



Annex B

PRELIMINARY BIOLOGICAL DIVERSITY AND FOREST CONSERVATION ASSESSMENT FOR MALI

This preliminary report represents the first of a two part study that satisfies section 118/ 119 of the US Foreign Assistance Act. The report is designed to be part of the new strategic planning process. The second and more comprehensive study will be completed during the first six months of 2006.

I. PHYSICAL SETTING

Mali is a vast land-locked country with a land area of 1,241,000 sqkm. It is subdivided into four main bioclimatic zones presenting a wide range of agro-ecological environments going from the humid climate in the South to the Saharan arid climate in the North:

- Guinean savannah (either tree or bush; rainfall higher than 1,200 mm/year) in the south with **moist/humid forest**. There are also areas of dry closed forest and gallery forest.
- Sudanian savannah. It comprises savannah park (750 to 1,200 mm rainfall) and grass savannah (500 to 750 mm rainfall), with **tropical dry forest** and abundant *Isobertia*. It is the country's farming zone.
- Sahelian shrub steppe (*Acacia*; 200 to 500 mm rainfall), a livestock-raising zone, and Sub-desert tropical steppe with rainfall of 50 to 200 mm, corresponding to the **tropical shrub land**
- Desert with rainfall less than 50 mm, corresponding to the **tropical desert**.

This geographical context determines the biodiversity description (forest, flora and Fauna species biodiversity), the population habits and their impact on natural resources.

The closed forest (FAO text and data Global forest resources Assessment, 2001) correspond to gallery or riparian forests with almost closed cover with tree species such as *Khaya senegalensis*, *Isobertia doka*, *Azelaia africana*, *Pterocarpus erinaceus*, *Daniellia oliveri*, *Cordyla pinnata*, *Burkea africana*, *Prosopis africana*, *Butyrospermum parkii*, *Parkia biglobosa*, *Anogeissus leiocarpus*, *Lophira lanceolata*, *Bombax costatum*, *Carapa procera*, *Erythrophleum guineense*, *Ekebergia senegalensis* and *Pseudocedrela kotschy*.

The open forests basically correspond to Sudano-Guinean and Sudano-Sahelian zones savannah woodland and tree savannah composed of:

- Guinean savannah woodland of *Isobertia doka*, *Uapaca somon*, *Erythrophleum guineensis* and *Lophira alata*;
- Savannah park, which is typical Sudanian savannah marked by the presence of *Butyrospermum parkii*, *Parkia biglobosa*, *Acacia faidherbia*, *Tamarindus indica*, *Khaya senegalensis*, *Terminalia* spp., *Adansonia digitata* and *Bombax buonopozense*;
- Tree and bush savannah north of the savannah park and south of the sub-Sahelian zone. Woody species occurring here are *Combretaceae*, *Guiera senegalensis*, *Ziziphus* and *Acacia* spp. There are stands of *Acacia sieberiana* and *borassus palm* (*Borassus aethiopicum*) in periodically flooded areas. (Biodiversity Planning Support Programme, BPSP; Integrating Biodiversity into the Forestry Sector, Mali, Bather Kone, 2001).

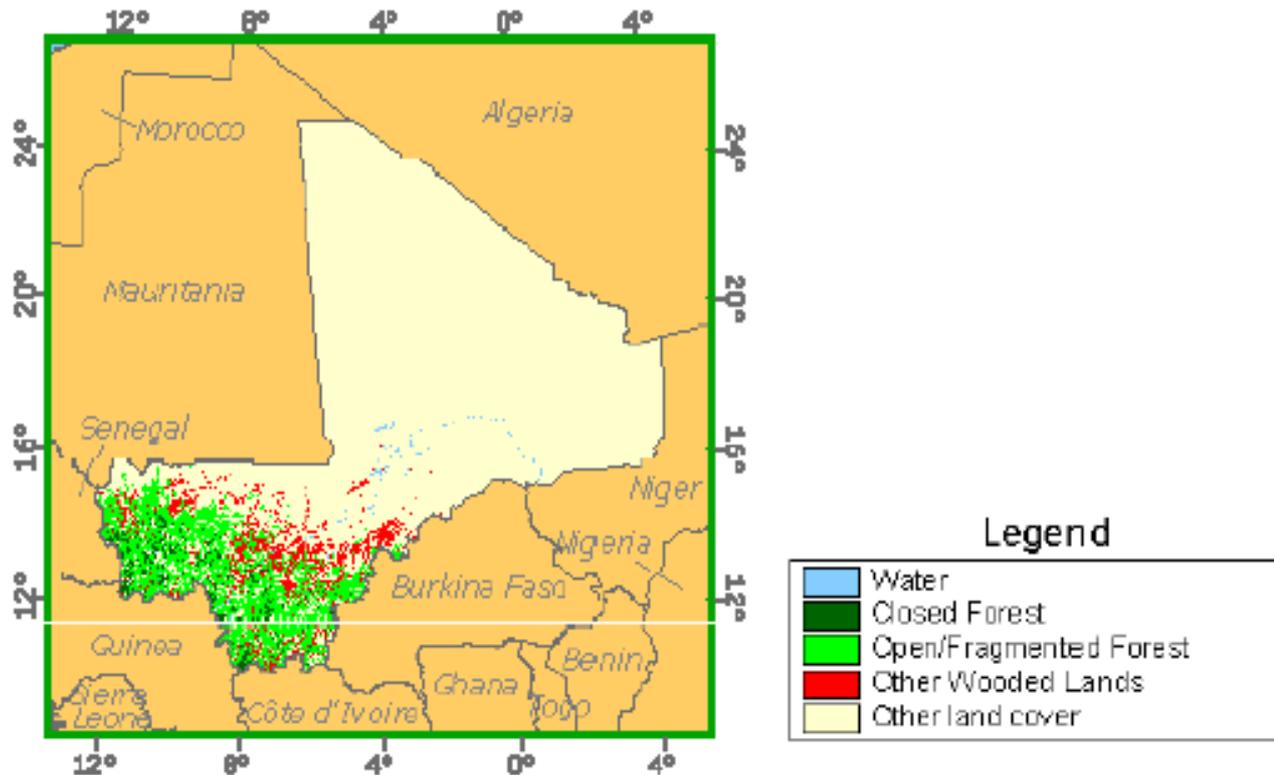


Figure 1. Mali's Forest cover (GFRA, FAO, 2001)

Since the occurrence of drought spells in 1970, the establishment of a more arid climate on the whole territory as well as a downward trend of rains and a shifting of isohyets by 200 km towards the South, have been observed. These conditions have threatened and modified already fragile ecosystems, particularly those of the Sahelian and Sahelo-sudanian zones. The droughts led some segments of the population especially pastoralists, to migrate towards the areas with higher rainfall in the Southern part of the country.

Two rivers systems are vital to Mali and its neighbors: the River Senegal, with a national basin of 155,000 sqkm and the River Niger with a national basin of 300,000 sqkm. The Niger River is characterized by the importance of the annual flow rates of 46 billion cubic meters in Koulikoro (Mali Biological Diversity Assessment; Peter Warshall, 1989) and the extent of its inner Delta which represents a unique humid zone in the sub-region (RAMSAR site).

According to Bather Koné report on BPSP, The national forest estate covers 34.4 million ha (PIRL 1985-1991 in Maiga, 1999; Annex 1) less than 26% of the country's surface area. Most of it is made up of woody plants covering 32.3 million ha. Less than 21 million ha are productive forest:

- 1.3 million ha are classified forests (state area);
- 3.9 million ha are faunal reserves with 1.5 million ha in the Mopti region and 1.75 ha in the Gao region;
- 15.7 million ha are agricultural plant formations covering 5.8 million ha of cultivated and fallow land and 9 million ha of reserves.

Mali has also a rich diversity in flora and fauna (1739 ligneous species; 640 bird species, 136 mammal species). Among the ligneous species, 8 are endemic (*Maeru de waillyi*, *Elatine fauquei*, *Pteleopsis habeensis*, *Hibiscus pseudohirtus*, *Acridocarpus monodii*, *Gilletiodendron glandulosum*, *Brachystelma medusanthenum*, *Pandanus raynalii*), and most of them are located in the Sudano-Guinean area. Two flora species are scarce (*Parinari*

excelessa, African acajou) and one is endangered (*Securidaca longipedunculata*). The protected species (forest law No. 95-004 of 18 January 1995, article 17) are: *Vitellaria paradoxa*, *Acacia albida* and *A. Senegal*, *Eleaisguineensis*, *Bombax costatum*, *Parkia biglobosa*, *Borassus aethiopum*, *Pterocarpus erinaceus* and *Khaya senegalensis*. In the last three decades, two species once found in Mali disappeared (UICN, 1992): *Oryx dammah* (scimitar-horned oryx) and *Damaliscus lunatus* (korrigum). About 30 species are in danger of extinction within the country, among them are *Taurotragus derbianus*, *Camelopardalis reticulata* (giraffe), *Trichechus senegalensis*, etc. The forestry law protects nineteen species.

- Tropical moist deciduous forest
- Tropical dry forest
- Tropical shrubland
- Tropical desert



II. THE STATUS OF BIODIVERSITY AND FOREST CONSERVATION IN MALI.

A. POLICY FRAMEWORK

A1. The National Environmental Protection Policy (NEPP). The policy was elaborated in 1998 and states: " Any person has a right to a healthy environment and the promotion of life quality is a duty for all and for the State» (Constitution of Mali, Art.: 15).

The conservation of natural resources, and in general that of the environment is an absolute priority for the Government of Mali and constitutes the basis for a sustainable socio-economic development. It is a framework for the efficient and sustainable planning and management of the environment. Its implementation focuses on:

- Desertification control;
- Food security;
- The prevention and control of pollutants;
- Poverty alleviation.

The environment policy of Mali is sustained by the following principles:

- Equity and equality;
- Involvement/empowerment and participation of all stakeholders;
- Prevention and precaution;
- Internationalization of the costs of the environment?? – not clear what this means; and
- Application of the " Polluter Pays" Principle.

A2. National Biodiversity Strategy

In May 2001 the GoM adopted a **National Biodiversity Strategy** and Action Plan; implementation of the plan began in 2003. The strategy focuses on the following areas:

- Reinforce protected areas: - maintain, restore and improve habitat for chimpanzees (Bafing and adjacent animal reserve) and of manatees in Kayo and Gao.
- Promote the sustainable utilization of biological resources, including:
 - develop management plans that include hunting interests and areas for animal protection in rural communes;
 - design and execute eco-tourism development projects (the Baoule area for its fauna, Bafing for chimpanzees, the elk of Derby, Delta for birds, and Gourma for elephants and Ansongo-Menaka for giraffes); hunting tourism in Gourma, Azaouak and Yanfolila;
 - support research and application of medicinal plants, by working with associations of traditional healers;
 - design and execute a plan for combating water hyacinth in the Niger river;
 - expand the links between biodiversity conservation and poverty reduction;
- Provide training and capacity development in biodiversity management for protection agents, locally elected officials, and others target groups;
- Build on traditional skills and knowledge in relation to bio-diversity conservation
- Preserve endangered local species by using networks of farmers animal breeders .

In view of the National Strategy vis-à-vis the Climatic Change, the following activities should be given attention:

- Promotion of energy saving equipment, new and renewable energy (solar energy, wind energy, bio gas), and bio fuels (oil and alcohol);
- Training, information and sensitization of drivers;
- Promote community forestry programs;
- Promote sustainable planning and management of state forests and that of decentralized communities.

The Government of Mali (GOM) is therefore fully committed to improving environmental and natural resources management (E/NRM). This commitment is also best reflected in the National Environmental Action Plan (NEAP – generated from the NEPP), which addresses E/NRM issues including biodiversity/forest, and problems

related to rural and urban areas, management of desertification, water pollution, sanitation, and liquid and solid waste disposal issues. The NEAP includes national E/NRM policies and establishes an institutional framework for implementation of the plan. The NEAP seeks to promote greater involvement on the part of civil society in solving environmental problems through decentralized processes, which promote greater management responsibilities at the local, communal level.

In addition, the implementation of Biotechnology activities which could preserve some threaten species is not advanced. The legislative texts allowing the implementation of biotechnologies activities in the country have been elaborated but not yet adopted by the National Assembly.

B. FIELD STATUS OF BIODIVERSITY AND NATURAL FOREST CONSERVATION

Mali's biological resources (vegetation and wildlife) were severely degraded by the 16-year Sahelian/Sudanian drought beginning in the 1970s. At least 80% of the population depends on these biological resources for food security and income.

According to Peter Warshall report, five ecological communities within Mali have special importance from a global, pan-African and national points of view. They are: the inner delta of the Niger River, the Gourma (area from the river to the border of Burkina Faso in the Gao Region); the southwest Sudanian woodlands; the Adrar des Iforhas (eastern part of Kidal Region in the north of the country); and the Sudanian rupicolous dry forests (Guibortia forests) of the western sandstone plateaus.

Biological inventories are lacking for the Adrar, the Guibortia forests and the southwest Sudanian woodlands to determine what plants and animals remain, their population sizes and distribution. The southwest Sudanian woodlands support the northernmost population of chimpanzees in Africa, the endangered Derby's eland as well as many other birds and mammals. Smaller habitats such as the Saharan oases and riparian woodlands in southern Mali also need biological surveys.

The inner Niger delta has lost most of its large mammals (the korrigum/topi is extirpated), and has low populations of crocodiles, manatees and hippos. It still supports over 1 million migratory birds (both intra-African and Eurasian) as well as important resident breeding birds. The Gourma supports the last remaining Sahelian and Malian herd of elephants as well as a wide variety of threatened antelopes.

Of these areas, only the Gourma has partial protection as a faunal reserve. All other areas described above have minimal official protective status. The Ansongo/ Menaka faunal reserve protects giraffes, which are also becoming rare. The Boucle de Baoule National Park complex has lost its large mammals (elephants, Derby's eland, giraffe, buffalo, etc.). Groundnut growers, pastoralists, poachers, commercial and trophy hunters, and villagers have all contributed to the demise of these species. According to a FAO team about \$8 million US would be required to restore the integrity of the park, not including costs of reintroduction of the large mammals (Peter Warshall 1989 report).

Mali has the potential to conserve some key ecosystems and for that reason, the GRM is making conservation of natural areas a priority. Commitment by the international community has been inconsistent, however. The 1989 biodiversity report recommended: the upgrading of the Gourma to a national park; the creation of a Bafing/Faleme area national park; the protection of bird nesting areas in the inner delta; as well as the surveys required to make decisions on other natural areas. To date these recommendations have not been fulfilled. The restoration of the Boucle de Baoule is underway, and elephant conservation has begun in some areas. The 1989 study also called for long-term funding (eight to ten years), feasibility studies for boundaries and population distributions, conflict resolution with local villages, integration of local populations into national park economies or economic development assistance, building of tourist facilities, anti-poaching teams, and training.

Although protection of natural resources is among the priorities of the GOM, without significant financial aid by donors, and a behavioral change within the hunting community, there will be no significant large mammal populations left in Mali in coming years. The Saharan and northern Sahel regions have limited protection. Addax, Dorcas gazelle and aoudad (Barbary sheep) are threatened or endangered. The oryx is extirpated; and the slender-horned gazelle may also be as well. In the mid/south Sahel and Sudanian woodlands, protection has been very weak. Most elephant herds, lion, Derby's eland, giraffe and ostrich

populations are locally extinct or declining. Dorcas and Damas gazelles are rare. The cheetah and hunting dog have disappeared. All wetland species have declined from intense use of the floodplains, drought, hunting, fishing, and the construction of the Manantali dam. Species most affected include the African buffalo, manatee, waterbuck, Buffon's kob, hippo, various fish species, and crocodiles.

At this time the projects, and their funding, related to species and ecosystem preservation are the following:

- Management of biological diversity in the Bafing Makana wild life reserve (full funding).
- Management of the Baoule bend biosphere reserve (full).
- Integrated management of the Gourma elephant rangelands (full).
- Management of the Nienendougou fauna reserve (no support).
- Management and implementation of management plans for the Ramsar sites in Mali (partial).
- Management of biological diversity in the Adrar and Tamasna pre-desert ecosystems (full).
- Sustainable management of resources in the Niger River Basin (partial).
- National Environmental Information System (partial).
- National Environmental Monitoring Network (partial).

Mali has no centralized herbarium and very little written information about its flora. The Saharan oases have been largely replaced by exotic plants.

TREES PROTECTED BY THE LAW IN MALI (P. Warshall report, 1989).

Daniella oliveri*	Isoberlinia doa*
Sterculia setigera*	Cordyla pinnata*
Bambusa abyssinica	Diospyros mespiliformis
Acacia scorpioides (radiana)	Hephaene thebaica
Acacia seyal	

Completely protected:

Butyrospermum paradoxum**	Parkia biglobosa**
Acacia albida **	Borassus aethiopum**
Elaeis guineensis	Alfzelia Africana
Pterocarpus arinaceus	Acacia senegal
Bombax costatum	Khaya senegalensis

(*) Never for firewood

(**) by permit in fallow areas.

BIRDS PROTECTED BY MALIAN LAW (P. Warshall report, 1989)

Whale-Headed Stork	
All carrion-eaters:	
Secretary Bird	
Saddlebill Stork (jabiru)	Marabou Stork
Bald Ibis (Waldrapp)	Nubian (lappet-faced) vulture
Cattle egrets	White-backed Vulture
All egrets (Egretta sp.)	White-backed Vulture
All storks (Ciconia sp.)	All other vultures
Hammerkop	
Spoonbills	
Flamingos	
Crowned crane	
All ibis	
Ostrich	
Ground Hornbill	
White-breasted Guinea Fowl	

"Not reported to have been seen in Mali (67)".

SUMMARY OF THREATENED, ENDANGERED AND EXTINCT ANIMALS IN MALI*
(Peter Warshall report, 1989)

Extinct in Mali:

Scimitar Oryx (E) Korrigum

Endangered both worldwide and in Mali:

Derby's Eland (E) [E]
Leopard (T) [E]
West African Chimpanzee (sp. verus) (E) [T] Dama's Gazelle
M [lozonai, E]
Addax (E)
Corn Crane (K*)
Western Wattled Cuckoo-Shrike (V) ?
Yellow-Throated Olive Bulbul (V)?
White-necked or Grey-necked Picathartes (V>R)? Bannerman's Weaver'?
Ibadan Malimbe?
Eurasian Peregrine Falcon [E]

Vulnerable worldwide (IUCN, USFWS) and Endangered in Mali: Dorcas Gazelle (V)
Cheetah (V) [E]

Elephant [T] West African manatee (V) [T] Hunting Dog (V) [E] Slender-horned
Gazelle (V) (highly endangered in Mali) Red-fronted Gazelle (V) Barbary
Sheep or Aoudad (V) Nile Crocodile (V) [E] West African Dwarf Crocodile
(I) [E] African slender-snouted Crocodile (I) [E] Pangolin [E]

Of unknown status in Mali or threatened only in Mali: Hippopotamus
(Threatened) West African Giraffe (Endangered) Ostrich (rapidly
declining) Spotted-neck Otter (unknown status) Cape Clawless
Otter (unknown status) Lion (vulnerable) Waterbuck (threatened)
Kob (threatened) Roan (vulnerable) Western Hartebeest
(vulnerable) Red-fronted Gazelle (threatened)

* IUCN Categories are in (). E (endangered); V (vulnerable); R (rare); I (indeterminate); K (insufficiently
known); T (threatened); CT (commercially threatened).

USFWS Categories are in []. E [endangered]; T [threatened]; V [vulnerable].

C. SUMMARY OF KEY THREATS TO BIODIVERSITY AND NATURAL FOREST CONSERVATION

The population is estimated at 12 millions, 90% of which are concentrated on about 30% of the territory, from Mopti Region to the Southern part of the country. It is a youthful population (60% are less than 25 years old, and 46% less than 15 years old) and is increasing rapidly (2.2% per year). The young population is highly mobile, especially towards urban centers that are experiencing a dramatic increases (+ 5% per year). Population density is very variable from North to South, from 1 inhabitant/sqkm in the North to more than 25 inhabitants/sqkm in the South. (Gestion des Ressources Naturelles, Note de Positionnement Stratégique et Plan d'Action, Septembre 2005).

The economy rests essentially on the agro-sylvo-pastoral sector which employs nearly 80% of the population and accounts for more than 40% of the Gross Domestic Products (GDP) and about 60% of exports. The sector will continue to drive economic development in Mali despite the overall low productivity of the sector. The handicrafts/industry sector and mining development are also expanding.

Since 1992, a democratic regime has been established. Important economic and institutional reforms, including decentralization, are underway, which has led to civil society becoming a more active stakeholder in development.

A recent analysis of the environmental situation reiterated several major environmental problems that should be addressed to ensure the necessary conditions for a sustainable economic and social development (Gestion des Ressources Naturelles, Note de Positionnement Stratégique et Plan d'Action, Septembre 2005). Some of the key challenges include:

- Restoring/conserving natural resources (soils, water, and vegetation, terrestrial and aquatic fauna) and managing them in a way to sustainably meet growing needs of the population;
- Improving the environmental quality of life for the benefit of all citizens.

The perceptible increase in the population, the persistence of unfavorable climatic conditions, and of extensive and inappropriate farming systems, have contributed to the degradation of natural resources and the environment, thereby accelerating desertification. The process of degradation of natural resources is characterized by:

- Loss of fertility of agricultural lands (reduction in fallows, wind and/or water erosion);
- Reduction in natural grazing lands (reduction in the duration of transhumance and considerable concentration around watering-points, increasing competition between Agriculture and Livestock, particularly in flooded areas and towards the Southern part,
- High pressure on forest resources, clearing for cultivation, overgrazing, considerable levies for fuel-wood, main source of domestic energy, bush-fires, etc.

However, the degradation is not even over the whole territory. In the North, one can observe an alarming desertification encroachment on a vast land-area which is not much populated, with a major risk of silting-up of valleys and ponds. In the Southern part, and more particularly around urban centers, the pressure on natural resources still available is being exacerbated in many places whereas it is the latter that allow for meeting food and energy needs.

In Mali, animal resources are closely linked to subsistence, trophy and commercial hunting, tourism, agricultural pest control for cash crops, human disease control, fishing, livestock production, and river basin water management. Plant resources are closely linked to rainfed agricultural crops, drought fallback food, craft and medicinal plants, rangeland quality, cooking, home building and income from sedentary agriculture, agro-forestry, timber forestry, agro-pastoralism, pastoralism, agro-fisheries, and artisans. Subsistence hunting is a major source of protein for Malian households.

More than 100,000 ha of forest are lost every year. The yearly volume of trees cut for wood and charcoal from the forest is estimated at 5MT and could correspond to 400,000 ha of plantation devastated; this situation is supposed to reach 7MT/year in 2010. (Gestion des Ressources Naturelles, Note de Positionnement Stratégique et Plan d'Action, Septembre 2005).

Environmental resources are also subject to an increased risk of pollution due to multiple causes: gold mining, industry and handicrafts, or insufficient sanitation infrastructures and equipment in urban areas.

Air, water and soil pollution affects more particularly areas with high human concentration and areas with intensive production such as Office du Niger and the CMDT zone owing to the increasing use of fertilizers and pesticides.

Together, these factors have led to a gradual deterioration of the life quality and the living conditions of urban and rural population.

Under conditions of high demographic growth, poverty, low purchasing power of the population and in the absence of adequate measures, this trend should continue to be pronounced in the years to come, with negative consequences on the health and welfare of the population.

The National Environmental Protection Policy was written in 1998 to address the above problems.

III. USAID MALI AND THE ENVIRONMENT SECTOR.

A. HISTORICAL SUPPORT

USAID/Mali has promoted, with success, individual and Community Based Natural Resources Management (CBNRM) initiatives within the Office de la Haute Vallée (OHV) for many years. Building on investments in the OHVN program over the last 20 years, an growing number of producers have increased yields and diversified and increased their household economies thereby reducing their vulnerability to threats posed by Global Climate Change (GCC). At the same time, they have increased prospects for future growth by reducing soil and ground cover degradation rates. Reduction in pressure on natural vegetation together with increased soil conservation both have direct effects on the protection of plants and animal diversity.

Past successes, again in the OHVN zone, highlight a number of communities which have negotiated agreements with the Forestry Service such that no commercial cutters are permitted on community lands. (Prior to agreement, commercial cutters, armed with permits issued by the Forestry Service, would harvest trees from community lands.) The quid pro quo was that the community would not sell wood to commercial cutters and would, to the extent possible, harvest dead wood. CBNRM demonstrated successes here, and intended to be extended in the new CSP period, clearly will continue to address the protection and conservation of forest areas through improved land use management. More importantly, the elaboration and adoption of Local Conventions to manage the natural resources will increase the preservation and protection of the biodiversity.

Enabling Conditions for some of the NRM activities.

- Viable, democratically-run and business-based Village Associations (VA). As a result of business training by CLUSA initiated in the mid to late 80's, Village Associations gained the skills and capacity to allow many of their members to lift themselves out of subsistence farming. These VA's also provided community members with the organizational skills to conserve natural vegetative cover and stem soil erosion on both a farm and watershed scale.
- Change in Forest Policies. Building on the experiences in the Village Reforestation Project in the Mopti-Sevare area in the early to mid-1980's, and discussions with donors, including USAID, the Malian government policy devolved authority and changed the Forestry Service from a command-and-control Agency to a partnership Agency. These changes (which took place around 1996) increased local control—as well as responsibility—over forest resources. (Recent findings showing stabilized area under ground cover is counter to old paradigm that sharing authority with communities would lead to rapid degradation.)
- New Technologies. Farmers in the OHVN benefited from research results that provided more intensive farming system approaches that increased yields and reduced degradation rates.

In 2002, OHV staff estimated the area of forest preserved and saved under USAID funded project at 749 hectares through the adoption of tree planting, anti-erosion practices, efficient stoves use, land rehabilitation, the village brigade controlling wood cutting. From a survey conducted by OHV NRM agents in 2001 with a sample of 500 farmers from 8 villages, 70% said that the vegetative cover was increasing, and 76% said that land clearing was reduced. Under USAID Cooperative Agreement with the PVO, Enterprise Works (EW), from 1997 to 2001, the number of efficient charcoal stoves sold was estimated to save area of 17,000 ha of forest and

reduce CO2 emissions by about 147,000 MT. Therefore by saving forest degradation, one is protecting the plant diversity.

Since 2003, USAID E/NRM activities are mainly centered on a participatory CBNRM approach through the development of “Communal Environmental Management Plans” which will include the elaboration of “Local Conventions”. The Local Conventions take into account the concerns of all community organizations including women. The adoption and application of the conventions lead to a better NRM for a better protection of the forest, and its species.

B. ANTICIPATED LINKS TO BIODIVERSITY AND NATURAL FOREST CONSERVATION

The Government of Mali puts a great importance on natural resource management for, although biodiversity activities are rated low for Mali by the Africa Bureau. As reported above, the Mission will spend, at least, some of its annual budget on natural resource management activities. USAID/Mali sees a link between the agricultural and environment sectors and also among the three objectives under the **E/NRM** section: 1) improve NRM and conservation across diverse landscapes, 2) promote equitable natural resource governance and management of competing claims on resources, and 3) increase sustainable production, marketing, and trade of natural resource-based products and services. Under the current strategy, emphasis is being put on objectives 1 and 2 and their achievement will trigger that of objective 3. The activities will be centered on a participatory CBNRM approach through the development of “Communal Environmental Management Plans” which will include the elaboration of “Local Conventions”. In collaboration with the Democratic Governance (DG) Strategic Objective (SO) which will work on strengthening the participatory governance, improving the decision-making processes, and reducing resource-based conflicts etc..., the Accelerated Economic Growth SO will help the institutions to implement NRM activities using the best practices, for activities such as wood and charcoal market management.

In the environmental sustainability assessment, when developing the Strategic Objectives (SO), each team focuses on the following questions: 1) what is needed to ensure environmental sustainability during implementation of each SO program; 2) what each SO team is planning to do or *not* do to address those needs.

Health SO: Increase use of High Impact Health Services and Improved Health Practices.

As a strategic objective, developed to address USAID Global goals in health, population and nutrition. It will include only limited explicit environmentally-focused activities or approaches. Nevertheless, it can be considered to be an environmentally-sustainable plan in that it is cognizant of and seeks to be responsive to the environmental components of health risks and trends. With a good healthy population, one can expect an adoption of improves E/NRM practices.

Basic Education SO: Improving quality of basic education.

Like the Health SO, this SO will also include only limited explicit environmentally-focused activities or approaches. Nevertheless, it can be considered to be an environmentally-sustainable plan in that it can improve the quality of the environmental education taught in some schools.

Democratic Governance SO: Consolidate Democracy and Mitigate Conflict through Shared Governance.

This SO, has been developed to address USAID Global goals in Democracy and Governance, and has environmentally-focused activities or approaches limited to the incorporation of NRM and Nature Wealth and Power approach in the Communes Environmental Plan development. Overall improvements in governance, particularly in conflict resolution over natural resources, and civil society participation in Mali can only impact positively upon the country’s environmental resources base, both in relation to USAID/Mali programs and more broadly. The natural resources results that the Mission is pursuing have evolved to emphasize community involvement as key to decision-making about resource use. Pursuit of these results will continue to engage local citizens groups in hands-on training in democratic decision-making, particularly in Local Conventions elaboration and application for effective NRM.

Economic growth SO: Agricultural Productivity, Incomes and Employment Increased in Targeted Zones.

As has been proven time and again, poverty is a major “driver” of environmental degradation. The SO aims to address that cause of degradation by helping raise agricultural household incomes. The program will work

through targeted sub-sector improvements aimed specifically at Production, Trade, and Financing. Targeted commodities for which Mali has a regional comparative advantage will be the focus such as livestock, rice and horticultural production, in high potential agro-ecosystem areas.

A major threat to forest resources in Mali is conversion to agricultural use. Thus AEG/SO will assist agricultural households in intensifying land use, using NRM best practices, and raising incomes where they are, rather than moving farther into marginal forested areas where productivity is less and environments are more fragile. The SO implementers will site their activities based on the appropriateness of existing ecosystems, and will plan activities to minimize adverse impacts on land, water, and soil resources. This will allow the reconstitution of some vegetation and the recovering of some degraded lands.

In collaboration with the DG SO, Economic Growth SO plans to implement a more thorough option – providing input to Community Based Natural Resource Management (CBNRM) land use/community resource management plans. This approach intends to develop and promote a process to increase local community participation in the identification, planning, use and conservation of natural resources. It also insures that this approach ensures that a broad perspective on environmental, social, and economic sustainability is captured, and that programs are harmonized with the Agency’s sustainable development goals. These land use plans may also be utilized to illustrate the need for a range of policy improvements to support sustainable enterprise, including agriculture, in Mali. From the agricultural perspective, such plans could help highlight systemic problems, such as extensification and subdivision of land, an increased need for market access, more environment-friendly technologies, and better support for smallholder producers. As noted, they can also help EG/SO implementing partners to avoid environmental and social problems that have encumbered some agricultural programs in the past; e.g., abusing toxic insecticides that pollute sensitive downstream waterways; addressing the wrong “farmers” – i.e., husbands instead of wives, where women are the primary growers; creating pockets of wealth and thereby also social divisions in formerly close-knit communities; etc.

As stated above, the program will assist in promoting decentralized management of natural resources and seek to develop joint implementation approaches to improve their democratic governance. A major effort will be devoted to training public and private partners in sound environmental assessments and planning. Additionally, activities will seek to improve food quality and safety by ensuring increased use of Integrated Pest Management (IPM) techniques for crop production. Note that all these approaches lead to biodiversity conservation by minimizing the loss of endangered species.

Communications for Development Special Objective: Accelerate development by making information accessible through innovative communication techniques and appropriate tools”.

Like DG/SO, this special SO has no explicit environmentally-focused activities or approaches included. Overall improvements in communications for development can only impact positively upon the country’s environmental resources base, both in relation to USAID/Mali programs and more broadly. Radio programs and radio campaigns on E/NRM topics could be very positive to the environmental protection.

Mali has been a country heavily damaged by the drought and an over centralized economy. USAID has helped Mali move toward food security, decentralized economics and environmental stability. Consideration of biological resources and diversity are important for both USAID and the Government of Mali. It is hoped that this report makes the conceptual and practical goals clearer and that biodiversity can be more tangibly incorporated into Mali’s evolving culture, ecology and economy.

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