nations Forum on Forests proposed measures designed to achieve sustainable management of forests in such countries. Proposed solutions included an ad-hoc intergovernmental group of experts, which has been set up to analyse existing financing strategies relating to sustainable forest management and explore ways of promoting access to funds, including the establishment of a global/worldwide forestry fund. Another initiative consisted of coordinating a 'facilitation process' for forest financing to support countries which have been witnessing a decline in financing in their forestry sector for the past twenty years, including low forest cover countries (LFCC) and small island developing states (SIDS).

Studies have shown that agricultural and pastoral exploitation in such forests is far more profitable than the sustainable management of forest resources, though only in the short-term. The return on investment in sustainable forest management operations is in fact generally lower than the average commonly accepted in business, even though in some cases investment can be attractive. The loss of forest resources is a global issue which can be explained by both direct and indirect reasons. The use of land and the development of forests are guided by socio-economic considerations, and based on previous studies, the most common reason is the change in the way the land is used, from less profitable use (forestry) to more profitable use (agriculture, breeding, etc.).

Having said that, degradation is very often the result of subsistence agriculture or policies which encourage agricultural expansion. This being the case, there are at least two solutions for reducing deforestation, namely regular control of changes in the mode of exploitation and making forest development as incentive and profitable as other usage options.

As part of negotiations on climate change, the reduction of emissions caused by deforestation and degradation (REDD+) in developing countries is contributing to resolving this problem by providing additional revenue for the conservation and sustainable management of forests. New financing related to climate change and forests could, of course, prove particularly important to climate change adaptation programmes for small island countries; likewise, for low forest cover countries, financing the increase in their forest cover through plantations and reforestation represents a great opportunity.

The aim of this study is to produce a report on the financing of the forestry sector by gathering and compiling the relevant information available in the country and analysing current and potential financing source flows, financing gaps, financing opportunities and interesting lessons learned and experiences gained in the field of sustainable forest management.

I. GENERAL INFORMATION ON MALI

1.1 Physical data

Isolated at the heart of Western Africa and over 1000km from the sea, Mali covers an area of 1,241,238 km², 11- 25 degrees north latitude, 0-14 degrees west longitude and 0-50 degrees east longitude. It shares borders with seven neighbouring countries, namely Algeria, Burkina Faso, the Ivory Coast, Guinea, Mauritania, Niger and Senegal.

Its intertropical continental climate is characterised by the alternation of a long dry season and a rainy season lasting from 2 months in the north to 5-6 months in the south, with a highly irregular pluviometry ranging from less than 100mm in the north to over 1200mm in the south.

Since the dry seasons were first experienced in 1970, a more arid climate has been noted throughout the country, as well as a global decline in useful rain and the southward shift of isohyets (curves joining points with the same pluviometry).

Such conditions contribute to the weakening of all ecosystems, particularly those in the Sahelian area, and have even resulted in some populations migrating to the wealthier, better-watered areas in the south of the country.

The area is prominently marked by the Senegal River to the west and the Niger to the east, crossing through the country for 900km and 1,700km respectively. The inner delta of the Niger, which spans some 40,000 km², is one of its most remarkable ecological features.

With regards to natural resources, Mali is sub-divided into 4 large eco-climatic areas consisting of 49 agro-ecological areas. These are, from north to south:

- 1) the **sub-Saharan or desert area**,
- 2) the **Sahelian area** which also includes the **inner delta of the Niger**,
- 3) the **Sudano-Sahelian area**
- 4) the **Sudano-Guinean to Guinean area**.

Arable land is made up of units of vegetation soil formed by soils with a high to very high production potential and units of vegetation soil formed by soils with moderate production potential. The total area of such land is estimated at some 1,486,300ha. Arable land does not include dead dunes, flattened dunes, ground on lateritic duricrust, flooded ground or rocky or unusual ground.

Figure 1 Map of Mali



1.2 Population-related data

In 2009, the population of Mali stood at an estimated 14,517,176 inhabitants (RGPH (General Census of Population and Housing) interim report 2009). The country has a very young population (61% of which are under 25 years of age) and the average density is around 10 inhabitants per km². In reality, this density varies greatly from north to south, with the three northern regions (Timbuktu, Gao and Kidal), which occupy two thirds of the country, being the least populated, home to only 9% of the total population, with a density of 1.43 inhabitants per km², as opposed to 27.86 inhabitants in the south of the country. The rural population is estimated as 8,399,416 as opposed to 4,313,239 in the towns and cities.

The rural population gets the majority of its income from the exploitation of natural resources (agriculture, breeding, fishing and the exploitation of forest and fauna). Very few populations depend on the exploitation of forests in the strictest sense of the term. Those which have very close links with the forest live in or near those forests listed as the most protected and not far from the major heating wood consumption centres, whilst others live along the roads connecting the country's main towns and cities. These populations have been organised into rural wood management structures as part of the Domestic Energy Strategy. Rural wood markets were created, from which farmers supply urban centres with primarily heating wood and charcoal.

1.3 Socio-economic situation

Reducing poverty is at the very top of the Malian Government's list of development priorities list. This being the case, the 2002-2006 Strategic Framework for Fighting Poverty (SFFP) was drawn up and adopted in 2002. Once this initial, so-called 1st-generation SFFP had been implemented, another 2nd-generation SFFP referred to as the 2007-2011 '**Strategic Framework for Growth and Poverty Reduction**' (SFGPR) was adopted by the government in December 2006.

This document represents a medium-term frame of reference for Mali's development policies and strategies as well as its main instrument of negotiation with all of its technical and financial partners. It was drafted based largely on lessons learned from the evaluation of the 2002-2006 SFFP and has two primary objectives, namely:

- to promote a high average annual growth of at least 7% through the generation of wealth and the creation of jobs.
- to improving the running of public authorities through the continuation, consolidation and deepening of business reforms.

In order to achieve these objectives, the SFGPR proposes three mutually-reinforcing strategic directions, namely i) the development of infrastructures and productive industries, ii) the continuation and consolidation of structural reforms and iii) the strengthening of the social sector.

The macro-economic objectives and forecasts relating to the implementation of the SFGPR over the 2007-2011 period are outlined in *Annex n°1*.

A report from the second year of implementation of the SFGPR indicates that the economic growth rate stood at 5.0% in 2008 as opposed to 4.3% in 2007. This rate is certainly below the objective set, namely 7%, but is nevertheless an improvement on 2007. The primary and tertiary sectors experienced growth rates of 13.3% and 4.9% respectively, unlike the secondary sector, which remained in decline with a negative growth rate (- 4.6%).

Growth in Mali is therefore heavily dependent on the primary sector. According to the definitive results of the 2008/2009 crop year, cereal production reached 4,814,871 tonnes as opposed to 3,885,477 tonnes in 2007/2008 (an increase of 24%), whilst the implementation of the rice initiative meant that rice production increased from 1,082,384 tonnes in 2007 to 1,607,647 tonnes in 2008, an increase of around 49%.

Food production excluding rice also increased by 14.8% (3,207,224 tonnes as opposed to 2,794,508 tonnes in 2007). Similarly, breeding production increased by 4.2% in relation to 2007 and the contribution of silvicultural operations to the GDP increased to 4.05% in 2008.

As far as government finance is concerned, total revenue excluding donations reached 607.3 billion FCFA in 2008 as opposed to 569.9 billion in 2007, meaning an increase of 6.6% despite a relative decline in fiscal pressure (partially due to a reduction in the contribution of the mining sector). Total expenditure and net loans stood at 828.2 billion in 2008 (23.4% of the GDP) as opposed to 845.5 billion FCFA in 2007, an increase of 2.1% reflecting the drop in investment expenditure, with recurrent expenditure accounting for a large share of this expenditure (over 55%). Public debt stock at the end of 2008 was estimated at 988.4 billion FCFA (1,976.8 million US\$) accounting for 27.1% of the GDP.

With regards to social progress, access to basic social services has shown encouraging signs of improvement since the SFGPR was implemented.

Access to housing has been improved, with 2008 seeing the launch of a new social housing programme. The electricity access of populations at national level has also improved, whilst efforts

made to improve access to drinking water have meant a national increase from 70.1% in 2007 to 71.7% in 2008.

1.4 Development policy and strategies: The place of forest management in global and sectoral development policies

Protecting the environment for the purposes of ensuring sustainable development is just one of the challenges which must be overcome in order to achieve the Millennium Development Goals (MDG) set for 2015. One of the aims of this objective is to integrate sustainable development principles into national and international development policies and to reverse the downward trend in environmental resources by 2015. The inadequacy of environmental data in Mali means that the achievement level of this objective cannot be estimated and the probability of it being achieved by 2015 seems very low with regards to forest resources¹.

On a national scale, the SFGPR represents a frame of reference for all of Mali's development strategies. Sustainable forest management is one of the components of the environmental sector taken into account in one of the SFGPR's areas of strategic direction, namely the development of infrastructures and productive industries, within which the environment occupies 3rd place in terms of priority areas of intervention.

A combination of the National Environmental Protection Policy (PNPE) adopted in 1998 and a National Environmental Action Plan (NEAP) consisting of 9 transversal National Action Programmes (PAN) forms the orientation framework for efficient and sustainable environmental management and planning, the implementation of which must allow for a significant contribution to issues relating to the fight against desertification, decontamination, food safety and the fight against poverty.

The implementation of this policy and the anticipated strategies was expressed in 2007 by, among other things:

- the reinforcement of the powers of local elected representatives with regards to the environmental aspect in social, economic and cultural development plans (PDESC) through the Guide to **Community Action Programs for the Environment** (CAPE)
- the drafting of the 2007 national report on the state of the environment
- the monitoring of international conventions, agreements and treaties
- the celebration and evaluation of the *Quinzaine de l'Environnement* ('Environment Fortnight')
- the management of environmental information
- the design of the environmental observation and monitoring system (DOSE)
- the implementation of the African Environmental Information Network (RAIE)
- the creation of Sustainable Land Management (SLM) programmes

With regards, more specifically, to the management of natural resources including forests, 2007 saw the review of the National Forest Policy and the implementation of the National Wetlands Policy action plan. The review of the National Forest Policy is currently in the process of being finalised, whilst areas of sustainable management concerning the inner delta of the Niger have already been established.

¹ Data concerning the protection and management of forests are not available in the 2nd report on the implementation of the MDG in Mali (2009). The 1st report (2004) indicates a decline in forest resources (forests covered 10.8% of the total area of the country in 2000 as opposed to 11.6% in 1990).

With regards to the decentralised management of local natural resources, it is clear that in the absence of an effective transfer of resources and competences relating to the management of forest and fauna resources, populations are now developing village, town and/or society-wide local agreement initiatives. Such actions are notably expressed through the establishment of surveillance groups and the implementation of protective measures, daily conflict management procedures, wood-cutting regulations, etc.

DRAFT

II. FORESTS AND THE FORESTRY SECTOR

According to the UNDP's report on the MDGs (2000), forests account for 10.8% of Mali's land and the national protected area 3.7%. Carbon dioxide (CO₂) emissions stand at around 0.05 tonnes per inhabitant and have not increased significantly since 1990.

The management of forests, and of natural resources in general, was the exclusive responsibility of the State by means of rather coercive legislation (including the Forestry Act and the National Code). All vacant (including forests) and unowned land belonged to the State, which recognised the customary rights of traditional users. Unfortunately, this form of management did not succeed in halting the forest resource degradation process primarily due to an imbalance between the ever-increasing needs of the populations concerned and the existing possibilities which continued to decrease despite the efforts made through various forest-related projects, as well as worsening climate conditions. Forest resources were also subject to human pressure of both a social (rampant demographics) and above all economic nature.

The report on the 2nd review of the 2007-2011 SFGPR indicates 'a general environmental situation marked by a trend towards (the) degradation and (the) reduction (in resources) under the combined effects of demographics, climate change, unsustainable management practices and poverty among the populations concerned'. Problems and restrictions related to the management of both the environment in general and also forest resources in particular stem primarily from the fraudulent and uncontrolled exploitation of natural stands which go to make up the forest estate and the lack of efficiency in transferring NRM-related competences and resources to local authorities (non-compliance with law n° 96 – 050 governing the constitution and management of local authority estate). Other limiting factors are mainly institutional (redundancy of certain missions by certain bodies responsible for the environment, poor coordination between the State, its Technical and Financial Partners (TFP) and the Civil Society Organisation (CSO), etc.

2.1 The forest in Mali: characterisation

Arable land is made up of units of vegetation soil formed by soils with a high to very high production potential, the total area of land with moderate production potential being estimated at some 1,486,300ha. Arable land does not include dead dunes, flattened dunes, ground on lateritic duricrust, flooded ground or rocky or unusual ground, although such ground can have forest cover and be classed as a forest or wildlife reserve.

Annex n°2 classifies and outlines the various types of forest stand found in Mali.

2.1.2 Areas concerned

The forest areas given below are taken from databases compiled following inventory reports drafted in 2006 on the country's northern regions and diagrams depicting energy wood supply in Ségou, Bamako, Bafoulabé, Yélimané, Bougouni, Sikasso, Koutiala, Kayes, and Kidal. The areas of all forest stands have been estimated at 31,670,000ha.

Table 1 Production, recovery and area of the various forest stands

<i>National category(2006)</i>	<i>Ground cover</i>	<i>Average volume</i>	<i>Area</i>
	<i>%</i>	<i>m³/ha</i>	<i>Thousands of ha</i>
Dense shrubby savannah (thicket)	15-20	11-15	9,808
Sparse shrubby savannah	5-10	5-10	9,888
Tree-planted savannah	15-20	15-20	1,123
Wooded savannah and gallery forests	20-60	20-30	701
Fallow land		8-10	633
Shrubby steppe	2-3	0.5-2	1,870
Tree-planted steppe	3-4	2-3	92
Orchards and parks		8-14	6,381
Clear forests	60-80	60-90	1,174
Total			31,670

Source: Reports (PEALCD, supply diagrams), 2006

Clear forests and gallery forests are the densest and the most productive.

These national forest stands form the forest estate which includes land of which the exclusive or primary products are timber, construction wood and heating wood, wooded and non-wooded forest land, land exempt from land-clearing operations for the purposes of protection, ten-year-old fallow land, sacred woods and protected areas with a socio-religious purpose.

The national forest estate consists of State forest estate, local authority forest estate and private forest estate, each of which is managed in accordance with the classified or protected forest estate regimes. In each case, the law stipulates the management rules to which the owners of the various estates are subject. Irrespective of the estate on which a stand lies, it will be managed either as a production forest or as a protection forest.

In the last Forest Resources Assessment (FRA) report from the FAO, the areas of these formations were estimated and are as follows:

Table 2 Area of forest stands

<i>FRA categories</i>	<i>Area in 1990</i>	<i>Area in 2000</i>	<i>Area in 2005</i>
	<i>Thousands of ha</i>		
Production forest	32,300	31,610	30,920
Soil and water protection forest	14,512	14,202	13,892
Biodiversity conservation forest	5,200	5,200	5,200

Source: DNEF, PSU/RDS, DNA, DNPIA and STP/CIGQE reports

2.1.2 Land-clearing and reforestation

Forest stands are sought-after by all production systems in rural settings. New land-clearing operations, estimated to involve some 100,000ha a year, take place every year in order to meet ever-growing needs for land following the degradation of old farms or increases in the active rural population. Furthermore, overgrazing and bush fires contribute to the degradation of large areas which consequently become unsuitable for any agricultural production. Added to these factors, domestic energy consumption needs are estimated at some 400,000ha a year, though the only statistics available on this issue are those recorded by the Forest Administration, which monitors only a tiny part of removal activities.

Faced with this situation, players in the industry are continuing natural forest improvement and alignment plantation and reforestation agroforestry projects, although given the scale of the forest

degradation phenomenon, such efforts on the part of the players involved are a mere drop in the ocean. Reforestation is also very expensive due to the surveillance, watering, etc. involved. Plantation costs per hectare for the 2010 year are estimated as follows:

- In the south of the country: around 339,000 FCFA and 50,000 FCFA for agroforestry.
- In the north of the country: 1,419,000 FCFA or 759,000 FCFA for the biological fixation of the dunes. In this part of the country, surveillance and even watering are required if plantations are to survive.

With such high costs, improving natural forests and developing and protecting them could certainly give better results.

Table 3 Controlled land-clearing and plantations implemented (2005-2009)

	2005	2006	2007	2008	2009
Planted area (ha)	5,987.5	7,530	9,079.37	10,389.75	16,335.13
Land-clearing (ha)	619.42	602.55	594.45	1,166.55	959.05

Source: Business report, National Directorate of Water and Forests, 2009

2.2 Forest production

2006 inventory reports from the country's northern regions and supply diagram reports from several towns in the southern and central regions indicate the following production levels by stand type.

Table 1 Production in the main forest stands

National category (2006)	Average volume	Area	Total volume
	m³/ha	Thousands of ha	m³
Dense shrubby savannah	13	9,808	127,504,000
Sparse shrubby savannah	7.5	9,888	74,160,000
Tree-planted savannah	17.5	1,123	19,652,500
Wooded savannah and gallery forests	25	701	17,525,000
Clear forests	75	1,174	88,050,000

Source: SMP and PEALCD

According to the same inventories, overall standing volumes are estimated at 520 million m³ with a great deal of variation between north and south and according to eco-climatic area. These volumes are as follows:

- under 10m³/ha for the shrubby savannah in the north,
- 20 to 40m³/ha for tiger bush,
- 50 to 80m³/ha for forests in the Sudano-Guinean area,
- over 100m³/ha for certain gallery forests and forests in the south of the country.

Average productivity stands at 0.86m³/ha/year, though this varies from 1-1.5m³/ha/year in the Sudano-Guinean area and from 0.3-0.5m³/ha/year in the Sahelian and Saharan areas.

2.2.1 Ligneous forest products

The main ligneous forest products involved in commercial exploitation are, in order of significance, heating wood, charcoal, construction wood and timber. Such products are exploited either by means of a Vente de Coupe cutting permit for a specific plot with specifications or by means of a felling permit (a permit entitling the holder to exploit a specified quantity of specific products). Those exploiting the land in this way are required to pay charges and taxes fixed by law, although despite such provisions, the quantities of products which fall under the radar account for by far the largest proportion. The figures given in the table below represent the declared quantities exploited by those in the forestry service.

Table 2 Changes in the exploitation of forest products

Year	Heating wood	Charcoal	Timber	Construction wood
	<i>st</i>	<i>qm</i>	<i>foot</i>	<i>units</i>
2001	174,332.55	80,525.21	11,197	683,096
2002	183,827	74,053	12,204	705,955
2003	140,514	59,962	9,256	668,696
2004	168,385	47,198	8,695	67,871
2005	144,059.1	76,803.5	9,664	79,879
2006	166,422.47	90,525.74	13,095	856,226
2007	142,722.70	26,256.67	24,523	1,021,071
2008	337,810.83	79,221.08	25,580	1,372,884.85
2009	261,337.36	85,198.60	22,724	1,762,753

Source: DNEF reports, 2009

Units: *qm* = 100kg *st* = stère, 1m³ of roundwood

The term 'construction wood' refers to any straight wood with a diameter of between 10cm and 25cm and of 1m or over in length, whilst 'timber' refers to any wood with a diameter of over 25cm, of at least 2m in length and destined for industrial or artisanal transformation.

2.2.2 Non-ligneous forest products

Non-ligneous forest products cater for a wide range of populations' needs, include both animal and plant products, and are traded very significantly, particularly as foodstuffs and drugs. The nature of the main non-ligneous forest products is outlined in *Annex n°3*. Of all these products, only four are registered with the National Directorate of Commerce and Competition and are subject not only to significant local competition but also, and primarily, international. These are:

- tamarind (fruit of the *Tamarindus indica*, a *Caesalpiniaceae* used for various purposes)
- shea (*Butyrospermum parkii*, a *sapotaceae*, the fruit of which produces shea butter, which is used in food preparation and cosmetics)
- nere (fruit of the *Parkia biglobosa*, a *mimosaceae*, which is transformed and used as a condiment)
- gum arabic (gum of the Senegalese *Acacia* tree or Arabic gum).

The following table shows the quantities exported (in both weight and value) between 2000 and 2008.

Table 3 **Value of exports of the four main non-ligneous products**

Year	Value (in thousands of)	
	FCFA	US\$
2000	288,840	578
2001	858,554	1,717
2002	1,142,462	2,285
2003	216,843	434
2004	355,746	711
2005	224,253	449
2006	367,715	735
2007	1,856,150	3,712
2008	914,518	1,829

Source: National Directorate of Commerce and Competition, 2009

See Annex 4 for more details

In 2002, the volume of exports of the four NLFP reached 19,392 tonnes with a value of 1,142.46 million FCFA (or 2.28 million US\$). Between 2005 and 2008, these exports increased from 4,338 tonnes to 33,664 tonnes representing a value of 224.25 million FCFA and 1,856.15 million respectively or 0.45 million and 3.71 million US\$ respectively (7 times the volume), although a decline in exports of some 38% was noted between 2007 and 2008.

Annex 4 provides details of changes in the export of these four main non-ligneous forest products.

2.3 Transformed forest products

Transformed forest products consist of sawn wood and charcoal. However, there are many craftspeople in Bamako and other parts of the country who produce furniture or build ships using imported or locally-sourced wood. Other craftspeople use logs of certain local wood species to produce musical instruments.

Although this sector is very active on a national scale, none of the statistical data available shows what percentage of timber is affected by this transformation.

2.3.1 Charcoal production

The traditional energy sector is characterised by needs for domestic fuels consisting of wood and charcoal. Meeting these needs depends over 90% on ligneous resources, thus putting a great deal of pressure on forest cover.

In 2009, charcoal production controlled by the forest service was estimated at around 8,520 tonnes, with the proportion of production falling under the forest service's radar, although unknown, also believed to be very significant, at least equal to the quantities which are controlled.

2.3.2 Timber production

Timber is artisanally exploited in the forests in the south of the country, with exploited products including baulks and boards used primarily in construction. Operators here are very poorly-equipped and the wood is transformed using saws and chainsaws.

The work involved in the production of plantation timber dates back to colonisation. When independence was gained, this work continued but did not produce the desired results, and most of the few successful plots on these plantations were exploited. Nowadays, the vast majority of timber exploited is sourced from natural forests and transformed into boards, baulks and rafters by Vente de Coupe operators or those with felling permits (permission granted by the Forest Administration). Local sawn wood products found on the market are produced by lumberjacks who are trained in the use of saws and chainsaws for cutting and sawing wood and who either own their own equipment or work for specific operators. The two or three sawmills which used to supply the local market with wood are no longer in operation due to a lack of appropriate equipment and the very high cost of purchasing wood.

The exploitation of timber (as well as heating wood and charcoal) by operators and their principals is subject to the payment of a charge, though it is primarily the domain of rural wood management structures (organisations of producers authorised by the authorities for the purposes of supplying a rural wood market). A rural wood market is a point of sale managed by an authorised rural management structure (See Table 5 on the production of timber).

2.4 Imported logs and forest products

As the production of wood from its forest stands does not cover its national needs, Mali imports a large part of what it needs from neighbouring coastal countries with relatively high levels of forest cover. Imported products include rafters, boards and plywood used in construction and public works, cabinet-making and interior design, though customs statistics do not distinguish between such products, which are generically referred to as 'wood'. The value of wood imported in 2009 stood at over 3,000 million FCFA (6 million US\$) and the import duty and taxes nearly 731 million FCFA (1,462 US\$). Changes to these imports and the relevant import duty and other taxes are as follows:

Table 4 **Wood imports**

Wood imports	Unit	2000	2001	2002	2003	2004
Weight	Tonnes	20,984	23,314	16,303	16,572	17,339
Value (in thousands)	FCFA	2,726,000	2,923,000	2,387,000	2,451,000	2,712,000
	US\$	5,452	5,846	4,774	4,902	5,424
Import duty and other customs taxes (in thousands)	FCFA	449,000	506,000	404,000	481,000	459,000
	US\$	898	1,012	808	962	918
Wood imports	Unit	2005	2006	2007	2008	2009
Weight	Tonnes	16,528	17,642	20,870	21,677	25,026
Value (in thousands)	FCFA	1,935,000	2,134,000	2,533,000	2,819,000	3,380,000
	US\$	3,870	4,268	5,066	5,638	6,760
Import duty and other customs taxes (in thousands)	FCFA	409,000	510,000	573,000	813,000	731,000
	US\$	818	1,020	1,150	1,626	1,462

Source: Accounts, General Customs Directorate

Although the country has had to resort to importing products to satisfy its timber, plywood and board consumption needs, national production of heating wood, charcoal and construction wood largely covers the country's needs in these areas, with the exception of northern parts of the country. Mali's wood production is domestically consumed, with no ligneous products, whether transformed or untransformed, officially recognised either by the DNCC (National Directorate of Commerce and Competition) or the DNEF as being involved in export activities.

2.5 Other forest-related environmental products and services

2.5.1 The forest as a wildlife habitat

Mali runs from the Sahara Desert to the edge of the Guinean Forest and is home to wetlands of international significance, which explains the habitat diversity behind its great and varied fauna. This wealth is, and will long remain, a source of food and medication for rural populations. The age-old exploitation of fauna in Mali and in Western Africa in general has supported the existence of a socio-professional group who are the trustees of a traditional expertise which has withstood the tests of time.

2.5.2 The forest as a place of worship

Despite the degradation forests are suffering, relics of ancient forest stands can still be seen today in many villages, including sacred woods, ancestral burial sites or places of spiritual meditation for certain rural populations. Such places of worship are part of the cultural landscape of certain populations and are protected by the entire community, particularly guardians of the faith.

2.5.3 The forest as a protector of water catchment areas

In order for the populations concerned to benefit from the advantages of protecting water catchment areas, land-clearing is prohibited:

- In areas where watercourses begin.
- In areas which are protected for public health reasons or in the interests of national defence.
- On mountainsides and hillsides, dunes and plateaus where there is a risk of gully erosion around permanent and semi-permanent watercourses over a span of 25 metres from the banks of bodies of water such as lakes and pools.

2.5.4 Carbon sequestration

The main greenhouse gas emitted by Mali in 1995 was CO₂ (23,372 Gg) due to the conversion of forests and meadows, the agricultural use of soils and the transformation and consumption of conventional energy sources. At the same time, Mali is a major CO₂ well due to the frequent abandonment of land (-13,643 Gg) and forests and plantations (-24,602 Gg), giving it a negative balance overall (-9,873 Gg). There are also CO emissions (705 Gg), resulting primarily from the burning of savannah and the transformation and conversion of forests and meadows and agricultural residues, to take into account.

Methane emissions stood at 388 Gg and were produced primarily as a result of domestic breeding and rice-growing, the conversion of forests and meadows and the burning of savannah and waste. (Source: *United Nations Framework Agreement on Climate Change, 2000*)

2.5.5 The forest as a biodiversity reserve

Ecosystem diversity is the reason behind the presence of many plant and animal species that populations use as food and medication. Indeed, 1,739 spontaneous ligneous species of 687 different genres and from 155 different families were recorded in the country, with eight species of plant considered native to Mali.

The country's wildlife consists of no fewer than 136 mammal species (IUCN, 1989), including 70 large species, and around 640 bird species, 15 of which are considered rare, with Palearctic migratory birds also spending 75% of their time in the inner delta of the Niger.

There are also many breeds of domestic animal made up of sub-breeds of bovine, ovine, caprine, cameline, equine, asine and porcine species.

The country's watercourses were home to around 143 fish species belonging to 67 different genres and 26 different families (Daget, 1954).

The country is also a major centre of domestication for many cultivated plant species, including, among others, rice, sorghum, cowpea and earth pea, for which there are various local ecotypes and related species.

Unfortunately, Mali's rich and varied natural heritage is under threat, primarily due to the actions of mankind (land-clearing, overgrazing, poaching, illegal fishing, bush fires, chemical pest and avian control (use of pesticides) and climatic hazards (notably rain shortages)).

2.6 The forestry sector in the national economy: the role of the forest in national development

In terms of national accounting, the forestry subsector is a component of the primary sector which also includes agriculture, breeding and fishing-related activities. Apart from general data on GDP, very little data exists regarding the forestry sector's contribution to employment (in silviculture, the wood industry and the furniture industry) and the contribution of the various components of this sector to the economy as a whole.

The contribution of silviculture may enable the forestry sector's contribution to economic growth to be estimated. The level of production and the contribution of silvicultural activities to Mali's GDP are given in the following table:

Table 5 Contribution of silviculture to GDP (2001-2008)

Year	GDP (market value) in millions [1]		Primary sector GDP [2]		Silviculture GDP [3]			
	FCFA	US\$	FCFA	US\$	FCFA	US\$	[3]/[2]	[3]/[1]
2001	2,212,038	4,424	774,121	1,548	100,069	200	12.93%	4.52%
2002	2,222,735	4,445	665,560	1,331	110,391	221	16.59%	4.97%
2003	2,453,555	4,907	864,997	1,730	122,904	246	14.21%	5.01%
2004	2,632,057	5,264	900,753	1,802	120,983	242	13.43%	4.60%
2005	2,893,858	5,788	1,001,446	2,003	136,654	273	13.65%	4.72%
2006	3,201,472	6,403	1,063,685	2,127	137,201	274	12.90%	4.29%
2007	3,424,535	6,849	1,114,794	2,230	146,102	292	13.11%	4.27%
2008	3,912,771	7,826	1,412,222	2,824	158,650	317	11.23%	4.05%

Source: DNSI - DNP Economic Accounts

The average contribution of silviculture to the GDP of the primary sector stood at around 13.50% for the 2001-2008 period, whilst in 2003, the contribution of silvicultural activities to Mali's GDP equated to 5.01%. These figures, which show only the share of primary activities related to forestry, are an indication of the importance of this subsector to Mali's economy.

Given the lack of data on the wood industry and the predominance of unofficial data regarding the transformation of timber and construction wood, it is difficult to rigorously analyse the total contribution of this subsector to the national economy. The figures given here are the result of a study carried out on behalf of the FAO².

This study divides the forestry domain into three subsectors, namely silviculture, the wood industry and the pulp and paper production industry³. Mali is primarily affected by the two primary subsectors, whose contribution to the economy has been evaluated in relation to jobs created, added value and the trade of forest products.

Silviculture includes the production of standing wood, afforestation and reforestation operations, nursery management and forest exploitation (heating wood, timber and construction wood, charcoal, the protection and management of forests and the harvesting of non-ligneous forest products), and it should be borne in mind that in most cases, the data shown in the study have been estimated either by adjustment or according to indicators provided by countries in the same region.

However, it estimates the number of jobs in the silvicultural sector at 1,000 between 1990 and 2000, with an equal number of jobs in the wood industry. With regards to the total working population, the percentage of jobs in the forestry subsector was deemed negligible to the study as it was based on an estimate.

The average annual added value for 1990 to 2000 was estimated at 113 million US\$ per year for silvicultural sector and 48 million US\$ for the wood industry, whilst the value of exports for the same period was estimated at 1 million and imports at 4 million US\$. The percentage of exports of forest products (non-ligneous because Mali does not export any ligneous products) in relation to total exports is 0.1% whereas imports account for 0.6% of total imports. Mali is indeed a low forest cover country which depends on imports to meet its forest product consumption needs.

Given the relatively high contribution to economic growth, on the one hand, and the low number of jobs noted in the subsector, on the other, the reliability of the data used in the study may well be questioned.

Forest exploitation has always been considered a secondary activity, with heating wood and charcoal by far the largest branch of the forestry subsector due to its significance in domestic energy consumption. Despite this importance to the national economy, the population dependent upon forest resources has never been evaluated.

² LEBEDYS Arvydas (2004): Trends and current status of the contribution of the forestry sector to national economies; document drafted for the FAO programme on the financing of sustainable forest management – Working paper FSFM/ACC/07, Forest Finance.

³ According to the International Standard Industrial Classification of all economic activities (CITI), the forestry sector includes all activities relating to the production and marketing of industrial roundwood, firewood and charcoal, sawn woods and boards made from wood, pulp and paper and furniture, as well as the production and commercial transformation of non-ligneous forest products. These subdivisions of forestry operations do not appear in the country's official statistics.

2.7 Sustainable forest management in Mali: issues and challenges

Challenges related to forest conservation primarily include climate change, the continuous degradation of natural resources by mankind and a lack of human, material and financial resources. Issues faced notably include the decentralised management of natural resources, including forest resources, by the authorities, the increasing decline in the role of forests in satisfying needs and the risk of growing poverty among primarily rural populations.

2.7.1 Climate change

The effects of climate change are felt by all rural development sectors, with successive droughts having had harmful effects on the growth and renewal of plant and wildlife resources. With regards to the forestry sector, such effects include, among other things:

- An increase in the number of illegal forest operators: some small farmers begin exploiting the forest (more often than not illegally) in order to compensate for poor crop years.
- A decrease in water table levels, the standing death of certain ligneous crops and biodiversity erosion in general.
- Soil poverty.
- The increase of annual land-clearing operations for agricultural purposes and overgrazing due to countrywide breeding.

2.7.2 The continuous degradation of forest resources

The population of Mali was estimated at 14,517,176 inhabitants in 2009, with an annual growth rate of over 2%. This growth in the country's population has direct repercussions on the degradation of forest resources, notably as a result of domestic wood use, which remains the primary reason for the exploitation of ligneous products. The country's wood consumption is currently estimated at 1m³/inhabitant/year with an average productivity of 0.86 m³/an.

The reduction in wooded areas as a result of all activities responsible for land-clearing is 500,000 ha/year, of which 400,000 ha are attributable to wood-felling and 100,000 ha to agricultural land-clearing.

These figures show that if the current energy wood consumption trend is not reversed, the resulting pressure on natural resources will become unbearable.

2.7.3 Insufficiency of human and financial means

The task of the forest service is primarily to (i) establish sustainable methods of managing renewable natural resources, (ii) train the relevant players in the application of these management methods, and (iii) monitor said application in accordance with the applicable management standards. It is paradoxical that faced with such a task, work forces and financial resources continue to dwindle and this situation remains a matter of concern for the Forest Administration, which must do its utmost to improve levels of financing.

2.7.4 The decentralised management of forest resources – transfer of competence and resources with regards to managing natural resources

Decentralisation is now one of the most significant issues in forest resource management as it brings with it many difficulties, including the low level of human and financial resources available to the authorities.

2.7.5 The role of the forest in the formation of GDP

The continuous improvement of the forestry sector's contribution to the formation of GDP is a relevant indicator in the sustainable management of forest resources. However, there is nevertheless some effort to be made in order to obtain the statistical tools required to assess the evaluation of all aspects of natural resource management.

2.7.6 The increasing poverty among populations

Two household surveys carried out in 2001 and 2006 showed that the number of people living in poverty is believed to have increased from 5.687 million in 2001 to 5.841 million in 2006, an increase of nearly 3% over this period (*2002-2006 SFFP Implementation Report*). The national poverty incidence for 2006 stood at 58% (32% of urban-dwellers and 70% of those living in rural settings).

These figures sufficiently prove that Mali is one of the world's poorest countries, and this poverty has harmful consequences on the sustainable management of both natural resources in general and, more specifically, on forests, in countries with a low level of forest cover. Sustainable forest management requires both financial resources and a code of conduct that those living in poverty find it hard to abide by. They have no choice other than to exploit the meagre forest resources which protect the crop land and pasture land on which they depend in order to survive, resulting in more severe degradation of such resources and the consequent worsening of the poverty level which pushes them to exploit the resources to depletion in the first place. In basic terms, poverty results in the degradation of natural resources which, in turn, results in poverty, meaning that breaking this vicious circle is one of the key challenges facing sustainable forest management.

III. CROSS-SECTORAL POLICIES, INSTITUTIONS AND LINKS

3.1 Forest policy and legislation

Mali has at its disposal a veritable arsenal of political and technical (sectoral policies and strategies) and legal instruments which determine the terms of intervention and management applicable to all economic and social development sectors. We will henceforth look in greater detail at the policies and strategies and legislative instruments relating to environmental and forest resource management.

3.1.1 Policies and strategies

During the National Environmental Conferences held in July 2009, the environmental field was defined and dealt with based around three key areas:

- The management of natural resources including the management of arid areas and climate change, the latter having strong cross-sectoral implications.
- Improving quality of life, which is greatly affected by problems relating to pollution, decontamination and health.
- Measures (education, communication, research, etc.) for consolidating environmental initiatives.

Thus far, natural resource management had been the subject of only three political documents and one strategy, namely:

- the 1998 National Environmental Protection Policy
- the 1995 National Forest Policy
- the 2005 National Wetlands Policy
- the 2001 National Biological Diversity Strategy

During the conferences, three new strategies were proposed with a view to dealing with NRM as a whole. These included:

- the National Protected Area Management Strategy
- the National Arid Area Development Strategy
- the National Climate Change Strategy

Forest policy includes all political trends and principles of action adopted by the authorities in harmony with other sectoral policies designed to guide future decisions relating to forest resource management in favour of society. It is responsible for drawing up an inventory of forest resources, setting objectives and establishing strategies to be implemented and means of application and includes an action plan consisting of a wide range of planned and scheduled initiatives to facilitate its implementation at various levels (national, regional and local). This document, drawn up in 1982, was first updated in 1995, then in 2007, and work is now underway to see it adopted by the authorities.

The forest policy action plan will be implemented across a nationwide forest estate which is also subject to other sectoral policies, meaning that it will involve a great deal of interaction with Rural Development (agriculture, breeding and fishing) sectoral policies as well as the departments responsible for mining, energy, water and facilities.

The transverse nature of environmental management is primarily dealt with through the inclusion of the environment in sectoral policies, and it should be noted that agricultural, water and mining policies also significantly involve natural resources. **Despite the importance of this link, none of**

these policies explicitly refer to forest resources; rather, said resources are integrated into the more general concept of environmental protection.

3.1.2 Forest legislation

Malian forestry law relating to the management of forest resources, wildlife and piscicultural resources is legally based on the 1933 London (Colonial) Conference on the Conservation of Flora and Fauna in their Natural State and the (Colonial) Decree of 4th July 1935 creating the forestry system in French West Africa (AOF). The African Convention on the Conservation of Nature and Natural Resources adopted by the Organization of African Unity (OAU) was largely inspired by these texts. The codification of post-independence legislative and regulatory texts relating to forestry, fauna and fishing dates back to 1968, after which the texts were fundamentally revised in 1986 and 1995.

Current forest legislation is very abundant (see Annex⁶) and covers all issues relating to the forestry sector. Law n°95 – 004 defines the national forest estate in relation to its components, namely State forest estate, local authority forest estate and private forest estate, distinguishing between two different types of estate, classified forest estate and protected forest estate, depending on the management system in question. Law 95 – 004 and its implementing regulations (decrees and orders) was responsible for stipulating the conditions of forest resource management and is complemented by Law n°95 – 003 governing the exploitation, transportation and trade of wood.

The National Land Code confirms the customary rights applicable to unregistered land and recognises the authorities' right to manage their estate (Law n°96 – 050 governing the constitution and management of local authority estate). The Agricultural Framework Law (Law n° 06 – 045) also deals with forest management issues⁴.

Mali has also signed and ratified various international legal instruments, including the Convention on Biological Diversity, the United Nations Convention on Desertification and the United Nations Framework Agreement on Climate Change to deal with the environmental challenges presented by the MDGs.

However, of all the above-mentioned laws, Law n°95 – 004 and its implementing regulations is the main legal tool governing the protection and management of forest resources.

3.2 Key players in the forestry sector

The institutional framework for the management of forest resources consists of several very varied institutions and organisations, some political, others technical, some operating on a national level, others at regional and local level. Various decentralised local authority organisations exist alongside these State organisations, as well as others from the private and community sectors, and forest management is one of the areas of intervention of several technical departments, such as those of agriculture, breeding, the environment and mining and energy, as well as nowadays the local authorities and various NGOs, with no real coordination of their actions.

The role of the State in such a situation is particularly important, especially when dealing with a sector which is undoubtedly one of the bases of economic, social and cultural development, namely land, forest, fauna, water and air.

⁴ By way of example, article 158 stipulates that 'the State draws up the agricultural development policy in conjunction with the local authorities and the agricultural profession. The agricultural development policy takes into account the national environmental protection policy, which in turn takes account of forest and fauna policy (...)'.

Political orientation unit

The Ministry of the Environment and Decontamination is the political orientation unit responsible for the management of forest resources, though it does share this task, primarily with other departments such as those of agriculture, breeding and fishing, mining and energy, which has resulted in the creation of an institutional framework for management environmental issues.

Coordination, monitoring and evaluation unit

The National Directorate of Water and Forest is the coordination unit for national forest policy.

Initiative implementation structures

NRM initiative implementation structures fall within the competence of public authorities, local authorities, the private sector and NGOs.

With regards to administration, the Regional Directorates of Water and Forests and their various decentralised departments, which are supported by other technical services at both regional and sub-regional level, are the most heavily-affected players.

Local authorities intervene in NRM initiatives at all levels.

The private sector intervenes by means of the provision of services and the implementation of promotional initiatives in certain industries.

The best-organised institutions consist primarily of the rural management structures (SRG) set up by the AMADER as part of the DES, though there are also various associations and NGOs which are involved in natural resource management at various levels (national, regional and local). They use various instruments and tools, the most common of which are the simplified development plan, the local council environmental action plan, local agreements and traditional means of protecting and managing natural resources (e.g. Hogokana in Dogon territory). NGOs and associations are primarily involved in the supervision of forest operators, including teaching them good NRM practices.

A study commissioned by the financial and technical partners in 2006 on the financing of environmental projects identified thirty-four NGOs, three of which were international and thirty-one of which belonged to ten nations (Europe and America), not to mention local NGOs.

Besides the abovementioned institutions, forest exploitation remains an individual, occasional and often family activity practised primarily by uncoordinated rural populations.

In the case of timber exploitation, modern equipment (such as saws and chainsaws), which only a few groups of professionals can afford, is required. Mali has been home to two or three sawmills, one of which was part of a government corporation (EMAB), though today, none of these mills is in full operation.

Forest research

In 2008, the programme on improving the management of forest resources lead three areas of research, namely the genetic improvement of Sahelian fruit trees through participatory vegetative multiplication, the regeneration by means of plantation of *Deutérium microcarpum* and the preservation of plant biodiversity through harvesting and the conservation of forest seeds.

These themes clearly respond to economic concerns among rural populations meaning that they may benefit from their support in the future.

Training executives in the forest service

Training in this field is provided in colleges and universities at three different levels:

- technical officers and technicians are trained at the **Forestry Practical Training Centre of Tabakoro**,
- senior technicians are trained at the Katibougou Rural Polytechnic Institute (IPR), and
- engineers are trained either at the IPR or at foreign universities.
- Post-graduate training is provided at the ISFRA and abroad

Other training paths also provide executives for the Forest Administration, the workforce here still demonstrating not only an imbalance between the various levels but also a failure to meet supervisory standards.

3.3 Decentralisation of forest management: the role of other institutional players

Decentralisation is a political reform whereby the State relinquishes some of its powers and transfers them to decentralised administrative bodies set up by local populations and known as 'local authorities'. There are three levels of decentralisation in Mali, namely the region, the circle and the commune, each with its own deliberation unit made up of elected citizens, known as the Regional Assembly ('*Assemblée Régionale*'), the Circle Council ('*Conseil de Cercle*') and the Local Council ('*Conseil Communal*') respectively, and represented at national level by a Local Authorities High Council ('*Haut Conseil des Collectivités*').

The authorities organise forestry operations on their respective forest estate in collaboration with professional organisations and the relevant technical services in accordance with local laws and conventions.

Local authorities may contract out the management of part of their estate to individuals, companies or organisations in the public or private sectors, with charges relating to the exploitation of forest resources on the authority's estate being set by the relevant unit.

The decentralisation of forest management is established by the law governing the constitution and management of local authority estate. In order to implement this in relation to the Malian Agency for the Development of Rural Electrification (AMADER), the Domestic Energy Strategy (DES) component set up Rural Wood Management Structures which operate in rural markets. The AMADER comes under the ministry responsible for energy whereas forest resource management is the domain of the Ministry of the Environment.

Rural wood management structures are organisations of producers authorised by the authorities for the purposes of supplying a rural wood market. A rural wood market is a point of sale managed by an authorised rural management structure. For the purposes of the DES, the decentralised management of forest resources has to be perceived as a three-pronged concept, these prongs being *political decentralisation, fiscal and financial decentralisation and technical decentralisation*.

It could be said that political decentralisation was advanced by the establishment of 703 communes, led by mayors and local councils. The next priority is to establish the competences of the various communes with regards to natural resource management by improving forest taxation and increasing their technical powers.

Improving taxation is currently hindered by two phenomena, namely the lack of control exercised by forest officials and corruption. With regards to increasing powers, various training sessions have already been organised but have had very little impact due to the periodic replacements which take place at the end of each term of office.

3.4 Other key sectors with a major impact on the forestry sector

Activities in other sectors, such as agriculture, mining and energy and breeding, also have a great impact (positive and/or negative) on forest resources.

3.4.1 The agricultural sector

The Rural Development Master Plan (SDDR) is structured around major objectives in line with the Government's general development objectives, including:

- Environmental protection and the conservation of natural resources. A strategic direction which underlines the obligation to take into account changes in the state of degradation of natural resources under the effects of climatic hazards and the actions of mankind. This involves adopting a long-term view of rural development based on the sustainable management of natural resources as well as involvement and accountability on the part of the populations concerned.
- Restoring and maintaining the fertility of soils in the framework of natural resource management and rural land management programmes and projects, among others. Restoring and maintaining the fertility of soils is an important issue in terms of both rural development policy and the day-to-day concerns of small farmers throughout the country. Given the advanced state of degradation of natural resources and insufficiency of the means available to rural producers, initiatives concerned with the preservation and promotion of land resources exceed the means available to small farmers and require the cooperation of the national community.
- The Agricultural Framework Law outlines the general objectives of agricultural development policy as follows: (i) the promotion of women, children and men in rural areas, (ii) the food sovereignty of the country, (iii) the reduction of rural poverty, (iv) the modernisation of family agriculture and the development of agro-industry, (v) environmental protection and the sustainable management of natural resources, (vi) increasing the contribution of the rural sector to economic growth and (vii) the balanced and coherent agricultural development of the country.

Interaction in the agricultural sector is related to the demand for new land due not only to a rapidly growing population but also to the modernisation of the sector, not to mention annual land-clearing operations related to slash and burn agriculture, estimated to involve some 100,000 ha.

3.4.2 The energy sector

The Domestic Energy Strategy (DES), drawn up in 1990, was implemented between 1996 and 2002 with the support of various development partners. Mali primarily (81%) depends on ligneous resources to meet its energy needs, with all of its domestic fuel (wood and charcoal) coming from national forest stands. **Fuel consumption levels stood at some 6 million tonnes in 2002 and put significant pressure on the country's forest ranges, estimated at around 33 million hectares.** The drafting of energy wood Supply Plans (SDA) confirmed that certain parts of Mali had already eaten into their forest capital.

Certain major issues and constraints are yet to be overcome in the short and medium-term in order to ensure the balanced and sustainable development of the traditional energy subsector. Indeed, the taxation and retail price of wood and charcoal do not reflect the actual economic costs of the ligneous resources and do not allow either for the self-financing of the subsector or adequate remuneration for producers. The inadequacy of forest control can also be noted, along with the fact that energy wood remains at a disadvantage in terms of competitiveness in relation to other fuels.

With regards to the mass creation of rural markets (RM), the need for thorough consideration of the relationships between local authorities, notably the communes and the RMs, the rights and duties of each player and the flows of funds which could bind them, is proving more urgent than ever.

Furthermore, the domestic energy sector is currently managed by two ministerial departments (the MEE and the MED), two central technical services (the DNE and the DNEF), a service related to the DNE (the CNESOLER) and a personalised service (the AMADER).

There is, therefore, a degree of institutional diversification in the public management of the energy sector, one of the consequences of which is the risk of incoherence and dispersion of efforts made with regards to outlining and implementing national energy policy.

3.4.3 The breeding sector

The practising of pastoral activities is subject to an obligation to protect the environment, and the exploitation of pastoral resources for animal feed must be sustainable and carried out in a way so as to preserve the rights of both present and future generations. Shepherds and shepherding organisations must provide support for environmental protection and the fight against desertification and contribute, in collaboration with the relevant technical services and other users, to maintaining natural ecosystems and the balanced functioning thereof and developing their productive potential.

Interaction between the environment and breeding activities can be seen from two different angles, from both a degradation and an enrichment point of view. The main causes of degradation are overgrazing, bush fires and the abusive trimming of ligneous resources, with overgrazing sometimes resulting from high herd numbers, or even poor management of the area (reduction in mobility through obstruction of passage) with a herd which does not necessarily exceed the carrying capacity of the area in question.

Breeding does, however, also contribute to environmental enrichment and examples abound of it making a positive contribution to environmental balances.

Interaction with the breeding sector is therefore related to the mutilation practices of goatherds in the most fragile Sahelian areas, bush fires and the abusive cutting of feed-grade ligneous resources, which are also the species which provide high-value wood (*Pterocarpus erinaceus*, *Azelia africana* and *Kaya senegalensis*). Herd numbers are increasing and overgrazing has become a national phenomenon which fuels many conflicts in rural areas, and such interaction justifies the legitimacy of ways of exploiting resources in the forest environment by various communities depending on the availability of water and resources in the vicinity.

More often than not, all of these sectors act upon resources without any consultation, which is why many forests, including classified forests, wildlife reserves and national parks, have been taken over by the agricultural and breeding services despite the existence of laws granting them special status. *The sustainable management of forest resources remains an issue, primarily due to the conflicts of interest and competence between the various institutions involved.*

In order to better incorporate the environment into sectoral policies and strategies, the systematic application of regulatory measures in the field and of specially-adapted international instruments for environmental evaluation and monitoring is required when designing certain projects. Such measures notably include systematic strategic environmental evaluation when devising both global and sectoral policies and environmental impact studies when designing development projects and transport infrastructures and devising industrial and mining activities.

3.5 National programmes: the National Action Plan for Adaptation to Climate Change (PANA) and the CCD's National Action Programmes

3.5.1 The National Action Plan for Adaptation to Climate Change (PANA)

Like all the Sahelian countries, Mali has always had a variable climate, which expresses itself through the alternation of dry periods and wet periods.

The dry periods are characterised, in pluviometric terms, by below-average rainfall, resulting in extreme drought of which the harmful consequences include, among others, water shortages, the destruction of forest resources, the premature drainage of pools and lakes, a decline in fishing resources and the degradation of the ecosystem.

The wet periods, on the other hand, are characterised by relatively abundant rainfall.

Over the past few decades, the frequency and duration of climate variability has reached such a level, particularly where the dry period is concerned (many successive years of drought following the decrease in rainfall), that it may well, and quite rightly, be put down to climate change.

A climate change adaptation programme drawn up by all players concerned with a view to overcoming the consequences of such climate variability has enabled the identification not only of priority sectors but also of priority projects to be implemented.

Priority sectors

Priority sectors were identified using a mutually-established climate risk rating system, whereby the weightings of the various climate risks in the various sectors were evaluated. The sensitivity matrix produced as a result weighting these risks enabled priority sectors, namely agriculture, health, fishing, energy, water resources, breeding, forest and fauna, to be established.

In order to analyse Mali's vulnerability to the harmful effects of climate change in its main sectors, the PANA took into account the results of existing studies, on the one hand, as well as, above all, the knowledge and experiences of rural communities and the institutions concerned on the other.

List of priority activities

The multifaceted analysis and sensitivity tests resulting from local consultations resulted in the creation of a list of priority options, listed in order of importance, from which priority initiatives were established and expressed in the form of project sheets.

In terms of projects, the promotion of butane gas and wood substitution fuels stands at seventh place whilst *the fight against bush fires, and raising awareness and improving organisation among populations with regards to preserving natural resources (drafting of local reforestation and agroforestry conventions)* stand at tenth place.

3.5.2 The CCD's National Action Programmes

In order to meet the specific overall objectives outlined in the National Environmental Protection Policy, a series of action programmes, including the following, have been drawn up:

- National programmes (of which eight of the nine planned relate to fighting desertification, which constitutes a major issue in environmental management in Mali).
- Regional Action Programmes (PAR) for each of the 8 regions and the district of Bamako.
- Local Action Programmes (PAL).

These are generally the fruit of much consultation between the institutions and other players concerned.

National Action Programmes

Nine national action programmes have been identified, namely:

- The *Programme d'Aménagement du Territoire* (National Development Programme);
- The *Programme de Gestion des Ressources Naturelles* (Natural Resource Management Programme);
- The *Programme de Maîtrise des Ressources en Eau* (Water Resource Control Programme);
- The *Programme d'Amélioration du Cadre de Vie* (Lifestyle Improvement Programme);
- The *Programme de Développement des Ressources en Energie Nouvelles et Renouvelables* (New and Renewable Energy Resource Development Programme);
- The *Programme de Gestion de l'Information sur l'Environnement* (Environmental Information Management Programme);
- The *Programme d'Information, d'Education et de Communication en Environnement* (Environmental Information, Education and Communication Programme);
- The *Programme de Suivi de la Mise en Œuvre des Conventions* (Convention Implementation and Monitoring Programme); and
- The *Programme de Recherche sur la Lutte Contre la Désertification et la Protection de l'Environnement* (Environmental Protection and Anti-Desertification Research Programme).

The relevance of these programmes, as well as the relevant objectives, results and priority initiatives, has been outlined based on the diagnosis and reports of certain deficiencies in the policies and action programmes currently being drawn up and/or implemented. They have been examined, enhanced and validated during a series of discussions in which the main technical services concerned, as well as certain partners with active involvement in environmental protection, were involved, and place great importance on the sustainable natural resource management and therefore sustainable forest management.

The implementation of such programmes is not exclusively the responsibility of the Ministry of the Environment but rather of all departments whose missions involve one or several of the programmes selected and all active partners in the field of environmental management.

Regional Action Programmes (PAR)

Mali is characterised by its extensive area (1,241,238km²) and the diversity of its ecosystems, which run from the Sahara in the north to the Sudanian area in the south. In order to properly take this discrepancy into account and adhere to the decentralisation process currently in force, a series of action programmes have been drawn up involving the country's 8 regions and the Bamako district, as well as certain villages (by way of experiment). These regional (PAR) and local (PAL) action programmes were designed on a participatory basis by regional teams in conjunction with the populations concerned.

Nowadays, the international community is concerned about the effects of climate change, which are the focus of all energies, even though much disagreement still surrounds greenhouse gas reduction quotas. Despite this reality which the world finds forced upon it, we must not forget that fighting desertification in countries with a low level of forest cover remains a priority, since for these countries, fighting desertification and therefore the sustainable management of natural resources, include biodiversity, is imperative to adapting to climate change.

IV. PROGRAMMES IMPLEMENTED IN THE FIELD OF SUSTAINABLE FOREST MANAGEMENT IN MALI

Natural resources have been managed through various reforestation and natural forest development programmes, fauna development projects, agricultural and breeding projects and surface and underground water control projects, implemented by State bodies, NGOs and associations and certain local authorities since decentralisation was introduced.

Over the past twenty-five years, various forest resource management programmes have been undertaken, primarily involving:

- industrial reforestation and the development of natural forests
- village and community forestry operations and even rural forestry
- management by rural wood management structures.

4.1 Industrial reforestation and the development of natural forests

Reforestation and natural forest development programmes have gradually adapted to the issue of forest exploitation at both regional and national levels.

Such programmes have involved either one or several regions and attracted the interest of various cooperative partners who have acted either alone or as part of a joint financing initiative in cases where the budget was beyond the possibilities of a single Technical and Financial Partner.

Achievements include the work of the OAPF and the OARS in the forests around Bamako and in Sikasso, which was carried out with the aim of producing enough heating wood and timber to satisfy consumption needs, securing significant financial means and resulting in the creation of large Gmelina, Eucalyptus and Neem plantations.

4.2 Community and rural village forestry

This concept came about following the difficulties encountered in the continuation of industrial plantations, the cost of which to the national budget was still high. As the primary beneficiaries of forest development, local populations should be involved in the profits this type of activity could provide.

A very wide awareness of the initiative was raised and the initiative was rolled out right across the country in the form of rural plantations, village groves, green belts and alignment and shade-tree plantations.

They were also sometimes combined with anti-erosion measures, the construction of better homes, measures design to protect degraded areas or the provision of equipment (such as the 'S'Equiper en Reboisant' ('Provision through Reforestation') project.

This programme was also responsible for opening the doors of the State forest estate to local authorities and professional organisations according to specifications which were more often than not ignored. Participatory forest management was initially aimed at former plantation employees who came together to form associations of artificial plantation and natural forest operators.

Revenue generated by the initiative was shared between the State and these organisations, which were also responsible for implementing protective measures.

As a result of this approach, decentralised resource management became increasingly evident, with populations gradually taking the place of the various State departments in the performance of

certain functions. These projects were primarily financed by bilateral partners right across the country, through State departments, associations and NGOs, and notably included:

- the APIVIG project in Gao;
- the MLI AIP in Mopti, Bandiagara and Djenné;
- the village wood project in Ségou;
- the village plantation project in Koulikoro;
- the PFRS and the PADREF in Sikasso and
- the project to combat sand deposition (PLCE) in Timbuktu.

Other projects have also been implemented by State bodies (the PGRN and the PNVA), NGOs, associations, EIGs and even certain industrial units (SUKALA in the Office du Niger area). The PNVA and the PGRN came about as a result of the work of the PNLCD and later the SDDR. Such programmes attempted, for the first time, to bring all players affected by rural development together to collaborate as a single production unit.

The most noteworthy of these plantations are the green belts of Timbuktu and Kayes which have entirely changed the face of these cities, though the same is true of the village plantations of Sikasso and the Office du Niger area, as well as many others.

It should, however, be borne in mind that the empowerment of populations living on the State estate has sometimes resulted in the destruction of managed ranges. This has shown the limitations of implementing this strategy and cast doubt upon the actual ability of such populations to take responsibility for forest management.

4.3 Management through rural wood management structures (RWMS)

Rural wood management structures were set up as part of the Domestic Energy Strategy to meet the demands of local authorities to which the law had granted the right to manage the natural resources within their boundaries, following the drafting of a development plan. These structures may also exploit areas which are not included in any development plans. This so-called directed or uncontrolled exploitation, as the case may be, is the least encouraged by the Administration due to its negative impact on forests, which is why the taxes generated by such means of exploitation are the highest.

SRGBs represent an attempt to professionalise the sector which, as such, must offer links to decentralised resource management.

We cannot, today, say that the anticipated result has been achieved, since the exploitation of forest resources on a sustainable basis is an increasingly uncertain objective. Indeed, operators place great emphasis on exploitation to the detriment of restoring ranges.

Having said that, some results have indeed been achieved, particularly with regards to reforestation and the development of natural forests, generally in classified forests and peri-urban areas, with the earliest records of reforestation dating back to the 1930s. Several thousands of hectares were consequently planted between 1942 and 1960, with a further 2,100ha planted between 1960 and 1970, primarily with *cashews*, *Gmelina*, *teak* and *Neem*. Between 1970 and 1978, reforestation was largely confined to the areas surrounding Bamako, whilst from 1980 on, external financing contributions meant that reforestation operations could once again be stepped up right across the country. Unfortunately, though, since 1988, this momentum has been lost to the benefit of natural stand development. Plantations created in Mali as at 1999 were estimated at 60,296.23ha (G. Konaté and M. Gakou). Reforestation operations performed between 1999 and 2004 by the DNCN and all players listed by the DNCN are outlined in the following table.

Table 6 Reforestation operations between 2001 and 2004

Year	Area (ha)
2001	1,102.12
2002	1,213.12
2003	2,303.71
2004	3,960.68

Source: DNCN annual reports

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V. FINANCING THE SUSTAINABLE MANAGEMENT OF FORESTS IN MALI

At institutional level, the transversal action of forest management falls within the area of activity of several technical departments, including those of agriculture, breeding, the environment, and mining and energy, as well as that of the local authorities nowadays, too. Furthermore, various NGOs operate in this sector with no real coordination of their actions, whilst the formal private sector, for its part, is still non-existent as far as primary forest production is concerned.

The lack of coordination between the various players, on the one hand, and the inadequacy of the statistics, on the other, make it difficult to analyse the development of SFM financing.

Forest financing in Mali comes from several sources, including the State, bilateral and multilateral partners and NGOs. Likewise, the use of forest resources provides resources for the State. ***These various types of financing and the resources they provide will be looked at in greater detail in section 5.2. The contribution of tax revenue received as a result of the exploitation of forest resources will also be analysed in section 5.2.***

5.1 Description of Mali's forestry tax system

Mali's forested areas are divided into three estates, namely the State forest estate, the decentralised local authority forest estate and the private forest estate.

Even though the legislation imposes the payment of taxes for removing wood (with the exception of local populations' right to exercise their user rights) from all types of forest, whether State-owned, communal or private, there is no denying the fact that a large percentage of forest exploitation evades taxation⁵. These taxes on forest products vary depending on the species in question and whether it is a forest with controlled exploitation, directed or undirected. However, the tax imposed on harvesting activities and other non-ligneous forest products (NLFP) is limited to a few products and this tax is applied to commercial transactions (taxes and customs duties), which account for a negligible percentage of revenue.

This revenue is intended to constitute the resources of the ***Fonds d'Aménagement et de Protection des Forêts et de la Faune*** ('Funds for the Development and Protection of Forests and Fauna') set up in 2009⁶ (a budget of 400 million FCFA, or \$0.8 million, was allocated for 2009, half of which was allocated to investment). In order to effectively achieve its purpose of protecting forests, this fund must largely be used to finance investment projects in the subsector (development, reforestation, creation of nurseries, etc.).

The forestry tax system is not governed by strict guidelines. Apart from the exceptions made for user rights, any exploitation or harvesting of forest products for commercial purposes will result in charges and taxes being applied to cover permit issuance fees and sales of harvested products⁷. **Revenue collected between 2000 and 2009 from the exploitation of forest resources (exploitation and transactions)** will be analysed in point 5.2. relating to the financing of forest management.

⁵ The exception made for with regards to taking wood for non-commercial or livelihood purposes (user rights) encourages a very high level of tax evasion (Maiga, Alassane B. [2001])

⁶ The previous *Fonds Forestier National* ('National Forestry Fund') was disbanded in 1993 due to the uniqueness of the fund and the conditions imposed by the World Bank and the International Monetary Fund financial institutions. In 2009, two new funds were set up to finance the sector, namely the *Fonds d'Aménagement et de Protection des Forêts* ('Fund for the Development and Protection of Forests') and the *Fonds d'Aménagement et de Protection de la Faune* ('Fund for the Development and Protection of Fauna').

⁷ This includes the surface tax, transfer rights for sites and charges for the exploration license and license for felling energy wood for the former, and the standard felling tax per foot of tree for logging chances and the license for felling timber and construction wood.

The forest tax structure has undergone several changes. Charges and taxes as currently applied are set by the laws governing the environment in the Republic of Mali⁸, including, among others, Law n°96–050 (1996) governing the constitution and management of local authority estate, Law n°95–004 (1995) stipulating the conditions of forest resource management, Decree n°97–053/P–RM (1997) stipulating the land-clearing charges applicable in the State forest estate and Decree n°98–402/P–RM (1998) stipulating the rates, terms of collection and distribution of taxes collected in relation to the exploitation of wood in the State forest estate (modified by decree n°04–137/P–RM (2004)). Forest taxation in Mali comes in three forms, namely taxation related to the exploitation of wood (timber, construction wood and energy wood) on the State forest estate, taxation related to the exploitation of wood on decentralised local authority forest estate and taxation related to the exploitation of wood on private forest estate⁹.

5.1.1 Average rate of tax collected for the exploitation of wood on the State forest estate (in FCFA)

Table 7 Average rate of tax collected for the exploitation of energy wood

<i>Energy wood sourced from natural formation</i>			
<i>Type of product</i>	<i>Product origin</i>		
	<i>Uncontrolled</i>	<i>Directed</i>	<i>Controlled</i>
Heating wood (FCFA / stère)	800	400	250
Charcoal (FCFA/quintal)	1 200	800	500
<i>Energy wood sourced from State plantations</i>			
	<i>Min.</i>	<i>Max.</i>	<i>Average tax</i>
FCFA per stère and according to species type	800	1 500	1 150

Source: Decree n°98 – 402 / P – RM

The notion of varying taxation according to origin (uncontrolled, directed or controlled areas) is aimed at encouraging exploitation in controlled or developed areas. *Annex 5* states the average rate of tax collected for the exploitation of roundwood.

5.1.2 Charges received for land-clearing on State forest estate

The clearing of plots of land on the State forest estate is subject to obtaining a permit for which a charge is payable. The amount charged varies in accordance with the type of land-clearing in question (incl. or excl. stump extraction) and the area (Sahelian or Sudanian). This charge, the rates of which are set by Decree n°97 – 053 / P – RM, varies between 5,000 FCFA/ha and 15,000 FCFA/ha depending on the agro-climatic area in question.

The products of such land-clearing activities are exempt from exploitation rights.

5.1.3 Tax system and the exploitation of wood on local authority and private forest

Law n°96 – 050 governing the constitution and management of local authority estate grants the latter the power to set and to collect charges related to the exploitation of local authority forest

⁸ These laws are indexed in Annex 6.

⁹ These taxes are collected by the relevant department as provided for by the *Code Général des Impôts* ('General Tax Code') and will not therefore be included in our study.

estate (Article 25). However, deficiencies in the transfer of competencies will impede the execution of this provision, in which case the State will continue to set and to collect the charges in question. Wood sourced from the private forest estate and that sourced from authorised land-clearing activities on State forest estate are exempt from tax, as provided for in Article 4 of Decree n°98 – 402 / P – RM.

5.1.4 Tax system and the exploitation of non-ligneous forest products

Taxation in the NLFP and transformed forest products commercial sectors falls within the responsibilities of technical tax structures. These products are subject to the general taxation rules which apply with regards to trade.

5.1.5 Other fiscal products (other taxes and fines)

Fines vary from 5,000 FCFA to 100,000 FCFA depending on the offence committed and the quantities exploited (fraudulent exploitation, fraudulent transportation, offences related to land-clearing, etc.).

It is necessary to point out that several problems and constraints can hinder the recovery of taxes and the use thereof, including i) the minimal amount of taxes collected; ii) poverty among the populations concerned (rural populations are the main players in exploitation), iii) a lack of public resources which does not allow for forest management and, moreover, the environment to be made a priority and iv) the poor level of control exercised by the public authorities (Forest Administration) and fraud. The resources available for forest funding remain largely below the threshold for meeting the needs pertaining thereto.

What resources are available and what are the financing needs and the efforts to be made in order to make up the deficit? These issues will be dealt with in the following sections.

5.2 Public financing of forest management

The national public financing of SFM comes primarily from budgetary allocations, revenue generated by the exploitation of forest, faunal and fishing resources and revenue from transactions (forest fund). The following points detail the evolution of budgetary allocations in the forest sector.

5.2.1 Public expenditure allocated to SRM: current levels

This consists of budgetary allocations from the various ministries involved in the management of forest resources, including the Ministry of the Environment and Decontamination, the Ministry of Agriculture (which saw the amalgamation of the agriculture, breeding, fishing and water sectors into the Ministry of Rural Development and Water in 2000), the Ministry of Breeding and Fishing and the Ministry of Mining and Water. Allocations from the *Institut d'Economie Rurale* ('Institute of Rural Economy') and the *Fonds d'Aménagement et de Protection de la Forêt et de la Faune* ('Funds for the Development and Protection of Forests and Fauna') (created in 2009) will also be taken into account. These amounts are distributed as follows:

Table 8 Level of budgetary resources allocated to the Departments involved in forest management

Institution	2000				2009			
	Total budget		Operations	Investment	Total budget		Operations	Investment
	*10 ³ FCFA	*10 ³ USD	%		*10 ³ FCFA	*10 ³ USD	%	
Ministry of the Environment and Decontamination ¹⁰	10,785,498	21,571	14.00	86.00	10,743,916	21,487.83	20.33	79.67
Ministry of Agriculture ¹¹	57,160,407	114,320.81	11.82	88.18	55,474,967	110,949.93	05.62	94.38
Ministry of Breeding and Fishing	-	-	-	-	24,333,621	48,667.24	08.81	91.19
Ministry of Mining, Energy and Water ¹²	8,892,192	17,784.38	16.40	83.60	53,778,139	107,556.28	06.33	93.67
<i>Institut d'Economie Rurale</i> ('Institute of Rural Economy')	2,997,000	5,994	0	100	1,981,422	3,962.88	39.80	60.10
<i>Fonds d'Aménagement et de Protection des Forêts</i> ('Fund for the Development and Protection of Forests')	-	-	-	-	400,000	800	50	50
<i>Fonds d'Aménagement et de Protection de la Faune</i> ('Fund for the Development and Protection of Fauna')	-	-	-	-	40,000	80	50	50
Total	79,835,097	159,670.19	12.20	87.80	146,752,065	293,504.17	08.08	91.92
Share in the budget (%)	14.92%	14.92%			13%	13%		

Source: Taken from the 2000 and 2009 Finance Acts

US\$ 1 = FCFA 500

10³ = 1 000

Note:

Oper.: Operating expenses including salary-related costs, transfer costs, recurrent charges and other expenditure not related to investment.

Invest.: Equipment and investment expenditure (SIB)

Investment programming in Mali takes place on a rolling basis. The Special Investment Budget (SIB) relates to the current annual bracket of the Triennial public Investment Programme (TIP). The TIP gives an overall perspective of programmable projects and programmes and their financing (both internal and external) over a period of 3 years and includes public investment projects which are currently being implemented or in preparation. The SIB gives the volume and composition of the budgets (both internal and external financing) allocated to the various State institutions for investment purposes and is binding in that it is adopted by the National Assembly and therefore an integral part of the national budget.

¹⁰ Ministry of the Environment 2000

¹¹ Ministry of Rural Development and Water (including agriculture, breeding, fishing and water) in 2000

¹² Ministry of Mining and Energy in 2000

We can see from the table that between 2000 and 2009, despite the creation of a new Ministry of Breeding and Fishing as a result of the disbanding of the Ministry of Agriculture, the budget of the latter remained constant whilst that of the Ministry of the Environment decreased.

Items listed in the SIB relate only to expenditure used to contribute to the gross formation of fixed capital, except where the offsetting of projects financed by external resources is concerned. Even to this day, it remains extremely difficult to distinguish the budget share allocated to each of the department's areas of activity within the budget of a given ministerial department. The public funds specifically allocated to the ministry responsible for forest management will be looked at in detail below. **It is virtually impossible to determine the share of expenditure devoted to forest management from the previous table**, which is why only overall amounts and those allocated to operations and investment will emerge from the following analysis.

In 2000, the rural development and environment sector accounted for 14.92% of the national budget, as opposed to 11.64% in 1999, making it the second largest consumer of public resources behind the public works, transport and town planning sector (16.11%), with investment accounting for 88% of the resources allocated to the sector.

By 2009, these resources had almost doubled from 79,835.097 million FCFA (159.67 million US\$) to 146,752.065 million FCFA (293.50 million US\$). This represented an increase of 83.27% and accounted for 13% of the national budget in 2009, with investment this time accounting for over 92% of the resources.

The Ministry of the Environment and Decontamination, the main institutional player in the forest management sector, saw its budgetary allocations in current francs fall from 10,785.498 million FCFA (21.57 million US\$) in 2000 to 9,185.729 million FCFA (18.37 million US\$) in 2008, only to rise again to 10,743.916 million FCFA (21.48 million US\$) in 2009. Having suffered such a substantial decline, public expenditure allocated to the 'forestry' subsector is now once again on the increase. However, although resources allocated to the Ministry of the Environment in 2000 accounted for 13.51% of the total expenditure of the rural development sector, by 2009 this has dropped to 7.34%. In terms of weight in the State budget, the budget allocated to the Ministry of the Environment and Decontamination in 2009 accounted for barely 1% of the total budget as opposed to 2.02% in 2000.

Looking a little closer at the investment aspect, it is important to note that there is a more general problem affecting the overall strength of Mali's government finances. The budgets of public sector institutions are generally insufficient to finance all the investment required for the sustainable development of forests¹³. Both technical and financial partners have always supported the national forestry sector (by way of loans and donations), but their priorities do not always reflect those of the country.

¹³ Alassane B. Maiga (2001): *'Régime fiscale forestier et dépenses de l'Etat en faveur du secteur forestier au Mali'* ('Forestry tax system and State expenditure on the forestry sector in Mali'), drafted on behalf of the FAO, Working paper FSFM/WP/06.

Box 1 The public investment budgetary planning process in Mali

The Special Investment Budget (SIB) is drawn up following the drafting of the Triennial Investment Programme (TIP). The programming mechanism is a product of development project-related public expenditure per annual bracket over a period of three (3) years.

The investment programming exercise is performed every year in accordance with a process aimed at monitoring and updating the expenditure programme from the previous year. Programming therefore means that the annual report for the past year, an estimation of the balance sheet for the current year and the programming for the next three years can be established simultaneously. The process comprises the following stages:

Stage 1: Preparation

This stage consists of updating the macro-economic framework which will serve as a basis for the forecasting of revenue and expenditure over three (3) years. It involves analysing and establishing the evolution of the macro-economic framework, which is a precondition of overall budgetary control. During this stage, the TIP / SIB budget allowances are established bearing the relevant financial constraints in mind.

A circular letter from the Ministry of Economy and Finance outlines the priorities and drafting schedule for the State budget.

Stage 2: Review and data collection

This stage consists of reviewing the various sectors in order to establish, by mutual agreement, the objectives and activities to be undertaken and estimate the cost thereof. It involves a series of meetings between the Department of Finance and Planning and the technical departments involved and requires the effective participation of the various technical parties involved and consultation between the various stakeholders.

It consists of delivering project sheets to the relevant ministerial departments, completing the project sheet and returning it to the DNPDP (National Directorate of Planning and Development).

Stage 3: Information validation and project selection: consultation and arbitration meetings.

The preliminary meeting held prior to TIP / SIP arbitration with the Planning and Statistics Units (PSUs) and the Finance and Administration Departments (FAD) is an opportunity for all players to come together to validate the implementation and financial programming of projects detailed on project sheets which are currently underway, select new projects which satisfy the programming and budget criteria and perform an initial assessment of the draft equipment-investment budget.

Source: taken from the manual on public investment programming and budgeting in Mali

Between 2005 and 2009, investment expenditure in the sector did not change significantly (in terms of volume or composition), as the following table shows¹⁴:

¹⁴ SFM is transversal. However, given the difficulties related to the centralisation of financial data relating to the various Departments with regards to SFM, the analysis will concern only the Ministry of the Environment and Decontamination, the main player in the sector.

Table 9 **Changes in the share of public investment expenditure allocated to the forestry subsector in relation to the Rural Economy¹⁵**
(Ministry of the Environment and Decontamination)

Year	2005		2006		2007		2008		2009	
Unit	*1000 FCFA	*1000 US\$	*1000 FCFA	*1000 US\$	*1000 FCFA	*1000 US\$	*1000 FCFA	*1000 US\$	*1000 FCFA	*1000 US\$
Forestry investment	5,818,000	11,636	5,762,000	11,524	6,609,000	13,218	6,561,000	13,122	4,079,000	8,158
Internal financing	1,066,000	2,132	1,162,000	2,324	1,589,000	3,178	1,182,000	2,364	1,475,000	2,950
External financing	4,752,000	9,504	4,600,000	9,200	5,020,000	10,040	5,379,000	10,758	2,604,000	5,208
Self-financing	0	0	0	0	0	0	0	0	0	0
Total Rural Economy SIB	103,136,000	206,272	95,297,000	190,594	107,307,000	214,614	108,813,000	217,626	100,802,000	201,604
Forestry invest./Rur. Econ. SIB	5.64%		6.05%		6.16%		6.03%		4.05%	
Total SIB	378,715,000	757,430	328,617,000	657,234	354,313,000	708,626	388,357,000	776,714	396,218,000	792,436
Forestry invest./ Total SIB	1.54%		1.75%		1.87%		1.69%		1.03%	

Source: *Special Investment Budget 2005, 2006, 2007, 2008 and 2009, DNPd (National Directorate of Planning and Development)*

US\$ 1 = FCFA 500

Note : Internal financing is the share of financing which comes from State-owned resources. External financing consists of the total amount of loans and donations granted to the country by financial partners.

¹⁵ The special investment budget divides investment into four sectors: the rural economy, the industrial sector, infrastructures and human resources. The various ministries are split between these sectors, and it is possible for a given ministry to find itself in several sectors. Investment financing in the forestry subsector therefore falls into the Rural Economy sector, along with agriculture, breeding and fishing-related investment.

Between 2005 and 2008, the average share of investment in forestry (MED) was 6% of the Investment Budget allocated to the Rural Economy sector¹⁶ and 1.70% of the total Special Investment Budget. In 2009, these shares dropped discernibly to 4.05 and 1.03 respectively. It is, however, important to point out that other departments (agriculture, breeding, energy, etc.) are also involved in projects with a 'forestry' component, the financing of which is difficult to evaluate.

The execution rate of the investment budget for the 'forestry' subsector progressed at a non-linear rate, dropping from 65.8% in 2000 to 55.1% in 2008 as a result of persistent deficiencies with regards to the planning, programming and implementation of various projects and programmes.

Table 10 Execution rate (disbursement) of the 'forestry' special investment budget

Year	Forecasts		Execution		Execution rate
	*1000 FCFA	*1000 US\$	*1000 FCFA	*1000 US\$	%
2000	3,036,000	6,072	1,999,000	3,998	65.84
2001	1,285,000	2,570	953,000	1,906	74.16
2002	1,844,000	3,688	896,000	1,792	48.59
2003	4,195,000	8,390	644,000	1,288	15.35
2004	4,121,000	8,242	1,935,000	3,870	46.95
2005	5,818,000	11,636	2,743,000	5,486	47.15
2006	5,762,000	11,524	3,450,000	6,900	59.88
2007	6,609,000	13,218	5,458,000	10,916	82.58
2008	6,561,000	13,122	3,616,000	7,232	55.11

Source: taken from SIB documents 2000 to 2008, DNPDP (National Directorate of Planning and Development)

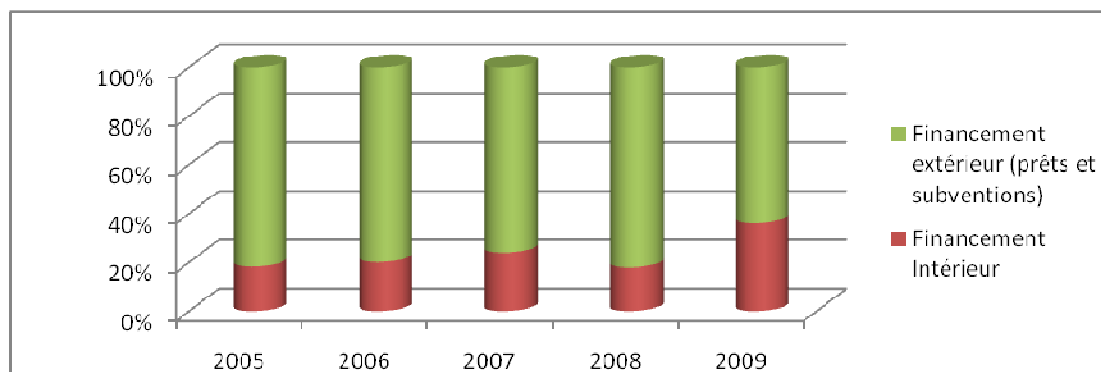
It is interesting to note the low execution rate of the public investment budget between 2002 and 2005: half of the forecasts relating to public investment were not executed. In 2003, this rate was exactly 15% and in 2008, 55.1%. *Technical and financial partners' procedures are more often than not cited as the main reason for the low public investment execution rate.* However, this development highlights the urgency of reinforcing the capacities of technical structures relating to programming and the implementation of investment projects and programmes.

The following analysis concerns all projects and programmes comprising a 'forestry' component and implemented by the Department for the Environment.

The respective internal (State-owned resources) and external (loans and donations) financing shares are as follows.

¹⁶ We would like to remind you that our analysis concerns only resources allocated to the Ministry of the Environment (and Decontamination).

Figure 2 Changes in the composition of investment in forest management (MED) according to financing source



Source: Taken from the Special Investment Budget 2005, 2006, 2007, 2008 and 2009

Note: Green: External financing (loans and grants), Red: Internal financing

The share of internal financing allocated to forest increased between 2000 and 2009 from less than 20% to 36% of the total investment budget of the Ministry of the Environment. This growing involvement of the State in SFM is a sign of the increasing relevance of integrating environmental issues into development strategies on the one hand and developing forest resource, among others, on the other. In 2009, the contribution of financial partners stood at nearly 64% of the overall investment in forests, although this was still down on previous years (76% in 2007 and 82% in 2008). The distribution of external financing in loans and grants is as follows:

Table 11 Distribution of the external financing (development assistance) of public investment in the forestry sector

External financing	Loans		Grants		in %	Main partners
	in 10 ³ FCFA	in 10 ³ US\$	in 10 ³ FCFA	in 10 ³ US\$		
2000	1,550,000	3,100	1,355,000	2,710	46.64	Norway, AFD, FAC, FFEM, GTZ, BM
2005	1,000,000	2,000	3,752,000	7,504	78.96	AFD, FED, UNESC, PNUD, BAFA
2006	899,000	1,798	3,701,000	7,402	80.46	AFD, FED, UNESC, FFEM GEF, PNUD, BAFA
2007	2,139,000	4,278	2,881,000	5,762	57.39	AFD, FED, FFEM GEF, BAFA
2008	1,477,000	2,954	3,902,000	7,804	72.54	AFD, FED, FFEM GEF, BAFA
2009	700,000	1,400	1,904,000	3,808	73.12	AFD, FFEM GEF, BAFA

Source: Taken from SIB 2000, 2005, 2006, 2007, 2008 and 2009 data

Note: Investment is classed as public when it is financed by the State, irrespective of the source of the financial resources concerned (own or external resources). It is very important to point out that since the international debt crisis of the early 1990s and under the impetus of partners in its development, Mali now officially only contracts concessional loans (the 'grant' component of which is significant, at least 25% of the total sum). These external flows should therefore be considered as part of the relevant development assistance resources.

The external financing of investment in the 'forestry' subsector jumped from 2,905 million FCFA in 2000 to 5,379 million in 2008, an increase of 85%. This external contribution dropped significantly in 2009 (as did the total SIB allocation and internal financing) to 2,604 million FCFA.

Since 2005, external financing has primarily consisted of grants (72.49% on average over the 2005 - 2009 period). The main financial partners are listed in the table above.

Other initiatives relating to the promotion of forest management are also implemented by other Departments and are not listed in relation to the forestry subsector. This is the case of the 'Domestic Energy and Access to Basic Services in Rural Locations Project' (PEDASB) implemented by the Ministry of Energy and costing a total of 53,710 million FCFA (around 107.42 million US\$) over the 2004 - 2012 period.

5.2.2 A Malian carbon fund: a promising outlook for forest management

Discussions have been underway since 2007 regarding the establishment of a Malian Carbon Fund aimed at supporting Malian developers in the fulfilment of their projects through the purchasing of their carbon credits over the 2009 - 2017 period, among others. This mechanism will enable them to more easily attract various investors in the carbon market by offering them a varied project portfolio. The Malian Carbon Fund will operate in the renewable energy, energy efficiency, waste management, afforestation and reforestation sectors.

This Fund will be financed by national public sources and bilateral and multilateral financial partners, as well as private companies. The strategy should be based on diversifying MDP project types in order to reduce the risks involved in this type of project.

5.2.3 Using the forest to finance the forest

It will be useful, at this juncture, to provide a description of the financing of forest management with revenue generated through the exploitation of forest resources.

The *Fonds d'Aménagement et de Protection des Forêts* ('Fund for the Development and Protection of Forests') (400 million FCFA in 2009, or 0.8 million US\$, and an anticipated 600 million, or 1.2 million US\$ for 2010, an increase of 50%) and the *Fonds d'Aménagement et de Protection de la Faune* ('Fund for the Development and Protection of Fauna') (40 million FCFA in 2009, or 80,000 US\$, and 50 million in 2010, or 100,000 US\$), both of which were set up in 2004, will undoubtedly constitute a new and equally significant source of financing for the forest sector in Mali. Thanks to these funds, revenue generated through the exploitation of forest and fauna resources are ploughed back into forest and fauna resource protection and management. **The problem lies in the fact that these funds do not include transaction revenue, even though this is generated from the same resources.**

One might also anticipate that a share of the import and export taxes applied to forest products be used to bail out this forest revenue in order to reinforce the power of the bodies responsible for SFM to intervene where necessary.

Forest revenue comprises the business income received from the exploitation of forest and fauna resources and transaction revenue consisting of fines imposed for fraudulent. This revenue consists of charges and taxes collected by the Forest Administration for the exploitation of forest products and includes both business income and transaction revenue relating to both forest and fauna resources.

Table 12 **Resources generated through the exploitation of forest and fauna resources (in thousands of monetary units)**

		2001	2003	2005	2007	2008	2009
Business income	FCFA	150,872	125,666	288,660	413,476	471,579	492,244
	US\$	302	251	577	827	943	984
Transaction revenue	FCFA	44,725	44,676	75,627	98,057	105,365	131,095
	US\$	89	89	151	196	211	262
Total revenue	FCFA	195,597	170,342	364,287	511,533	576,944	623,339
	US\$	391	341	729	1,023	1,154	1,247

Source: DNEF (National Directorate of Water and Forests) report, 2009

The contribution of the forestry subsector to the State's fiscal and non-fiscal resources remains low (around 1% of non-fiscal revenue between 2005 and 2009) whilst its contribution to GDP is between 4 and 5%.

Decree n°04-137(b)/P-RM stipulates the distribution of revenue collected from the exploitation of forest (and fauna) resources, with such revenue being distributed between the *Fonds d'Aménagement et de Protection des Forêts* ('Fund for the Development and Protection of Forests') (80%) and the local authorities' budgets (20%). This distribution is the same for the exploitation of fauna resources. It is also worth pointing out, in the light of the terms governing fund management (Decree n°04-091, Art. 4), that 85% of resources are allocated to investment initiatives (development, maintenance and facilities, among others).

5.2.4 Payments for environmental services

Payments for environmental services are part of a set of financing mechanisms linking development and conservation and include the following systems:

- Bio-right
- Integrated Conservation and Development Project (ICDP) and

Of these mechanisms, only Bio-right and PES have been trialled in Mali, the first by an NGO in the Mopti region (Wetlands International) and the second in the Koulikoro region.

In Mopti, the project was aimed at linking the fight against poverty and the conservation of migratory birds which were being illegally exploited for commercial purposes by women from certain communities. By giving the women involved other alternatives, the project managed to persuade them of the importance of protecting these water birds. With a guarantee of financing from a micro-financing organisation to undertake other revenue-generating activities, the women of nine rural communities stopped exploiting the birds throughout the duration of the flooding of the Niger River in the Delta. This financing agreement involved women's associations, the civil service and the NGO, and payment was linked to the profit that the various associations achieved in performing the activities they had chosen and which stemmed from their community's Programme for Economic, Social and Cultural Development (PDESC). With a success rate of 75%, the guaranteed financing became the property of the association in question; at only 50%, the interest accrued could be returned to the association, and when profits were lower than 50%, the association lost both the capital and the interest.

Thanks to this financing, the women from the various communities who managed to make a success of their alternative activities ceased the trading in birds which had previously hindered efforts relating to the protection of this biodiversity.

The K – TGAL project implemented in Senegal, Mali and Guinea-Bissau is another example of an innovative REDD project. The project has been implemented in Mali in the 11 villages (8,603 inhabitants) in the rural area of Bougoula, in the Koulikoro region¹⁷, with the aim of reducing emissions caused by deforestation and the degradation of forests by involving local populations in environmental protection initiatives by means of financial payment for emission reductions. The resource in question is a shrubby savanna of around 226ha. Thanks to the involvement of local populations in the management of this forest, the CO2 sequestration potential has been estimated as 8.3 tonnes/ha/year and the estimated amount of CO2 saved through the degradation which will have been avoided as 2.5 tonnes/ha/year. This carbon sequestration will therefore result in an annual gain of 6,102,000 FCFA, or 12,204 US\$. This experience also proves that the management of forests by local populations can be a source of revenue which will undoubtedly prove useful in the quest to reduce poverty in an environmentally-friendly manner.

Indeed, it is important to note that although financing for forest management is generally the domain of the public sector, correct management of such forests remains very often the domain of grass-roots communities which have a sound awareness of the issues at hand and are well-trained in natural resource conservation techniques. For example, in the case of the abovementioned project, the populations in question organised themselves into committees and exploitation of the forest for commercial purposes was prohibited.

By way of conclusion, in the current context of stagnation or even decline in public financing for the forestry sector, financing mechanisms linking development and conservation will represent huge potential with regards to attracting essential new funds on the one hand and fighting poverty among those living in the vicinity of the forest on the other. This being the case, we can refer to point 2.5 concerning other services provided by forests as well as the development mechanism inherent to the Kyoto Protocol.

5.3 Other sources of private financing for sustainable forest management

5.3.1 The private sector

The private sector is almost non-existent with regards to the primary forest and forest management sector, and plants are only available from nurserymen, who are often grouped into EIGs. It is therefore important to note the lack of real concessions (sale of harvested products) between the State and private players in the strictest sense of the term.

There are, however, some businesses and companies which are involved in secondary activities such as the conversion and commercialisation of forest products, though such businesses do not invest in forest management and are happy to pay the necessary taxes and duties applicable to their activities. The financing of forest management by the private sector is therefore negligible, particularly as Mali has little in the way of forest cover and does not, therefore, appeal to foreign investment.

5.3.2 Non-Governmental Organisations

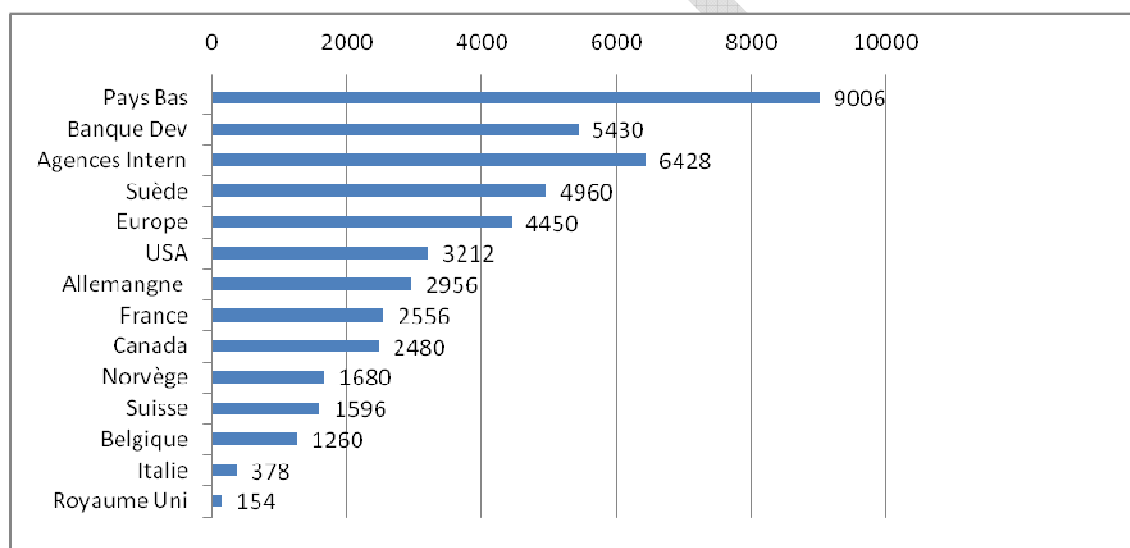
Despite the apparent political will we are seeing, the concept of incorporating civil society into political decisions still faces various problems and inadequacies. National NGOs are still at the embryonic stage with regards to self-financing and the execution of their programmes depends on

¹⁷ BA, L. and SKUTSCH, M. (2010): "REDD – issues for Africa"; *Tiempo Afrique* N°4, February

partnerships with international NGOs or backers – they have no financial support from the State despite their high level of involvement in the practical implementation of such programmes¹⁸.

Their operations affect various environment-related fields and it is still not easy to establish how much financing is destined for each field (biodiversity, forests, fighting desertification, etc.). We do not, therefore, have any statistics relating to the exclusive financing of forest management by NGOs. It is also extremely difficult to take stock of donations and grants raised by non-governmental environmental protection associations and organisations due to the fragility of the coordination mechanism with which data produced by national and international associations and NGOs in Mali is collected and centralised. Many operations are either financed and carried out by national and international NGOs or financed by international and bilateral cooperation mechanisms but carried out by national NGOs or national and local technical organisations, in which case such financing still does not appear in the national budget. Between 2004 and 2008, over 10,170 billion FCFA (around 19.40 million US\$) in grants were raised in this way by national NGOs as part of various projects aimed at protecting and promoting biodiversity. If we look at the environment as a whole, over 25.3 billion FCFA (annualised financing) was raised over this period by the MED (31% of projects), other ministries involved (14%), NGOs (37%) and other partners (18%)¹⁹. The following graph gives an indication of the distribution of such financing by donating country and origin of the partner NGO.

Figure 3 **Distribution of financing (in thousands of US\$) for the environment by donating country (2004 – 2008)**



Source: Taken from the 'Directory of the environmental projects of backers and international NGOs in Mali' (GTZ – 2006)

¹⁸ European Commission (2006); Environmental Profile of Mali, p.41

¹⁹ GTZ (2006): Environmental TFP Forum: 'Directory of the environmental projects of backers and international NGOs in Mali'

VI. SFM FINANCING NEEDS IN MALI

Difficulty in obtaining financial data from all of the institutional players involved in forest management means that only the financing needs of projects and programmes managed by the Ministry of the Environment and Decontamination can be taken into account. Furthermore, the absence of a Mid-Term Expenditure Framework for the 'forestry' subsector constitutes a major restriction when it comes to estimating the overall financing needs (operations and investment) of this subsector in this respect. This being the case, we intend to analyse the financing needs of the 'forestry' subsector in light of the 2010-2012 Triennial Investment Programme followed, by way of an indication, by the action plan produced as a result of the National Environmental Conferences of 2009.

NB: *the 2010-2012 Triennial Investment Programme was drafted prior to the National Conferences, the analysis of which will, in any case and by way of an indication, enable us to estimate financing needs in the subsector.*

6.1 The MED's Triennial Investment Programme

The Triennial Investment Programme (TIP) is the programming of development project and programme-related public expenditure per annual bracket over a period of three years. If we refer to the 2010-2012 Triennial Investment Programme, the volumes of public investment financing required for the implementation of projects and programmes in the 'forestry' subsector up to 2012 are as follows:

Table 13 Estimated allocations²⁰ relating to the 2010-2012 TIP / Ministry of the Environment and Decontamination (in millions of monetary units)

	2010		2011		2012		2010-2012 TIP Total		EF
	FCFA	US\$	FCFA	US\$	FCFA	US\$	FCFA	US\$	
Forest Investment Programming	3,794	7.588	1,354	2.71	960	1.92	6,108	12.27	35.58%
MED Investment Programming	10,555	21.11	6,735	13.47	4,463	8.926	21,753	43.51	23.67%
MED TIP Forest financing share	35.95%		20.10%		21.51%		28.08%		

NB: EF = External financing (in % of the total 2010-2012 TIP financing)

Source: Taken from the 2010-2012 TIP Project outline (DNPd) and the 2010 State Budget (MEF)

Financing needs in the 'forestry' subsector over the 2010-2012 period total 6,108 million FCFA (around 12.27 million US\$), whilst with regards to the environment and decontamination, the funding required for the implementation of investment projects and programmes stands at some 21,753 million FCFA (around 43.51 million US\$). External financing generally consists of sums which are acquired through signed loan or donation agreements but whose provision is often subject to conditions (project execution rate, national match funding, etc.).

It is important to note that 9 of the 16 projects featured in the 2010-2012 TIP in the 'forestry' subsector are due to come to an end in 2010. In 2009, only two new projects were submitted to the SIB for a duration of one year and with a total cost of 121 million FCFA, around 242,000 US\$.

²⁰ These figures are estimated as the TIP is drafted on a 'rolling programming' basis. They provide us with an approximate overall perspective of changes in investment in the various sectors. 2010 totals are indicative only.

The amounts allocated to the sector are in decline, a decline which could be explained by the termination of these projects but which is also believed to be a result of deficiencies on the part of the Department with regards to planning and programming. *The aim of this approach is in fact to ensure that new projects and programmes are negotiated in accordance with current strategies in order to be able to offer new investment-related operations year after year.*

The percentage of investment directed at 'forestry' in the TIP/MED stands at 23.5%, whilst scheduled allocations in the 'forestry' subsector will decrease from 3,794 million FCFA (7.59 million US\$) in 2010 to 960 million de FCFA (1.92 million US\$) in 2012. Over the 2010-2012 period, investment in 'forestry' will account for 28.08% of investment in the 'environment/decontamination' sector.

Initiatives relating to the development and protection of forest resources account for barely 45% of the 2010-2012 TIP's forest allocations, which demonstrates the very high percentage of investment in infrastructure (the construction of premises) and in human resources (training, networking, etc.). This trend needs to be reversed by allocating a greater proportion to developing the forest economy (initiatives relating to issues such as the development and protection of forests and fauna, forest plantations, etc.).

External financing accounts for 36% of the 2010-2012 TIP drafted by the Ministry of the Environment and Decontamination, the main partners being the FGEF, BAFA, the UNDP, the FDA, the GTZ and the UNESCFAC. For most of these partners, the disbursement rate of contributions to projects currently being implemented stands at around 80%.

6.2 The National Environmental Conference's action plan

The action plan produced as a result of the National Environmental Conferences (2009) assesses the financing needs of environmental initiatives to be implemented over the 2010-2014 period as 288,484 billion FCFA (around US\$ 576 million). It is important to note that such initiatives are aimed at achieving the 21 environmental promotion strategies examined at the Conferences.

The various issues dealt with in the Plan include natural resource management, the incorporation of the environment into sectoral policy, the improvement of living conditions, ways of strengthening environmental initiatives and reinforcing the environment in an institutional context. The financing needs for each area as perceived by the policy and strategy drafting teams (in millions of FCFA) are as follows:

- Natural resource management	127,345,950
- Incorporation of the environment into sectoral policy	803,500
- Improvement of living conditions	136,989
- Strengthening environmental initiatives	23,100
- Reinforcing the environment in an institutional context	246

Initiatives which are directly linked to resources (particularly forest resources), that is to say those linked primarily to issue n°1, represent over 47% of the financing needs. The distribution of needs between the various components of this issue is as follows:

Table 14 **Financing needs related to natural resource management**

Components of issue n°1	Financing required		
	in thousands of FCFA	in thousands of US\$	As a % of the total
National Forest Policy	34,452,120	68,904.24	27.05
National Wetlands Policy	16,178,440	32,356.88	12.70
National Biological Diversity Strategy	1,165,000	2,330.00	0.91
National Protected Area Management Strategy	23,745,450	47,490.90	18.65
National Arid Area Development Strategy	38,154,900	76,309.80	29.96
National Climate Change Strategy	13,600,000	27,200	10.68
Total	127,345,950	254,691.90	100

Source: Action plan produced as a result of the National Environmental Conferences, MED (2009)

The financing needs of national forest policy account for 27% (after the national arid area development policy) of the needs with regards to the implementation of NRM initiatives. This required financing is acquired to the tune of nearly 20 billion FCFA (or 40 million US\$).

Other issues cover certain matters related to forest management. The total financing needs which are directly linked to forest management are increasing for the 2010-2015 period to 87,804.06 million FCFA (175.61 million US\$), more than 2/3 of which are yet to be sourced. Some of the operations featured in the action plan are operations which are in the process of being implemented (featured in the TIP/SIB) and most of the priorities outlined have already acquired financing, notably from development partners (see point 6.2.).

It is not possible, given the data available, to perform an analysis according to expenditure category, such as the public administration of forest management, the expansion of forest cover, forest inventory, the planning and control of and investment in plantations and other private investment (certifications, etc.). The project sheets analysed are not as detailed, particularly where forecasting is concerned.

VII. GAP IN THE FINANCING OF SUSTAINABLE FOREST MANAGEMENT

Sustainable forest management initiatives are suffering from a rather significant financing gap. The amount of charges and taxes collected and the inadequacy of the financial resources provided by the State are significantly hindering the planning and implementation of initiatives in the field. Human pressure on forest resources and the effects of climate change tend to increase the gap between available financing and financing needs.

The financing gap will be analysed based on the TIP/MED (2010-2012), followed, by way of an indication, by the action plan produced as a result of the National Environmental Conferences (2010-2014).

7.1 Investment financing gap in the 'forestry' subsector in Mali: an analysis of the TIP/MED

As at 31st December 2008, the cost of investment projects and programmes in the environment and decontamination sector stood at 69,629 million FCFA, of which 59,607 million was for projects currently underway and 10,022 million was for those still at the negotiation stage²¹ (a total of 139.29 million US\$). The financing acquired for the implementation of operations in the sector accounted for 81% of the total cost. The 'forestry' subsector at this time accounted for 43% of the costs and 49.05% of the financing acquired. It is important to note that in 2008 the percentage of external financing in the financing acquired stood at 66.22% for the 'environment/decontamination' sector, whilst in the 'forestry' subsector, 81.21% of the financing acquired came from external partners (loans and grants).

The financing gap as at 31st December 2008 stood at 13,008 million FCFA (26.07 million US\$), of which 2,166 million (4.33 million US\$), or less than 1/5 of the total environment financing gap, was for the 'forestry' subsector. From these figures it can be assumed that the largest gap to be financed related to projects in the 'decontamination' subsector. However, this high proportion may be only relative, as only 14 of the 44 SIB projects in the sector in 2008 fell into the 'forestry' subsector.

As at 31st December 2009, the cost of 'forestry' projects stood at 37,881 million FCFA (75.76 million US\$), an increase of some 26.5% in relation to 2008, whilst the percentage of financing acquired stood at 35,529 million FCFA (71.09 million US\$). The subsector accounted for 45.68% of the cost of investment projects and programmes in the sector and 54.74% of the financing acquired. External financing stood at 77.88% of the total financing acquired, whilst the 'forestry' subsector contributed 54.74% to this acquired financing.

The financing gap in the 'forestry' subsector stood at 2,352 million FCFA (4.70 million US\$) or 13.05% of the total gap in the sector (18,022 million FCFA or 36.04 million US\$). Although the total gap increased by 38.5% between 2008 and 2009, for the 'forestry' subsector, this increase was of around 8.6%. The decline in the proportion of the gap in the 'forestry' subsector in relation to the total gap was caused by the termination of several projects and the lack of proposals for new structural projects, among other things.

In 2008, the total financing gap accounted for 18.68% of the cost of operations in the sector, whilst for the 'forestry' subsector, this percentage stood at 7.24%. By 2009, the total gap stood at 21.73% of the sector's special investment budget, whilst for the 'forestry' subsector, this figure was just 6.29%.

Developments regarding costs, financing acquired, the financing gap and the importance of external funding were as follows:

²¹ National Directorate of Planning and Development, Report on the ninth review of development projects and programmes in Mali, June 2009

Table 15 Costs, financing acquired and financing gap – Public investment in the ‘environment/decontamination’ sector

		<i>Ministry of the Environment and Decontamination</i>	<i>of which Projects – forest resources</i>	<i>In total % MED</i>	<i>Ministry of the Environment and Decontamination</i>	<i>of which Projects – forest resources</i>	<i>In total % MED</i>
<i>Figures in thousands of monetary units</i>		<i>as at 31st December 2008</i>			<i>as at 31st December 2009</i>		
Cost	FCFA	69,629,000	29,935,000	42.99%	82,932,000	37,881,000	45.68%
	US\$	139,258	59,870		165,864	75,762	
Financing acquired	FCFA	56,621,000	27,769,000	49.04%	64,910,000	35,529,000	54.74%
	US\$	113,242	55,538		129,820	71,058	
Cumulative disbursement as at 31 st December	FCFA	26,597,000	16,241,000	61.06%	37,885,000	22,767,000	60.10%
	US\$	53,194	32,482		75,770	45,534	
Financing gap	FCFA	13,008,000	2,166,000	16.65%	18,022,000	2,352,000	13.05%
	US\$	26,016	4,332		36,044	4,704	

Source: Reports on the ninth review of projects and programmes (DNPD) and MED project and programme review report

NOTE:

The analysis is based on a rolling programming basis.

The financing gap as at date (t) is the difference between the cost of projects and programmes as at date (t) and the financing (both internal and external) acquired as at date (t)

Table 16 **Importance of external financing in environmental financing in Mali**

	2008			2009		
	Financing acquired		of which	Financing acquired		of which
<i>In thousands of monetary units</i>	FCFA	US\$	external financing (%)	FCFA	US\$	external financing (%)
'Environment/decontamination' sector	56,621,000	113,242	66.22%	64,910,000	129,820	61.94%
'Forestry' subsector	27,769,000	55,538	81.21%	35,529,000	71,058	77.88%

Source: Reports on the ninth review of projects and programmes (DNPd) and MED project and programme review report

It should be noted that several of the projects in the sector remained in the portfolio of public investment projects and programmes even after they expired, either because the costs were re-evaluated or because additional resources were granted by TFPs or even with the aim of increasing acquired financing. In 2008, in fact, no new investment projects were expected to be featured in the 2009 SIB in the 'forestry' subsector, meaning that the increase in the cost of operations in 2009 resulted from the implementation of new projects in the 'decontamination' subsector and the re-evaluation of the cost of certain projects currently underway. In 2009, a single project (Support for the 2010-2011 forestry information system for 450 million FCFA, of which 150 million had been acquired) was being prepared for submission to the 2010 SIB.

One thing that is clear from the aboveoutlined situation is the forestry sector's very high level of dependence on external financing (over 75%). The 'priority' nature accorded to the management of natural resources and therefore of forests would not, therefore, come into practice (relatively poor financing in relation to the objectives). This situation, combined with the abovementioned low level of disbursement of financial resources, will undermine the achievement of objectives relating to the protection and conservation of Mali's forests.

7.2 Financing gap in the action plan produced as a result of the National Environmental Conferences

If we consider the action plan produced as a result of the National Environmental Conferences, the financing gap in initiatives relating to sustainable forest management over the 2010-2015 period is expected to stand at 60,606.79 million FCFA (see table below):

Table 17 **Cost – financing acquired and the financing gap in the action plan produced as a result of the National Environmental Conferences**

In thousands	<i>Total cost</i>		<i>Financing acquired</i>		<i>Financing gap</i>	
	FCFA	US\$	FCFA	US\$	FCFA	US\$
	87,804,058	175,608	27,197,271	54,395	60,606,787	121,214

Source: taken from the action plan produced as a result of the National Environmental Conferences (MED)

The financing acquired accounts for barely 31% of the cost of operations, a reminder of the huge efforts still to be made with regards to planning and the search for appropriate funding for the strategic management of forest resources and the environment in general. It is also worth pointing out the often major confusion between the financing of a policy and that of its implementation strategies, which makes it difficult to assess the effectiveness of the financing raised.

VIII. ENVIRONMENT REINFORCEMENT NEEDS WITH REGARDS TO SFM FINANCING

8.1 Evaluating the investment climate

Investment in Mali's forest sector relies on public institutions, technical and financial partners, NGOs (both national and international) and local authorities (public investment). The actual private sector does not exist in terms of primary forest initiatives; this sector rather concerns small businesses, most of which are of modest means.

The political will to protect the environment, including forests, is very apparent (constitution, laws and other national and international legal instruments). Mali as a country has a relatively large capacity to access external financing and has internal financing (although not as great) for forest management-related initiatives. Mali also has a satisfactory absorption capacity when it comes to the financial resources allocated to this subsector (Cf. IV. Financing of forest management). The latter is, however, subject to constraints related both to the institutional environment (multitude of players, insufficient coordination, lack of coherence between policies and strategies, inadequacy of statistics, etc.) and to difficult population behavioural changes.

8.2 Main restrictions of the adequate financing of sustainable forest management

Generally-speaking, the levels of both internal and external financing destined for the forestry sector in Mali is undoubtedly highly insufficient in relation to its needs. **Although it is true that the forestry sector is a matter of priority in the national development strategy (2002-2006 SFFP and 2007-2011 SFGPR), but this priority does not feature anywhere in the strategy's financing plans.** In any case, this deficiency cannot be exclusively attributed to a lack of financial resources; incentives for multilateral financial bodies, institutions and donating countries to put additional resources into the development of this sector are not encouraged due to the inadequacy of institutional capacities and the lack of familiarity with existing financing mechanisms. Indeed, the priority in Mali, as is the case in most African countries, is to meet the short-term food needs of the population rather than to sustainably manage its natural resources.

The adequate financing of sustainable forest management is therefore subject to a great many restrictions and only those which appear to be decisive, including the insufficient level of financial resources, will be analysed. Other restrictions relate to the lack of familiarity with forest resources, the lack of power on the part of the Forest Administration (notably with regards to planning), the failure to fully consider the cross-sectoral dimension of forest management and the low level of involvement of civil society in sustainable forest management. These factors also have an effect on the volume of financing made available to the forestry sector.

- the lack of familiarity with the forestry sector and its contribution to economic growth and the reduction of poverty

A lack of resources, equipment and personnel skills prevents Mali from carrying out periodic national forest inventories. Even when it is possible to carry out such evaluations, the institutional framework and resources required for sustainable forest management are severely lacking. The transversal nature of the forest (economy [agriculture, breeding, forestry, trade, etc.], culture, health, religion, etc.) also makes it difficult to gather data and measure its contribution to economic growth, the reduction of poverty, and development.

Indeed, such restrictions, combined with the lack of familiarity with regards to the level and status of forest resources (statistics) and the lack of planning/programming (cost and scope of operations) on the part of the Administration mean that budgetary allocations and their effect on forestry resources are unpredictable, as a result of which it becomes difficult to obtain adequate financing for the implementation of effective strategies. The poor management capacity of the

authorities in the recovery of charges and taxes on ligneous and non-ligneous forest products reduce the sector's contribution to the accumulation of State resources.

Taking into account the transverse nature of the forestry sector, including its development, would enable these deficiencies to be significantly reduced.

Given their role, civil society organisations should be able to call upon the authorities to act in cases where the implementation of policies, legislation and directives relating to the environment and natural resources fails to meet expectations. They must also strengthen their advocacy capacity by improving their knowledge of the causes and effects of deforestation, soil erosion, land degradation, poaching and land-clearing, for example. Consequently, they might also play just as significant a role in budgetary and financial negotiations relating to forestry.

Furthermore, it is only possible to conserve forests (and fauna) if those living in the vicinity of the forest can benefit from the promotion of forest resources based on sustainable management, meaning that such populations should be heavily involved in the expression of needs and the implementation and monitoring of operations.

8.3 Recommendations for eliminating financing restrictions and difficulties

Specially-adapted national strategies for the financing and implementation of various innovative initiatives combined with better communication with the populations concerned as well as other sectors are some of the ways to eliminate the main restrictions to which the forestry sector is subject with regards to the planning, implementation and financing of sustainable and concerted forest management. The major challenges to obtaining better financing in the subsector will therefore be:

- Increasing the powers of the Forest Administration with regards to budgetary negotiation (planning, programming approach, etc.) and the recovery of charges and taxes whilst taking into account all forest products. This increase should be implemented at the same time as an increase in forestry department staff.
- Integrating environmental issues (and the funding thereof) into all development policies and strategies, which will then lead to an increase in financing.
- Aligning all operations in sectors which influence the environment whilst taking into consideration the aspirations of Malian populations, particularly those who depend on forests.
- Promoting knowledge of forest resources (inventory).
- Encouraging the calculation of the contribution forests make to national wealth (with a view to attracting future financing to the sector).
- Involving all sectors and all stakeholders in sustainable forest management, for example by promoting greater access (of rural populations) to micro-financing institutions with the aim of developing activities which generate revenue, will enable us to reduce human pressure on current sources of revenue such as forest resources.

If we are to achieve the objectives of the national forestry policy and the strategic framework for growth and poverty reduction based on the development objectives of the millennium, it is important that the abovementioned issues be addressed.

IX. RECOMMENDATIONS FOR STRATEGIES FOR INCREASING SFM FINANCING IN MALI

Various recommendations should be borne in mind by the national authorities in order to increase the level and quality of financing for sustainable forest management. These include:

- Reinforcing the power of the *Direction Nationale des Eaux et Forêts* (National Directorate of Water and Forests) for the purposes of creating a Mid-Term Expenditure Framework for the 'Water and Forestry' sector and improving the monitoring and evaluation framework governing sustainable forest management initiatives.
- Knowledge of existing sources of financing and reinforcing national negotiation capacities with a view to taking advantage of major international opportunities relating to the financing of sustainable forest management including the REDD and REDD+ financing mechanism. Over the past few years, regional and international contracts have in fact been developed to promote and provide financial recognition of the efforts made by populations in relation to the management of natural resources, particularly forests. Acquiring additional financing through these mechanisms should represent a challenge with regards to the implementation of sustainable forest management initiatives. However, it is crucial that the financial and monetary resources acquired thanks to reductions in emissions as part of the quest for sustainability be passed on to the populations, who are the main players in such changes, notably in the form of PES.
- Reviewing the forestry tax system and the application thereof with a view to increasing the contribution of internal financial resources to the financing of sustainable forest management.
- Wide distribution of the texts and agreements in force in Mali.
- Continuation of the transfer of skills and resources in relation to the management of environmental resources in the framework of decentralisation, since improved organisation and greater support for rural populations could have a significant impact on concerted forest management.
- Taking into account the transverse nature of the sector, sectoral development policies and also, most importantly, the financing thereof. Returns from tourism or mining research and exploitation, for example, should benefit the local populations surrounding the exploited sites. This profit could take the form of monetary payment, development projects or the provision of socio-economic infrastructures (schools, drilling, reforestation, the use of renewable energies, revenue-generating activities, microcredit, etc.).

In addition to such measures, private sector support by means of the development of forestry industries and the trade and use of forest products could represent a very interesting opportunity to investment in forest management (conservation, development and protection of forest and fauna resources).

CONCLUSION

Many policies and strategies aimed at the development and management of natural resources including forest stands exist in Mali, but despite this fact, assessing the financing destined for the forest sector remains problematic, due, on the one hand, to the great number of players involved, whose mission contains a provision enabling them to exploit and manage natural resources, and on the other hand, to difficulties related to the coordination and harmonisation of the initiatives in which said players, who do not always have the same priorities, are involved. The sustainable management of forest resources remains problematic due to conflicts of interest and of skill between the various players in the subsector (most of whom act without consultation or coordination) and the role forest resources play in the existence of local, particularly rural, populations.

Significant financial resources are raised at both national and international level for the implementation of various forest management programmes throughout the country, including industrial plantations, the development of natural forests, community or rural forestry and the management of forest ranges by rural wood management structures. Despite such efforts, it is clear today that financing committed to sustainable forest management has not achieved the anticipated results. Forest resources continue to deteriorate, thus increasing both needs and the financing gap as a result of increasingly ambitious sustainable forest management objectives, on the one hand, and a stagnation in the volume of financial resources allocated to SFM on the other.

Mali primarily (81%) depends on ligneous resources to meet its energy needs, with all of its domestic fuel (wood and charcoal) coming from national forest stands. Fuel consumption levels stood at some 6 million tonnes in 2002 and put significant pressure on the country's forest ranges, estimated at around 33 million hectares.

Mali's growth is highly dependent on the primary sector, which includes silvicultural production activities. The average contribution of silviculture to the GDP of the primary sector stood at around 13.50% for the 2001-2008 period, whilst in 2003, the contribution of silvicultural activities to Mali's GDP equated to 5.01%. These figures, which show only the share of primary activities related to forestry, are an indication of the importance of this subsector to Mali's economy.

In 2007, the cost of environmental damage and inefficiencies in the use of natural resources, materials and energy fuels accounted for 21.3% of Mali's GDP, at over 680 billion FCFA (1.3 billion US\$). In other words, for every 100 francs produced annually in Mali, 21 francs were disappearing in the form of environmental damage, the most significant of which was in the fields of energy and materials (7.9% of the GDP), soils and forests (5.8% of the GDP) and water (4.8% of the GDP).²²

We will need to redress the balance and ensure that what is taken from the forestry sector is returned to the forestry sector if we are ever to get out of this situation. In the absence of measures to encourage such an approach, the already very significant financing needs are likely to increase further still due to climate change and poverty among the populations who will continue to deplete the resources.

²² Economic evaluation of environmental management in Mali: costs and benefits, *Final report*, 2009

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DRAFT

Annex 1 2007 growth forecasts and results of the implementation of the 2007-2011 SFGPR
Table 1 Growth objectives

<i>Indicator/Year</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>Average</i>
<i>GDP</i>	<i>Estim.</i>	<i>Forecast</i>					<i>2007-2011</i>
GDP at market value (billions of current FCFA)	3,205.8	3,420.0	3,645.0	3,886.5	4,187.6	4,483.8	3,924.6
Actual GDP growth rate at market value (%)	5.3	7.0	6.3	6.5	7.8	7.1	7.0
Actual GDP growth rate at factor cost (%)	4.4	6.5	6.1	6.2	6.7	6.8	6.5
- primary sector GDP (%)	5.0	5.5	5.6	5.6	5.7	5.9	5.7
- secondary sector GDP (%)	5.9	7.1	6.0	6.4	6.7	7.0	6.6
- tertiary sector GDP (%)	2.9	7.2	6.8	6.7	7.7	7.5	7.2

Source: 2007-2011 Strategic Framework for Growth and Poverty Reduction

Table 1 2007 Growth objective achievement level

<i>Indicator/Year</i>	<i>SFFP objective s</i>	<i>Achievement</i>	<i>SFGPR objective reminder</i>	<i>Objective achievement rate</i>
<i>GDP</i>	<i>2006</i>	<i>2007</i>	<i>2007</i>	<i>2007</i>
GDP at market value (billions of current FCFA)	3,176.7	3,402.0	3,420.0	99.5
Actual GDP growth rate at market value (%)	5.3	4.3	7.0	61.4
Actual GDP growth rate at factor cost	7.2	2.3	6.5	35.4
- primary sector GDP	4.3	2.5	5.5	45.5
- secondary sector GDP	8.3	-3.0	7.1	-42.3
- tertiary sector GDP	9.4	5.4	7.2	75.0
<i>Average across all three sectors</i>		3.2	7.0	45.7

Source: 2007 report on the implementation of the 2007-2011 SFGPR

Annex 2 Classification and definition of the different types of forest stand

National class	Definition
Forest	Any area of land covered in vegetation of which the exclusive, primary and secondary products are wood, resins, gum, fruits, bamboo, creepers, raffia, or any other plants not classed as agricultural products.
Dense dry forest	Closed-stand multi-strata forest, lower in height than the previous type; most of the trees on the upper levels lose their leaves; the shrubby undergrowth is either evergreen or deciduous and the grassy carpet generally intermittent.
Thicket	A type of shrubby, deciduous vegetation which is generally not easily penetrable, often scrappy, with intermittent, if any, grassy carpet.
Gallery forest	Closed-cover vegetation of a medium height, consisting of several strata which form a corridor of greenery along permanent or temporary watercourses or land depressions in savannah areas.
Clear forest	Open forest with small or medium-sized deciduous arborescent strata, the tops of which are more or less contiguous, leaving the entire cover clear; grassy stratum which is sometimes rather dense or mixed with other herbaceous and suffrutescent vegetation.
Savannah (wooded, tree-planted, shrubby or grassy)	Vegetation consisting primarily of a continuous grassy stratum of at least 80cm in height (at the end of the vegetation season) standing over another lower stratum and flat-leaved basal and cauline grasses. This primarily grassy stand can also be scattered with shrubs and trees.
Steppes (tree-planted, shrubby, succulent or grassy)	Open grassy stands, sometimes combined with ligneous plants; generally not crossed by fires. Widely-spaced hardy perennial grasses, generally not reaching any more than 80cm; narrow, curled up or folded, primarily basal leaves. These annual plants often feature abundantly among hardy perennial plants.
Other forest stands	Land which was once forest-covered and which has since been cut or destroyed by fire and is now undergoing a natural regeneration process or reforestation; fallow land destined for reforestation; damaged land unsuitable for agriculture and requiring restoration

Source: J. Parkan, *Classification des formations forestières au Mali* ('Classification of forest stands in Mali')



Indufor

Annex 3

Annex 3 Nature of non-ligneous forest products

Plant products/raw materials	Animal products/raw materials
<ul style="list-style-type: none">- Foodstuffs- Forage- Raw materials used in the production of drugs and flavourings- Raw materials used in the production of colouring agents and dyes- Raw materials used in the manufacturing of utensils and crafts and in the construction industry- Ornamental plants- Exudates- Other vegetable products	<ul style="list-style-type: none">- Animals- Leather, hides and living trophies- Wild honey and beeswax- Bush meat- Raw materials used in the production of drugs- Raw materials used in the production of colouring agents- Other edible animal products- Other non-edible animal products

Source: Forest Resources Assessment, FAO 2005



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Annex 4

Annex 4 Exports of the main harvested products

Table 1

<i>Species</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>
Tamarind	11,192	3,794	4,015,001	1,660	1,010	268,900	239,325	175,000	106,150
Shea	4,239,594	12,379,338	362,000	38,000	4,009,576	3,555,779	7,241,774	30,000	19,395,500
Nere	37,289	380	750,200	704,030	50,000	-	-	33,044,601	-
Gum	456,648	482,400	14,265,485	4,645,135	1,126,560	514,706	417,650	414,173	1,328,853
Total	4,744,723	12,865,912	19,392,686	5,388,825	5,187,146	4,339,385	7,898,749	33,663,774	20,830,503

Table 2 Value of quantities exported (in thousands of FCFA and thousands of US\$)

	<i>Tamarind</i>		<i>Shea</i>		<i>Nere</i>		<i>Gum</i>		<i>TOTAL</i>	
	<i>FCFA</i>	<i>US\$</i>	<i>FCFA</i>	<i>US\$</i>	<i>FCFA</i>	<i>US\$</i>	<i>FCFA</i>	<i>US\$</i>	<i>FCFA</i>	<i>US\$</i>
2000	559.60	1.12	250,889.61	501.78	1,118.69	2.24	36,271.81	72.54	288,839.71	577.68
2001	187.35	0.37	817,506.20	1,635.01	65.00	0.13	40,795.33	81.59	858,553.88	1,717.11
2002	-	-	175,210.75	350.42	261,350.00	522.70	56,448.86	112.90	493,009.61	986.02
2003	122.10	0.24	-	-	836.00	1.67	29,439.74	58.88	30,397.84	60.80
2004	900.64	1.80	239,875.92	479.75	1,500.00	3.00	113,470.26	226.94	355,746.82	711.49
2005	6,628.18	13.26	158,345.35	316.69	-	-	59,280.05	118.56	224,253.58	448.51
2006	9,882.50	19.77	322,949.24	645.90	-	-	34,884.00	69.77	367,715.74	735.43
2007	1,750.00	3.50	750.00	1.50	1,786,202.06	3,572.40	67,448.00	134.90	1,856,150.06	3,712.30
2008	1,801.25	3.60	718,546.85	1,437.09	-	-	194,169.85	388.34	914,517.95	1,829.04

Source: National Directorate of Commerce and Competition



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Annex 5

Annex 5 Average rate of tax collected for the exploitation of roundwood (timber and construction wood)

Table 1 Timber and construction wood sourced from natural stands (according to species removed and site of removal)

		<i>Product origin</i>					
		<i>Uncontrolled</i>		<i>Directed</i>		<i>Controlled</i>	
		<i>Min.</i>	<i>Max.</i>	<i>Min.</i>	<i>Max.</i>	<i>Min.</i>	<i>Max.</i>
Construction wood	Poletimber, posts, crotches and props	60	3,000	35	2,000	25	1,000
	Canes, poles and stakes	25	90	15	60	10	30
	Palm leaves	25	35	10	20	5	10
Timber	Protected species	5,000	20,000	3,000	10,000	1,500	12,500
	Non-protected species	1,500	7,500	1,000	5,000	800	4,500

Tax (in FCFA) per unit for construction wood and per foot for timber

Source: Decree n°98 – 402 / P – RM

Table 2 Timber and construction wood sourced from State plantations«

		<i>Minimum</i>	<i>Maximum</i>
Construction wood (FCFA per unit)	Poletimber, posts, crotches and props	100	600
	Canes, poles and stakes	30	250
Timber (FCFA per foot)	Exotic species	1,000	10,000
	Native species	4,000	10,000

NB: tax on timber is set according to the nature of the resource in question as well as according to size (diameter)

Source: Decree n°98 – 402 / P – RM

Annex 6 Texts relating to the management and protection of forest resources in Mali

- Law N° 95-004 of 18th January 1995 stipulating the conditions governing the management of forest resources
- Decree N° 97-053/P-RM of 31st January 1997 stipulating the land-clearing charges applicable on the State forest estate and outlining the official southern border of the Sahelian area
- Decree N° 98-402/P-RM of 17th December 1998 stipulating the rates and terms of recovery and distribution of taxes collected as a result of the exploitation of wood on the State forest estate
- Decree N° 99-320/P-RM of 4th October 1999 stipulating the land-clearing procedure to be used on the State forest estate
- Decree N° 00-022/P-RM of 19th January 2000 stipulating the terms of forest classification, reforestation perimeters and protection perimeters on the State forest estate
- Decree N° 01-404/P-RM of 17th September 2001 outlining the conditions and terms of exercise of forest resource exploitation rights granted
- Order N°95-2487 of 14th November 1995 outlining the terms governing any ignition of the State forest estate or decentralised local authority forest estate
- Law N° 04-005 of 14th January 2004 concerning the creation of the *Fonds d'Aménagement et de Protection des Forêts* ('Fund for the Development and Protection of Forests') and the *Fonds d'Aménagement et de Protection de la Faune* ('Fund for the Development and Protection of Fauna') on State estate
- Decree N° 04-091 of 24th March regarding the organisation and terms of management of the *Fonds d'Aménagement et de Protection des Forêts* ('Fund for the Development and Protection of Forests') and the *Fonds d'Aménagement et de Protection de la Faune* ('Fund for the Development and Protection of Fauna') on State estate
- Decree N° 04-137 (bis) /P-RM of 7th April 2004 stipulating the distribution of revenue collected from the exploitation of forest and fauna estate and State estate between the ***Fonds d'Aménagement et de Protection des Forêts et de la Faune*** ('Funds for the Development and Protection of Forests and Fauna') and local authority budgets
- Order N° 96-0753/MDRE-SG stipulating the rules of supply and operation governing rural markets
- Order N° 96-0793/MDRE-SG concerning the composition and operation of the regional commissions responsible for arbitrating conflicts relating to the setting of annual quotas on the exploitation of wood
- Order N° 96-1023/MDRE-SG outlining coupon types and models and the terms governing the allocation, issuance and control of wood transportation coupons.



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