



Niger: 118/119 Biodiversity and Tropical Forest Assessment

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Report Submitted by:

Dave Maercklein
Forest Fire Staff Officer and Planner
Hiawatha National Forest
2727 N. Lincoln Rd.
Escanaba, MI 49829

dmaercklein@fs.fed.us
906-789-3301
Fax: 906-789-3311

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ACRONYMS

AENRC	Agriculture, Environment and Natural Resource Commission
AGOA	African Growth and Opportunity Act
BATS	Biodiversity Analysis and Technical Support
CPAP	Composante Environnement du Plan d'Action du Programme de Pays
EU	European Commission
ECHO	European Commission Humanitarian Aid
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GNP	gross domestic product
GRN	Government of the Republic of Niger
HDI	Human Development Index
IFAD	International Fund for Agricultural Development
IISD	International Institute for Sustainable Development
INRAN	Institut National des Recherches Agronomiques du Niger
IUCN	World Conservation Union
LWR	Lutheran World Relief
MCC	Millennium Challenge Corporation
MDG	Millennium Development Goal
MHE	Ministry of Water Resources and the Environment
NGO	non-governmental organization
PEPFAR	President's Emergency Plan for AIDS Relief
PNEDD	Plan National de l'Environnement pour un Développement Durable
PRSP	Poverty Reduction Strategy Papers
SML	Société des Mines du Liptako
SONICHAR	Société Nigérienne de Charbon
TSCTP	Trans-Sahara Counter-Terrorism Partnership
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Program
UNEP	United Nations Program for the Environment
USAID	United States Agency for International Development
WARP	West Africa Regional Program
WFP	World Food Program
WRI	World Resources Institute

EXECUTIVE SUMMARY

The following 118/119 Biodiversity and Tropical Forest Assessment for Niger is the result of short-term desk research based primarily on readily available materials from the Internet and limited interviews with USAID working on initiatives for the West African region. To date, no previous 118/119 assessment has been conducted for Niger.

Niger has experienced more than 40 years of persistent drought, with periods of severe drought, and falls within a sub-arid climatological zone south of, and including, the Sahara Desert. As such, the country's natural resource base is threatened by desertification and the expansion of the Sahara by thousands of hectares each year. Historically rural in nature, the population has experienced increased population growth and urbanization since gaining independence from France in the 1960s. The degraded natural environment has pushed communities to move into the remaining rain-fed, verdant areas that support agricultural production and to urban centers in search of economic alternatives to subsistence agriculture and raising livestock. By recent estimates, approximately 17 percent of the national population now lives in urban areas, with approximately 6 percent residing in the capital city of Niamey.

Today, Niger's economy is focused primarily on uranium mining, subsistence agriculture, and livestock grazing. The agricultural sector is able to meet an average of 87 percent of the national demand for agricultural products, and increasing degradation of the natural environment is generating decreasing returns for agricultural production. Niger's economy has maintained a low but steady growth since 1999, when the Government of the Republic of Niger (GRN) instituted a number of wide-ranging macroeconomic, structural, and governmental reforms. Poverty levels have not changed statistically since 1990, with an estimated 61 percent of the population continuing to live on one U.S. dollar per day,¹ and much of that population depending on agricultural activities in the more fertile south for survival.

The Sahelian nation is party to a number of international conventions on biodiversity, conservation, and climate change. The country also has developed a significant body of legislation and strategies to address constraints to sustainable natural resources management and advancement of the rural sector. In demonstration of its commitment to the Convention on Biological Diversity (CBD), Niger prepared a National Environmental Plan for Sustainable Development (Plan National de l'Environnement pour un Développement Durable, or PNEDD), along with subsequent reports on the country's progress.

In addition to the GRN's own efforts in addressing impacts on the natural environment, a number of international NGOs and donor organizations have contributed to the advancement of sustainable natural resources management in Niger. CARE, Lutheran World Relief, and Oxfam have long maintained a presence in the country, as have the United Nations Environment Program (UNEP), the United Nations Development Program (UNDP), World Bank, European Commission (EU), and European Commission Humanitarian Aid (ECHO), and the Global Environment Facility (GEF). Perhaps not an exhaustive list of donor organizations and implementers, these organizations represent those most visibly active in issues related to the management and conservation of Niger's natural resources.

¹ Human Development Report 2005, UNDP

Niger's natural resources are threatened by both environmental and human activities. Persistent drought and encroaching desertification are punctuated with periods of severe drought, flooding, and locust infestations. Pressure from population growth and the corresponding increased agricultural activities are threatening an ever-diminishing natural resource base. Land and soil degradation in agro-pastoral areas and oases, shifting sands and soil erosion, and deforestation of remaining vegetative resources due to overgrazing and land clearing for agriculture all decrease the ability for the natural environment to support native flora and fauna, as well as migratory populations of birds and animals. Changes in the water table and salinization of areas surrounding irrigated agriculture also contribute to the decline in productivity and the health of the overall ecosystem.

In response to these challenges, Niger has established key protected areas to safeguard its biological resources. Parc National du W has been designated as Ramsar wetlands of international importance, and has been the recipient of international assistance toward the development of management plans. Protected areas comprise eight percent of the total national territory of the country (10,100,000 hectares).

Niger is host to 1,178 plant species, 127 mammal species (13 threatened, 2007), 500 birds (5 threatened, 2007), and 150 reptiles and amphibians. Niger has the largest population of elephants, buffalos, giraffes, and large ungulates of Sahelian West Africa. Primary threats to endangered species include over-exploitation of resources through poaching and increasing pressures of agriculture and grazing activities onto a limited land base. Increased fragmentation of natural habitats is particularly detrimental for migratory waterfowl and for threatened species found throughout the region. In addition, the negative impacts of extractive industries, especially the potential negative impacts of gold, uranium, coal and other mineral exploitation, also present significant threats of pollution and related impacts.

According to the Food and Agriculture Organization of the United Nations (FAO), Niger possesses few remaining forest resources, and these are disappearing at an alarming rate. Forest cover makes up less than four percent of Niger's national territory. Another six percent is made up of lands classified as a wooded savannah. There is no large-scale forest industry in Niger, despite attempts to establish forest plantations to counter desertification and soil erosion. Little information is available on the status of these plantations. Threats to these forested areas include drought, overgrazing, and clearing for agriculture.

Soil erosion and degradation, resulting from overgrazing and harvesting of trees for firewood and building materials, are to blame for desertification impacting crop fields, market garden plots, and villages. Since the forests have decreased along with wetland areas (lakes, *wadis*, and ponds), there are limited natural refuges for wildlife and migratory birds. In the Niger River valley, the extent of land under cultivation, together with poor drainage practices, are the main causes of soil deterioration.

Primary issues related to biodiversity and tropical forest conservation identified as a result of this assessment include:

- Drought and desertification
- Human and animal threats
- Over-exploitation
- Inadequate institutions for management of natural resources

Since 1998, USAID has had minimal involvement in Niger due to a coup d'état. At the time, USAID withdrew its mission and formally halted operations in the country. In the re-emergence of democratic presidential elections (1999), USAID has provided humanitarian assistance through NGOs and the West African Regional Program (WARP).

While the FY 2008 Congressional Budget Justification (CBJ) does not include programmatic areas that would utilize biodiversity-earmarked funds, the proposed programmatic areas do present opportunities to contribute to the conservation of Niger's natural environment.

The FY 2008 CBJ includes requests for funds in four areas of the U.S. foreign assistance agenda:

- \$1.1 million for Peace and Security
- \$1.3 million in Governing Justly and Democratically
- \$5.6 million in Investing in People
- \$10.5 million in Economic Growth

PEACE AND SECURITY

The GON condemns terrorism and is committed to fighting it and religious extremism, but the government needs assistance in both resources and training to be more effective. Although peace and security activities are not directly tied with conservation efforts, they have important connections with the potential to affect environmental activities. The need for regional peace and security is apparent when considering that protected areas need law enforcement along borders, especially in protected transboundary areas.

GOVERNING JUSTLY AND DEMOCRATICALLY

Democratic and transparent governance are imperative today in Niger, with the country's democracy restored by presidential elections held in 1999. With the importance of the restored civilian democracy, the U.S. government will provide assistance to the legislature and democratic institutions, including political parties and a free press; promote human rights; and support anti-corruption programs to ensure that income from gold and uranium exports are used for development.

INVESTING IN PEOPLE

The U.S. government will assist with the improvement of preventative and treatment programs for child and maternal health and local capacity to respond to issues related to food security, including access to clean water. Initiatives will also be geared toward increasing income generation through targeted micro-enterprise sectors and community works. For Niger, where a significant percentage of the population relies on agricultural and livestock activities, food security is heavily dependent upon a healthy natural environment. Similarly, access to potable water is predicated upon functional watersheds and effective pollution protections. Sustainable micro-enterprise activities have the potential to bring communities out of poverty, but only in so much as these activities also contemplate the sustainable use of natural resources and the protection of the natural environment.

ECONOMIC GROWTH

Support for capacity building for micro-credit institutions, establishment of a micro-credit fund, and promotion of expanded livelihood strategies also comprise primary components of USAID's proposed program. Broadening the range of viable economic opportunities for the growing population can alleviate the pressure placed on the environment by agricultural and livestock activities. Technological know-how has been identified time and time again as a primary constraint to sustainable management of natural resources by local communities. Initiatives aimed at expanding livelihood strategies to local populations should concentrate on best practices in soil conservation and improved agricultural and livestock techniques. In addition, access to credit should be fostered to increase local communities' ability to invest in improved practices. Prior to implementing initiatives to broaden the available micro-enterprise opportunities, impact assessments should be conducted to ensure that the new proposed activities do not cause undue harm to the already degraded natural environment.

This report attempts to identify the key threats to biodiversity and forestry conservation and to provide examples of past and current initiatives with aims to ameliorate these threats. Although Niger has for many years been a non-presence country for USAID, the agency has taken significant strides in offering humanitarian assistance and encouraging the burgeoning democratic process developing within the country. And while at present little attention seems to be focused on the natural environment, through its proposed portfolio, USAID has the opportunity to contribute to the livelihoods, health, and democratic opportunities of the people of Niger.

SECTION A. INTRODUCTION

The Republic of Niger, located in western Africa, is bounded on the north by Algeria and Libya, on the east by Chad, on the south by Nigeria and Benin, and on the west by Burkina Faso and Mali. It is a landlocked country with an area of 1,267,000 km² and lies between latitudes 11° 37' and 23° 23' N and longitudes 0° and 15° E.

The terrain is composed of the continental African base covered by sediment and debris and smoothed by erosion. Altitude ranges from 200 to 500 m, with the Tamgak mountains (1,800 m) in Air in the northwest, overlooking the Iferouane valley and the vast expanse of the Ténéré dunes in the northeast. Altitudes also rise sharply in the northeast on the border with Chad and north of Zinder. In the southwest, the Niger River flows for 300 km from the border with Mali to Gaya, over a large plain cut by dry valleys. In the southeast, the country borders the northwest bank of Lake Chad.



Political map of Niger (Source: appliedlanguage.com)

The rainy season lasts from June to October in the south, with maximum rainfall in August, but becomes steadily shorter further north as the rain becomes more irregular and lighter. The dry season, from October to June, is hot until November, then relatively cool until mid-March, and very hot again in April and May, with a burning east wind. The average annual temperature in the capital city of Niamey is 29°C (85°F), but temperatures can reach as high as 50°C (122°F) in the desert. Only the very southernmost 20 percent of the territory in the country supports rain-fed agriculture and vegetation.

A1. ENVIRONMENTAL AND NATURAL RESOURCE MANAGEMENT CONTEXT IN NIGER

A sub-arid climatological zone located south of the Sahara Desert, the Sahel encompasses nine countries and 47 million of the poorest people in the world, including much of the population of Niger. The Sahel region is particularly sensitive to climate change due to farming and livestock grazing activities and its proximity to the Sahara, which is growing by thousands of hectares each year. Combined with 40 years of drought and a substantial decrease in the level of underground water resources, human activity in the Sahel has contributed to deforestation, serious soil degradation, and erosion.

The growing population, a large percentage of which struggles in a degraded natural environment and subsists at the brink of food insecurity, presents a unique set of development challenges. For a considerable portion of the population, the struggle for survival overshadows concern for the conservation of the natural environment. Due to limited knowledge of and

capacity to adopt improved practices, the population has insufficient resources to invest in improved techniques for sustainable natural resources management.

A1a. Economic environment

The country consists of four ecological climatic zones. Divided into three agro-ecological zones (Saharan, Sahelian, and Sudanian), Niger's economy is supported by two primary industrial sectors: gold and uranium ore extraction. Overall, the industrial sector is marked by relatively limited competition, markets, and economic activities. The GRN's Plan National de l'Environnement pour un Développement Durable states that the country's agricultural sector is only able to meet an average of 87 percent of the national demand with agricultural activities that cover a mere 15 percent of the national territory. As a result, Niger has difficulty feeding its population and must rely on grain purchases and food aid to meet food requirements. The gross domestic product per person is approximately \$273 (2006), with the agriculture sector contributing up to 40 percent of that amount and supporting 87 percent of the employment.² The agriculture sector in 1995 consisted of 55 percent rain and irrigated farming, 34 percent pastoral activities, and 11 percent forestry and fisheries.³

The amount of Niger lands capable of agriculture cultivation in 1984 was 15 percent of the total area of the country. FAO estimated in 1993 that annually, 70,000 to 80,000 hectares of new land is committed to agriculture use, at the detriment of forest and grazing. Crop area has increased from approximately 3.3 million hectares under cultivation in 1979 to over 11.9 million hectares in 2005. The main agriculture crops are millet and sorghum, with rice and corn as secondary crops. The main export agriculture products are groundnuts. Cotton, manioc, garden vegetables and fruit are consumed locally. Between 1982 and 1996, in only three years did Niger produce enough food for the country to meet its needs, with shortfalls varying from 1 percent to 40 percent and an annual average shortage of 13 percent.

The principal livestock raised in Niger are goats, sheep, cattle, and camels. There are two types of livestock farming in Niger: sedentary in the agriculture zone, and pastoral by nomadic and seasonal usage. Access to water and pasture are the two main constraints to livestock farming, with the availability of water causing some areas to be overgrazed and other areas to be under-utilized. From 1965 to 2005, numbers of goat, sheep, cattle, and camels ranged from a low of 7,780,000 to 22,280,000, with numbers reflecting impacts of drought or higher rainfall periods.

Mineral deposits occur near Liptako, l'Aïr, Ténéré, Damagaram Mounio, and south of Maradi regions and contain deposits of uranium, platinum, chrome, copper, lead, zinc, titanium, lithium, and vanadium. In the areas of the country overlaid with sediments, particularly in the Illumenden basin, substantial deposits of phosphates, coal, iron, limestone, and gypsum also have been found, but insufficient data exists to estimate the levels of production.

Exploitable deposits of gold are known to exist in the region between the Niger River and the border with Burkina Faso. In 2006, gold was Niger's third most important export, accounting for 13.6 percent of the country's total exports. The Samira Hill gold mine represents the first commercial gold production in the country. Samira Hill is owned by a company called SML (Société des Mines du Liptako), which is a joint venture between a Moroccan company, Société

² FAO, 2005

³ Vision National de la Diversité Biologique

Semafo, and a Canadian company, Etruscan Resources. Both companies own 80 percent (40 percent/40 percent) of SML, with the Government of Niger responsible for the remaining 20 percent. The potential reserves for the Samira Hill mine could be recovered over a 6-year mine life. SML officials believe that significant gold deposits can be found within what is now recognized as the “gold belt” and known as the Samira Horizon, located between Gotheye and Ouallam.

Niger has oil potential, but proven reserves are unknown and no production has yet occurred. In 1992, the Djado permit was awarded to Hunt Oil, and in 2003 the Ténéré permit was awarded to the China National Petroleum Company. In 2006 an ExxonMobil-Petronas joint venture ceased exploration activities at what may be Niger's largest oil deposit, the Agadem block, located north of Lake Chad. In 2007, 19 companies vied for exploration and production rights to the Agadem block, but none of the bids was accepted. The Government of Niger is trying to attract new bids on the Agadem block for 2008.

To date, only uranium and coal have undergone any substantial mining, and today they are the most important mineral activities of the country. Uranium is very important to the economy, providing approximately 55.4 percent of national export proceeds in 2006. Niger's two uranium mines — SOMAIR's open pit mine and COMINAK's underground mine — are owned by a French-led consortium and operated by French interests. As of 2007, many licenses have been given to other companies from Canada and Australia in order to exploit new deposits.

The parastatal SONICHAR (Société Nigerienne de Charbon) in Tchirozerine, north of Agadez, extracts coal from an open pit and fuels an electricity generating plant that supplies energy to the uranium mines with reserves estimated at nine million tons. The total production of coal over the last 17 years has been 2,438,778 metric tons.⁴ Given the known reserves, Niger has an opportunity to produce more for industrial and domestic consumption. Additional coal deposits to the south and west are of a higher quality and may be exploitable.

A1b. Social climate

Niger, one of the world's poorest countries, has made considerable progress towards macroeconomic stability and growth since the return of democratic governance in late 1999. The reform agenda, however, remains vast, and poverty is widespread. Niger's prospects are clouded by limited natural resources and a highly degraded natural environment, explosive population growth, extremely low human and institutional capacity, very limited international competitiveness, location in a potentially volatile sub-regional context, uncertain donor commitment, and years of poor governance. These factors contribute to the extreme vulnerability of poor Nigerians, particularly women and children. The percentage of population living on less than USD \$1 per day has remained nearly unchanged at 61 percent since 1990.⁵

With improved macroeconomic performance over the past few years, Niger has benefited from increased flows of donor support, as well as interim debt relief since the Enhanced Heavily Indebted Poor Countries Initiative (HIPC) Decision Point of December 2000. This initiative's debt-burden thresholds were adjusted downward, which enabled a broader group of countries (including Niger) to qualify for larger volumes of debt relief. In addition, Niger has benefited

⁴ PNEDD

⁵ Human Development Report 2005, UNDP

from grants under International Development Association's (IDA's) 13 arrangements. The clients of IDA are the poorest countries that usually cannot afford to borrow on commercial terms. IDA offers concessional, no-interest loans (called "development credits") to these countries. Nonetheless, resource flows are limited by continued donor concerns about stability and absorptive capacity, as well as by HIPC-related constraints on Niger's ability to borrow. Thus, Niger's central challenge is to achieve the ambitious program of economic and social transformation set forth in its PRSP by maximizing the effectiveness of development assistance and public resources.

Niger's society is mainly rural, with 17 percent living in urban communities and approximately 850,000 people living in the capital, Niamey.⁶ The rural population in Niger is concentrated in the southern one-third of the country in the rain-fed agricultural zones and along the Niger River, which supports irrigated rice and cereal production on the annual flood plain. Agro-pastoralism and pastoralism are found in the middle and north and are mostly focused around oases and a vast expanse of uninhabited desert. Livestock and livestock products, along with sorghum and millet, comprise the staples of local consumption. There are also niche products such as irrigated rice, dates, and fish caught from the Niger River. Livestock are sold informally in Mali, Burkina Faso, Benin, Togo, and Nigeria during periods of seasonal grazing across the borders.

The balance of rural poverty, manifested through food insecurity and environmental degradation, is precarious, and the rural population of Niger is vulnerable to environmental changes. While large-scale environmental events such as drought or flooding along the bank of the numerous intermittent streams are comparatively rare, the growing population becomes more and more reliant on finite natural resources. Grazing and agricultural activities are restricted to increasingly limited arable land surrounding seasonal water sources and oases. The growing reliance on ever more limited resources (fire wood, building materials, clean water) intensifies the impact of even minor natural occurrences. Not only does 61 percent of Niger's population live on less than USD \$1 per day, but much of that population depends on subsistence agricultural activities carried out within a 75- to 150 km-wide strip of land on the southern boundary of the country receiving low and sometimes unpredictable annual rainfall.

GEF found that agricultural productivity is further limited by insufficient transport infrastructure, hindering access to markets and agricultural services, and limited access to investment and working capital.

Since February 2007, the social situation in the desert northern region deteriorated with an ongoing uprising led by Tuareg rebels. They claim to be marginalized and ask to benefit more from the resources extracted in the region (primarily uranium, given that the region contains the largest deposits in the world). In August 2007, the government declared the northern region a military zone. This situation jeopardizes the tourism season (October-March), which is the main source of revenue for local people.

A2. BACKGROUND ON USAID ACTIVITIES IN NIGER

USAID has had minimal involvement in Niger since 1998, when USAID pulled out due to a coup d'état. Although USAID does not have a mission in Niger, annual official aid is administered through United States and local NGOs with programs addressing food security,

⁶ UN Population Division, 2005

health, local governance, youth training, girls' education, corruption control, and improving the business environment.

A3. CURRENT USAID EFFORTS IN NIGER

Niger is a young democracy struggling to consolidate its democratic political gains against a variety of internal and external destabilizing forces. Niger is the world's least developed country, has the highest fertility rate in the world, and an annual population growth rate that limits real per capita GDP growth and produces a “youth bulge” — almost 70 percent of Nigeriens are under 25 years of age. Food insecurity, poor health conditions, and unemployment constitute threats to survival. Persistent insecurity in the northern and eastern desert regions, alienation among young people and certain ethnic groups, and corruption challenge the political culture of this emerging Muslim democracy. Assistance that will improve the daily lives of people, including economic conditions, is essential to sustaining democratization and partnership on counter-terrorism.

Ninety-eight percent of Nigeriens are Muslim. The country's tradition of tolerant Sufi Islam is challenged by illiberal, extremist interpretations of the faith coming from Nigeria, South Asia, and the Middle East. The Government of Niger's ability to provide necessary services to its citizens is limited. Corruption, weak revenue collection, poor public education, and a culture of entitlement born of traditional patron-client political relationships create a gulf between popular expectations and the government's capacity to meet them.

Insecurity and conflict are born of natural resource scarcity and ethnic tension. Conflicts between farmers and herders over access to water and pasturage are common in the south, while Tuareg, Arab, and Toubou alienation from the GON yields banditry and trafficking in the north and east. Porous borders with neighbors including Chad, Mali, Nigeria, Algeria, and Libya contribute to trafficking in arms, cigarettes, and persons. Poverty leads to child labor, and the maintenance, in isolated instances, of traditional caste-based slavery.

The FY 2008 CBJ includes requests for funds in four areas of the U.S. foreign assistance agenda:

- \$1.1 million for Peace and Security: Niger is a valuable ally in the Global War on Terror. It is a core participant in the Trans-Sahara Counter-Terrorism Partnership (TSCTP). Assistance in this objective is designed to complement ongoing TSCTP activities and train Niger's security forces.
- \$1.3 million in Governing Justly and Democratically: As a young, growing democracy, Niger needs additional assistance to reinforce its existing success. An effective, transparent, and participatory decentralization process is essential not only to advance democratization in Niger, but also to involve citizens and other actors at the local level in order to address chronic issues such as food insecurity and to combat extremism. Funding to support the decentralization process, as well as elections support, will help to strengthen this young democracy's ability to govern.
- \$5.6 million in Investing in People: Niger has one of the highest infant mortality rates in the world, as well as a very high birth rate and low literacy rates. Funding in maternal and child health is designed to address these problems. Additional funding will address general weakness in the public health sector and a pressing need for clean water. Assistance to an

education program is designed to bring Niger up from near bottom in global literacy figures, with a particular focus on women's education — in this area, Niger ranks last among the countries for which data is available.

- \$10.5 million in Economic Growth: Niger suffers from a chronic nutritional crisis and is one of the least developed countries in the world. Assistance in this area is intended to bolster economic growth and help Niger deal with its nutritional crisis and burgeoning population. U.S. assistance will build on successful food security interventions currently underway in agricultural, agro-pastoral, and pastoral areas to further increase the food security of the most vulnerable populations.

A4. RATIONALE FOR A 118/119 ASSESSMENT IN NIGER

ADS 201.3.8.2, Mandatory Technical Analysis for Developing Strategic Plans, Environmental Analysis, contains the formal environmental requirements of USAID operating unit strategic plans. These requirements were derived from the Foreign Assistance Act and 22 CFR 216, which set forth the guidelines for the performance of Section 117 (Environmental Sustainability), Sections 118 and 119 (Tropical Forestry and Biological Diversity, respectively), and 22 CFR 216 (Agency Environmental Procedures). Sections 118 and 119 assessments are required by law for all USAID operating unit operational plans and Country Assistance Strategies, and they are conducted or updated prior to the development of new strategic plans by missions.

Sections 118 and 119 specifically require that all country plans include: 1) an analysis of the actions necessary in that country to conserve biological diversity and tropical forests, and 2) the extent to which current or proposed USAID actions meet those needs.

These assessments identify biodiversity and forestry assets in the country, discuss the impact of USAID activities, and identify actions within current and future programs where USAID could promote conservation. More than a legal requirement, a current 118/119 analysis can provide important advice to help guide proposed programs toward a more sustainable use of the country's renewable natural resources. To date, USAID has not conducted or commissioned a 118 or 119 assessment for Niger, and this combined 118/119 assessment was developed to fulfill the requirement.

SECTION B. LEGISLATIVE AND INSTITUTIONAL STRUCTURE AFFECTING BIODIVERSITY AND FORESTRY

Niger's most recent constitution was approved in July 1999. It restored the semi-presidential system of the December 1992 constitution (Third Republic) in which the president of the republic, elected by universal suffrage for a five-year term, and a prime minister named by the president share executive power. As a reflection of Niger's increasing population, the National Assembly was expanded in 2004 to 113 deputies elected for a 5-year term under a majority system of representation. The constitution also provides for the popular election of municipal and local officials, and the first-ever successful municipal elections took place July 24, 2004.

In June 2002, the National Assembly passed a series of decentralization bills. Administrative powers were distributed among 265 communes (local councils) with regions and districts established as decentralized entities. Currently, the country is divided into eight regions (departments), which are subdivided into 36 districts (*arrondissements*). The chief administrator (governor) in each region is appointed by the government, and functions primarily as the local agent of the central authorities. The current legislature elected in December 2004 contains seven political parties. President Mamadou Tandja was reelected in December 2004.

Policymakers have promoted decentralization of government services, but implementation has fallen short of expectations. Local administrations hope to improve the delivery of services but are constrained by inadequate resources, limited capacity, and weak linkages with civil society and the private sector. Communities typically lack the financial resources and decision-making powers to manage their own development. They seek greater participation in decisions that affect them but are thwarted by entrenched political and institutional interests. As a result, decentralization remains largely on paper, while true community-driven development in Niger exists only in isolated cases supported by donors or NGOs.

Threats to animal and plant diversity in Niger have prompted the country to engage in major institutional, legal, and land reforms. In 1992, the CNEDD was created and housed in the Office of the Prime Minister. CNEDD has been entrusted with the elaboration of a National Plan for the Environment and Sustainable Development (PNEDD) and a National Program for the Management of Natural Resources (PNGRN). Legal reforms have consisted of the enactment of the Guiding Principles for a Rural Development Code and revision of the forestry code, hunting rights, fishing rights, forest fiscal policy, forestry service institution, cooperative laws, and other GRN laws that lead to decentralization. The new constitution includes provisions for self-governance and free association for development and professional activities.

B1. POLICIES AND TREATIES RELATED TO THE ENVIRONMENT

Niger is party to a number of international treaties on environmental issues, either by signature or by accession. Of primary importance for the purposes of this report, Niger signed the Convention on Biological Diversity (CBD) on June 12, 1992, and ratified it on July 25, 1995, thereby committing to promote sustainable development and recognizing that biological diversity is not only composed of flora and fauna, but that human actors also play an active role in conserving their environment.

Niger has now produced its National Plan for Environment and Sustainable Development. Niger's first and second national reports are available via the country's CBD clearinghouse website (<http://bch-cbd.naturalsciences.be/niger/ner-eng/index.htm>).

Niger has also ratified several other international treaties related to conservation and natural resource management, including:

- The Convention to Combat Desertification (CCD), which was signed on October 14, 1994 and ratified on August 7, 1996.
- United Nations Framework Convention on Climate Change (UNFCCC), signed on June 11, 1992 and ratified on July 25, 1995. Signatories committed to consider approaches to reducing global warming. Niger also signed the Kyoto Protocol, the related legally binding requirements of the Convention on October 23, 1998. The Protocol went into effect on February 16, 2005. In addition, Niger ratified the Vienna Convention on Protection of the Ozone Layer by accession on October 10, 1992.
- The Cartagena Protocol, which was ratified by accession on October 20, 2005. The protocol is an international agreement on biosafety.
- The Convention on Wetlands of International Importance (Ramsar Convention), which was ratified in 1987. Niger is home to 12 Ramsar sites.
- The Bonn Convention on Migratory Species, which entered into force November 1, 1983.
- The World Heritage Convention, which was accessed on December 23, 1974. Niger has two Natural World Heritage sites.
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which was ratified on September 8, 1975 and entered into force on December 7, 1975.
- The African Convention on the Conservation of Nature and Natural Resources, which was signed on September 15, 1970.⁷ This convention provides a classification of protected areas and guidance on Class A and Class B wildlife and the regulation of activities related to each.

B2. LEGISLATION RELATED TO THE ENVIRONMENT

The Rio Conference on Biological Diversity allowed Niger to lay the foundation for the PNEDD, its reference document for sustainable development in the area of environment. The PNEDD's steering and decision-making body is the CNEDD, along with its executive board, the Executive Secretariat (SE/CNEDD). The PNEDD contains the assessment of Niger's environmental situation, policies, orientations, objectives, priorities, strategies and action programs. The primary beneficiaries of the plan are Niger's rural and urban populations who bear the brunt of environmental degradation. Other beneficiaries include the administrative entities, public

⁷ The African Convention on the Conservation of Nature and Natural Resources can be found at http://www.africa-union.org/root/au/Documents/Treaties/Text/Convention_Nature%20&%20Natural_Resources.pdf

institutions (universities, research centers, etc.), civil society groups (associations, NGOs, traditional authorities, private sector, etc.). The PNEDD includes the following priority programs:

- National Action Program for the Fight Against Desertification and Natural Resource Management (PAN/LCD-GRN), with five priority programs: Land degradation restoration and conservation and surface water management; combating sand dune formation; community forestry and natural resources management; capacity building of national institutions in charge of environment and monitoring and observation of desertification and drought
- Water and Sustainable Development
- Energy and Sustainable Development
- Urban and Living Environment
- Climate Change and Variability
- Biodiversity Management

Other national programs, plans, and initiatives include the following.

- The National Biodiversity Strategy and Action Plan (SNPA/CDB).
- The Niger Community Action Program (CAP), aimed at poverty reduction and improved governance through stimulating economic growth, improving natural resource and ecosystem management, raising levels of health, education, and food security, and empowering communities and local governments. These goals will be achieved through local-level capacity-building efforts and implementation of demand-driven micro-projects.
- The Strategy for the Reduction of Poverty (SRP), which is the main reference for national sustainable development. The SRP fully addresses the policies and priorities of the NEPAD global framework, by focusing on the important role of sustainable development for poverty alleviation.
- Niger's National Forestry Action Plan, drawn up with FAO support, was fully integrated with the National Plan to Combat Desertification in operational as well as conceptual terms. Implementation of the plan has boosted forest development activities, with practical action carried out in reforestation, agroforestry, soil and water conservation/soil protection and rehabilitation (SWC/SPR), forest management and land management; improvement of agro-pastoral production systems; and general improvement in standards of living and income in rural populations.
- The Rural Code sets the basic principles underlying the legal framework of agricultural, forestry and pastoral activities, containing guidelines for rural development policy and establishing strategies for:
 - Rational management of national resources

- Intensification and diversification of production
 - Food security
 - Organization and empowerment of the people and progressive withdrawal of the State from the production and marketing sectors
 - Financing of an appropriate rural credit scheme
 - Increasing security of land tenure by providing a legal basis for the recognition of land-use rights
- The definition in 1984 of strategic thrusts to combat desertification, known as the Maradi Commitment.
 - The decree of the Council of Ministers of July 7, 2001 and Law #2001-23 (August 10, 2001), which provide for decentralization and the autonomous administration of districts and communes.
 - The formulation and adoption of new legislation and regulations on the extraction and marketing of fuelwood.
 - The formulation and adoption of a document entitled “Guiding Principles for a Rural Development Policy for Niger.”
 - The implementation of the FAO/UNDP project to combat siltation (1990-1996).

B3. PRINCIPAL INSTITUTIONS OF NIGER INVOLVED WITH THE ENVIRONMENT

Before 1982, the management of natural resources was under the Ministère du Développement Rural, with responsibilities to oversee agriculture, forage, forest, wildlife, fish resources and rural engineering. In 1982, the Ministère de l'Hydraulique et de l'Environnement (MHE, or the Ministry of Water Resources and the Environment) was created to help improve the management and administration of natural resources. Instead, the breakup of this large ministry into two distinct ministry departments has caused conflicts between different government sectors overseeing natural resource management and administration. These conflicts have hindered advancement of environmental cases and the development of long term sustainable management.

Several institutions are dealing with the management of animal and plant resources for conservation and



Niger's southern area is much more fertile than the desert landscapes of the north. (Source: www.wikipedia.org)

sustainable use. Among these are research institutions (Institut National des Recherches Agronomiques du Niger, or INRAN; and the University of Niger), development projects and structures in the Ministry of Agriculture and Animal Husbandry, in the Ministry of Water Resources and the environment, and non-governmental organizations. The Wildlife Service under the MHE manages conservation areas. The Department of Water and Forestry also operates under the MHE and oversees wildlife, fisheries, and forests outside protected areas. Unfortunately, these institutions and projects are working in a piecemeal fashion without the involvement of local communities, particularly in regard to the locals' longstanding wisdom on ways to sustainability use biological resources.

The sharing of roles, responsibilities, and administration between ministries is not clear. Situations exist where several directors and services oversee the administration of the same resource area. The organizations have different perspectives on environmental issues, and their management causes tension between ministries and leads to uncertainty, inconsistency, and inaction by the different parties on natural resource management. Resources are generally insufficient for these institutions, resulting in ineffective administration.

The legislative laws and regulations covering the management of the environment are not adequate. An incomplete inventory conducted by government officials in 1997 revealed more than 317 laws and regulations.⁸ Most of these regulations contain errors, gaps, inconsistencies, and contradictions. The regulations' origins include 10 different governmental institutions within seven ministry departments. These situations and conditions confuse the institutions and legal instruments relating to the environment and for sustainable natural resource management. It is advisable to develop a strategy to review and overhaul these conditions to allow the development and administration of sound sustainable management of the environment.

B4. INTERNATIONAL NGOS

Threats to biodiversity are closely associated with poverty, which will become increasingly difficult to address in the coming decades. By 2050, Niger's population is expected to nearly double from 13.5 to 21.8 million,⁹ increasing the strain on an already degraded natural environment. According to GEF, the GRN has limited administrative capacity, particularly related to economic and sectoral policy implementation and management, strategic management, planning, and programming/monitoring of public expenditures, and civil society has not yet developed sufficiently to fill the void. A number of international organizations are working presently on issues related to biodiversity conservation and forestry management in Niger.

B4a. Oxfam

Oxfam is working primarily to provide emergency food aid and help pastoral and agro-pastoral households most affected by the recent food crisis, to rebuild their assets, and develop local resources and capacity to reduce the impact of future crises. While these activities are not directly related to biodiversity conservation, the aim of increasing economic opportunities will have an added side effect of providing local populations with alternatives for income generation with which to sustain themselves, in turn lessening reliance on resource-based activities.

⁸ PNEDD

⁹ UN DESA, 2006

Oxfam responded to Niger, Mali, and Mauritania during the food crisis of 2005-2006, when the effects of extreme drought were compounded by a plague of locusts that destroyed agricultural crops and created a crisis of monumental proportions. Oxfam has worked for over four years on a number of projects in the southwestern region of the country. These programs support over 130,000 pastoralists and agro-pastoralists in the Dakaro and Tillaberi regions. Their main activities include:

- Animal livestock fairs and vaccination campaigns. Many pastoralists lost up to 70 percent of their animals in the food crisis. Oxfam will help to rebuild devastated livelihoods by providing new animals.
- Rehabilitating and constructing water points. Improving the water supply for human, animal and agricultural consumption will reduce future vulnerability.
- Public health promotion. Public health campaigns, and the distribution of mosquito nets and other hygiene items, will improve public health, and reduce morbidity and mortality rates.
- Strengthening the capacity of Oxfam partners. Training partners so that they have the skills to better respond and assist people in future crises.

Oxfam plans to remain in Niger in the long term to work with local partners and communities to tackle the root causes of poverty and vulnerability to crisis. More information about Oxfam/Niger may be found at <http://www.oxfam.org.uk/resources/countries/niger.html>.

B4b. CARE

CARE is one of the world's leading humanitarian organization fighting global poverty. CARE's mission is to serve individuals and families in the poorest communities in the world, promoting innovative solutions by strengthening capacity for self-help, providing economic opportunity, delivering relief in emergencies, and influencing policy decisions at all levels.

CARE has been working in Niger since 1974 and has implemented more than 50 projects representing a value of more than \$70 million. CARE presently has 29 active projects in Niger in the areas of livelihood security, civil society organization development, governance, gender, health, HIV/AIDS, natural resource management, and microfinance. Natural resource management has included funding for tree nurseries for afforestation and windbreaks in Maggia Valley in the Department of Tahoua.

B4c. Lutheran World Relief (LWR)

LWR works to support community efforts to improve and protect natural resources, especially those that are vital to livelihoods. Reforestation, soil conservation, watershed protection and irrigation, organic farming, environmental education and the use of alternatives to chemical fertilizers and insecticides are all elements in LWR's efforts to promote good stewardship of the earth and ensure sustainable community-based natural resources necessary for both human living environments and agricultural production.

LWR began work in Niger in 1974 in response to drought-related famine. Since then, LWR has worked to address the root causes of food insecurity, ways of improving water supply, and

overall food production, while also addressing issues of gender equity and women's empowerment.

B4d. Africare

Africare works in partnership with African communities to achieve healthy and productive societies, placing communities at the center of development activities. Africare believes that only through strong communities can Africa feed itself; appropriately exploit its natural resources; educate, care for, and protect its children; promote the economic well being of African people; and live in peace. More than 50 Africare assistance projects have benefited communities in Niger in the basic developmental areas of food, water, the environment, and health. In the village of Tara, an early Africare "integrated rural development" project supported large-scale irrigated rice production, with related forms of assistance such as the establishment of agricultural co-ops and the construction of farm-to-market roads. Recent work in Niger has focused on food security and civil-society development. Current Africare programs include:¹⁰

- Agadez department: Food security (U.S. Agency for International Development/U.S. P.L. 480 Title II Program)
- Arlit and Tchirozerene districts: Radio-transmitted civic education and community development (U.S. Agency for International Development)
- Balleyara village and cities of Maradi and Niamey: Strengthening of indigenous non-governmental organizations (National Endowment for Democracy)
- Boboye district: HIV prevention (William and Jennifer Mead); and Africare HIV/AIDS Service Corps (Africare)
- City of Niamey: Food monetization for consortium of U.S. non-governmental organizations (U.S. Agency for International Development/U.S. P.L. 480 Title II Program)

B5. OTHER DONOR ORGANIZATIONS

In addition to international NGOs, the international donor community has also contributed to conserving Niger's natural resources. The most important donors in Niger are France, the European Union, the World Bank, the International Monetary Fund, and United Nations agencies — UNDP, UNICEF, UNFPA, FAO, and WFP. Other donors include the United States, Belgium, Germany, Switzerland, Japan, China, Italy, Libya, Egypt, Morocco, Iran, Denmark, Canada, and Saudi Arabia.



Cattle herding in northern Niger's Sahara desert.
(Source: www.irinnews.com)

B5a. UNDP/UNEP

¹⁰ Africare FY2005 annual report

The United Nations Development Program is an organization advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. UNDP focus is helping countries build and share solutions to the challenges of [Democratic Governance](#), [Poverty Reduction](#), [Crisis Prevention and Recovery](#), [Energy and Environment](#), and [HIV/AIDS](#). Niger's Plan of Action (Composante Environnement du Plan d'Action du Programme de Pays, or CPAP) addresses the implementation of these programs with a total allocated budget of \$55.3 million between 2000 to 2011. The plan has two principal environmental components: support the institutions that manage the environment, and integrate resource management. These principles are the driving strategy in the areas of biodiversity, climatic change, land degradation, international water, and persistent organic pollutants.

Niger has 10 projects addressing sustained land management and control of desertification and land degradation, totaling \$19.8 million between 2004 and 2011. They include:

- Monitoring and evaluation on climatic change
- Inversion and trends of degraded land and water in the Niger River watershed
- Inversion and trends of degraded land and water in the Lake Chad watershed
- Support the sustain management of natural resources
- Support the institutions of management of the environment
- Integrated management of water and resources
- Integrate the supply system of drinking water
- Evaluate the national capacity to strengthen for national and global environment
- Control the silting of oasis in the Departments of Gouré and Mainé Soroa (PLECO)
- Joint management of resources in the l'Air et du Ténéré

The objectives of these projects are to improve capacity and understanding of integrated sustainable management, rehabilitate degraded ecosystems, prevent degradation of lands and water, protect important biological diversity and ecosystems, protect the basic capability of the land to produce, improve international cooperation and management of international resources (waters of Lake Chad and Niger River), develop new sources of water and improve conditions of existing sources, and to develop greater involvement of local population and decentralization of the decision making in natural resources management systems.

B5b. World Bank

Eliminating poverty, reducing inequity, and improving opportunities for people in low- and middle-income countries are the World Bank Group's central objectives. The Comprehensive Development Framework (CDF) is an approach by which countries can achieve these objectives, emphasizing the interdependence of all elements of development — social, structural, human, governance, environmental, economic, and financial. The CDF is the foundation for the new partnership between developed and developing countries to achieve improvements in sustainable growth and poverty reduction that will help countries achieve the Millennium Declaration Goals.¹¹ The CDF approach, operationalized through poverty reduction strategy papers (PRSPs) in low-income countries, provides the common foundation for implementing this new partnership at the country level.

¹¹ see [The Monterey Consensus, 2002 \(PDF\)](#)

The [Niger Poverty Reduction Strategy Paper](#) incorporates many elements of the CDF principles, with the government following a consultative and participatory process leading to its adoption. The strong ownership that characterized the PRSP preparation has made it a genuinely country-driven process. Niger's PRSP presents a coherent and results-oriented strategic framework that rests on four main pillars:

- Macroeconomic and financial stability
- Development of productive sectors, especially in rural areas
- Improvement in the access for the poor to quality social services
- Strengthening of institutional and individual capacity, within and outside government, at the central and local levels

The strategy is comprehensive, integrating sectoral strategies as well as focusing on macroeconomic stability, access to basic social services and infrastructure, good governance, private-sector-led economic growth, and capacity building as central priorities for poverty reduction. In addition, it includes medium-term and long-term targets for the year 2015.

As of August 2007, the World Bank had approved 64 projects for Niger, totaling about USD \$1.5 billion. The current portfolio consists of projects supporting investments in (a) water infrastructure; (b) rural development, promotion of agricultural exports, and irrigation; (c) HIV/AIDS; (d) a nationwide community action program to support development programs at the community level; (e) education for improving access to and quality of basic education; (f) reforming and restructuring the financial sector; (g) health sector and institutional strengthening; and (h) natural disaster management.

Policy reforms to support improved public expenditure management and remove bottlenecks are being undertaken under a series of development policy lending operations. The first tranche of USD \$25 million was disbursed in August 2007. A Country Assistance Strategy is being prepared for approval in FY08.

B5c. Global Environment Facility (GEF)

The Global Environment Facility was adopted at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 as the financing mechanism to enable developing countries to meet their commitments under two global environmental conventions: the Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC). GEF was also designated as the financing mechanism for the Convention to Combat Desertification (UNCCD). Since 1997, the GEF has provided program support for Niger with USD \$10.378 million for projects focused on biodiversity (4 percent), climate change (6 percent), land degradation (41 percent), persistent organic pollutants (5 percent), and multi-focal issues (44 percent). Also during this same time period, Niger has benefited from programs that span multiple countries in West Africa's Sahel and dry tropics in the same focus areas, amounting to USD \$235.5 million.

B5d. European Commission (EU) and Humanitarian Aid (ECHO)

The mission of the European Commission is to help reduce and ultimately eradicate poverty in the developing countries through the promotion of sustainable development, democracy, peace, and security. The EU role is to initiate and formulate the community's development cooperation

policy for all developing countries as defined in the treaty establishing the European Community, and to coordinate the community's relations with sub-Saharan Africa, including the African Union. The Commission's Global Sahel Plan covers five countries: Burkina Faso, Mali, Mauritania, Niger, and Chad. The Plan focuses on three main objectives:

- To improve the quality of information and systems of information exchange/sharing, at both the national and regional levels.
- To develop a specific response to acute malnutrition, favoring innovative initiatives, nutritional treatment programs, improved access to basic health care, protection of the means of subsistence, and short-term food security.
- To support advocacy and boost public awareness within the Sahel of nutritional issues.

The approach is based on the synergy that exists between humanitarian and development assistance.

In the period 2002-2007, €8.5 million was allocated for the international management of resources for Niger and Gambia. In 2005, The European Commission's Humanitarian Aid department (ECHO) allocated humanitarian aid worth €18.3 million to people in need in Niger, with funds supporting nutrition programs and emergency food security. In 2007, the commission adopted a global €25 million humanitarian aid plan for the Sahel region, aimed at reducing acute malnutrition and mortality among the most vulnerable — in particular the estimated 1.3 million acutely malnourished children under the age of five, as well as five million pregnant and breastfeeding women. This aid covers five countries in the Sahel: Burkina Faso, Chad, Mali, Mauritania, and Niger. These countries also benefit from additional food aid worth €10 million.

B5d. Millennium Challenge Corporation (MCC)

Millennium Challenge Corporation is a United States Government corporation designed to work with some of the poorest countries in the world. MCC is based on the principle that aid is most effective when it reinforces good governance, economic freedom, and investments in people. MCC's mission is to reduce global poverty through the promotion of sustainable economic growth.

Starting in 2008, a three-year, \$23 million threshold program with the Government of Niger seeks to improve the government's performance on MCC's Control of Corruption, Business Start-Up, Land Rights and Access, and Girls' Primary Education Completion Rate indicators.

Specifically, the program will reduce public corruption, with an emphasis on the health and education sectors, by strengthening the legal framework, improving public procurement systems, and supporting the anticorruption efforts of civil society and the media. The program will also streamline the process of starting a business by establishing the administrative, legal, and regulatory structures required to implement business facilitation reforms. To improve land rights and access, the program will help improve policy reforms to reduce the time and costs associated with land ownership transfer, land valuation, building permitting, and notarization. Finally, the program will bolster demand for girls' education by implementing public awareness campaigns,

improving the quality of teaching, establishing methods to motivate and retain students, specifically girls, and building “girl-friendly” schools.

B6. USAID

While the [U.S. Agency for International Development](#) does not have an office in Niger, the United States is a major donor and partner in policy coordination in food security, education, water management, and HIV/AIDS sectors. U.S. foreign assistance to Africa is directed to helping African governments, institutions, and African-based organizations incorporate good governance principles and innovative approaches to health, education, economic growth, agriculture, and environment programs.

USAID programs and activities in Africa in these sectors aim to ensure that development assistance supports the overall goal of transformational diplomacy — to help build sustained and well governed states that respond to the needs of their people, reduce widespread poverty, and conduct themselves responsibly in the international system. USAID Assistance to Niger in FY 2006 totaled \$5,732,000, primarily for initiatives relating to food security. As discussed previously, the FY 2008 CBJ includes \$18.5 million in foreign assistance for Niger.

USAID supports many countries through the West African Regional Program (WARP). The mandate of WARP is to tackle long-term development issues that are inherently regional in nature. Thus, WARP works closely with the other USAID missions in the region, U.S. embassies in countries where USAID does not have a mission, and the region's leading intergovernmental organizations, to implement a program that benefits Niger. WARP is concerned with primary areas:

- Fostering regional economic integration and trade
- Increasing the adoption of effective policies and approaches to reproductive health, child survival, and HIV/AIDS in the region
- Enhancing capacity to achieve regional food security, improved management of natural resources, and agricultural growth
- Improving the conditions for peace and stability in West Africa

SECTION C. STATUS AND MANAGEMENT OF NATURAL RESOURCES

Despite the extensive degradation of Niger's landscape in the last three decades due to successive droughts and increase in population, the country possesses a number of important natural resources and a foundation for increased protection of biodiversity and forestry resources.

C1. NIGER'S NATURAL RESOURCES

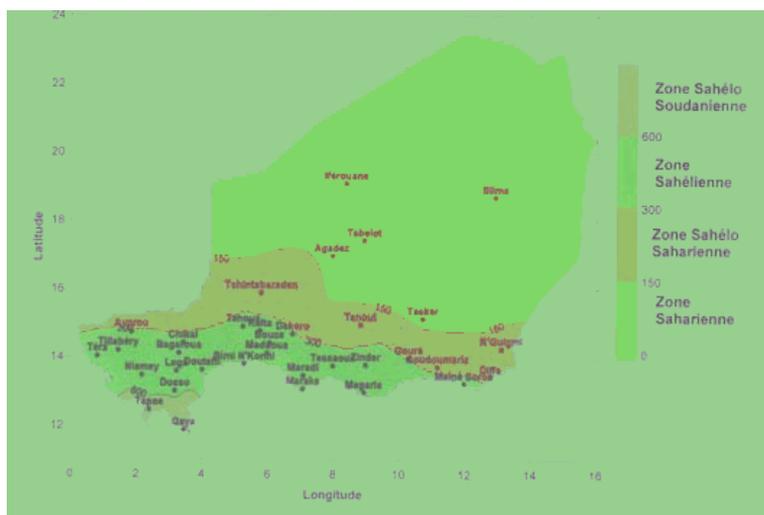
Niger consists of four ecological climatic zones, based on water availability thru rainfall. They include Saharan (*Saharienne*), Sahel-Sahara, Sahel (*Sahélienne*), and Sahel–Sudan (*Soudanienne*).

The Saharan zone, covering 500,000 km² in the northern two-thirds of the country, is Saharan desert, including the Ténéré, with annual rainfall of 0mm in the north to 150mm in the south. Limited farming and livestock occur only at oases and in mountain valleys.

The Sahel-Sahara zone, covering some 450,000 km², has an annual rainfall of 150 mm in the north to 300 mm in the south. This zone is generally open shrub or tree steppes. There are areas of striped bush, where it is hard to tell whether this is a climatic and soil feature or the result of degradation. The Sahel steppe is marked by the occurrence of *Combretum* scrub. The gum (*Acacia senegal*) proliferates especially in the east of the country, and *Acacia albida* encroaches on farmland. The palms borassus (*Borassus aethiopicum*), doom (*Hyphaene thebaica*), and date (*Phoenix dactylifera*) are also present. The trees most commonly found in the Sahara steppe are *Acacia raddiana*, *A. seyal* and, to a lesser degree, *Commiphora africana*. Thorny vegetation (*Acacia raddiana*) is found in combination with doom palms near the boundary with the Saharan zone. This zone is suited to nomadic pastoralism.

The Sahel zone proper, covering about 200,000 km², has an annual rainfall of 300 to 600mm. This zone is composed mainly of bush land and open woodland savannah of scattered trees of *Acacia spp.*, *Combretum spp.*, *Isobertinia doka*, *Tamarindus indica*, and the two palms borassus (*Borassus aethiopicum*) and doom (*Hyphaene thebaica*). This zone contains two systems of mixed agriculture: grazing with agro-pastoral in a band, with 300 to 400mm of rainfall; and a system of production dominated by cereals in a band, with 400 to 600mm of rainfall.

The Sahel–Sudan zone, represented by a narrow strip in the south and a small Sudanian enclave in the southwest on the borders with Benin and Nigeria, has an annual rainfall of 600 to 850mm with permanent and intermittent streams. This zone is an open- and closed-broadleaved tree



Ecoregional zones in Niger. Source: Moumouni Abdou, PRIPODE: NE1. Titre du Projet : Quelles transitions agraires en zones semi-arides à forte croissance démographique le cas du Niger., Faculté d'Agronomie de l'Université de Niamey, Rapport Final Revise, Novembre 2006.

savannahs, where forest stands have been extensively encroached upon or practically eliminated. Nevertheless, there are still a few small islands of closed savannah woodland south of Niamey and in the Say region. Typical species here include the tamarind (*Tamarindus indica*), shea (*Butyrospermum parkii*), kapok (*Bombax costatum*), locust bean (*Parkia biglobosa*), *Combretum glutinosum*, and *Cassia sieberiana*, as well as *Hyphaene thebaica*, *Borassus aethiopicum*, and *Parinari macrophylla* in the wetter areas.

Niger shelters a number of mammal populations and bird species of international importance that are threatened by extinction. In the north, where the ecosystems are especially fragile, are localized populations of the addax, dama gazelle, cheetah, and ostrich. Niger constitutes an important stop in west Africa for the passage of migratory birds, with Lake Chad sheltering a large concentration of migratory water birds. The largest and most important because of their biological diversity protected areas in the country are Parc National du W, the last refuge of the flora and fauna of the Sudan zone; and the Réserve Naturelle Nationale de l'Aïr et du Ténéré.

Other protected areas that support biological diversity are the Termit, Tadress, and the reserve of Gadabeji (a favorite area for the large bustard) and notably, the flood plain of the Niger River. In addition, Niger is the only country in West Africa that currently shelters a population of giraffes, whose future conservation is a priority of the Government of Niger.

C1a. General threats to natural resources

The western Sahel consists of densely populated arid and semi-arid areas, with estimates placing more than 85 percent of the population (around 44 million people) in Burkina Faso, Chad, Mali, Mauritania, and Niger in the Sahel, with estimated demographic growth of around 3 percent annually. The Permanent Interstate Committee for Drought Control in the Sahel (CILSS) estimates that more than 100 million people will be living in the Sahel region by 2020. By 2050, that number will be 200 million, 141 million of whom will live in Burkina Faso, Mali, and Niger, with 21.8 million in Niger.

This rapid population increase has long been the main cause of environmental degradation through land claims on more and more marginalized land. Oxfam reports that the population density in fragile pastoral regions in the northern Sahel was already six times higher than the carrying capacity in the late 1980s. Similarly, in the agricultural regions in the south, Oxfam estimates that the number of people exceeds the current carrying capacity by a factor of two.

However, the area has great potential for irrigation development along the Senegal and Niger rivers — a potential that remains largely unexploited. The Sahel region, moreover, is the zone most vulnerable to drought in western Africa, mainly as a result of the unsustainable production models based on natural resources.

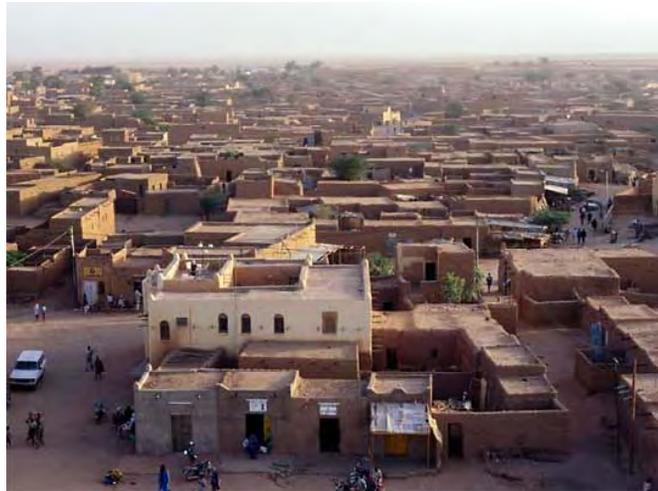
Niger suffers from perennial and periodic threats to biodiversity conservation and forestry management. Perennial threats are induced by environmental and human factors. Pressure from population growth and the corresponding increased agricultural activities are threatening an ever-diminishing natural resource base. Land degradation is among the primary threats to natural resources in Niger. Its impacts can be especially devastating around agro-pastoral areas and oases, which serve as the principal sources of water for cattle as well as agricultural and pastoral production. These areas also supply firewood, timber, and crops, as well as provide habitat for

plants and animals. Primary hindrances to sustainable natural resource management can be grouped according to several basic underlying causes.

POPULATION GROWTH

Increased human activity in already degraded areas puts pressure on the strained watershed systems, on the remaining flora and fauna, and on the human activities themselves. Niger's Sahel, which comprises the country's agriculturally productive area, is already threatened with looming desertification.

In addition to land degradation caused by the clearing of land for the expansion of agriculture into less productive areas and excessive grazing of livestock, other human disturbances such as tourism and infrastructure development contribute to loss of habitats for wildlife and vegetative cover. In particular, the Niger River valley and the southern area of the country adjacent to Nigeria and Burkina Faso have experienced dramatic population growth and the accompanying expansion of agriculture and urban and industrial development.



Agadez, in central Niger, serves as a trade center frequented by Tuareg pastoralist nomads. (Source: www.lonelyplanet.com)

INADEQUATE LEGAL AND INSTITUTIONAL FRAMEWORK

Shortcomings in the legal and institutional framework include conflicting and outdated regulations, multiple ministries and departments responsible for natural resource management with conflicting direction, and insufficient mechanisms for participatory decision-making. According to the UNDP/UNEP, the dearth of sufficient monitoring of the natural and human activities have caused “significant, though not well quantified, reduction in biodiversity, loss of wildlife habitats, deterioration in soil productivity over wide areas and great pressure on the remaining natural resources.”

INCREASED INDUSTRIALIZATION

Extractive industries also play an increasingly significant role in the degradation of the natural environment, with seemingly little benefit returning to the people of Niger. Presently, mineral extraction is not a major component of Niger's economy, but potential for increased extraction exists. Given Niger's sensitive arid and semi-arid ecosystems, mining activities have potential to harm the environment.

LIMITED ACCESS TO FINANCE AND EDUCATION

In addition to lack of sufficient resource tenure, agriculturalists and pastoralists often have a limited awareness of the environmental impacts of their practices, resulting in unsustainable management. Furthermore, they have limited access to financial instruments that would enable investment in education, training, and infrastructure to promote improved practices and behavior change. Additionally, limited alternatives for domestic fuels results in continued degradation of

forest and vegetative resources. The lack of access to improved agricultural and grazing methods and limited monitoring and technical supervision result in unchecked exploitation of wildlife, fisheries, and forestry resources.

Niger is trapped in a vicious cycle. The loss of arable land and pastures generates conditions of food insecurity, which engenders poverty. Poverty leads to increased environmental degradation due to increasingly limited resources and non-existent alternatives, which lend themselves to increased poverty. Add encroaching desertification and inexorable drought and periods of more severe drought, flooding, and locust infestations, and both the human population and natural environment move closer to being irreparably compromised.

C2. STATUS AND MANAGEMENT OF PROTECTED AREAS

As a signatory of the African Convention on the Conservation of Nature and Natural Resources, Niger has established a number of protected areas in line with the guidance established in the convention. Box 1 provides a list of the protected areas in Niger and their national and international designations.

Of a total land area of 1,267,000 km² (489,678 square miles), approximately 8 percent of Niger's land area (101,000 km²) is designated as a national park, reserve, or wetlands of international importance. An additional 2,770,000 ha of faunal reserves and buffer areas are recommended for protection. The Aïr and Ténéré Nature Reserve is floristically outstanding, with Saharo-montane vegetation particularly on its highest peaks. Along with Parc National du W and Tamou Nature reserve, they conserve as much as 80 percent of the country's biodiversity.

Parc National du W

Parc National du W is one of the key conservation areas for savanna woodlands in West Africa due to its size and proximity to other protected areas in Benin and Burkina Faso. Parc W was established as a national park in 1954 and recognized as an internationally important wetland site under the Ramsar Convention in 1987. In 1996, the Government of Niger officially proposed to create a Biosphere Reserve in the W region of Niger, with the Parc National du W as a core zone. The park is contiguous with other protected areas in Burkina Faso and Benin, increasing the value of all the sites for the

BOX 1: PROTECTED AREAS IN NIGER

National Parks

- Parc National du W

National Nature Reserves

- Réserve Naturelle de l'Aïr et du Ténéré

Strict Nature Reserves

- Sanctuaire des Addax (imbedded within l'Aïr et du Ténéré Reserve)

Faunal Reserves

- Gadabedji
- Tamou
- Tadres (Recommended)
- Termit Massif (Recommended)

Partial Faunal Reserves

- Dosso

Wetlands of International Importance (Ramsar)

- Parc National du W
- Complexe Kokorou-Namga
- Dallol Bosso
- Dallol Maouri
- Gueltas et Oasis de l'Aïr
- La Mare de Dan Doutchi
- La Mare de Lassouri
- La Mare de Tabalak
- Lac Tchad
- Oasis du Kawar
- Zone humide du moyen Niger
- Zone humide du moyen Niger II

World Heritage Convention

- l'Aïr et du Ténéré Reserve
- Parc National du W

UNESCO-MAB Biosphere Reserve

- l'Aïr et du Ténéré Reserve
- "W" Region (Niger)

Source:
UNEP-WCMC, World Database on Protected Areas, <http://sea.unep-wcmc.org/wdbpa>

survival of species that need large areas for seasonal migrations.¹²

The park lies in the transition zone between the Sudanese and Guinean savannas and represents important ecosystem characteristics of the West African Woodlands/Savannah Biogeographical Province. A recent estimate indicates 500 plant species or more are present.¹³ Six principal shrub and forested habitat types are found, including shrublands, savanna woodlands, deciduous gallery forests, semi-deciduous gallery forests, evergreen gallery forests, and flooded plains along the Niger River. Species of interest include the only two orchid species recorded in Niger, *Eulophia cucculataa*, *E. guineensis*, and the insectivorous plant *Drosera indica*, all of which are sensitive to grazing and trampling. The park also contains the only significant remaining tracts of riparian forest in Niger, those outside the park having been largely cut down or degraded.



Parc W contains the last remaining population of elephant in Niger. (Source: www.eoearth.org)

Its wild flora includes herbaceous species such as millet *Pennisetum sp.*, *Digitaria sp.*, *Euleusine sp.*, rice *Oryza sp.*, and leguminous plants *Vigna sp.*, representing important genetic resources for biological conservation and research.¹⁴

The park contains typical northern Sudanese savanna fauna and the only remaining populations of elephant and buffalo in Niger. More than 70 diurnal mammals have been described, including a number of carnivores and primates, and the park hosts the largest populations of ungulates in West Africa.¹⁵ Approximately 350 bird species are found in the park, with migratory aquatic birds common in the wetland areas. Reptiles live in the Niger River, including the Nile crocodile and various fish species. Species lists are given in Rép. Niger (1995).

Waterholes have been constructed in the park to attract wildlife. Annual burning of grass in the months following rain has been successful in reducing rank grass, but are detrimental in the long-term, depleting the desired perennial grasses that are the basic food of many indigenous large herbivores. U.S. Peace Corps volunteers have developed and carried out fire management and park management plans. A management plan is under preparation, financed under the Regional Project (European Development Fund) from 1995. The plan aims to ensure the integrity of the site, and the creation of a Biosphere Reserve, including both Tamou and Dosso Reserves, with Parc National du W forming the core zone.¹⁶

¹² Rép. Niger, 1995

¹³ Rép. Niger, 1995

¹⁴ Ibid.

¹⁵ Le Berre & Messan 1995

¹⁶ Rép. Niger, 1995

Aïr and Ténéré Natural Reserve

This reserve is the largest protected area in Africa (and world's third largest), covering over 7.7 million hectares. The reserve is in the south central Sahara and north central Niger. Two-fifths of the reserve lies in the northeastern half of the Aïr Mountains, a Sahelian volcanic massif isolated in climate, flora, and fauna from the surrounding Saharan desert of Ténéré. The rest of the reserve is in the western half of the desert of the Ténéré du Tafassasset. The Sanctuaire des Addax lies in the Ténéré at the foot of the mountains, north of the center of the reserve and covering one-sixth of its area. It contains an outstanding variety of landscapes, plant species, and wild animals. The site was established in 1988 by the Government of Niger, inscribed on the Natural World Heritage List in 1991, and designated a Biosphere Reserve in the UNESCO Man & Biosphere program in 1997.

The Aïr Mountains are the first green land seen by birds flying south from the Mediterranean. They are a Sahelian floristic enclave within the Sahara that also contain relict Sudanese and Mediterranean species. The *wadis* and temporary pans are relatively well-wooded oases, having gallery woodland with understorey Sahelian species in the wetter parts of the mountains.

Sudanese and Mediterranean species grow at higher elevations in sheltered, more humid localities in the massifs. The reserve harbors wild relatives of several important crop species: wild olive, millet (*Pennisetum glaucum*) and sorghum (*Sorghum aethiopicum*). These species have been the subject of genetic studies by the French Institute for Scientific Research and Cooperative Development and the International Board for Plant Genetic Resources.¹⁷ On the sands of the Ténéré, there is almost no vegetation except for a few ephemeral annuals growing in response to scattered showers. Over 350 plant species have been recorded.

Because of their diversity and inaccessibility, the Aïr harbor viable populations of several species internationally threatened. Both Saharan and relict Sahelian species occur, with the Sahelian species having been isolated from populations further south for thousands of years. The addax is rare, and the ostrich may be locally extinct due to poaching for the wild animal trade. Nine of the country's species are on the IUCN Red List for Niger (Box 2, page 28).¹⁸

The Aïr harbors important populations of several threatened Saharan ungulates, mainly gazelle and Barbary sheep. Numbers of dorcas gazelle and aoudad may have increased since the creation of the reserve, but dama gazelle are declining due to continued military poaching and tourist disturbance. Addax have declined steadily since 1979. At one time, the population was thought to be only 15 individuals. A 1997 IUCN field mission, however, found a population of more than 100 in the southeastern part of the Ténéré.

Most larger Sahelian carnivores were exterminated earlier this century by hunting and poisoning, but limited cheetah and a few striped hyena persist, preying on feral donkeys. Other Sahelian mammal species include an isolated population of olive baboons and Patas monkeys, both of which are subspecies endemic to the Aïr.

¹⁷ Ingram, 1990

¹⁸ UNESCO, 2001

The resident avifauna are Saharan, Saharo-Sahelian, and Saharo-montane species. The last large population of the West African ostrich is found west of the Takaloukouzet massif. In 1990, the population was estimated at 800 to 2,000 individuals,¹⁹ but was almost extinct in 2001.

The reserve hosts some 85 species of palae-arctic passage and over-wintering migrants. During the wet season, there is an influx of local Afro-tropical migrants from the south.

C3. STATUS AND PROTECTION OF ENDANGERED SPECIES

Niger is host to 1,178 vascular plant species, 127 large mammal species (13 threatened, 2007), 500 bird species (five threatened, 2007), and 150 species of reptiles and amphibians. It is believed that over the past 30 years there has been a drop of as much as 90 percent in the numbers of large mammal populations, and several mammal species are threatened with extinction. These include the addax (*Addax nasomaculatus*), oryx (*Oryx algazelle*), collared sheep (*ammontragus lervia*), manatee (*Trichechus senegalensis*), giraffe (*Giraffa camelopardalis*), dama (*Gazella dama ruficolis*), cheetah (*Acinonyx jubatus*), and ostrich (*Struthio camelus*). As a country dominated by pastoralism, Niger also has a great variety of domesticated mammal species. The Kouri cattle strain, which is endemic to the Lake Chad basin, is on the brink of extinction.

C4. THREATS TO ENDANGERED SPECIES

Threats to Niger's endangered species are due to both human and environmental activities. Overall, habitat degradation, fragmentation, and loss serve as the primary threats to biodiversity. Threats to habitat are caused from population growth that increases pressure on the limited natural resources, droughts which lead to increased desertification, and civil / military disturbance.

The Air and Ténéré Natural Reserve has suffered from droughts and military and civil disturbances. As a result of the disturbance in the 1990s, the World Heritage Committee inscribed the site on the List of World Heritage Sites in Danger in 1992. IUCN/WWF missions to the site in 1998 and 2001 found that the numbers of most wildlife species were recovering and the flora to be mostly intact, except in some valleys overused by the local people.

¹⁹ Magin, 1990a

BOX 2: IUCN RED LIST: NIGER

Critically Endangered (3)

- Addax (*Addax nasomaculatus*)
- Dama Gazelle (*Gazella dama*)
- Monkfish (*Squatina aculeata*)

Endangered (3)

- Slender-Horned Gazelle (*Gazella leptoceros*)
- African Wild Dog (*Lycaon pictus*)
- Egyptian Vulture (*Neophron percnopterus*)

Vulnerable (15)

- Cheetah (*Acinonyx jubatus*)
- Afzelia (*Afzelia africana*)
- Barbary Sheep (*Ammotragus lervia*)
- Beaudouin's Snake-Eagle (*Circaetus beaudouini*)
- Lesser Kestrel (*Falco naumanni*)
- Dorcas Gazelle (*Gazella dorcas*)
- Red-Fronted Gazelle (*Gazella rufifrons*)
- Common Hippopotamus (*Hippopotamus amphibius*)
- African Mahogany (*Khaya senegalensis*)
- African Elephant (*Loxodonta africana*)
- African Lion (*Panthera leo*)
- Paragomphus sinaiticus
- Lappet-aced Vulture (*Torgos tracheliotos*)
- African Manatee (*Trichechus senegalensis*)
- White-Headed Vulture (*Trigonoceps occipitalis*)

Source: IUCN 2006. 2007 IUCN Red List of Threatened Species. www.iucnredlist.org. Downloaded on December 26, 2007.

Some species continue to be seriously threatened by poaching and the international trade in live animals and animal by-products. Most of the vegetation is drought adapted but slow to recover from prolonged stress, such as the long droughts of the 1970s and 1980s, and many of the trees are being heavily overutilized and harvested. Most of the reserve is relatively intact, but some valleys have been over-used by local people browsing, grazing, and tree felling.

In Parc W, poaching, illegal grazing and annual migrations of Fulani cattle, uncontrolled bush fires, fishing, and cultivation within the park occur. Poaching has affected significantly the elephant and antelope populations. According to the Niger République (1995), proposals for phosphate mining and damming of rivers are unlikely due to the lack of environmental impact studies.

Increased industrial activity — mainly any future mining opportunities — can pose an additional threat. Due to the overall poverty of the nation, there is an interest in developing more of its mineral resources. Any increase mining and processing of ores will result in habitat loss and increase the risk of pollution, further degrading the existing poor water quality.

C5. STATUS AND PROTECTION OF WATER AND FOREST RESOURCES

According to the FAO (2005 figures), forest cover makes up less than four percent of Niger's national territory. Six percent is made up of other wooded lands, most of which consists of Sahel savannah found along the country's southern area. The most important region in terms of forest conservation is Niger's Parc National du W, which contains 16 percent of the country's forests. In 1970, forested areas were estimated at 14 million hectares across all ecological zones of Niger. By 1980, forested areas were reduced to 9 million hectares, with 6 million hectares in the Sahel-Sahara zone, 2.6 million hectares in the Sahel, and 300,000 hectares in the Sahel-Sudan zone.

The FAO lists a similar current condition of these forested areas, and indicates a loss of approximately 900,000 hectares (19 percent) between 1990 and 2005. A more recent inventory by the GRN in 1997 on the loss of natural forest showed that between 1958 and 1997, the loss of forest was on the order of 40 to 50 percent, principally due to agriculture, need for firewood, and urban development, and found that the existing conditions are severely degraded with more than 50 percent of forests having lost a large part of their potential vegetation.²⁰

There is no large-scale forest industry in Niger, although there is a modest network of forested areas, mainly of *Acacia* and *Combretum spp* forests in the country's central and eastern departments. According to 2005 statistics of République du Niger's Direction de l'Environnement, Niger has 656,280 hectares of total forest area, including natural (classified forest: 84 areas) and plantation forests. Plantations have been established to fix dunes, reduce wind erosion, produce fuelwood, enhance soil fertility, and serve other non-industrial purposes. Plantations have been established in conjunction with agricultural land,²¹ the first established in 1960 to experiment on techniques and species. The aims were wood production on dry lands, soil conservation, gum arabic production, and firewood production. After the drought in the 1970s, the purposes of plantations were expanded to include protection and improvement of the environment. During the 1980s, attempts to create large industrial plantations were undertaken

²⁰ PNEDD

²¹ FAO, 1999

with the assistance of various projects, one of them being IDA/FAC/CCCE (1979-1990). Unfortunately, they were not successful due to several problems, such as insufficient personnel and lack of follow-up.

On the other hand, plantations established for other protective purposes, such as sand fixation, turned out to be successful.²² The lack of an inventory makes it impossible to accurately estimate the area and volume of plantations successfully established. However, the total plantation area is estimated at 45,000 ha, 36,000 ha of which were established between 1979 and 1986.²³ Since the first establishment of plantations, *Azadirachta indica*, *Eucalyptus camaldulensis*, *Acacia albida*, and *Acacia senegal* have been planted for non-industrial purposes. *Acacia albida* is used to increase soil fertility, while *Acacia senegal* is used to produce gum arabic.²⁴ Planting by individuals, both in urban and rural areas, is increasing with a clear tendency to utilize local species.²⁵ Recent studies indicate a “greening of the desert” in the departments of Zinder, Mardi, Tillabery, and Tahoua.

With the northern-two thirds of Niger within the Sahara desert, and the remaining area mainly within the dry tropics of the Sahel zone, aquatic resources are very important to Niger’s biological diversity. Generally, Niger consists of two grand basins: a western and eastern basin. The western basin, with the important aquatic systems of the Niger River, contains the only course with permanent flows, though these are highly variable. Important tributaries include the Goulbis, Ader Doutchi Maggia, and watersheds that reach as far north as the western slopes of the Air Mountains.

The eastern basin includes seasonal and sporadic streams that drain into Lake Chad. Within these two major systems occur important natural formations of lakes (both natural and reservoirs), mares, basins, and bowls that are important for recharging the subsurface water table, seasonal water courses (*wadis*), permanent and temporary water pools in isolated areas or in the beds of seasonal streams, and oases that occur in areas of higher water tables.

C6. THREATS OUTSIDE OF PROTECTED AREAS

Niger has the highest deforestation rate in Africa, estimated by FAO in 2000 at 3.7 percent per year. Natural vegetation of Niger has been strongly affected by human interference and the combined effects of the drying climate, and is now so sparse that its present composition is only a pale reflection of what it was originally. It is important to remember that the Niger was one of the countries worst hit by the 1967 to 1974 drought, and the forests damaged or destroyed during that period have not reconstituted themselves.

Soil erosion and degradation are to blame for the encroachment of deserts in Niger that have covered villages, pasture, and farm fields. Violent sand storms often cause damages to forests, vegetation, and soils. In addition, riparian vegetation has decreased along seasonal streams and wetland areas (lakes, *wadis*, and ponds), resulting in limited natural refuges for wildlife such as migratory birds. In the Niger River valley, increased land cultivation and bad drainage practices are the main causes of soil deterioration.

²² FAO, 1999

²³ FAO, 1987

²⁴ FAO, 1985

²⁵ FAO, 1999

Water resources have suffered from the adverse effects of droughts during these last 30 years and are sensitive to climate variability. The strength of water runoff during torrential rainfalls and floods deteriorates considerably the soils and causes losses in woody and herbaceous species. Water takes away large quantities of sand and results in the silting up of watercourses, the most worrying of which is the Niger River.



Unprotected Sahelian drylands are under threat from local populations. (Source: www.worldagroforestrycentre.org)

A combination of human population growth (average 3 percent per year) and unsustainable resource use is threatening the Niger River's current and future ability to support the basin's rich biodiversity and provide resources to the communities living along its banks. The effects of deforestation and farming of fragile soils is leading to sedimentation of river channels. The Niger, which is the third largest river in Africa, dried up completely for several weeks in 1985 at Malanville in the Benin Republic.

Habitat alterations are also threatening the rich tapestry of the Niger River ecosystem. These include dams, which drastically alter the flow and sediment regimes of the rivers in the basin in addition to directly fragmenting and destroying aquatic habitats; irrigated floodplain agriculture, which displaces productive habitat for fish, livestock, and wildlife; and increasing discharges of sewage and other anthropogenic pollutants into the rivers.

Of climate variation, decreasing rainfall is one of the main habitat deteriorating factors, leading to the reduction of biological diversity. Flooding and high temperatures also cause the same effects on wildlife. Bushfires, more common in the extreme south near Niamey, destroy habitat and lead to wildlife species destruction. High temperatures cause the death of animals and slow down the reproduction of certain species through the drying out of water points.

Extreme weather events, particularly drought, have contributed to the drying out of water points and overall reduction of fisheries production resulting in a decrease in the fishers' derived incomes. Silting up of surface water points caused in long-term by torrential rainfalls and the increase of evaporation due to high temperatures, contributing to the reduction of fisheries production.

Like the devastating actions of man on natural resources (over use, silting up, cropping), droughts constitute one of the dangerous enemies of wetlands. From 1974 to 2004, Niger suffered great losses of this ecological resource — for example, at Lake Chad, whose surface area diminished under the effect of successive multi-year droughts. Floods and torrential rainfalls cause the over flowing of *wadis* with the destruction of roads, bridges, earthen dams, and other infrastructure.

Niger's forests are subjective to a strong human and animal pressure, and as elsewhere, to the consequence of recurring droughts resulting in low production of wood fiber. Niger's Poverty Reduction Strategy (2002) states that the population derives 95 percent of its energy needs from wood, resulting in overexploitation of the forest resources. Households use firewood as the principal source of energy for cooking, regardless of their residential setting or the region. Firewood and its derivatives are used by more than 92 percent of urban households and 96 percent of rural households, while oil and gas are very little used (1 percent to 5 percent, depending on the urban area in question). The National Human Development Report for Niger, 1999, estimated that national demand for firewood will exceed supply by a factor of 5 in 2010. If no steps are taken before 2010, the deficit could be more than 3 million tons.

C7. CONSERVATION OUTSIDE OF PROTECTED AREAS: GREENING OF NIGER'S SAHEL ZONE

In the 1970s, Niger faced a fuel wood shortage crisis due to the catastrophic drought of 1968 to 1974. As a result, there was a concerted effort by donor organizations to train foresters, fund nurseries, and establish fuel wood plantations and village woodlots. To accomplish this effort, expenditures amounting up to a thousand dollars per hectare and millions of dollars per year were invested. In 1980, about 3 million hectares were planted in the Sahel zone of west Africa, including Niger.

Partly as a result of this, and in addition to administrative changes in tree ownership in the past 20 years, Niger has seen an increase of tree coverage on 3 million hectares of agriculture lands. Increased tree and shrub density have been found to range from 20 to 150 stems/hectare — a 10- to 20-fold increase since 1975.

More than 120 million trees have been protected and managed by farmers since 1980. Lands that were once degraded are now reclaimed with increased land values and production capability. At least 250,000 hectares of degraded land have been reclaimed and restored to crop production in the last two decades. Lands with increased tree densities include nitrogen-fixing gao trees (*Acacia albida*) over extensive areas, windbreaks (Maggia valley), and farmer-managed natural regeneration in their crop fields.

The effects of increased tree densities through farmer-managed natural regeneration and associated investments in natural resource have been:

- Rural communities have a greater positive outlook, more self-reliance, improved social status for women, and increased capacities
- Crop fields have increased yields and greater supplies of fuel wood, fodder, and livestock herds
- Household income and food security have improved, vulnerability to drought has reduced, and demand for rural exodus has reduced
- Land values have increased and new markets have emerged for specialized labor to restore land

- Access to land and income generation for women, widows, and the landless poor has improved
- Out-migration of youth and migrant labor has been reduced

This transformation of Niger's agricultural lands is the result of a variety of programs that have increased opportunities for improved livelihood and enabled farmers to make their own rules for management of their trees and woodlands. The initial response to the droughts consisted of food aid and health care and assistance, with reforestation of village forests and fuel wood plantations. There were also programmatic shifts, with more attention to microfinancing, literacy training, enterprise development, economic incentives, and addressing livelihood issues. Support for capacity building included institutional development, grants to local NGOs, training at forestry schools and universities, and creating partnerships.

Farmers and the rural populations have taken interest and invested in natural resource management because of the changing options related to environmental and economic crisis of the 1970s and 80s. Ownership of trees has shifted from state to individual, providing an economic incentive for farmers to protect and grow trees in their fields.

SECTION D. MAJOR ISSUES IN BIODIVERSITY AND TROPICAL FOREST CONSERVATION

The environmental picture for Niger is challenging. The reduction of large mammals and vegetative cover foretell environmental degradation. According to the République du Niger PNEDD and Vision National de la Diversité Biologique, primary challenges for biodiversity conservation fall into four main categories:

- Drought and desertification
- Human and animal threats
- Over-exploitation
- Inadequate institutions for management of natural resources

While the situation is not unsalvageable, several significant issues present major challenges for the recovery and sustainability of the natural environment — specifically, drought and desertification, population growth and urbanization, degradation of soils, and natural resources management strategy and policies.

D1. DROUGHT AND DESERTIFICATION

As a Saharan-Sahelian country, Niger is at constant risk from drought and desertification. Its natural environment suffers from these maladies, as do the human and animal populations, whose reliance on dwindling sources of freshwater increases pressure on the entire system. Limited rainfall in recent years has exacerbated the already overextended water system and hastened the decline of the water table.

D2. POPULATION GROWTH AND URBANIZATION

With an estimated population of 13.5 million (2006) and an estimated growth rate of 3.2 percent (1985-1994), Niger is expected to reach 21.8 million people by 2050. At present, an estimated 61 percent of the population lives below the poverty line, and an estimated 6 percent of the population lives in the capital of Niamey.

There is nothing to suggest that the trend toward urbanization will decline with the increase in population. In fact, if current trends continue, Niger's few urban centers, and the narrow swath of productive land along the southern boundary, will be called upon to sustain larger and larger numbers of people. Population growth increases pressure on natural resources and the ability of local ecosystems and infrastructure to provide for the growing communities. Along the bank of the Niger River, increased population has the potential to increase conflicts between newly sedentary communities and nomadic populations, increasing the strain on natural resources.

D3. LOSS OF PASTURELAND AND DEGRADATION OF SOILS

Loss of arable land due to drought, land clearing for small-scale agriculture, overgrazing and the resulting disappearance of vegetative cover have led to the severe degradation of Niger's soils through wind and water erosion. The resulting erosion reduces the land's crop production capability, creating a cycle of increasing pressures and erosion. Unsustainable use of existing range and forest resources has resulted from population growth and increasing demands upon the soils and pasturelands.

(Citizens have) limited financial resources and access to information have limited understanding of the long-term impacts of production activities. Furthermore, unchecked and unmanaged land use from a lack of sufficient monitoring, supervision, or service provision to local communities results in excessive land clearing for agriculture and overgrazing leading to deforestation.

D4. INSUFFICIENT NATURAL RESOURCES MANAGEMENT STRATEGY AND POLICIES (DECENTRALIZATION OF GOVERNING)

In Niger, natural resources management is improving due to local community involvement and cooperation in the planning and use of natural resources. Niger has made great strides in decentralization of decision-making and reform of land tenure and regulations of rural and forestry codes, as evidenced by the increase of natural tree and shrub regeneration in farmers' fields in four departments of Niger. The Government of Niger should continue to be highly supported in further emphasizing, backing, and expanding decentralized and participatory mechanisms that empower rural communities and local governments to take charge of their own development.

While there is evidence of rural support related to biodiversity conservation and natural resource management, the continuing predominance of international NGOs, donor organizations, and project implementers suggests that participatory methodologies and capacity building of local organizations and communities continues to be of primary importance in the near term.

As Niger's population has grown and become increasingly concentrated around the remaining natural resources, competition for these resources has increased. The current legal framework continues to need reform and promotion to regulate competing demands, particularly those of sedentary communities and traditional nomadic groups that find themselves vying for the same resource base. Tradition-based rules and regulations are inadequate by themselves, and those that do exist are not applied uniformly. Though community participation has occurred in areas, an increase through expansion to all areas of Niger is warranted.

SECTION E. RECOMMENDATIONS AND PROPOSED ACTIONS FOR USAID PROGRAMS

With the recent release of the FY 2008 Congressional Budget Justification, the U.S. government continues its commitment to assist Niger strengthening its commitment to democracy and its ongoing improvement in the areas of clean water, child and maternal health, and economic development. Three programmatic areas factor into this assistance: Governing Justly and Democratically, Investing in People, and Economic Growth.

E1. PEACE AND SECURITY

For FY 2008, \$1.3 million has been requested for aiding in the professional development of Niger's armed forces. The GON condemns terrorism and is committed to fighting it and religious extremism, but it needs assistance in both resources and training to be more effective. Although peace and security activities are not directly tied with conservation efforts, they have important connections with the potential to affect environmental activities. The need for regional peace and security is apparent when considering that protected areas need law enforcement along borders, especially in protected transboundary areas.

Mission activities focus on building the government's capabilities via training and collaborative counter-terrorism planning, coordination, information sharing; developing military-to-military engagement between the U.S. and Niger; and engaging at-risk populations and communities to lessen the threat of religious extremism. Recent acts of banditry and small-scale attacks on Nigerien security forces suggest that the commitment of some Tuareg and Toubou ex-rebels to the peace process that ended hostilities a decade ago may be tenuous. At the same time, the potential for alliances of convenience between smugglers, bandits and ex-rebels, and Al-Qaeda in the Islamic Mahgreb (formerly known as the Salafist Group for Preaching and Combat) requires continued attention to joint training and cooperation. Youth alienation and receptivity to radical preaching from Nigeria threatens Niger's traditionally tolerant brand of Sufi Islam.

Using TSCTP and Department of Defense funding, the Mission will continue military training programs that enhance the GON's ability to combat trans-national crime and terrorism. Also, USAID-managed TSCTP funds will be used to create youth centers for disaffected, unemployed youth and to work with former rebels in northern Niger to reinforce stability and encourage potentially volatile groups to reintegrate and engage in community life.

Therefore, USAID should work with organizations implementing the peace and security activities and conservation organizations in Niger. Together, these organizations can identify and target those areas that need security and natural resource protection the most. The added security will protect conservation areas from illegal use such as poaching.

E2. GOVERNING JUSTLY AND DEMOCRATICALLY

Democratic and transparent governance is of the essence today in Niger. As such, the U.S. government's support for the civilian democracy will be of primary importance during the coming year. The U.S. government will provide assistance to the legislature and democratic institutions, including political parties and a free press, and support anti-corruption programs to ensure development. The FY 2008 CBJ includes \$1.3 million in foreign assistance funding for these types of activities.

Through its support to effective and transparent democracy and governance in Niger, the U.S. government has the opportunity to strengthen civil society organizations that participate in the management of natural resources management. Similarly, the RNG has taken steps to decrease corruption in resource management. Through initiatives that combat corruption and increase compliance with and enforcement of legislation and international agreements related to extractive industrial activities, the U.S. government might secure the sustainable use of the country's natural resources. The Government of Niger could be supported in ensuring that revenues from extractive industries are reinvested for the benefit of the country's population.

In conjunction with the objectives set forth in the FY 2008 CBJ, USAID should work to strengthen the ability of civil society organizations in Niger to participate in decision-making regarding natural resources management. Collaboration with initiatives for decentralized natural resources management would build the capacity of local actors to advocate for their rights to the sustainable use of natural resources and their ability to implement improved practices and techniques. USAID should assist with ensuring that the people of Niger experience the benefits of Niger's natural resources.

Furthermore, the monitoring of current extractive and natural resource use practices and the enforcement of existing legislation will help to prevent over-exploitation of the country's natural resources. Continuing the review of existing legislation to strengthen decentralization of decision making would not only provide incentives for local actors to invest in sustainable natural resources management, but also lend itself to ameliorating conflicts over the resources themselves.

For Niger, where 61 percent of the population still lives on less than one U.S. dollar per day, efforts toward eradicating corruption would help to bring about the transparent management and reinvestment of export revenues in development. As such, USAID could assist with ensuring that the people of Niger experience the benefits of their natural resources by continuing to decentralize the country's natural resource management. Such assistance would not only afford incentives for local actors to invest in improved approaches to sustainable natural resources management, but also lend itself to ameliorating conflicts over the resources themselves.

USAID might assist the RNG in establishing a process for environmental screening of new industrial and extractive activities in order to protect against further degradation of the country's natural environment. Anti-corruption activities might also include safeguards against corruption in the permit and licensing process itself.

E3. INVESTING IN PEOPLE

The FY2008 CBJ includes \$5.6 million to improve preventative services and treatment programs for child and maternal health and to increase local capacity to respond to issues related to food security, which include access to clean water. Initiatives will also be geared toward increasing income generation through targeted micro-enterprise sectors and community works.

Environmental degradation and poverty go hand in hand, and clean water sits at the confluence of environmental and human health issues. In Niger, where a significant percentage of the population relies on agricultural and livestock activities, food security is heavily dependent upon a healthy natural environment. Similarly, access to potable water is predicated upon functional

watersheds and effective pollution protections. Sustainable microenterprise activities have the potential to bring communities out of poverty, but only insofar as these activities also consider the sustainable use of natural resources and the protection of the natural environment.

Niger's population lives under the constant threat of food insecurity. USAID should provide local communities with the tools and techniques to increase the productivity of agricultural activities, while at the same time protecting the natural environment. In areas of critical importance to biodiversity, civil society organizations should be engaged by USAID to prevent encroachment of agricultural activities into ecologically sensitive areas. USAID should focus on building local capacity to foster a sense of ownership on the part of local actors over the natural resources upon which they depend for survival.

Shortage of water is a chronic problem in Niger. Fifty-four percent of Niger's population does not have sustainable access to an improved water source, and limited availability of water is a problem throughout the country.²⁶ In the past, USAID has provided significant humanitarian assistance in the area of potable water. USAID should continue to engage in initiatives that focus on increasing the accessibility of potable water and to protect the watersheds that are ultimately responsible for supporting the resource.

In terms of the development of new opportunities in microenterprise and the identification of new income generation activities, USAID should screen new activities and consider any potential negative environmental impacts. The expected outcomes of proposed activities should be weighed against the particular threats that they might pose to the natural resource base.

E4. ECONOMIC GROWTH

The foreign assistance budget for FY 2008 includes \$10.5 million in support of capacity building for microcredit institutions, the establishment of a microcredit fund, and the promotion of expanded livelihood strategies.

Niger's economy has shown positive signs over the last several years, and the creation of microfinancing mechanisms will enable the diversification of income generation activities, which in turn will lead to the stabilization of food security. Broadening the range of viable economic opportunities for the growing population can alleviate the pressure placed on the environment by agricultural and livestock activities.

Numerous donor initiatives have identified a lack of technological know-how as a primary constraint to sustainable management of natural resources by local communities. Therefore, initiatives aimed at expanding livelihood strategies to local populations should concentrate on best practices in soil conservation and improved agricultural and livestock techniques. In addition, access to credit should be fostered to increase local communities' ability to invest in improved practices.

A key issue related to biodiversity conservation and natural resources management is the lack of knowledge in local communities regarding the state of the natural environment, the potential threats and opportunities which lie therein, and the skills necessary to participate fully in a discourse about the fate of their natural environment. Through its microfinance activities,

²⁶ WHO, 2006

USAID may enable local communities to educate themselves and access improved agricultural, agro-pastoral, and resource conservation practices that are critical to raising the capacity of local communities to fend for themselves in the degraded natural environment.

However, access to capital can also open the potential for an increased exploitation of resources, use of potentially toxic agricultural inputs, and the construction of projects in environmentally sensitive areas. Prior to implementing initiatives to broaden the available micro-enterprise opportunities, environmental impacts assessments should be conducted to ensure that the new proposed activities do not cause undue harm to the already degraded natural environment.

SECTION F. CONCLUSIONS

Niger's natural environment is in dire straits. This report has attempted to identify the key threats to biodiversity and forestry conservation and to provide examples of past and current initiatives whose aim it is to ameliorate these threats.

Although Niger has for many years been a non-presence country for USAID, the agency has taken significant strides in offering humanitarian assistance and encouraging the burgeoning democratic process developing within the country. And while at present little attention seems to be focused on the natural environment, through its proposed portfolio, USAID has the opportunity to contribute to the livelihoods, health, and democratic opportunities of the people of Niger while gaining synergies with conservation efforts.

A review of the proposed FY 2008 U.S. government assistance to Niger did not present any major threats in terms of the proposed program's potential impacts on Niger's biodiversity and forestry resources. The focal areas identified in the proposed program present some interesting and important potential synergies with natural resources management and conservation objectives. However, to realize these synergies, USAID should:

- Ensure that environmental impact assessments are conducted as a routine component of the design of any new program and implementing partner activity
- Concentrate on empowering civil society organizations that work with local management of natural resources
- Ensure that governance interventions reduce corruption in the licensing of extractive industry players and the reinvestment of industry revenues

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