

**REPUBLIC OF NIGER**

.....  
**THE PRIME MINISTER'S OFFICE**  
.....

**NATIONAL ENVIRONMENT COUNCIL  
FOR A SUSTAINABLE DEVELOPMENT (CNEDD)**



**NATIONAL ENVIRONMENT PROGRAM FOR A  
SUSTAINABLE DEVELOPMENT (PNEDD)**



**NATIONAL ACTION PROGRAM FOR COMBATING  
DESERTIFICATION AND NATURAL RESOURCES  
MANAGEMENT (PAN-LCD/GRN)**

**November 2000**



Niger has been supported in the elaboration process of its National Plan of Action for Combating Desertification and National Resources Management (PAN/LCD/GRN) by the following partners:

**UNDP**

**UNSO**

**PGRN**

**ITALY**

**IFAD**

**CCD**

**CILSS**

**OSS**

**IUCN**

**ACRONYMS & ABBREVIATIONS**

**FORE-WORD**

**Chapter I. GENERAL CONTEXT**

- 1.1 Geographical Situation**
- 1.2 Ecological Context**
  - 1.2.1 .Climatic Characteristics
  - 1.2.2 .Natural Resources
- 1.3 Socio-Economic Context**
  - 1.3.1. Population
  - 1.3.2. Agriculture
  - 1.3.3. Livestock
  - 1.3.4. Forestry
  - 1.3.5. Fishing
  - 1.3.6. Industry, Tourism and Mines

**1.4. Socio-Political Context**

**Chapter II. DIAGNOSTIC ASSESSMENT OF COMBATING DESERTIFICATION AND NATURAL RESOURCES MANAGEMENT**

**II.1 The Issue of Combating Desertification and the Natural Resources Management**

- II.1.1 Issues
- II.1.2 Desertification Factors and their consequences in Niger

**II.2 Element of policies analysis, strategies plans and program in LCD/GRN**

- II.2.1. Multi-sectorial adapted to current requirements
- II.2.2. Plans, Program and projects
- II.2.3. Analysis of resources mobilization strategy

**II.3 Legal, Regulatory and Institutional framework of LCD/GRN**

- II.3.1. Legal and regulatory framework
- II.3.2. Institutional framework

**II.4 Drawn Lessons**

**Chapter III. NATIONAL ACTION PROGRAM FOR COMBATING DESERTIFICATION AND NATURAL RESOURCES MANAGEMENT (PAN-LCD/GRN)**

**III.1 Challenges, Objectives and Strategies of the PAN-LCD/GRN**

- III.1.1 Challenges
- III.1.2 Objectives
- III.1.3 National Strategy

**III.2 Priority areas of the PAN-LCD/GRN**

- III.2.1 Natural Resources management

III.2.2 Combating hazards and Constraints Related to Natural resources Management

III.2.3 Support Mechanism to Combating Desertification and Sustainable management of national resources

### **III.3 Priority sub-programs of the PAN-LCD/GRN**

#### **III.4 Urgent Actions**

#### **III.5 Implementation of the PAN-LCD/GRN**

III.5.1 Implementation Modes

III.5.2 Implementation of Legal regulatory, institutional and organizational framework

III.5.3 Human Resources Mobilization

III.5.4 Financial resources mobilization

III.5.5 Monitoring - Evaluation and Impact assessment Mechanism

#### **III.6 Risks**

### **Bibliographical references**

### **Annexes**

**MAIN ABBREVIATION USED IN THE TEXT**

NBA	Niger Basin Authority
TCCA	Technical and Cultural Cooperation Agency
CIDA	Canadian International Development Agency
ACMAD	African Center of Meteorological Applications for the Development
AEP	Potable Water Supply
AGRHYMET	Hydrology and Agro-Meteorology Training Center
WB	World Bank
CCD	Convention on Combating Desertification
UNCCC	United Nations Convention on Climate Changes
CILSS	Inter-State Committee to Combat Desertification in the Sahel
C/GRN	Natural Resources Management Unit
CES/DRS	Ground Water Conservation/Land preservation and Restoration
CFDT	French Company for Textile Development
CFJA	Young Farmers Training Center
CPR	Rural Development Center
CPT	Technical Proficiency Center
CNEDD	National Environment Council for a sustainable Development
UNCED	United Nations Conference on Environment and Development
COMINAK	Akokan Mining Company
CRESA	Regional Center for Specialized Training in Agriculture
DCE	Capacity Development in Environment
DDRL	Regional and Local Development Directorate
DE	Directorate of Environment (Ministry of water resources and Environment)
EE	Environmental Education
EIE	Impact assessment on Environment
EMAIR	Aïr School of Mining
FED	European Development Fund
WEF	World Environment Fund
FNE	National Environment Fund
GIE	Economic Interest Group
GTZ	German Agency for Technical Assistance
IEC	Information, Education Communication
INRAN	National Agricultural Research Institute of Niger
IPDR	Practical Institute of Rural Development
PDR-ADM	Rural Development Project - Ader Doutchi Maggia
PDRT	Tahoua Rural Development Project
PBVT	Tarka Low Valley Project
CPR	Rural Development Center
CFCA	Literacy Staff Training Center

MAG/EL	Ministry of Agriculture and Breeding
MHE	Ministry of Water Resources and Environment
MME	Ministry of Mines and Energy
OCB	Grassroots Communities Organization
ONG	Non-Governmental Organization
OPVN	Niger Food Office
OSS	
PAFT	Tropical Forestry Action Plan
PAN-LCD/GRN	National Action Program for Combating Desertification and Natural Resources Management
PAR	Regional Action Program
PAS	Structural Adjustment Program
PASP	Agricultural and Breeding Project
PASR	Sub-Regional Action Program
PDRM	Mayahi Rural Development Project
PIB	Gross Domestic Product
PIE	State Investment Program
PIK	Keita Integrated Project
PNB	Gross National Product
FNUAP	United Nations Population Fund
FIDA	Agricultural Development International Fund
FIT	Inter-tropical Front
PGRN	Natural Resources Management Program
PFIE	Training/Information in Environment Program
PNEDD	National Environment Program for a Sustainable Development
PNLCD	National Program for Combating Desertification
PNUD	United Nations Development Program
PRSA	Strengthening Agriculture Support Services Program
SIE	Environmental Information Service
SIFOM	Multi-usage Land Information System
SIGNER	Geographical Information System of Niger
SNV	Netherlands Development Assistance Association
SONICAR	Niger Coal Company
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Infancy, Child, Education Fund
USAID	United States Agency for International Development
SOMAIR	Air Mines Company

**NB:**

The main terms used in the present document namely, desertification, drought as well as all concepts related to combating desertification and management of natural resources are defined in the CCD.

## FOREWORD

The current document constitutes the National Action Program for combating desertification and Natural Resources Management (PAN-LCD/GRN). It is one of the six priority sub-programs of the National Environment Program for a sustainable Development in Niger (PNEDD). It results from a process coordinated by the Secretariat of PAN-LCD/GRN Technical Committee established by decision N°066/PM of August 22<sup>nd</sup>, 1997.

It is important to recall that the process of designing the PAN-LCD/GRN, resulting from the one that led to the designing of the PNEDD, is based on the main following elements:

- ⊙ The PAN/LCD-GRN is built on national capacities and sized in relation to the context of the country;
- ⊙ The participatory approach enabled to involve, at all the levels, the various stakeholders, namely the population and the civil society interested in desertification and natural resources management issues;
- ⊙ The taking into account and integration of achievements and provisions of the convention on desertification control;
- ⊙ The PAN/LCD-GRN is a participatory process with three stages which are its elaboration, its implementation and its continuous evaluation;
- ⊙ The establishment of consultation framework through the setting up of a technical committee in charge of designing the PAN/LCD-GRN;
- ⊙ The information and sensitization of the various stakeholders on the CCD through eight regional workshops;
- ⊙ The realization of national, regional and sub-regional diagnostic assessments on the environmental issue;
- ⊙ The realization of supplementary thematic studies in the environment area (Agriculture, livestock, water resources, forest, wildlife);

On the basis of the approach selected during the different meetings of the Technical Secretariat of the aforesaid committee, this document was submitted to regions for contributions and a national validation workshop should perfect its designing process.

From the exercise emerge phenomena of desertification and natural resources degradation that have been and still constitute a major concern in the economic and social development of Niger. Facing such a situation, the state continues to develop numerous initiatives and conduct actions likely to preserve the productive basis in order to ensure a sustainable productivity.

To this matter, the National Debate on Desertification Control held in Maradi in 1984 would have been the starting point for the formalization of a national awareness

and a political commitment of Niger about problems of desertification and sustainable natural resources management. Notable results have been recorded, but their impact could have been more meaningful had the approach been more global. From the commitment of Maradi to date the results are among others:

- the production of 80,000,000 saplings which would correspond to an average reforestation of 8,000 hectares per year
- The development of about 480,000 hectares of forests
- the restoration of 107,000 ha of degraded lands
- the realization of 22,000 km of firewalls

Source: Various reports of the Services of the Ministry in charge of Environment

The implementation of the actions proposed by the current document which is the result of a consensual approach among the different actors and which will enable to face more effectively desertification phenomena, alleviate drought effects and ensure a sustainable management of natural resources.

The methodology of designing the current document comprises three stages:

- ⇒ the identification and analysis of different factors which contribute to desertification, drought and to the degradation of natural resources;
- ⇒ the synthesis of thematic studies above mentioned;
- ⇒ the designing of the PAN-LCD/GRN through a diagnostic assessment of the past actions in terms of desertification control natural resources management and the new strategy proposals and the implementation framework

The document is structured in three main chapters:

- ⇒ General context,
- ⇒ Diagnostic Assessment of Combating Desertification and Management of Natural Resources
- ⇒ National Action Program for Combating Desertification and the Management of Natural Resources (PAN-LCD/GRN).



## Chapter I

### General Context

#### I.1. Geographical Situation

Niger, a totally land locked country, covers a surface of 1,267,000 Km and is located between longitudes 0°16' and 16° East and latitudes 11°01' and 23°17' North. Its nearest border to the coast is at more than 600 Km from the Guinea Gulf. The three quarters of this surface are situated in the Northern zone in hot desert.

At the relief plan, it is a peneplain which is both immense and monotonous, of average altitude of 300 meters in which exist here and there depressions invaded sometimes by sands and regions heightened by volcanic actions in the northern part of the country (isolated massifs of the air).

At the hydrographic plan, Niger is run across in its western part, on about 550 Km, by only one river, the one it owns its name and in the east by an almost permanent river, the Komadougou. At the furthest East of the country there is the Lake Chad whose North-west part belongs to Niger; that is to say 300 Km<sup>2</sup>. Other lakes and streams more or less permanent exist in the country

#### I.2. Ecological Context

##### I.2.1. Climatic characteristics

The country climate is particularly dry. Niger belongs, in fact, to one the hottest zones of the globe. It has two types of hot climates: a desert climate on the major part of its surface, and a tropical climate with only one rainy season. There are four seasons.

- A season said cool units with temperatures that could go below 10°C and even 0°C in the Northern zone of the country;
- A dry and not season (March-may) with burning winds and temperatures that can be superior to 45°C;
- A rainy season (June-September) characterized by rains, sometimes thunder, a high humidity and an average temperature of 33°C;
- A hot season without rain (October-to Middle December) with a relative humidity and an average temperature of 35°C.

The evaporation is intense and varies between 1700 mm and 2100 mm of water per year; the climatic hydrous deficit is therefore important during the dry season and for the flora, to survive, it must draw from the underground reserves. The rain fall is characterized by a strong variation in space and time. That is how we can distinguish, according to this rainfall, from the North to the South of the country, the following four zones.

- **The Sahara zone** in the North of the country represents around 65% of the national territory, with very scarce rains. The rainfall remains always inferior to 100 mm per year and the dry season is very long with average temperatures higher than 35° C. We are in the presence of a desert climate.

- **The sahelo-Saharian** (12.2% of the national territory) with rain a very low rainfall comprised between 100 and 300 mm per year; rivers are temporary, flowing after important atmospheric precipitations. We have, here, a sub-desertic climate;
- **The sahelo-Sudanian zone** (21,9% of the national territory) comprising a drier Sahelian part in the North devoted mainly to nomadic breeding with a rainfall varying from 300 to 600 mm and a more watered Sudanian part in the South;
- **The sudanian zone** which receives more than 600 mm of rains per year represents 0.90% of the national territory.

In Niger, the annual rainfall characterized by a space and time and inter-annual variability, has consequences on agricultural productions. It must be emphasized that drought can persist there, as observed during the 1970's and 1980's decades.

## 1.2.2. Natural Resources

### a) Lands

In Niger, lands are generally poor in nutritive elements and in organic matters content. The possible surface suitable for cultivation is estimated at 15 millions hectares, representing less than 12% of the total surface of the country. It must be noted that 80 to 85% of land suitable for cultivation are sand hills and only 15 to 20% of land suitable for cultivation are hydromorphic lands fairly clayey (SEDES, 1987). These lands less productive and fragile are very sensitive to hydrous and wind erosion. Most exploited lands suffer from a serious deficiency in phosphates (Bationo, 1991). The potential in irrigated Land is estimated at 270,000 hectares, that is to say 4% of the total surface of which 140,000 hectares are situated in the river Niger valley.

In addition, because of the demographic pressure and the weakness of agriculture intensification, for the six main crops (millet, sorghum, beans, rice, groundnut, maize), cultivated surfaces passed from 3.1 millions hectares, that is to say 21% of lands suitable for cultivation in 1965, to 13.9 millions hectares that is to say 93% of lands suitable for cultivation in 1999; the result is an increase of 72% of lands suitable for cultivation for the considered period ; however, it is important to balance these figures by taking into account the dominant river crops system which is the association of millet – beans.

Referring to the preceding climatic zoning for a total surface of 126.70 millions hectares ( Mha) we would have:

- ❑ 15.46 millions hectares (12.2%) in Sahelo-Saharian zone (100-300 mm rainfall) with soils less improved from aeolian contribution and dark red soils dominantly sandy;
- ❑ 27.74 millions hectares (21.9%) in Sahelo-Sudanian zone (300-600 mm rainfall) with tropical ferruginous soils;
- ❑ 1.14 mha (0.9%) in sudanian zone (> 600 mm rainfall) with ferruginous soils

The mountainous area and the great plateaus (Air, Ader Doutchi, continental terminal) are dominated by lithosoils. Fossil valleys (Dallols, Goulbi, Korama), the

river valleys, the Komadougou, Lake Chad and Manga basins are essentially dominated by hydromorphic soils and vertisoils.

## b) Waters

The country equally has important surface and underground hydrous potentials (Master Plan of Water Resources, 1998).

The identified surface waters essentially in the southern part come mostly from external contributions. Surface waters are shared among the following hydrological Units (Map I.1.in annex) :

- river Niger and its right bank tributaries (average quantity of flowed out water is around 31 billion m<sup>3</sup> per year, surfaces liable to flooding: 63.000 ha);
- Ader-Doutchi-Maggia (average quantity of flowed out water : around 2 billion m<sup>3</sup> per year);
- dallols ( fossil valleys);
- Coulbis (at present without any significant flowing)
- Koromas (the rate is linked to rains and to the pouring out of water tables contained in the sub-stratum of the concerned valleys);
- The Komadougou Yobé which carries 500 millions m<sup>3</sup> per year in Niger territory. This flow is today reduced by the building of numerous dams in its upper watershed.
- Lake Chad (completely drained in Niger territory with a slow return following to the heavy rains of 1998);
- Lake Madarounfa;
- The Air Koris, characterized by strong floods of short duration, carry almost 100 millions m<sup>3</sup> of water per year, feeding essentially water tables of the region;
- Ponds and artificial water retention;
- Oases.

Several regional and sub-regional organizations are set up to encourage mainly common management of surface resources (NBA, LCBC).

### **Underground waters are distinguished in:**

- Renewable hydrous resources whose availability is evaluated to about 2000 billion m<sup>3</sup> and presently less than 20% are exploited and,
- Non- renewable hydrous resources whose reserves are estimated at some 200 billions m<sup>3</sup> (MHE, 1995).

## c) Vegetation

In its aspect and composition the vegetation reflects the pedological and climatic conditions of the area. Thus we can distinguish the following large bioclimatic areas:

- ✓ The Saharian domain where the vegetation, when it exists, is a discontinuous steppe, generally taking shelter in the depressions;

- ✓ The Sahelian domain which corresponds in practice to the Niger inhabited part which concerns the part of the territory comprised between the Saharian North and the South urban occupation part. This area is characterized by a vegetation passing from contracted formation or clear shrubs to types more diffuse and planted with trees in the South;
- ✓ The Sahelo-Sudanian area is characterized by a discontinuous herbaceous Savannah and a low density shrub stratum more wooded in humid shallows;
- ✓ The Sudanian area covers the most Southern part of the Country. More wooded than the Sahel, it comprises a Savannah vegetation, characterized by a herbaceous stratum more continuous or not. The ligneous stratum comprises bushes and trees capable of constituting locally closed populations. The vegetation is globally characterized by combretaceae and by the presence of some valuable species like the shea tree (*vitelaria paradoxum*), the néré (*parkia biglobosa*), etc.

#### d) Wildlife

The various bioclimatic stages and ecosystems of Niger screen a rich wildlife and very diversified. Up to now only vertebrates and especially the mammals have retained the attention of scientific (SNBA/DB – 1998). It comprises representatives of Sudanian domain, in the south of the Sahelian area and Saharian desert domain. The knowledge of the major part of animal species remains limited (mammals, birds, reptiles, amphibians, fishes, invertebrates, etc) as well as the natural habitats. The recent studies carried out, in the framework of the elaboration processes of the national strategy and the action plan in matter of biological diversity conservation, retained that Niger has, at the present stage of our knowledge, 3 200 animal species of which 168 mammals and 512 birds. The rest is constituted by reptiles, amphibians, fishes etc (SNPA/DB-1998).

These figures should be increased with up dated knowledge on the role and the diversity of the microbial flora.

Besides its recognized importance in the protein alimentation of communities, wildlife has always been an interest center namely the pharmacopoeia, culture and vision tourism. It represents an indicator of environment quality. But the unfavorable aspects to wildlife development mentioned above, combined to disastrous effects of repetitive droughts, have reduced the wildlife potential to less than 10% of what it was in the 1960's. Its specific composition reveals also that several species have disappeared or are in the process of disappearing.

The reduction of humid zones surfaces, preferential habitat of numerous birds and some rare mammals (sea cow, hippopotamus), as well as human activities lead to a change in the behavior of migrating species (SNPA/DB – 1998).

### I.3. Socio-economic context

#### I.3.1. Population

Like other developing countries in general and the Sahel in particular, Niger is facing with:

- ✓ An accelerated population growth (annual increase rate is 3,3%);
- ✓ A very high fertility level (synthetic fertility rating is 7.4 children per woman);
- ✓ A mortality level relatively high (infantile mortality rate is 123 for thousand and maternal mortality is 6,5%);
- ✓ A quite young structure of its population (49,5% are less than 15 years old);
- ✓ An unequal space distribution (75% of its population live on 25% of the national territory);
- ✓ A rapid urbanization of its population: 25.1% of the population live in urban area in 1993 (source pop sahel n°26-October 1997) against 13% in 1977 (RGP – 1977) ;
- ✓ A higher percentage of women who represent about 52% of the population;
- ✓ A poor school attendance rate

The population is made up of eight (8) socio-linguistic groups of which two form nearly 80% of the numbers (Hausa and the Songhai-Zarma). These groups islamized at more than 95% share common values in their rapport with environment issues as well as in matters of space management in general and the access to natural resources in particular. Nigeriens are divided into sedentary and nomads. However, the proportion of these last which is falling continuously following recurrent droughts.

The Niger population is very unequally distributed on the territory . In fact, the three quarters remain concentrated in Southern zones South to the 16<sup>th</sup> parallel on about a quarter of the total surface of the country. The average density is 6 inhabitants/km<sup>2</sup>; it is less than 1 inhabitant/km<sup>2</sup> in the region of Agadez, and it is 34.7 or 80 inhabitants/km<sup>2</sup> in that of Maradi (RGP-1988). This population concentration poses in some zones a serious suitability problem with agricultural production levels which is continuously falling, recording more and more important structural cereal deficits (Map I.2 in annex).

The increasing mobility of the population which is brought into effect at internal and external levels, has important consequences on the geographic distribution, and for that, at the level of pressure exercised on natural resources. This travelling linked especially to socio-economic constraints; but may be situational and generate important incomes which unfortunately have not induced a notable transformation of the production systems.

Facing with major challenges posed by the satisfaction of basic needs of the population, the Government designed in 1992, a National Population Policy whose objective is to achieve a control of population growth and migratory flows in order to adjust them to an economic development conditions aiming at a substantial qualitative improvement of standards of living namely in rural area.

### I.3.2. Agriculture

Every year nearly 99% of cultivated surfaces are allocated to pluvial agriculture. The major constraint of this agriculture resides in the insufficiency in water for the crops ; this insufficiency really displays a weak capacity of surface waters mobilization and access to underground waters. To this constraint is added the low fertility of the lands, the parasitic pressures, insufficiency of loans consecutive to the Government

disengagement from agricultural sector, reducing thus the access to fertilizers and the inappropriate technical itineraries.

We note a strong expansion of lands allocated to cereal food crops (main speculations) because of the low intensification of production systems.

This crops lands expansion is done through the exploitation of marginal lands, that which contributes to the acceleration of lands and pasturage degradation. the productivity (outputs) fall, consequently reducing the contribution of agriculture to GDP and exacerbating the persisting issue of food security.

The low performances recorded by agriculture in Niger are the result of a general situation marked essentially by the following factors:

- The persistence of extensive character of production systems;
- The fall of yield;
- The high costs of production means and the lowness of rural credit systems;
- The low price at producers level and lack of effective structures of fertilizers marketing and supplying;
- The low performances of research and popularization systems;
- The inadequacy of Research-Training-Extension-Development systems.

### I 3.3. Breeding

Breeding constitutes the second economic activity in Niger. Availability and access to water, pasturage are the major constraints. Besides, the bad distribution of pastoral hydraulic facilities all over the country leads to the overexploitation or even the destruction of some pastoral ecosystems whereas others are practically non exploited.

Until 1973, national policies on breeding have been centered on the livestock sanitary state improvement and the conduct of a pastoral hydraulic policy dominated by the construction of drillings equipped with pumping stations. The result was the increase of numbers up to the early 1970's and, consequently, the increase of the pastoral charge often without relation with the milieu capacities. After the 1973 drought, these policies have been dominated by livestock reconstitution efforts. With the *Tahoua Action Plan*, strategies in breeding end up in taking into account environmental aspects and charge capacity of the milieu.

Breeding contribution to GDP formation is in constant fall (20.7% of the GDP in 1961; 17.1% in 1975; 16.5% in 1984 and 12.8% in 1991) because of low performances of breeding systems (low intensification level) combined with recurrent droughts disastrous effects which decimate regularly the livestock for thirty years. This sub-sector adapted itself to this situation through a significant modification of herds composition and a transfer of numbers from pastoral zone to Southern agricultural regions more favorable, but also more populated, that which provokes more often conflicts among breeders and farmers.

### I.3.4. Forestry

As for Forestry, national policies in the matter evolved three decades ago from a “conservative” attitude to a strategy of Desertification control and the integrated management of the whole of natural resources. It is in this framework that a *National Plan for combating Desertification* (PNLCD) has first been designed, then a *Natural Resources Management Project* (PGRN).

Between 1982 and 1989, an inventory of forest resources (except the region of Agadez) enabled to estimate in a global way, the productive potential at 16 millions ha (of which 11,600,000 ha of marginal forest lands and 440,000 ha of forest lands which could be developed). Their productivity is very poor varying from 0.1 to 1.5 stere/ha/year (PUSF, 1982, 1989). The supplying of urban population represents about 12% of the total demand of the country. The natural forest formations provide about 87% of the population energy needs in wood, that is to say the equivalent of 2.5 to 3 millions tons per year of which 150.000 tons for the sole needs of Niamey city (Projet Energie II, 1991).

The supplying of urban populations represents about 12% of the global demand of the country. These same forest formations provide almost the totality of wood at the service of populations estimated at 113.000 tons in 1993 (Projet Energie II). Because of the demographic growth, this consumption is to double in the coming years, hence the risk to accentuate the green cover degradation whose production is already low. The “wood-energy assessment” of regions indicates that most regions are in deficit. The supplying in wood comes up in a particularly acute manner in regions of Tahoua, Maradi, Tillaberi and Zinder. To cope with this situation, the country has developed alternative situations, namely in the area of new and renewable energies. Several programs are thus elaborated in this framework: domestic energy project; Urban gas project ; charcoal project... These programs encountered enormous difficulties in their implementation; However, wood rural markets whose principle is based on empowering villagers in the management of their areas, obtain positive results unanimously appreciated.

#### I.3.5. Fishing

The richness of Niger waters in fishes is a major advantage for the food security of the country because fish, in many cases, is the main source of proteins. The exploitation and development of fish resources contribute equally, in a decisive way, to the GDP and to the balance of payments therefore to poverty control.

Niger surface waters in which fishing activities are carried out over about 600,000 ha. The levels of lakes and rivers waters (River Niger, Komadougou) fluctuate from one year to the other and according to seasons. These waters screen a great biological diversity of which the most exploited is the itchy- fauna, represented by 112 species. Fish production has been very variable these last years. In fact, in piscicultural stations, controlled fish production has passed from 20,000 tons in the 1970's to 5,000 tons in 1986, whereas the normal potential is estimated at 30,000 tons per year.

Beyond drought, we can note, among others, the silting up of lakes and rivers accelerated up stream by deforestation, wind and hydrous erosion, anarchic occupation and without thinking of the flooding plains (reproduction areas). Another more worrying phenomenon is the infestation of lakes and rivers by invading plants. It is the case of the water hyacinth in Niger. The negative effects of all these factors on

the aquatic habitat have resulted in the disappearance of eight (8) species during the catching by the river Niger fishermen. That which is a great loss for the biological diversity of Niger. If actions (preservation of river banks, plantations, integrated developed Lands, water hyacinth control and the implementation of the law N°98-042 of 29 December 1998 relating to fishing) are not undertaken at a very short term to reverse the trend, Niger is risking to lose the contribution of the fishing sector to the national economy, estimated every year, on average, at more than twelve billions francs CFA/year.

#### I.3.6. Industry, Tourism and Mines

To maintain its economic growth, Niger opted for an industrialization strategy through the substitution to importation by enhancing the value of local resources (Coal, Uranium, Gold, Agricultural and Animal products transformation). In the case of Niamey city where there is a high concentration of industrial units, up to a recent date only few studies have been carried out in order to assess industrial activities impact on the environment.

Niger has an important tourist potential. It is question namely of wildlife, various lands capes, Game parks, cultural and historical sites encouraging the development of an Eco-tourism and a vision tourism. At present, tourist activity is mainly concentrated in two regions, namely the North of the country and the river Niger region comprising the National W Game Park.

Finally, on mining level, the various prospecting works undertaken from the colonial period to date enabled to give prominence of mineralization clues located in geographic areas well individualized or provinces susceptible to contain minerals. Among the thirty mineral substances which constitute the mining potential of Niger, only uranium, coal, limestone, gypsum, phosphate, tin, salt, natron are exploited. It fits to note that since the 1960's, gold is the subject of small scale exploitation, but its industrial exploitation begins (1996). About petroleum exploitation which started in 1958, it enabled to give proof of clues and hydrocarbon reserves respectively in Djado and Agadem Basins.

#### I.4. Socio-political context

Three decades after the great decolonization wave, Niger began in 1991 its democratization process. Since then, the development policies are registered in an institutional framework characterized by recurrent tensions, a slow down of the administrative machinery and a poor participation of the civil society. The law state and democracy which constitute the reference values of the political system which is establishing itself, are still to be strengthened in Niger.

In view of the importance of challenges of development, Niger authorities chose the political option to make of decentralization the institutional response to the issue of populations participation to national development.

Thus empowering populations in relation to the environment must finally take into account basic objectives aimed at by the grassroots communities. However, if



laws relative to decentralization are promulgated, it remains that the concrete sitting of local is still expected.

## Chapter II

### Diagnostic Assessment of Combating Desertification and Natural Resources Management

#### II.1 The issue of Combating desertification and Natural Resources Management

##### II.1.1 The Issue

In Niger, it is obvious that problems of desertification and degradation of natural resources are becoming an acute issue. The climate, the demographic pressure and exploitation methods of the environment constitute decisive factors of these scourges. The major issue is expressed through a certain number of contradictions or paradoxes having significant consequences on the country's rural development whose resolution turned out to be imperative for an efficient socio-economic development. It's about :

- The search for food security in a persistence context of unfavorable climatic conditions;
- The rational natural resources management and demographic pressure on these resources followed by practices and exploitation methods not respectful of the environment;
- The control of drought effects before the economic recession that the country goes through and the poverty situation of the population;
- The struggle against rural population poverty and the low level of agriculture and breeding productions, populations main sources of income.

The evidence of these contradictions and dilemmas which challenge the natural environment, man and his exploitation methods are emphasizing the desertification phenomenon.

##### II.1.2 Desertification factors and their consequences in Niger

###### II.1.2.1 At the national level

###### a) The Climate

At climatic level, it is obvious today that climatic variability and desertification are closely related. In fact, important inter-annual and inter-seasonal variability have caused rainfall decreases that can reach 20 to 40% of the last 50 years average. (Atlas AGRHYMET 1998). These droughts have started the natural resources degradation. Thus, we witness deep modifications of the green cover, and wildlife, fish resources. These modification are linked either to the reduction or the disappearance of certain species.

The modification of the green cover results in the development of wind and water erosions very high followed by fertile lands loss and a total or partial drainage of rivers and stretch of water plans.

b) The human pressure on natural resources and their exploitation methods.

Climate negative effects on the natural resources are today worsened by the rapid population growth and exploitation practices of the environment for agriculture, breeding and industrial productions. These situation is seriously worsening the development of poverty and the degradation of environment both in rural and urban environment.

Another aspect aggravating the ecological imbalance is the large unequal geographical distribution of this population of which 75% live in the southern part on quarter of the total surface of the territory. This part of the country which contains the essential of agriculture and breeding potential is thus submitted to intense human and animal pressure which is expressed by lands crops extension, overgrazing and clearing. The phenomena of lands extension generates countless conflicts among farmers and breeders and the reduction of classified and protected spaces. As an example, if the level of this pressure is kept, the forestry resources of Niger are estimated at 13 millions hectares in 1980 will be reduced by 4 millions by the year 2020 (PAFT 1991). These resources are therefore exposed to the total disappearance at the rate of the rapid population growth and the demand in firewood.

c) The low Technological Level and Poverty

The increasing impoverishment of the rural population exacerbated by an economical crisis which continues unfortunately limits the adoption at large scale intensification technologies (use of appropriate agricultural inputs, mechanization, improved clearing adoption of speculations with added value) enabling to reverse rapidly the tendency of environment degradation.

The intensification of productions in general is impeded by socio-economic and mainly financial considerations. This situation compels the producers to use practices less respectful of the environment (clearing; bush fires, hillsides development, lack or reduction of fallow period). The performances of the rural sector which uses more than 80% of the population remain globally insufficient.

At the economic level, desertification and drought have had negative consequences on the economy in general and on the agricultural GDP in particular. Finally, at the social level desertification and drought provoked international, regional and transnational movements of populations which often compelled the state to resort to food assistance.

II.1.2.2. At the regional level

Besides the general problems of lands degradation that Niger faces, certain regions present degradation problems which are specific to them. These are among others:

- ✓ The whole region of Agadez as well as the northern regions of Maradi, Tahoua, Zinder, Tillaberi and Diffa, areas of bush fire forecast and submitted to a strong wind erosion and sitting;
- ✓ The valleys of the river, of Ader-Doutchi-Maggia, of the Tarka, of Goulbin Kaba and of the Aïr, area submitted to a strong hydrous erosion;
- ✓ The agricultural dune lands of the regions of Maradi, Dosso and south-Zinder, cereal culture zone for excellence which have a strong reduction of soils fertility related to a strong demographic pressure and non-adapted production systems, as by the way, in all agricultural zones;
- ✓ The National reserves games W and its peripheral zones, zones submitted to strong anthropic pressures.

As an example, Tables II.2.1 and II.2.2 in annex, give a detailed summary for each of the regions about forestry and agro-forestry potentialities/constraints as well as their conditions and, population and production indicators. In short, information on natural resources potentials and constraints are still fragmentary even sometimes contradictory, consequently there is a need to deepen the information by:

- Exhaustive inventories of natural resources;
- Study of the dynamics and the operation of ecosystems;
- Etc.

## **II.2 Elements of policies and strategies, plans and programs regarding LCD/GRN**

### **II.2.1. Multi-sectorial policies adapted to present requirements**

It is with the 1973 drought that Niger, promoted and implemented real policies and strategies about desertification control, natural resources management and alleviating drought effects. Until 1972, Niger faced food self sufficiency, related to ecological balance and an important livestock. At that time, the only concerns were available natural resources conservation, the development of cash crops for the search of foreign currencies and maintenance of a good animal health. These set up policies and strategies experienced approaches evolutions according to new ecological and social realities as well as the intended economic development policies. We distinguish several outstanding periods corresponding to specific policies and strategies.

a) The period 1973-1983 was marked by a series of droughts having dramatic consequences (1972-1973 and 1983-1984). These situations have led to deep changes in the global rural development policy of the 60's (emphasis on cash crops).

Thus, in the field of environment management, the <<conservationist>> policy is replaced by a policy of desertification control following the drastic reduction of natural resources and productive potential degradation. During that period, the main instrument of this scourge control is the large scale reforestation through the implementation of a large number of projects with the support of external donors, which unfortunately provided mitigated results. In fact, the droughts which succeeded brought out the precariousness of food balance and led to the establishment of food self-sufficiency policy.

Thus, in order to find food self-sufficiency of the 60's, the development of staple food as indicated above, became the strategy axe which was translated in the field by:

- ✓ Giving up support to cash crops,
- ✓ Promotion of productivity projects which seek to increase productivity by the dissemination of technological packages in the rural area namely plow farming, inputs, agricultural and rural loans grant;
- ✓ Development of hydrous and agricultural lands;
- ✓ The setting up of several support institutions and organizations to production and marketing (UNC, CNCA, etc)

The development of food crops is doubled with another strategy of forecast and droughts management in a hardly controllable climatic context. Thus, the state carried out :

Regarding forecast:

- ✓ The setting up and strengthening of meteorological and hydrological forecast systems;
- ✓ The setting up of early warning and natural disasters management mechanisms;
- ✓ The setting up of food security stocks
- ✓ The setting up of an agricultural campaign follow up and evaluation

Regarding management:

- ✓ To the support to agricultural products importation through the suppression of import taxes;
- ✓ To the development of high intensity man-power activities in order to forecast migratory movement;
- ✓ To the promote and development of off season farming
- ✓ To the regulation of cereal market through the injection in the market of agricultural products resulting from stabilization stocks;
- ✓ To the mobilization of food aid from the partners.

As far as pastoral development, is concerned, important losses recorded during 1972-73 and 1983-84 droughts have shown the limits of livestock development policy based on sanitary protection. The three-year program 1976-1978 and the five-year plan 1979-1983 set up the new orientations policies in this area. These new orientations are based on the improvement of livestock productivity so as to ensure internal consumption and exports.

b) The period 1984 to today has been characterized by social charges (National conference and democratic process), the up heavily of desertification control strategies and the search for food self-sufficiency of the past decade, as well as the awareness of environment issues in full since "CNEDD". Furthermore, faced with the worsening of natural resources degradation problems and the persistence of cereals deficit, deep reflections were engaged about the efficiency of strategies and

the approaches selected regarding desertification control and the search for food self-sufficiency:

### **II.2.2. Plans Programs and projects**

In the framework of these reflections, a seminar on intervention strategies in rural area was organized in 1982 in Zinder during which a critical analysis of approaches was done. Moreover, the year 1984 recorded the holding of another meeting on LCD in Maradi (Maradi debate) from which the LCD strategy was examined in the research of for an efficiency of interventions (Maradi commitment). Thus, the government decided the following measures: at all region local governments and districts head quarters levels, the authorities must imperatively and annually. Proceed to the delimitation of areas in which trees will be planted:

- 5 ha per district;
- 10 ha per local government
- 15 ha per department

Similar measures were simultaneously taken at villages, hydro agricultural fitting outs, mosques and public places levels. Maradi commitment infused a constant dynamic regarding reforestation, consolidated by the institutionalization of the national tree day (August 3<sup>rd</sup>) which marks henceforth the national independence day celebration.

From Maradi debate, desertification control was placed in the global context food self sufficiency search. That is why reforestation strategy was completed by other strategic axes namely, the production systems improvement, natural resources management in an integrated approach and the populations sense of responsibility.

In order to materialize this new orientation, a national plan of desertification control was designed in 1985. This plan adopted by the government enabled the realization of many actions. It was reviewed in 1991 to serve as national policy and strategy in desertification control and advocate an integrated approach and an increased sense of responsibility of the populations. A year after the Maradi meeting, another debate on breeding was held in Tahoua from which an Action Plan for Breeding development was designed and which advocates an approach which gives farmers sense of responsibility in an action integration approach.

All these sectorial reflections selected the actions integration and the populations responsibility as strategies and approaches of food self-sufficiency and desertification control policy implementation. This global and integrated vision was materialized by the setting up and adoption of a reference political strategic framework: the ordinance 92-030 of July 8, 1992 relating to Guiding principles of Rural Development Policy (PDPDR) in Niger whose one which are subjected to the axes is GRN following the <<area>> approach. During that period, it has been noted a better consideration of concerns relating to GRN with the setting up of a large GRN program and the designing (in 1992) of a Tropical Forest Action Plan (PAFT) for the management of natural forest resources which are subjected to an increasing degradation. Unfortunately this plan was not adopted; however, this did not prevent the realization of important development actions of forest resources among which:

- Village forestry development through Energy II project;
- Development of natural made spaces (Gueselbodi, Hamadidie, Goroubasounga, Baban Rafi, etc).

Besides, it is worth mentioning that significant operations have been realized in CES/DRS, in protection and dunes fixation as well as, plantation and lands management, from 1990 to 1998 in the various regions of the country; these realization are (Environment conditions in Niger, 2000)

- 180,000 ha and 6,300 Km for CES/DRS actions;
- 7,000 ha of dunes fixation and 11,300 of 11,300 ha of protection;
- 48,500 a group plantations and 20,000 Km of linear plantations.

Besides, other economic, social and environmental development plans as well as sectorial strategies having LCD interest have been designed and implemented: It is essentially about:

- ✓ The economic and social development plan 1987-1991 which presents desertification as a major challenge to take up and propose a rigorous combat against this scourge;
- ✓ The economic revival program (adopted in 1997) like LCD, through the PNEDD, is one of the four priority axes. In fact, this program forecasts the improvement of the production system performances through LCD/GRN actions;
- ✓ Projects and strategies regarding population, poverty control, bio diversity conservation, energy, land management, etc.

Nevertheless, in view of certain indexes (Human development Index, increase of urban and rural poverty, reductions of agricultural yields, natural resources degradation, etc.). we can claim that these policies, strategies, plans and actions have already been above the expectations of a sustainable development.

In the perspective of the PAN/LCD-GRN implementation, there is a need to proceed first to impact assessment of carried out actions.

### II.2.3. Analysis of the resources mobilization strategy.

In analyzing mobilized resources situation for combating desertification it is today difficult in lack of reliable data, to number the levels of human, financial and material resources invested in desertification control and natural resources management. However, the available data show that important efforts were made in these areas.

#### a) Human Resources

Important actions were achieved in the framework of recommendations resulting from Maradi debate, thanks to voluntary mobilization of certain population strata, namely young people (National Participation Service) and women with the support of NGOs, technical services and development projects. Particularly for

women it is noted a physical massive participation representing most often more than 50% workers present on the sites, a proportion which can reach 95% in the framework of certain projects implementation (reforestation sites of PDR-ADM/Keita-FAO, PASP-GTZ, PDRT-GTZ, PBVT-European Union, etc.). This strong feminine presence on the sites is only due slightly to men exodus; it is also explained by motivations. But, population participation which is expressed by actions sometimes sparse and selective, remained up to now below what the phenomenon (desertification) scale would require and whose impact goes far beyond National borders. This situation is linked to the lowness of services offer to which the weakness and intrinsic limits of social mobilization strategies and populations sense of responsibility are added. These are insufficiencies which have heavily hindered human resources development at the grassroots level and competencies, making hypothetical thus the effectiveness of populations participation to LCD/GRN actions.

On the other hand, the strong presence of women on sites is partly due to men exodus or immediate remuneration (food for work/cash for work); also it is understood by proper motivations which express the awareness rising of the need to rehabilitate their milieu.

But, popular participation which is translated by sparse and punctual actions has been up to now below what would require the magnitude of the phenomenon (desertification) whose impact exceeds largely the national borders. This situation is namely linked to intrinsic limitations of social mobilization and population empowerment strategies. These are insufficiencies which heavily hindered human resources development at the grassroots level and skills, thus making hypothetical the effectiveness of populations participation to LCD/GRN actions.

In the government's disengagement perspective and because of LCD/GRN actions sustainability reasons, the authorities have given priority to development at the grassroots level according to the participatory approach. Also, it has been noticed for some years the emergence of around 250 NGOs (of which 131 deal with environment sector in rural communities).

#### b) Financial resources

Since Maradi debate, the government and communities have done their utmost,, with the support of development partners, to devote more financial resources to the environment management, despite the low growth of national economy. Table II.3 in annex accounts for a couple o projects which scheduled at the beginning an aspect of LCD or GRN, but whose execution has not been realized in most cases.

But, a certain number of obstacles limited the financial resources mobilization at the national level. They are:

- ✓ The low national economy competitiveness and the burden of external debt;
- ✓ The low internal resources mobilization;
- ✓ The low gross formation of the fixed capital and a low self-funding capacity at the local and national levels;
- ✓ The low external resources mobilization
- ✓ The low participation of the private sector;
- ✓ The low credits absorption capacity



- ✓ The low elaboration capacity and or projects management insufficient valorization of national skills;
- ✓ The low mobilized resources efficiency.

Despite all, quite important financial resources have been injected in desertification control and environment protection for the period going from 1985 to 1997. The resources integrate both internal and external funding. Nevertheless, it must be noted that a great part of the resources allocated in the framework of projects is devoted to the operation for the detriment of concrete actions in the field.

The assessment of the government's investment program from 1985 to 1997, bring out a great disparity in funding of the rural sector financing. Globally, sub-sectors agriculture and breeding have been object of particular attention by the government. On the other hand Forest-wildlife and water resources, not less important two sub-sectors, had modest and decreasing budgetary estimations, with low of realization rates.

Besides the government contribution to LCD-GRN, as well as to all other sectors, has not stopped falling since 1982, with the end of uranium boon.

At the local administrations level, the evolution of environmental activities funding from 1984 to 1995 brings out that the credits allocated to the environment sectors vary between 500,000 and 800,000 F a year and per collectivity. This denotes the lowness of means allocated to them despite the advanced degradation of the ecosystems. The execution rate for most of these budgets from 1984 to 1990 is between 50 to 80%. This situation is explained by the positive effects of Maradi commitment which strengthened more the national awareness regarding desertification control and natural resources management. But from 1991 to 1995, the situation was suddenly deteriorated to reach the lowest level in 1995 (29,28%). This could be explained by the scarcity of financial resources at national level. To that, we must add the successive political crises and the financial embargo to which Niger was subjected from the period 1990 today.

Regarding, national and international NGOs; financial estimations in environmental activities funding field were almost entirely realized on a five year total. Thus, on a total of about 13.8 milliard FCA, 12.5 billiards were effectively mobilized for the operations funding. The years 1993 and 1994 experienced a realization rate higher than the estimations, due to the interest revival shown by the international community regarding the civil society and the decentralized cooperation.

As far as OCBs are concerned, mobilized amounts went from 22.5 millions F CFA in 1990 to more than one milliard in 1995. This proceeds to the dynamism more and more manifested by these organizations regarding the environment funding. However, data analysis brings out disparities in funding environmental activities. In fact, Dosso, Maradi, Tillaberi and Agadez are OCDs privileged intervention zones.

Let us finally note that a part from the government NGOs, Associations and collectivities, beneficiary populations bring their physical and/or financial contribution. Nevertheless, for want of reliable data, it is difficult to quantify this contribution.

### II.3. LCD/GRN Regulatory juridical and institutional framework.

### II.3.1. Legal and regulatory framework

Regarding environment protection and management Niger has, beside conventions, international treaties and agreements that Niger has signed, legislative and regulatory.

Today, there are more than 300 conventions, about 900 treaties and 35 international agreements entirely or partially consecrated to the protection and management of the environment (source: study on the environment blueprint law-MHE/ANUE/1998).

Niger agrees with several of these agreements, namely those derived from the Rio summit in 1992. At internal level, there exists a multitude of legislative and regulatory texts which have direct or indirect link with environment protection and management; among others, it fits to name:

- ✓ The July 18, 1999 constitution;
- ✓ The law n° 97-024 of July 8, 1997 on the economic revival program
- ✓ The law n° 98-56 of December 29, 1998 outlining the blueprint law on environment management
- ✓ The law n°74-7 of March 4, 1974, establishing the forest regime,
- ✓ The law n° 96-05 of February 6, 1996 on the establishment of administrative circumscriptions and territorial collectivities;
- ✓ The law n° 96-06 of February 6, 1996 determining the basic principles of the regions, departments and communes for self administration, as well as their competencies and resources;
- ✓ The law n° 98-048 of April 29, 1998 on hunting regulation and the wildlife protection;
- ✓ The law n° 98-042 of December 7, 1998 on fishing regulation in Niger
- ✓ The law n°96-033 of May 24, 1996 on dangerous, unhealthy, or inconvenient establishments;
- ✓ The law n°93-014 of March 22, 1993 on water regime
- ✓ The ordinance n°97-001 of January 1997, on institutionalization of environment impact assessment;
- ✓ The ordinance n° 93-015 of March 2, 1993 setting the rural code orientation principles;
- ✓ The ordinance n° 92-030 of July 8, 1992 on the adoption of master principles of a rural development policy for Niger;
- ✓ The ordinance n° 92-037 of August 21, 1992, on the marketing organization and wood transportation in big urban centers, and the tax system applied to it;
- ✓ The ordinance n°96-024 of May 30, 1996 related to the regulation of naturalist institutions, savings and credit cooperatives

This legal arsenal shown if necessary, the concern of the state to set up laws for environment management and natural resources, as well as the transfer of skills and responsibility to grassroots communities. Nevertheless these texts application often suffer from numerous breaches, namely because of lack of complementary texts and lack of a concerted institutional follow up and evaluation framework.

The implementation of conventions, treaties and international agreements is also carried out in an incoherent manner, that which does not encourage an efficient and effective follow up of these tools.

The result is the necessity to carry out a better diffusion of the texts and follow up their applicability in order to bring possible readjustments.

### II.3.2. Institutional framework

Considering the pluri-disciplinary and multi-sector character of the combat against desertification, the natural resources management (GRN) and the drought effects diminishing (AES), several institutions are today directly or indirectly involved at various stages. All these institutions were subjected to a diagnostic analysis which enabled to know the role that they have played as well as the conflicts of competence which resulted. They are, among others, Ministries of environment, rural development, water resources, research and training, Mines/energy , etc sub-regional, regional, international institutions (AGRYMET, NBA, ACMAD, ICRISAT, etc.)

### II.4. Drawn lessons

Insufficiencies revealed from past adopted strategies in combating desertification (vision relatively sectorial and top down) led to the adoption of methods more participatory, then responsibility.

In the field, one of the most significant success is incontestably populations consciousness on desertification effects in their area and on the necessity to attach a greater priority to the combat against this phenomenon. However, the results obtained remain limited because of desertification phenomenon scope, the country's vastness and the limited means assigned to the combat against this scourge.

Thus, the food deficit situation remains nearly permanent despite the implementation of programs and projects aiming at combating desertification and increasing productivity. Thus, there is a permanent solicitation of early warning system and disasters management (SAP/GG) mainly the management aspect of food assistance so as to alleviate the drought impacts.

Other insufficiencies favored the precariousness of the food imbalance namely:

- ✓ The mismanaged liberalization of agriculture ( government disengagement policy, namely through the suppression of agricultural credits and grants...), has not enabled a real expansion of agricultural productions, hence, less controlled rise in price of productions factors and agricultural products on the markets,
- ✓ Sometimes inadequate applications of technologies despite their performances;
- ✓ A bad partnership between development structures and the research ones;
- ✓ A low impact assessment;

- ✓ A weakness of the data basis on LCD and natural resources degradation;
- ✓ Lack of organized and sustainable mechanism of LCD and GRN actions funding;

Nevertheless, advantages have been recorded notably in the field and, at institutional and legislation levels within the framework of agro-sylvo pastoral activities of productivity for food security namely:

- ✓ The promotion of an appropriate legislative, so as to improve the management of natural resources (decentralization, rural code, forest code, fishing law under review, hunting law, master principles for a rural development policy in Niger, regulatory and legislative texts on the exploitation and marketing of wood-energy, blueprint law on environment etc.),
- ✓ A beginning of partners empowerment materialized by a sharing of forest incomes among the state, local communities and OCB'S (Wood rural markets);
- ✓ The training of local stakeholders (farmers, association, etc.), among others, at the technical and organization levels, in some projects intervention areas;
- ✓ Successful large scale actions in reforestation and soils conservation realized at the local level with the full participation of populations (borrassus projects sites PDR-ADM; PDRT, PBVT, Gao project/Dosso/FAC-UNSO, etc).

Aware of all these lessons and the validity of the interventions coordination in combating desertification (CCD) elaborated this huge program for the welfare of its current and future populations.

## Chapter III

### National Action Program for Combating Desertification and Natural Resources Management (PAN/LCD-GRN)

#### III.1 Challenges, Objectives and Strategy of the PAN/LCD-GRN

##### III.1.1 Challenges

The improvement and permanence of the productive capital (Land, water, etc.) on the one hand and that of the life framework on the other hand constitute the main challenges of the LCD-GRN in Niger. Today, we notice that the productive capital of our country is not capable of satisfying our basic needs, talkless of releasing a surplus to invest. So in ensuring the permanence of this capital the main challenge, the PAN/LCD gives itself as objectives those defined below, in order to enable a happy change in the strategy implemented for a sustainable management of the area.

##### III.1.2 Objectives

###### a) General objectives

Basically they are:

- ✓ To identify factors which contribute to desertification and concrete measures to be taken to combat it and alleviate drought effects;
- ✓ To create favorable conditions to the improvement of food security, the solution to domestic energy crisis, the economic development of the population, and their empowerment in the management of natural resources.

###### b) Specific objectives

To reach these general objectives, PAN/LCD-GRN aims at the following specific objectives:

- ✓ To analyze and follow up the factors that contribute to drought and desertification;
- ✓ To promote a sustainable management of natural resources in the areas (to organize, train and make the population participate in the sustainable management of the natural resources);
- ✓ To improve the production and the rural communities conditions of life namely through the adoption of more appropriate technical ways;
- ✓ To ensure an adequate funding of planned activities in the different sub-programs.

##### III.1.3. National Strategy

The present exploitation methods of these natural resources, far from contributing to the development, have rather encouraged the environment degradation. This degradation is due to climatic and anthropogenic factors, has reached today such a degree that it seriously mortgages this development. In order

to face this, Niger design a strategy whose main basic principles and axes are presented below.

#### a) Basic Principles

Taking into consideration the national context, the letter and spirit of the United Nations Convention on Desertification Control, the national strategy for desertification control and natural resources management relies on basic principles of which the most important are:

- **An integrated and Global approach**

The problem of the desertification issue in Niger has evidenced the complexity of the relationships among the different elements which underline the realities of food insecurity, poverty, natural resources management and energy crisis. But, the analysis of the evolution of desertification control and natural resources management strategies showed the limitation of isolated actions and sectorial interventions in the search for solutions to degradation problems in natural milieu and social milieu. That is why the national strategy demands an integration and a harmonization of actions.

In sum, it is important to recall that desertification control and natural resources management are not sectorial but must take into account the social, economic and ecological development conditions. Desertification control and the natural resources management must also be foreseen from the angle of poverty control.

- **A coherence of interventions and a cohesion among stakeholders**

The review of LCD/GRN institutional framework reveals a diversity of institutions and a multitude stakeholders of actors and their approaches. This situation, characterized by the duplication and the skill conflicts, provoke coordination problems and coherence of interventions to provide appropriate solutions. Besides, the implementation of PAN/LCD-GRN will seek for conventions synergy from the Rio de Janeiro summit.

- **An intervention according to the “ Villages management approach”**

Primarily, LCD-GRN is executed at the local level and through local development programs, the “villages management approach” which perfectly suits with the CCD demands, will be the backbone of the Combating because of its integrated, participatory and decentralized nature.

- **An involvement and an active participation of populations particularly women and youth, through effective decentralized structures**

The same management of resources and space demands the full and total participation of populations. These ones will be associated, through organized structures, at all stages of the diagnostic, planning/programming, implementation and follow up evaluation of interventions. This association will be done at all levels and will emphasize, particularly on the choice of technology, the modalities of implementation, funding and self management of the achievements. A natural

understanding of CCD challenges by all stakeholders, particularly, the population, is the evidence of their implication/participation. For that, the national strategy will put a particular emphasis on information, sensitization and communication as well as the taking into account of traditional knowledge and know-how.

- **A strengthened partnership among stakeholders**

The taking into account of combating desertification and natural resources management impose a share of powers and responsibilities, and a definition of roles among all stakeholders, namely the population and the civil society. Thus, the PAN/LCD-GRN will put forward the search for a reinforcement of partnership through a permanent dialogue among all stakeholders involved at all levels, namely: the state (through its various services and agencies), the local communities, the civil society, the NGOs, the traditional chiefs, the beneficiary populations and the donors agencies with the view of a clear distribution of their roles. All along stakeholders will be permanent carried out.

- **A consideration of achievements**

Niger has got experiences in LCD, it is suitable to capitalize these achievements and bear them in mind in the elaboration of future sub-programs and projects.

- **Long term vision**

Despite the urgency that the situation demands in certain regions and the need to respond more rapidly as possible to certain important imbalances, the national strategy requires a medium and long term perspective analysis of problems and solutions.

- **A harmonious distribution of actions**

In order to avoid a sprinkling of funding and ensure a better impact of actions to be carried out, there should be a sustained fund research and raising policy f concerned stakeholders as well as, harmonious and balanced allocation of these funds bearing in mind priority zones vis à vis preserving the production capital.

- b) The strategic axes

There elements of reference, distributed in priority zones in relation with desertification and drought factors are taken into account. They are: the natural resources management, the follow up of climatic hazards and constraints related to national resources management and the support to LCD/GRN.

### III.2.1. National Resources Management

#### III.2.1.1. Lands

- a) Exploitation method

This section will mainly deal with lands degradation due to human activities which are mainly agriculture and breeding

About agriculture, the dominant production systems are rainy season farming and if need be the irrigated farming. The first ones met essentially under the Isohyet 300 mm (map III.1 in annex) and are unfortunately in costly extensive. They are:

- ✓ To extensive agricultural and breeding production;
- ✓ The agricultural and breeding production system on the way of intensification, characterized by a beginning of inputs and truck farming use, in which women play an important role in the production (leguminous plants, market gardening);
- ✓ The irrigated production system which comprises on the one hand the agricultural production system in way of intensification under traditional irrigation, and on the other hand the intensive agricultural production system with total water control at the level of hydro-agricultural developments. This system often leads to lands fertility loss due to hydrous erosion, to silting up and alkalization.
- ✓ The oasis production system in the Northern and the Eastern part of the country but facing exploitations silting up and products outlets problems.

It is said that, all these agricultural production systems, except those form irrigation and oases, are mainly based on millet and sorghum crop combined with leguminous plants (beans peanuts) and have a common feature, namely the insufficiency of their productivity. This poor performance is by in large due to the reduction of soils fertility, the use of rudimentary agricultural input, the reduction of mulching, the low adoption of improved seeds, parasites pressure, insufficient technical training of the rural sector, among others. About specific cases of extensive systems and those ongoing intensification, according to the situation, we notice a dominance of vegetal or animal productions.

**Breeding** represents 12 to 16% of the GDP depending on years and constitutes the second source of export after wanium. The bad beading of the herds constitute an important factor of lands-degradation. It is practiced through production system which the most important are:

- ✓ The production system typically pastoral and extension in the zones recording less than 300 mm of annual rainfall, with fodder potentials but affected by the droughts;
- ✓ The agro-sylvo-pastoral production;
- ✓ The urban and suburban production system whose main constraints is the well-know insufficiency of appropriate pasture zone and animals wandering;
- ✓ The specialized production system made up of the breeding on irrigated perimeters and that of ranching type.

The animal production through these various systems knows today constraints of food nature (poorness of the pastures, invasive plants and the low fodder crops production), sanitary (parasitism) and the perpetuation of certain practices (capitalization by increasing the numbers) and the perpetuation of certain practices (capitalization by increasing the numbers). In conclusion, agriculture and breeding, as



sub component of the land reform, are complementary (fodder, fertility and energy) but way often in competition for the space exploitation (farming lands extension and subsequent conflicts between and breeders).

#### b) General Objective

The general objective is to ensure a sustainable management of lands in the areas. In order to achieve these main objective, strategic orientations and possible identified actions are presented in the table below:

Strategic Orientations	Possible Actions
1. Adopt an participatory approach of the areas development	1.1 Information, sensitization and populations training  1.2 Completion of the regulatory framework, popularization and application of juridical texts for grassroots organizations (law on the co-operatives status, law on juridical regime and of natural resources management local structures, etc...)
2. Proceed to the transfer of decision powers to grassroots communities ('decentralization) and make effective their sense of responsibility	2.1 Support to the emergence and/or the grassroots organizations consolidation namely specific organizations of producers;  2.2 Acceleration of decentralization implementation;  2.3 Incitement to transparent relationships establishment freely negotiated between technical, administrative powers and the grassroots organizations (contract/Protocol/convention, etc.)
3. Restore and preserve the productive capital	3.1 Rehabilitation of degraded lands by conserving the ecosystems productive character and combating basins salinity;  3.2 Popularization of silting up control techniques and the lands fertility management;  3.3 Promotion of phosphate-enriched;

<p>4. Improve agricultural and breeding practices</p>	<p>3.4 Elaboration and implementation of clearing front stabilization plans;</p> <p>3.5 Setting up windbreaks and the recourse to CES/DRS actions;</p> <p>3.6 Control of silting up of cultures, oasis, basins and the elaboration and implementation of palm-groves management plan;</p> <p>3.7 Conservation techniques development and/or agricultural products transformation;</p> <p>3.8 Valorization of organic manuring;</p> <p>4.1. Promotion and popularization of endogenous technologies, valorization of local knowledge;</p> <p>4.2. Strengthening of intervention technical services in rural area in human resources, natural and technological means;</p> <p>4.3. Agricultural and breeding products diversification and intensification;</p> <p>4.4 Agriculture and forestry promotion;</p> <p>4.5. promotion of research-development-training agencies</p> <p>4.6. Promotion of technological exchanges through South-South and/or North-South cooperation.</p> <p>4.7. Assessment of potential impacts agricultural production systems on land deterioration;</p> <p>4.8. Development of high output crops and adapted to specific agricultural and ecological zones</p> <p>4.9. Improvement of breeding system by emphasizing on green cover protection and restoration aspects;</p>
---	---

<p>5. Specialize regions in agricultural, forestry and breeding productions in respecting lands vocations.</p> <p>6. Realize support infrastructures for agricultural forestry and breeding production</p> <p>7. Promote a land security and institutional and legal framework favorable to the development of agricultural, forestry and breeding activities</p> <p>8. Strengthen agricultural forestry and breeding research.</p>	<p>4.10. Consideration of seasonal forecast in planning agricultural activities;</p> <p>4.11. promotion of agriculture/breeding integration;</p> <p>4.12. Promotion of private irrigation system;</p> <p>4.13. Mobilization and saving of surface water in order to value lands;</p> <p>5.1. Elaboration of potentials and constraints map for the various types of activities in the regions;</p> <p>5.2. Elaboration of agricultural and breeding productions specialization programs;</p> <p>5.3. Promotion of exchanges among regions</p> <p>6.1. Realization of tracks services in order to open up production zones;</p> <p>6.2. Building and/or rehabilitation of products and conservation, stocking and transformation facilities;</p> <p>6.3. Improvement of penning into breeding water points</p> <p>7.1. application of developed land policy in the rural code orientation principles;</p> <p>7.2. popularization of the rural code,</p> <p>7.3. Creation and funding of lands commissions,</p> <p>7.4. Delimitation of pastures areas and corridors.</p> <p>8.1. Efficient mobilization of the national system of research</p> <p>8.2. Promotion of research/development</p>
---	---

<p>9. Strengthen actor's capacities in information, Education Communication (IEC) consulting assistance, loans, supply and marketing</p>	<p>in order to improve system productivity</p> <p>8.3 Identification of causes and solutions to the problem of the adoption of technologies and new varieties adapted (new varieties mechanization various fertilizers know how, etc.;</p> <p>8.4. Inventory and diffusion of the farmers savoir-faire, the appropriate innovations and technologies transfer;</p> <p>9.1 setting up of appropriate mechanisms of the activities funding;</p> <p>9.2. Creation of appropriate mechanisms activity funding;</p> <p>9.3. Assistance to supportative actions upstream (inputs) and downstream (transformation and marketing) production systems ;</p>
--	--

### III.2.1.2.Vegetal and wildlife resources.

#### a) Exploitation mod

The vegetal resources condition is particularly worrying in Niger. In fact, resources were severely affected, these last decades, by a generalized degradation process mainly attributable to climatic and anthropogenic factors. One of the main causes of deforestation is on the one hand agricultural outputs decrease resulting in the expansion of clearings and population moves towards the south, in protected and classified forest areas, and on the other hand, an important population growth. To that adds, the water table decrease due to an overexploitation and/or the frequent rainfall deficit. As consequence, the transformation of some forest ecosystems following the progressive disappearance of pioneering species in favor of more rustic species as *Acacias*. The forest spaces are also perceived by rural populations as breeding spaces and reserved lands spaces for agriculture. Wood trade showed among others, the economic interest of ligneous formations this explains their over exploitation. These formations would diminish every year by more than 100.000 ha, under the combined effects of uncontrolled cutting down, bush fires, overgrazing, cultures expansion and climatic regression. Ligneous resources constitute the main energy source of the country (90% of the national energy needs). In addition, it constitutes a at least food complement for the population, products for traditional pharmacopoeia and also supply the essential of wood services. Contributing for more than 25% in fodder needs, vegetal resources play an important role in breeding. Therefore breeding activity constitutes the main degradation factors of green cover.

As far as wildlife is concerned, Niger is among the few countries of the sub-region having approached the international norm in classify their space into protected

areas (11%). National policies implemented in wildlife and in developing hunting spaces, consisted essentially in the protection of some wildlife species, in classifying in the form of reserves the resources of some portions of the territory (6.1%), and in the effective ban of hunting from 1972 to 1996.

Despite the legislative and statutory measures, the practical exploitation of resource, characterized essentially by illegal withdrawals and the destruction of the best habitats (bush fire, strong breeding pressure and agricultural encroachments) continue one of the main causes of the national wildlife production potential decline. However, despite these practices combined with drought effects, there is hope as far as the reconstitution of sizes and the taking into account of wildlife are concerned (case of last specimens of giraffes in west Africa) as an economic activity which could contribute significantly to the national economy.

#### b) General objective

The general objective is to ensure a sustainable management of vegetal and wildlife resources, through the organization and effective participation of the populations. From this objective come out strategic orientations and possible actions presented in the table below.

Strategic orientations	Possible actions
1. adopt a participatory approach for land development	1.1 Information, sensitization and training of populations  1.2. regular reforestation courses to development technical senior staff  1.3. Completing of the statutory and population framework of legal texts grassroots organization (law on cooperative status, law related to legal regime of local agencies of natural resource' management, etc.)
2. Proceed to the transfer of decision making powers to grassroot communities and make effective their sense of responsibility (decentralization)	2.1. Adoption of adequate regulations on the transfer of decision making power;  2.2. Promotion of the emergence and/or reinforcement of grassroots organization, especially producers' organization  2.3. Incitement of the establishment of transparent relationships freely negotiated between technical administrations powers and grassroot organizations (contracts/protocol /convention, etc.)
3. Promote associations	3.1 Establishment and/or strengthening of

<p>(GIE,NGO, cooperatives, OCB, etc.) and strengthen their capacities.</p>	<p>training agencies and advice to grassroots organizations</p>
<p>4. Ensure land security to producers and equal access of women to vegetal resources, ensure a sustainable management of these resources</p>	<p>3.2. Negotiation capacity of peasant organizations;</p> <p>3.3. Increase of material, financial, human and organizational capacities of state, NGO, Associations and Institutions;</p> <p>4.1.Application of the development in the orientation principles of the rural code;</p> <p>4.2. Popularization of the rural code</p> <p>4.3. Creation and funding of land commissions;</p>
<p>5.Create conditions for a better participation of populations and private sector on the management of vegetal and wildlife resources.</p>	<p>5.1. Information, sensitization and education of populations on the strategic importance of vegetal and wildlife resources;</p> <p>5.2. Institutionalizing of a national LCD week;</p> <p>5.2. Responsibilizing the population in the management of forest and wildlife resources and the desertification control;</p> <p>5.4. Designing and/or adoption, disseminating and applying of appropriate legislative and regulatory texts (in collaboration with populations);</p> <p>5.5. Encouraging and enhancing the value of traditional practices promoting a good natural resources management and generally all efficient initiatives (tree nursery, private forest, ranching) capable of contributing to productive potentials preservation and improvement;</p> <p>5.6. Encouraging partnership with populations in the implementation of strategies;</p> <p>5.7. Facilitating of procedures of access trough means necessary for investment;</p> <p>5.8 Rationalizing resources exploitation which takes into account populations interests;</p> <p>5.9. Generalizing the design and implementation</p>

<p>6.Improve the knowledge of the productive potential and promote sustainable developments of vegetal wildlife resources</p>	<p>of supply master plans in wood energy wildlife, forest and fisheries development plans ;</p> <p>5.10. consideration of local knowledge in the design and implementation of research/development programs.</p> <p>6.1. Updating the inventory of green and wildlife resources;</p> <p>6.2. Strengthening and harmonization of information system on natural resources (SIRN);</p> <p>6.3. Promoting research on identification, valorization and preservation of biological materials having a clear socio-economic and ecological interests.;</p> <p>6.4. Consideration of supportive activities that can generate incomes in rural area in implementing projects;</p> <p>6.5. Development of fodder plants and food supplement;</p> <p>6.6. development of agrostological research by creating a monitoring system of pastures;</p> <p>6.7. Creation of an adequate penning of water points and their systematic reforestation;</p> <p>6.8. Generalization of land development plans by focussing on population sense of responsibility;</p> <p>6.9. Control of the livestock size and consideration of the grazing capacity;</p> <p>6.10 Knowledge of livestock size and routes charge capacity;</p> <p>6.11. Zootechnical performances improvement of bovine, camel races etc.;</p> <p>6.12. Livestock marketing development</p>
<p>7. Reconstitute ecosystems favorable to wildlife and flora diversity</p>	<p>7.1. Allocation of some financial resources generated from the promotion of genetic tourism and vision, in favor wildlife and its rabitat;</p>

8. Increase the existing resource capital	<p>7.2. Designing plans of wildlife species management and taxonomic exploited groups;</p> <p>8.1. Development of mass reforestation, village forestry and of natural regeneration and the creation of arboreta;</p> <p>8.2. Development of wildlife breeding;</p> <p>8.3. Popularization of improved clearing technique</p>
9. Alleviate pressure on ligneous resources	<p>9.1. Development of building</p> <p>9.2. Development of the use of improved hearth ;</p> <p>9.3. Development of the use of firewood substitutes for rural populations;</p> <p>9.4. Development of forests (rural markets)</p>

### **C) Hydrous and fish resources and their exploitation methods**

#### **C.1. Exploitation methods**

Though the country has important water potentials, this resource appears as a limiting factor because of its insufficient exploitation. Thus is the basic problem of water in Niger is laid in term of control of this resource. Nevertheless, it constitutes the main lever in land development. This is the reason that Water Development Program, one of the six (6) priority programs of the PNEDD has been designed.

Regarding fish exploitation, it is essentially traditional and seasonal. Numerous water plans have an important fish potential but they are often under exploited and faced with a high evaporation, a gradual silting, an overrunning by water plants such as water hyacinth (*Echornia crassipes*), *pistia stratoites* *nymphaea* sp and anarchic occupation of the banks. For most of them, they are not under any management method. The fish exploitation is often limited by accessibility difficulty and the remoteness of consumption centers. Also, the improper utilization of machines not much selective and often destructive is widely developed making thus difficult the renewable of the stock.

The last ichthyobiological studies carried out on the Niger part of the River Niger in 1962, 1971 and 1987 enabled to notice during inventories the persistence of species diversity with a decrease in their abundance. This similarity makes us believe that drought conditions do not make some species disappear although several of them have become rare in their captures. Fishing products are partly reliant on seasonal floods of alluvial plains for fish stocking and reproduction which can be jeopardized by the discharge modification or hydro-agricultural lands development

#### **C.2. General Objective**



The general objective is to enhance the value of hydrous resources in view to encourage fish conservation and the development fishing activities. To reach these objectives strategic orientation and selected possible actions are presented in the table below:

Strategic orientations	Possible actions
1. Maintain and enhance the productive capital	1.1. Development of watersheds aiming at reducing silting of water plans and allow infiltration; 1.2. Development of irrigation lands allotted to local communities by means of rural concessions; 1.3. Monitoring capacities development of ground waters, surface water, evolution of lands under irrigation and potential impact on environment, present and future public and private investments in the area of irrigation; 1.4. Establishment of water retentions at the level of favorable sites (bridge; watersheds, etc.) in view developing fish agricultural and pastoral production; 1.5. Taking into account fish breeding activity in flooded developed areas ; 1.6. Elaboration and/or adoption of dissemination of appropriated legislative and regulatory texts (in collaboration with the populations);
2. Enhance fish productions	2.1. Information sensitization and training Producers; 2.2. Development of conservation, transformation and marketing techniques of fish.

#### **d) MINERAL RESOURCES AND THEIR EXPLOITATION METHODS**

##### **d-1 Exploitation Methods**

Deposits characteristics (geographic localization, size, content) exploitation method (open cut mine, underground mine ), minerals recovery techniques, evacuation of spoils and activities related to exploitations as well as the development of towns around mines are responsible for the degradation of environment and desertification .

However, some mining resources are source of energy (mineral coal, uranium, petroleum). Regarding mineral coal, the positive conclusion of the impact assessment on the utilization of mineral coal for domestic use enabled the construction of a pilot carbonization unit on Sonichar site in Tchirozérine and the conduct of a marketing test project in urban zones in the North .

In the industrial area, wastes contribute to desertification phenomenon through lands and vegetal cover degradation. It is the case of plastic phenomenon, ground waters pollution, transmission of sterilizing dust and gas with greenhouse effects.

#### **d.2 General Objective.**

The general objective is to promote a mining and industrial exploitation respectful of the environment by minimizing the risks of pollution and land degradation. That is why strategic orientations and possible defined actions are presented in the table below.

Strategic Orientations	Possible Actions
<ol style="list-style-type: none"> <li>1. Promote mining energy sources exploitation and fertilizers;</li> <li>2. Promote environmental impact assessment of mining and industrial exploitations and see to their application;</li> <li>3. Promote resources exploitation technologies respectful of environment</li> </ol>	<ol style="list-style-type: none"> <li>1.1. Exploitation of mining resources, sources of substitution energy ( mineral coal, petroleum,.....) and source of fertilizers;</li> <li>2.1 Application of the blueprint law on environment and the law instituting the impact assessment and their implementation respect;</li> <li>2.2. Institution of an environmental supervision in mining and quarry exploitation zones</li> <li>2.3. Application of texts relating to mines and quarries exploitation;</li> <li>3.1 Development of mining exploitation respectful of the environment;</li> <li>3.2 Safeguard and restoration of degraded ecosystems around mines and quarries;</li> <li>3.3 Prevention and safeguard of water and air quality any mining and quarry exploitation</li> </ol>

### 3.2.2 Combating hazards and constraints relating to the natural resources management

#### a) Climatic phenomena and drought.

It is obvious today that climatic changes and desertification are intimately linked. In fact, during the last 30 years, the observed rainfall from 20 to 40% in Niger encourages drought and desertification through land degradation processes. The first interaction type is that with hydrous deficit, energy which helps to evaporate water is used for the warming of surrounding air possible evaporation and perspiration potential and consequently, the reduction of the cloudy cover and land desiccation. The second interaction type between the two phenomena is the vegetal cover disappearance because of desertification, that which has as a consequence the disappearance of absorption wells greenhouse effects gases and therefore the warming increase. This reduction of the vegetal cover will also increase the quantity of reflected energy towards the atmosphere, increasing thus the albedo.

The wind erosion is unquestionably the most important phenomenon of environment degradation by its extent and effects as well in Niger as and in the Sahelian zone in its whole. The long dry season and the processes described previously create the more favorable conditions for this type of erosion. The most important soil losses are recorded during tornadoes linked to stormy grains. The most recent data give an average loss of 10 ha at the passage of a grain line resulting in a net fertility loss of the first 10 centimeters estimated at 3% (STERK, 1997).

The most disturbing aspect of wind erosion in Niger is its interaction with the climate through what is now called local mechanism of retroaction. In fact, we notice that on the last 75 years, rainfall varies in reverse sense of atmosphere charge in wind erosion dust (ICARDA 1998). This phenomenon also observed in other countries of the Sahelian zone, lets think of a mechanism of self maintenance of drought initiated always at the beginning by general circulation anomalies.

At last, we must signal in relation with degradation process, that rains, besides their beneficial effects, have also harmful effects. The diffused streaming on the plateaus and slopes, carry away fine elements and end in formation of glacia sterilizing important surfaces. Concentrated streaming due to violent rains develops for its part, regressive erosion which can locally be important. We estimate at 3.8 tons/ha the average quantity of land taken away by tornado (IFAN, 1997). Eventually, these various phenomena also contribute to limit water infiltration, and therefore limit hydrous reserves for the plants and this, in addition, reduces surfaces of lands suitable for cultivation.

In conclusion, degradation process complexity is such as a large number of causes and effects are retroactively linked. That which a priori does not enable to find simple solutions, the key variables which are: demography rainfall deficit, the mechanical effect of rains, wind and poverty. If none of these parameters, can be effectively controlled, then there are risks to reach impasses: the soil degradation, the reduction of agricultural and breeding production, widening of food deficit, etc.

#### General Objective

The general objective is to analyze, follow and reduce the factors contributing to desertification and drought.. To reach these objectives, the defined strategic orientations and actions are presented in the table below:

Strategic Orientations	Possible Actions
<p>1. To know better the factors which contribute to drought and lands degradation;</p> <p>2. Understand the mechanism at the heart of drought persistence, the aggravation of desertification phenomenon.</p> <p>3. To identify and adopt follow up indicators relating to climate, drought and lands degradation</p> <p>4. To adopt and reduce strategy of winds, rains and drought erosive effects;</p>	<p>1.1. Completion of the environmental diagnostic assessment (ex: realize the diagnostic assessment of natural resources (UTA/DE-PGRN);</p> <p>1.2. Setting up of a system of follow up on Environment (information system on Environment)</p> <p>2.1 Quantification of lands degradation phenomenon;</p> <p>2.2. Forecast of lands degradation risks and their taking into account in development projects designing.</p> <p>3.1. Strengthen climatological, meteorological and hydrologic national follow up capacities</p> <p>3.2. Definition and the use of drought and desertification follow up indicators;</p> <p>4.1. Reinforcement of local population effective participation in the designing, planning, implementation, follow up and evaluation of hydrous and wind erosion control actions;</p> <p>4.2. Creation and /or strengthening of CES/DRS popularization techniques structures;</p> <p>4.3. Training and information of the decision makers, populations (namely women, young people), NGOs, as well as development agents on the importance and consequences, especially long-term, of desertification phenomenon;</p> <p>4.4. Elaboration and implementation of projects aiming at promoting new means of subsistence in drought situations;</p> <p>4.5 Promotion of local practices of drought reduction.</p>

## **b) Population and Habitat**

The rhythm of population growth in Niger tends to accelerate because of the high birth rate (52.3% in 1999). Similarly, the economic growth hardly goes beyond 1.5%. Before this situation, with the support of external partners, the government has set up from 1992 a national population policy essentially based on family planning. Despite this policy, the rate of increase always remains high. This mitigated result is explained partly by the socio-cultural and illiteracy gravity

Rural in its majority, this population tempts to combat drought and desertification effects by developing survival strategies through intra-regional, inter-regional (from North to south), and transboundary migrations (Diffa and Tahoua regions cases), the production systems diversification (anti-risks systems), the livestock, land and natural resources decapitalization (wood and straw commercial exploitation).

Despite its predominant role in demographic dynamic of some regions, migration, whose extent is unrecognized, constitutes in other respects an important factor of populations concentration in the southern zone in the south to of the 16<sup>th</sup> parallel on about on quarter of the total surface area of the country.

The main link between habitat and the environment reside in the fact that the buildings use ligneous resources and villages expansion has a direct impact on natural environment. That is why vegetal resources (palm trees..) used as materials in traditional habitat buildings, are in constant regression for some years under the combined effect of climatic hazards and anthropogenic factors. The most hardy species, which were formerly the most utilized, become locally more and more scarce.

The degradation of the environment therefore has negative incidences on habitat and man's conditions of life. But, it is specially the most destitute who suffer more of this firewood shortage and paradoxically it is they who use service wood the most (wood of lower quality leading to a more frequent renewal).

However, to explain the environment degradation only by the population growth and the necessity to feed it would be an incomplete diagnostic, because a population which is well informed, sensitized, educated and which is given a sense of responsibility, constitutes the engine of desertification control and of a sustainable management of the national resources.

### **General objectives**

The general objective is to see the dynamic of populations in relation with space occupation, to organize them and make participate in the sustainable management of the national resources, in the sense of a good land security, the improvement of their activities profitability and that of their conditions of life. This objective may be supported by strategic orientations and possible actions in defined the table below:

Strategic Orientations	Possible Actions
1. Improve the perception of the economic character of the natural resources of the grassroots communities.	1.1. Sensitization and information of the rural communities on all LCD-GRN aspects;  1.2. Development of the rural entrepreneurship  1.3. Valorization of the national resources as a source of income
2. Improve the population conditions of life	2.1 Establishment and/or development of income generating activities (handicraft units, fattening etc.)  2.2. Setting up of mechanisms of financial resources mobilization for rural communities;  2.3. Strengthening of the capacities of rural community support service;  2.4. Encouragement of technology exchanges at national and sub-regional levels through south-south cooperation  2.5. Discouragement of the plastic bags imports by high taxes to importation;  2.6. Establishment, protection and management of green spaces and reserved spaces to social equipment;  2.7. Creation of leisure parks and botanical gardens;  2.8. Creation of modern water points.  2.9. Sensitization, information and training of the rural communities on hygiene and the sanitation.
3. Adapt population and habitat policies to resources availability	3.1. Large scale popularization of techniques of building without wood;

4. Improve women conditions of work	<p>3.2. Valorization of the traditional techniques regarding family planning;</p> <p>4.1. Alleviation domestic works (grain mill, water exhaustion means)</p> <p>4.2. Establishment of multi-purpose community and private woods at village level;</p>
5. Empower the populations in the socio-economic development process	<p>5.1. Finalization, popularization and implementation of rural code application texts;</p> <p>5.2. Generalization of the land commissions;</p> <p>5.3. Organization and training of women and young people to LCD works;</p> <p>5.4. Powers and technologies transfer to populations and particularly women and young people..</p>

### **III.2.3. Support mechanisms to desertification control and sustainable management of natural resources**

#### III.2.3.1. Education and Sciences

In Niger, training activities in the framework of desertification control are essentially provided in favor of the following target groups: rural communities, development agents and students.

At rural communities' level, the training practices for rural development have been very heterogeneous during the three last decades. Important differences exist within the country, even within a region where often coexist very various and less articulated among themselves educational and informal training actions.

Training which as practiced in the 60's in the form of rural animation evolved later towards mass literacy before resulting functional with the emergence of projects. Rural communities' training constraints are of several types:

- ✓ only a tiny part of the rural population mostly illiterate (80%) is affected and mainly through projects; in fact, there is an inadequacy between recruitment policy and supervision needs the field;
- ✓ this training does not sufficiently take into account social and cultural environment of the populations; in addition, it does not live up to the population expectations.

The supervision agents are trained in public schools namely IPDR of KOLLO, CFCA and EMAIR for technicians, Faculty of Agronomy, CRESA and other schools abroad for the senior staff.

The main features of this training encounters the following:

- ⊙ Insufficient number of training centers and their reception capacities,
- ⊙ inadequacy of rural world realities integration in the syllabi ,
- ⊙ ignorance of local know-how and farmers' traditions, (lack of control of farmers practices and national languages)
- ⊙ shortage of trainers and supervision agents,
- ⊙ oriented training,
- ⊙ shortage of material and financial means

At the level of students, to Environmental Education (EE) has long been included in the strategies of desertification control and natural resources management, through region cooperation animated and coordinated by CILSS. This education aims the following general objectives:

- ⊙ To improve the quality and effectiveness of actors addressing environmental issues,
- ⊙ To enhance the local capacities of natural resources management in the sahel of which the first step is the Sahelian Syllabus for Environmental Education (PSE) whose specific objective is to bring educated sahelian children to adopt a respectful attitude.

Two components of PSE are currently implemented in Niger

- \* the training/information program on environment (PFIE)
- \*the sahelian education program on environment for secondary schools (PSE2) .

These two components of PSE do not cover all the schools in the country. In fact, environmental education is at a piloting stage and does affect only a handful of school children. Thus, the environmental dimension is insufficiently taken into account despite the scope of environmental problems. However, in the regions of Zinder and Diffa the implementation of an environmental education program funded by IUCN and which interests on only the formal and informal school milieu but also the non academic milieu.

In the area of research, desertification control and natural resources management activities concern both basic research and applied research. Applied research, conducted generally at the request of development support structures, is characterized by the insufficient consideration of farmers' practices and know-how though socially and economically justified.

The consequence of this situation is the low interest shown by producers regarding research findings and the extended technologies. Though, all farmers production practices fit in explicit logic and management strategies of basic production to reduce hazards, they are today considered not much productive, or even environment degradation factors.

Basic research is characterized by the insufficient dissemination of its findings due to lack of means earmarked for this purpose. Thus, the collected stored data remain not much exploited by users. The two categories of research are confronted today to problems of human and financial resources mobilization, insufficiency of adequate equipment. Besides, the existing skills are insufficient with regard to the



necessary research scope for a better increase of agricultural and breeding productivity. To that there is a lack of synergies among research institutions that entails results too much sectoriel for the treatment of the rural world global problems. Presently there is no coordination structure of research activities that whose consequence is the repetition in some cases of topics treatment.

Research funding suffer in general from difficulties linked to extension provision and their adoption mainly because of:

The lack of political commitment which results in the insufficiency or even lack of financial means.

⊙ inappropriateness tation of technologies to socio-economic ad cultural realities of

producers (major difficulty), hence populations reluctance to adopt certain technologies,

⊙ insufficient number and low level competence of grassroots extension provision agents.

However, despite all these constraints, some achievements have been recorded. It is mainly the case with the forms whose dissemination gave satisfactory results in their application area (index of approaches and experiences regarding PRSAA, January 1998).

### Aim

The aim is to enhance the capacities of actors in desertification control and natural resources management through the development of existing local know-how and viabilization of educational, training and information structures in order to reach this objective strategic orientations and possible actions are presented this objective strategic orientations and possible actions are presented in the table below:

Strategic Orientations		Possible Actions	
1.	To strengthen operational the links between research and development	1.1	Establishment of a synergy between researchers and development senior agents (for example Early warning system (SAP) and organizations in charge of meteorological and weather forecast;
		1.2	Motivating the department in charge of research-extension and the participation of development of senior staff in the definition of research areas and the follow-up of their implementations
		1.3	Development of the dissemination of information and exchange of experiences at will levels
2.	To promote new behaviors	2.1.	Adults sensitization, information and training through the use of appropriate tools (schools,

<p>favorable to DS/NRM/SDM;</p>	<p>literacy centers media and permanent education centers)</p> <p>2.2. Promotion of the piloting of innovations and their integration into the formal educational system;</p> <p>2.3. Allocation of necessary means to the educational and research systems;</p> <p>2.4. promotion of teacher training at all levels</p> <p>2.5. Development of staff training in sufficient number and in quality to assure a better coverage of the national territory on the one hand and support the development of self-training on the other as well as the in-service training of these staff.;</p> <p>2.6. Enhancement of access to IPDR for the private sector</p> <p>2.7. Encouraging the establishment of public and private training centers and reception capacities building of the existing centers;</p> <p>2.8. Setting up of a coordination and monitoring mechanism in the area environmental education (EE);</p> <p>2.9. Developing and encouraging after impact assessment, the utilization of agricultural material;</p> <p>2.10. Encouraging private initiatives in the area of DC/NRM;</p> <p>2.11. Capitalization and valorization of experiences of projects and other stakeholders in environmental education</p> <p>2.12. Development of the use of national languages and Elaboration of didactic documents;</p> <p>2.13. Rehabilitation and generalization of CFCA, CPR and CPT etc.;</p> <p>3.1 Development of an efficient partnership and capacities building in the area of national, sub-regional and regional</p>
---------------------------------	--

<p>3. To promote the development of applied research in CD/NRM/SDM;</p> <p>4. To promote improve and enhance local technologies and know-how</p>	<p>research;</p> <p>3.2. Encouraging and extension provision for applied research on ecology and management of milieu,</p> <p>3.3. Encourage and promoting research on physical milieu (in particular soil and at misfire</p> <p>3.4. Pursuing and intensifying research works regarding combating resources enemies in the area of agriculture, animal breeding forestry and fish breeding;</p> <p>3.5. Inventorying collection and analysis of data related to specific composition and general behaviors of species,</p> <p>3.6. Betterment of the understanding of agricultural system and farmers' strategies in the area of DC/NRM;</p> <p>3.7. Gathering understanding of the plant and animal compositions, the evolution of their numbers and the health hazards facing the animals in the national game parks</p> <p>3.8. Follow-up and updating of agrosystems characteristics;</p> <p>3.9. Maintenance, conservation and improvement through the most appropriate ways and means of genetic resources and bio-diversity,</p> <p>3.10. Designing and proposing productions intensification models that are natural resources-friendly .</p> <p>4.1. Integration of the local environmental and know-how dimensions in all training programs at all level:</p> <p>4.2. Inventory taking, selection and dissemination of local practices strategies and know-how regarding agriculture, breeding, forestry and fish breeding.</p>
--	--

### III.2.3.2. Monitoring, warning and drought effects reduction systems

Niger has experienced during this century natural disasters of which the most significant ones are:

- ✓ famines of the 1931s, 1953-1955s, 1966-1969s, 1973/74s, 1983/84s, 1997/98s
- ✓ epidemics of bovine plagues, smallpox, cholera, meningitis;
- ✓ locust invasions (1928-1931), (1974-1975) and bush fires;
- ✓ floods following abundant precipitation (1936-1946, 1952, 1998).
- ✓ predators and diseases which affect crops and vegetation,

All these well as calamities entailed important losses identified in natural resources as in human and animal lives. The poor implementation of identified policies, orientations and actions reveal the weakness of the monitoring systems and follow up of the desertification phenomenon, the effects of drought and in general, of other environmental problems. This situation proves the necessity to have adequate systems of monitoring, prevention and reduction of drought effects. To that effect an agrohydrometeorological follow up is carried out every decade. It is piloted by a pluri-disciplinary taskforce made up of the permanent secretariat of the early warning system (SAP), the national department meteorology, of agriculture, breeding and animal product based industry and the department of water resources, with the participation of the gendarmerie national, special military Unit the Ministry of Interior and with the collaboration of AGRHYMET. This system consists in continuous watch of large areas which are not always easily accessible with in mind the aims of assessment desertification evolution or efforts to alleviate desertification. Yet, the monitoring evaluation activities of desertification control and drought effects alleviation have not provided the expected results.

The bio-geophysical indicators among which; water erosion wind erosion, vegetal cover degradation, human settlements have not been appropriately followed up.

The Early warning system being a set of seasonal information, on natural resources and agricultural productions, is foremost the aimed at, people's food security and disaster prevention and management.

From the 1960s, the following disaster early warning and management have been established following the 1984 droughts

- The Multidiscipline technical committee on food Aid Monitoring and coordination
- The permanent early warning system (EWS) and disaster Management.

Another of early warning set up in Niger, is the forecast of critical discharges of river Niger at Niamey for which an annual technical note at low water level period is produced. Unfortunately, this forecast is carried out only on the river Niger and not on the hydrological network as a whole.

Besides the follow up of rain parameter is fundamental for early warning. It is in order to mention the weakness of the observation network in Niger as a limiting factor.

The existing national committee in charge of the early warning system and disaster management (SAP-GC) has been mandated, to propose to government:

- ✓ suitable measures to eliminate or reduce the instability effects of natural and socio-economic environment;
- ✓ punctual activities and development activities
- ✓ necessary measures to detect structural or crisis situation and find a remedy to them, follow up their implementation and assess their impact.

It is an established today fact is that the SAP has focussed essentially its activities on food assistance etc.) to especially specially to remedy cereal deficits of agricultural campaigns. This is why appropriate measures are not timely taken to address food shortage situations. From what precedes it transpire that the SAP is reduced to a more curative function than preventive.

### Aim

The aim is to set up an adequate system of disaster monitoring and have a mechanism for natural catastrophes effects reduction. To reach this objective, strategic orientations and possible actions defined in the table below are presented.

<b>Strategic Orientations</b>	<b>Possible Actions</b>
1. To enhance the capacities of the national network of monitoring, follow-up and early warning regarding the desertification and draught phenomena	1.1 Enhance of the national monitoring network and establishment of a pertinent database in the area of desertification monitoring and follow-up.;  1.2 Development of practical modalities for desertification monitoring along well identified transport and at the level of pilot sites.  1.3 Use of remote sensing in view of assessing the degradation of the environment;  1.4 Systematic monitoring for a better design of erosion control program;  1.5 Rehabilitation and up grading of the national hydrometry network;  1.6 Enhancement of scientific capacities for a multiscale modeling of land occupancy;  1.7 Enhancement of the existing early warning system mainly through the integration of components relating to drought forecast and monitoring;  1.8 Development synergies between sub-regional and international institutions

<p>2. To promote an appropriate and efficient system to monitoring and assess the activities relating to desertification control, natural resources management and drought effects alleviation</p>	<p>working in the area of DC on the one hand and their counterparts at national levels, on the other hand;</p> <p>2.1. Design and establishment of an information system on desertification with the assistance of partners (UNEP, OSS etc.);</p> <p>2.2. Design of a national system to assess and monitor desertification on the basis of relevant physical, biological, socio-economic and cultural indicators;</p>
--	--

### III.3.PAN-LCD/GRN priority sub-programs

The analysis of desertification and natural resources degradation factors and of priority intervention axes related to the action plan enables to identify 5 priority sub-programs; they are:

a) In the area of sustainable management of natural resources:

Sub-program of conservation and restoration of degraded lands and water control which will integrate the following components:

- Conservation and restoration of lands,
- Mobilization and control of water resources,
- Sub-program on land silting control
- Sub-program community forestry and of natural resources management which will include, among other components:
  - Multi-purpose reforestation;
  - Development of forest by-products;
  - Agroforestry,
  - Natural resources Management (extension);
  - Development and management of natural forests;
  - Control of bush fires
  - Control of weeds

b) In the area of climatic and environmental effects and constraints control, desertification control and natural resources management mechanisms establishment

- Sub-program on strengthening capacities of desertification and drought monitoring and follow up services which will focus mainly on the following components:

- Sensitization, information and training on desertification control and natural resources management,
- Strengthening the capacities of desertification and drought monitoring and follow-up services.

c) In the area of DC/NRN/DEA monitoring and follow-up

- Sub-program for DC/NRN/DEA monitoring and follow-up
- Determination of relevant physical, biological, socio-economic and cultural indicators in the area of DC/NRN/DEA
- Design of a national desertification monitoring and follow-up system.

**Priority subprograms of PAN/LCD/GRN**

Priorities	Sub-programs	Objectives	Expected results	Observations
<b>Natural resources management and production method</b>	Sub-program on conservation and restoration of degraded lands and water resources control	To restore the productive capital in view of improving agricultural and animal breeding productions  Strengthening agricultural and breeding productions	- The productive capital will restored;  - The agricultural and animal breeding production outputs will be increased;  - Surface waters will be used for agricultural and breeding productions ,  - Production systems will be improved	Cost estimates and financing seeking
	Land silting up control sub-program	To secure agricultural and animal breeding productions	- lands and basins yields will be improved  - socio-economic infrastructure will be protected	Cost estimates and financing seeking



	<p>Community forestry and natural resources management sub-program</p>	<ul style="list-style-type: none"> <li>- To improve the environment and agricultural output increase communities incomes and meet their food needs</li> <li>- To ensure the sustainable management of natural resources</li> <li>- To improve agricultural productivity and increase of fodder availability</li> </ul>	<ul style="list-style-type: none"> <li>- the fish-breeding production will be increased by more than 50%</li> <li>- socio-economic infrastructures will be protected</li> <li>- fish production will be increased by more than 50%.</li> <li>- water plans devoted to fish breeding will be restored</li> <li>- national resources will be rationally managed in view of agricultural and animal breeding productions</li> <li>- soil fertility will be managed by agroforest plantations</li> </ul>	<p>Cost estimates and financing seeking</p>
		<ul style="list-style-type: none"> <li>- To ensure a sustainable management of forest resources and improve communities incomes</li> <li>- environment</li> </ul>	<ul style="list-style-type: none"> <li>- Yields will be increased thanks to the plantations of windbreaks and quickset hedges</li> <li>- agricultural incomes will be improved</li> </ul>	

		preservation and safeguard	<ul style="list-style-type: none"> <li>- development plans will be designed for exploitable forest clumps</li> <li>- rural markets are established and exploited</li> <li>- clumps riparian populations will benefit from their forests incomes</li> <li>- ecosystems will be preserved from harmful effects of bush fires</li> <li>- pastoral and wildlife resources will be protected</li> </ul>	
Climatic hazards and environmental constraints control, establishment of supporting mechanisms of desertification control and natural resources management	Strengthening of capacities desertification and drought observation and follow-up services sub-program	<p>To alleviate drought and desertification effects through the strengthening of concerned services.</p> <p>To strengthen local capacities and promote partnership for the DC/NRM.</p>	<ul style="list-style-type: none"> <li>- drought and desertification observation and follow-up arrangements will be strengthened .</li> <li>- recommendations by services will be taking into account and systematically applied.</li> <li>- the SID will be set up</li> </ul>	Cost estimates and financing seeking

			<p>and become operational</p> <ul style="list-style-type: none"> <li>- civil populations will be informed about the desertification effects,</li> <li>- youth and women will actively participate in desertification control activities.</li> </ul>	
DC/NRM follow-up and assessment	Determination of Indicators sub-program	To determine relevant physical, biological, socio-economi and cultural indicators in the area of DC/NRM	<ul style="list-style-type: none"> <li>• The national and local capacities in the area of DC/NRM will be enhanced</li> <li>• Relevant bio-physical indicators including water erosion, wind erosion, green cover degradation, human settlement will be used to monitor desertification</li> <li>• Relevant indicators of follow-up/aaseesment in the implementation of the PAN/LCD/GRN will be designed in accordance with the arrangement made by C0 P2 CCD</li> </ul>	Cost estimates and financing seeking

### III. 4 Emergency Actions

Priorities defined in the PAN/LCD-GRN which aim at providing an answer to combat desertification and alleviate drought effects and start productive capital restoration in the view of a sustainable development through an integrated strategy, will be executed in the long term. However, during the environmental diagnostic assessment realization, populations had expressed their real and pressing needs. Before the implementation of the priorities and to guarantee the success of PAN/LCD-GRN process, it is consequently imperative to take, without delay, provisions likely to stop productive capital degradation, to show the government will, and make population aware that their implication is essential and determining. It is in this sense that urgent actions are planned both as pilot actions and a strategy of adhesion and mobilization of different partners in the PAN/LCD-GRN implementation process; in sum what is at stake is sensitizing and training beneficiary populations and program actors through concrete actions.

The urgent actions are small operations of productive capital protection, in the short and medium terms, the recovery of the capital whose degradation is still limited and/or the preparation of some large scale actions in the medium and long terms. They aim at satisfying the real pressing needs expressed by the populations, designed and realized locally by means of appropriate technologies and affordable budgets in short time.

**Table of Urgent Actions**

Strategic Orientations/Priority Actions	Possible Urgent Actions	Localization (*) = all the regions
---	-------------------------	------------------------------------

1.1 Productive capital restoration	1.1.1. Dunes fixation(at the river level in particular)	*
	1.1.2. Control of silting up of stretches of water and streams including the river.	*
	1.1.3. Treatment of koris/ watersheds	*
	1.1.4. Recovery of degraded lands (Zaï, half-moons, dikes, etc...)	*
	1.1.5. Protection, bushfires control	*
	1.1.6. Development of pasturage areas/delimitation of animals routes.	*
	1.1.7. Control of weeds (cordifolia, water hyacinth, Pestia stratoids)	*
	1.1.8. Extension of soils, and water conservation and management techniques;	*
	1.1.9. Creation/improvement of silvicultural potential	*
	1.1.10 .Improvement of the knowledge of resources	*
	1.1.11. Recovery and protection of natural regeneration	*
	1.1.12.Generalization of the implementation of the domestic energy strategy	*
	1.1.13.Establishment of small water retention and the development of ponds for agriculture forestry and breeding	*

<p>1.2. Realization of Agriculture, Forestry and Breeding products transportation And conservation infrastructures.</p> <p>1.3. Improvement of women conditions of life and work in rural area.</p>	<p>1.1.14.Rehabilitation of traditional practices of trees plantation during some socio-cultural celebrations.</p> <p>1.2.1.Realization of roads to open up production areas and encourage inter and cross-regional exchanges</p> <p>1.2.2. Building of conservation, storage infrastructures for products from local materials and local expertise</p> <p>1.2.3. Support to the development of small scale food processing units (traditional and semi traditional)</p> <p>1.2.4. Protection of the RN1 road Zinder-Diffa against silting-up.</p> <p>1.3.1. Creating income generating activities (bovine fattening, loan for small scale trade, off season farming, poultry farming etc.)</p> <p>1.3.2. Acquisition of domestic works lightening equipment (grain mill, husking machines, and high-performance means of drainage).</p>	<p>*</p>
---	--	----------

### III.5. PAN/LCD-GRN Implementation

#### III.5.1. Implementation methods

The PAN/LCD-GRN will be translated into regional, sub-regional and local action programs by taking into consideration the ongoing decentralization process in Niger (Map III. 2 in annex).

At the local level (municipality), action programs for combating desertification and natural resources management will be the outcome of “land management” approach and will act as local Development plans.

### III.5.2. Implementation legal, regulatory institutional and organizational framework.

#### III.5.2.1. Legal and regulatory framework

The diagnostic analysis showed that Niger has elaborated laws encouraging LCD-GRN activities. However, this legal environment needs to be reinforced for an effective implementation of the PAN/LCD-GRN namely following the decentralization mechanism. Thus, in accordance with article 5 on general provisions of the CCD, they will proceed to the completion of existing laws and the elaboration and adoption of new legislative measures. Thus, the following activities will be carried out to that effect :

- finalizing the revision of the law fixing the forest code;
- completion of enforcement regulations of blueprint law relating to environment management ;
- elaboration and adoption of enforcement law on institutionalization of environment impact assessment;
- elaboration and adoption of regulations governing the functioning and organization of the National Environment Fund
- adoption of texts on local management structures.

#### III.5.2.2. Institutional and organizational framework

##### a) Implementation institutions/actors

As said supra, there will be a search for partnership reinforcement through a permanent dialogue among actors involved in the LCD/GRN. The following roles can be devolved to each of these actors:

##### **Public Sector**

- Definition of policies and strategies regarding LCD/GRN and designing planning tools (inventories of natural resources, development and exploitation of master plans..),
- Implementation of institutional projects,
- Definition and control of legislative and regulatory framework application at the national level (forest code, Rural code, hunting code...) and the follow up of international conventions,
- Coordination and harmonization in implementation actions notably at the civil society level,
- Realization of heavy works for the rehabilitation of degraded ecosystems (large glaciais areas, dune cords, parks and stretches of water, humid zones...)
- Facilitating the search for funding,
- Development of international cooperation
- Animation/information/sensitization and supports advice to actors namely populations
- Research, training and monitoring genetic material,
- Various studies, enhancement/and capitalization of results
- Nature protection, development of zoological gardens,
- Conservation of biological diversity



- Encouraging the emergence of the civil society
- Follow-up evaluation of actions.

### **Private Sector**

- Development of commercial branches (wood-energy, improved fire-boxes, secondary forest products, agricultural products, fishing and breeding products)
- Development of private wood production (private treelets production, private plantations)
- Forest activities enterprises
- Industrial transformations of products (secondary forest products, agricultural products, fishing products, hunting products and breeding products...)
- development of pharmacopoeia and traditional medicine,
- contribution to biological diversity conservation (farms and game ranches development)
- input provision (fertilizers, zootechnical products, pesticides, production materials, fishing equipment...), contribution to the development of hunting tourism.
- internal training, information, sensitization and follow-up evaluation;
- support to rural savings mobilization.

### **Territorial Bodies**

- strategies definition at regional and sub-regional levels taking into account national orientations and policies,
- designing and implementation of and regional and sub-regional master plans regarding LCD/GRN,
- funding of actions in the areas of LCD/GRN and local development,
- communities forests management,
- information, training and sensitization of populations
- design, implementation and follow-up/evaluation of regional and sub-regional projects,
- development of decentralized cooperation ,
- creation and development of protected local areas,
- Rational management of hunting areas
- Land security

### **Rural Communities**

- Participation in the design and implementation (including funding) of LCD/GRN actions: management of forest, fishery, water and pastoral resources, productions of treelets and reforestation
- Primary firewood production, fishery and apicultural productions
- Participation in setting up and operation of savings and credit mobilization systems in rural environment.
- Mobilization of human and financial resources for community based activities,

- Follow up/evaluation of actions

### **NGOs and Associations**

- Design and implementation (including fund raising) of projects in accordance with the orientations defined by the public sector,
- Training and sensitization on LCD/GRN
- Cooperation (partnership),
- Participation in studies in LCD/GRN areas and enhancing the value of obtained results,
- Follow-up/evaluation actions.

#### b) Organizational framework

##### ➤ At the national level:

The CNEDD through its secretariat, and more precisely, through its PAN/LCD-GRN technical committee, will ensure:

- coherence of the implementation of the PAN/CD-GRN with orientations defined in the PNEDD, including synergy with the other environment agreements.
- follow-up/evaluation of the implementation and possibly the readjustment of PAN/LCD-GRN.

The Ministry in charge of desertification control will be responsible for the PAN/LCD-GRN implementation coordination. In this capacity, it will :

- Participate directly in this implementation through its technical services;
- Involve the other actors, notably the populations and the civil society;
- Be in charge of the control and technical follow-up of the activities.

##### ➤ At the regional level

The regional, sub-regional and communal councils on Environment for a sustainable Development will ensure coherence and follow up/evaluation.

- decentralized services of the Ministry in charge of desertification control for implementation coordination, technical control and follow-up and involvement of actors;
- The local communities will conduct the in-the-field activities. They will be helped in this regard by both the concerned services and the civil society.

### **III.5.3. Human resources mobilization**

The implementation of PAN-LCD-GRN implies the setting up of a sustainable mechanism of human and financial resources mobilization and the involvement of several partners. In this framework a particular emphasis must be put on the improvement of partnership among actors through:

- ✓ A better involvement of the civil society in the implementation of the program,
- ✓ Strengthening the operational capacity of actors for the implementation of actions defined in the program,
- ✓ Sensitization and information of actors (government, bodies, NGOs and associations) on the program stakes and the necessity of a consultation for its implementation.

#### **III.5.4. Financial Resources Mobilization**

Before the advent of CCD, LCD/GRN activities funding has been characterized by irregularity. In fact, national resources allocated were affected by the difficult situation experienced by the country. As far as external funding is concerned, it has been uncertain and circumstantial.

This is why the funding of PAN/LCD-GRN implementation will require the setting up of a stable financial mechanism and a judicious utilization of resources.

This mechanism will draw from the following sources:

- national funding through the state, local governments, the private sector and grassroots organizations,
- external funding,
- NGOs and associations funding.

##### ➤ National Funding

Financial resources will come from:

- contribution from the state budget in the form of direct grants to LCD/GRN activities;
- contribution from local governments budgets to desertification control and natural resources management ;
- setting up of a mechanism for additional resources mobilization from the private sector and grassroots organization
- voluntary contribution from individuals and legal entities.

All of these national resources will go into an account which will be domiciled at the national environment fund established by the blueprint law on environment management and whose main mission is the funding of LCD/GRN activities.

##### ➤ External funding

To complement internal efforts of resources mobilization for LCD/GRN funding purposes, bilateral and multilateral cooperation partners will be called for through donations, conditional loans and debt restructuring. Besides world CCD mechanism will be used to improve external funding

➤ Funding by NGOs and Associations

In this case the State will create conditions which will enable them to mobilize resources directly from their partners which will be utilized in a coherent and harmonized way with other actors

### III.5.5. Follow-up/evaluation and impact analysis mechanism

Another not less important form of funding consists of making DC/NRM a monetary income-generating activity through a mechanism which gives incentive to investors, for example, through the creation of some tree-plantations (firewood production, by products from non-ligneous species such as the gum-tree), the development of industrial fisheries etc.

In line with the stipulations of article 9 of the convention, the realization of the program's objectives requires among other things, the follow up evaluation and identification of the impact of actions to implement. This therefore implies the setting up of a true mechanism of international and external follow-up evaluation and analysis of social and cultural transformations induced by the program on the productive capital, at ecological, economic, sociological and cultural levels. The goal aimed at, is to identify and preferably present to the various actors of the program (populations, policy-makers) and to the international community through the CCD permanent secretariat, progresses recorded in desertification control and natural resources sustainable management. The information will then enable to take concerted decision on the performances of the program implementation strategy.

To reach this goal, the follow-up/evaluation and impact mechanism requires the direct or indirect participation of all and it will operate as follows:

a) Internal follow –up/ evaluation

A decentralized follow–up/evaluation system, negotiated with actors will be set up at the level of all sub-programs through follow-up evaluation units which will be established for this purpose. It will work on the basis of information collection, analysis, elaboration and dissemination system on the implementation of the program. The information will enable to orientate if necessary the planning/programming of actions.

b) External Follow-up evaluation

It will be piloted by the CNEDD executive secretariat in close cooperation with the DC/NRN Committee and the decentralized services of the Ministry in charge of DC. These structures mission is to evaluate the participation level of action program sub-programs vis à vis sustainable development objectives as defined in the PAN/LCD-GRN.

c) Impact Follow-up

An impact follow-up system of desertification control and natural resources management program will be set up and coordinated by follow-up/evaluation units. It will consist in, on the basis of some ecological, economic and social impact indicators, searching periodically for macro and micro-economic transformations

induced by the program. This system will call upon specialized international, regional, sub-regional and national organizations namely UNEP, observatoire du Sahara et du Sahel (OSS), AGRHYMET center, specialized National structures, etc.

### III.6. Risks

It should be noted that the PAN/LCD-GRN implementation and the realization of its objectives can be hindered by some factors difficult to control. Thus, at the program implementation level, the participation degree of all the stakeholders will depend on the satisfactory realization of PAN/LCD-GRN sub-programs with as a consequence the effectiveness of the LCD-GRN.

Another not less important risk is the funding of the program: In fact the disengagement of possible donor countries for LCD/GRN actions funding in affected countries in general, and in the Sahel in particular, resources mobilization difficulties through the world mechanism are factors capable of impeding the PAN/LCD-GRN implementing. To this is added the persistence of economic recession that Niger is facing, which would inevitably hinder the allocation of national resources.

Concerning the achievement of the program's objectives, and may be compromised by recurrent droughts which would inevitably affect the efforts in controlling productive capital degradation in an essentially agricultural country.

## REFERENCES

Agence Canadienne de Développement International (ACDI), 1996 : Projet d'Appui à la Mise en Oeuvre de la Convention Internationale sur la Désertification, *Programmes d'Action Nationaux Situation et Besoins (Burkina Faso, Niger, Mali, Sénégal)*, Rapport final. Niamey, Niger. 63 PP.

Agence Canadienne de Développement International (ACDI), 1992 : *Guide Méthodologique, Planification Stratégique en Environnement, apport de la prise en compte de l'environnement comme élément stratégique de la planification et de la programmation en développement international*. Direction de l'Environnement . version provisoire. Niamey, Niger. 38 PP.

Association néerlandaise d'Assistance au Développement (S.N.V.), 1992 : *Étude de la situation socio-politique du Niger*. Niamey, Niger. 90 PP.

ATLAS AGRHYMET, 1998 : Atlas en dix volumes, Centre AGRHYMET, Niamey, NIGER

Awaïss ABOUBACAR, 1997. Les Ressources Halieutiques au Niger : Inventaire Environnement au Niger, édition RESADEP/INSTITUT PANOS, 71 pp.

Banque mondiale, 1992 : *Rapport d'évaluation Projet Population*, rapport No. 10047-NIR, Division des Opérations Population et Ressources humaines, Département Sahel, Région Afrique, République du Niger. Washington , USA . 130 PP.

Banque mondiale, 1993 : *Niger Country Environmental Strategy Paper, Draft*, 15 . Département Sahel, Région Afrique, République du Niger. Washington , USA . 41 PP.

Bationo A, A.U. Mokuwunye, 1991, Alleviating soil fertility constraints to increased crop production in West Africa: the experience in the Sahel. *Fertilizer Research* 29: 95-115.

Bureau international du Travail, 1988 : *Elevage et développement au Niger, Quel avenir pour les éleveurs du Sahel?* Genève, Suisse, 147 PP.

Charney, J.G., Stone P.H. and Quirk W.J., 1975 : Drought in the Sahara, a biogeophysical feedback Mechanism. *Science* v.187, p. 434-435.

Comité national de préparation de la CNUED, 1991 : *Rapport national*, préparé à l'occasion de la Conférence des Nations-Unies sur l'Environnement et le Développement (Brésil 1992), projet UNSO INT/91/X 14. 73 PP.

Comité technique interministériel sur la Population, 1990 : *Migration, urbanisation, emploi, aménagement du territoire*, Projet de politique de population, document de base, groupe 3. Niamey, Niger. 54 PP.

Conseil Militaire Suprême, Conseil National de Développement, 1984 : *L'Engagement de Maradi sur la Lutte Contre la Désertification à Maradi*. Ministère de l'environnement, Niamey, Niger. 59 PP.

FAO/Banque mondiale, 1993 : *Programme national de Gestion des Ressources naturelles*. Centre d'investissement, Programme de coopération Niger: Mission de préparation, no. du rapport: 52/93 CP-NER 29, Rome, Ital. 3 volumes.

FAO, 1992 : *Développement durable et environnement: les politiques et activités de la FAO, Stockholm 1972—Rio 1992*, Rome, Italy. 89 PP.

FAO, 1991: Document d'orientation du plan d'action forestier tropical pour le Niger

ICARDA, 1998: Wind Erosion in Africa and West Asia: Problems and Control strategies. M.V.K. Sivakumar, M.A. Zobisch, S. Koala and T. Maukonen Editors. 198pp.

Josette Murphy et Tim J. Marchant, 1988 : Le suivi et l'évaluation dans les organismes de vulgarisation. Banque Mondiale, Serie 79F. 81 PP.

Ministère de l'Agriculture et de l'élevage, 1991 : Projet protection des végétaux de la GTZ, *Lutte antiaviaire. Niamey, Niger*. 190 PP.

Ministère de l'Environnement, de l'Habitat et de l'Urbanisme, 1993 : *Plan d'actions environnemental du Bénin*, projet de document final, Cotonou , Bénin . 93 PP.

Ministère du Plan, 1998 : , *Plan National de l'Environnement pour un Développement Durable* Conseil National de l'Environnement pour un Développement Durable, Secrétariat Exécutif. Niamey, Niger. 121 PP.

Ministère de l'Agriculture et de l'Élevage, Comité national du Code rural, Secrétariat permanent, 1991 : *Projet de loi fixant les principes d'orientation du code rural*, édition révisée, Niamey, Niger. 100 PP.

Ministère de l'Environnement et du Tourisme, 1991 : *Plan d'Action National pour l'Environnement (P.A.N.E)*, Comité National de Lutte contre la Désertification, Tome II Programme d'Investissement, Ougadougou, Burkina Faso. 201 PP.

Ministère du Logement, du Cadre de vie et de l'Environnement, 1996 : *Synthèse des travaux du PNAE-CI* (Plan National d'Action Environnementale de la Côte d'Ivoire), Abidjan, Côte d'Ivoire . 59 PP.

Ministère des Mines et de l'Énergie, Direction de l'Énergie, 1993 : *La situation énergétique au Niger*, Niamey, Niger. 47 PP.

Ministère des Travaux publics et de l'Urbanisme, Direction de l'Urbanisme, 1984 : Schéma directeur d'aménagement et d'urbanisme - Niamey, livre blanc, Atelier national d'urbanisme - Niamey . 104 PP .

Ministère de l'Équipement, de l'Habitat et de l'Aménagement du Territoire, Direction de l'Aménagement du Territoire, 1993 : *Contribution à la définition d'une politique d'aménagement du territoire au Niger*, Niamey, Niger. 83 PP.

Ministère de l'Hydraulique et de l'Environnement, 1993 : *Schéma directeur de mise en valeur et de gestion des ressources en eau*, Niamey, Niger. 105 PP.

Ministère de l'Hydraulique et de l'Environnement, Ministère du Plan, Ministère de l'Agriculture et de l'Élevage, 1991 : *Plan national de Lutte contre la Désertification*, document de synthèse. Sous-comité Développement rural, Comité ad hoc pour l'actualisation du Plan national de lutte contre la désertification, Projet PNUD/UNSO NER 90 X 04. Niamey, Niger. 44 PP.

Ministère de l'Environnement/Secrétariat permanent du PNAE/CID, 1998 : *Plan National Environnementale et Programmes d'Actions Nationaux de la Convention Contre la Désertification*. Bamako, Mali. Vol. I ; 93 PP.

Nicholson, S.E., 1989 : African Drought, characteristics, causal theories and global teleconnections. 79-100. In *Understanding Climate change*, American Geophysical Union.

OCDE, 1995 : *L'aide des donneurs en faveur du développement des capacités dans le domaine de l'environnement*, lignes directrices sur la coopération pour le développement. Niamey , Niger. 14 PP.

OCDE/BAD/CILSS, 1994 : *Pour préparer l'avenir de l'Afrique de l'Ouest : Une vision à l'horizon 2020*. Niamey, Niger. 68 PP.

Organisation des Nations Unies, 1990 : *Amendement au protocole de Montréal relatif à des substances qui appauvrissent la couche d'ozone*, CN 246, TREATIES-9 (Annexe), Montréal Canada. 16 PP.

Pewe, T.L., 1981 : Desert dust. A Special Paper. The Geological Society of America Publisher, 303pp.

PNUD, , 1991 : Bureau de Nations Unies pour la Région Soudano-Sahélienne Evaluation de la désertification et de la sécheresse dans la région soudano-sahélienne

PNUE, 1985 : Lutte contre en Afrique , documents établis par le service de lutte contre la désertification du PNUE, volume I, II et III. Nairobi

Projet Energie II, Volet Offre 1990: Schéma Directeur d'Approvisionnement en bois énergie de Niamey, 120PP.

Programme des Nations Unies pour le Développement, Représentation au Niger, 1996 : *Appui au Processus d'Elaboration du Plan National pour l'environnement et le Développement Durable*, Projet du Gouvernement du Niger, descriptif du projet, Plan de financement, Niamey, Niger. 39 PP.



Programme des Nations Unies pour l'Environnement, 1991 : *Manuel concernant le protocole de Montréal relatif à des substances qui appauvrissent la couche d'ozone*, deuxième édition, Secrétariat de l'Ozone, octobre, 110 PP.

PNUE, 1994 : *Convention des Nations Unies sur la lutte contre la désertification dans les pays gravement touchés par la sécheresse et/ou la désertification, en particulier en Afrique*. Niamey, Niger. 71 PP.

SEDES, 1987: Etude du secteur agricole du Niger. Bilan-diagnostique-Phase I. Niamey, Niger. 333 PP.

SNPA/DB, 1998 :Ministère du Plan , *Projet de stratégie Nationale et de Plan d'Action en matière diversité biologique au Niger*. Niamey, Niger. 93 PP.

Sterk, G., 1998: Wind Erosion in the Sahelian Zone of Niger: Process, Models, and Control Techniques. Tropical Resource Management Papers, No15; WAU ed., 151PP.

**ANNEXES**

**Tableau II.2.1: Forestry and forestry potentialities**

REGION	Names of the forests	Preservation Date	Surface area at preservation	Current Surface area (ha)	degradation level	Observations
<b>AGADEVZ</b>	Dabaga	1954	1050	18.4	extreme	under Disappearance used as a Harding zone
	Kerbougou	-	25000	-	-	
Total				26050		
<b>DIFFA</b>						
Deboua preserved forest	1939	27		-	degraded	9/12 forest disappeared only 81339 ha remain, out of initially ha
	Diana	1938	625	-	degraded	
	Goudio	1952	92	-	good condition	
		1942	1120	-	good condition	
	N'Boo	1938	185	-	good condition	
	Tansougoukoua	1941	1395	-	degraded	
	Karagou	1942	84	-	degraded	
	Ariboudiram	1939	4100	-	degraded	
	Mounouck	1941	61000	-	degraded	
	Garoua	1942	133	-	degraded	
	Loulono	1941	100	-	degraded	
	Sissi	1935	1335	-	degraded	
Total			70196			
Preserved Forest	Gougoumaria	1976	72		75% of restoration rate	
	Kayetawa	1976	94			
	Kalgounam	1976	281			
	Kodjemerri	1976	156			
	Gagamari	1976	86			
	Malam Minari	1976	410			
	Malganari	1976	132			
	Malam balmani	1976	333			
	Toubouram	1977	66			
Total			1630			
<b>DOSSO</b>						
preserved Forest	Gourou Bassounga	1937	10000	9900	100 ha classified in 1998	occupied by
	Fogha Beri	1948	4438	-	overgrazing clearings	agriculture and
	Bana	1955	738	-	excessive wood	livestock,
	Koulou	1948	2060	-	cuttings and illegal	increasing
					Overgrazing, clearing	degradation,
					Aging.	existence
						compromise
Total			17236			

preserved Forest	Tounga avant 1960	23862	-	-	at least 50% of the whole	over exploitation,
	Marigouna Bella avant 1960	43360	-	-		over exploitation, fire
	Rôneraies dallol avant 1960	28274	-	-		
	Forets du Fakara avant 1960	104524	-	-		
Total		200000	100000			
Agroforestry Parks	Acacia albida -	-	-	-	park under value,	excessive exploitat°
	Parinari macrphilla -	-	-	-		
	Vitellaria paradoxm -	-	-	-		
	Bombax costatum -	-	-	-		
	Parkia biglobosa -	-	-	-		
	Hyphaene thebaica -	-	-	-		
TILLABERI/CUN preserved Forest	Say	-	2460	-	very degraded	strong ion
	Ghuesselbodi 1948	5400	-	-	very degraded	agricole,
	Niamey-aviation	-	255	<10	under disappearance	exploitation Parc
	de W 1954	330000	3300000			abusive
	Tera	-	44000	-	degraded	
	Boumba	-	645	-	degraded	
	Faira 1950	8500	-	-	degraded	
Total			391260			
preserved Forest	Tamou	-	-	-	observed trend is the degradation	Multiples
	Boyanga	-	12300	-	of all forestry located in the Niamey pressures	
	Koure	-	116625	-	wood supply basin	
	Hamadidie	-	37350	-		
	Diakindi	-	31015	-		
	Autres plateaux -		très vaste			
Total			environ 2000000			
MARADI preserved Forest	Kouroungoussaou 1952		2300			
	Dan Gad Karazomi 1952		134			
	Dan Madotchi 1952	4				
	Dan Tourke 1952		650			
	Guidan Roumdji -		2100			
	Rigna 1952		25,6			
	Kandamaou 1952		4928			
	Gabi Nord 1950		560			
	Gabi Sud 1950		400			
	Madarounfa 1950		830			
	Chabare 1952		795			

	Dan Kada	1951	5190		
	Dan Gado	1951	4300		
	Bakabe	1956	2635		
	Bimin lalle	1951	48		
	Total		24900		
preserved Forest Dagor	-	-		53	
	Garinoney	-	-		53
	Doutchi Begoua	-	-		97
	Guidan karo	-	-		98
	Naguidi	-	-	33	
	Guidan Atiale	-	-		61
	Koukabel	-	-		49
	Kornaka	-	-		227
	Ajekoria	-	-		234
	Berle	-	-		258
	Karfin Gaba	-	-		35
	Takounde	-	-		57
	Baban Rafi	-	80000 in 1962	15350	
	Maradi	-	-		60
	Sabon Gari	-	-		48
	Guidan Siri	-	-		37
	Diambali	-	-		54
	Ounwala	-	-		39
	Bamo Bara	-	-		85
	Bamou	-	-		72
	Kouya	-	-		33
	Dan Mani	-	-		50
	Aderawa	-	-		498
	Dan Issa	-	-		1800
	Tibiri	-	-		2235

		Kodaga	-	-	2945	
		Tapkin guiwa	-	-	5820	
		Dan goulbi	-	-	3290	
	Total				33671	
Gommeraies		Intuila	-	-	545	
		Guidan Moussa	-	-	252	
		Matoya	-	-	188	
		Bader	-	-	82	
	Total					
ZINDER						
classified Forest	Takieta	1950	1955	6720	900	
		Boubaram				
		Kissanbana				
		Tounfiram Nord				
		Tounfiram ouest				
		Droum				
		Berbekia				
		Kongome				
		Korama				
		Libaram				
		Dan Ogoma				
		Kelle				
		Azjomba				
		Guirbo				
		Kaigam				
		Gadabour				
		Kourabouri				
		Kalgueri				
		Kadara				
		Karbale				
		Dawambeye				
		Tchedia				
		Desga				
		Total				
preserved Forests	forets de bas fonds	-	-	-	-	around 10,000 all degraded at more 50 p. cent Agriculture pressure on allpark a accacia albida - all degradation at 50 per cent all these forests
<b>TAHAOUA</b>						
preserved Forests						
		Abouboul	1956	72	0	
		Aboudea	1955	175	31	
		Bangui	1954	3275	0	
		Damfan	1955	540	156	

Massouki	Karofan	1955	4020	4020 ((under degradation)	Diverses pression
	1956	80	0		
	Minao	1955	60	20	
	Tapkin zaki	1955	1070	123	
	Tsemaoua	-	2367	50 ( en 1975)	
Total			11659	4400	
preserved Forest	forets de bas-fonds	-	-	28000	
	Forets de plateaux	-	-	178000	all under degradation
	Forets de Guieye	-	-	50	Diverses pressions
Total				206050	

Tableau II.2. PRODUCTION AND POPULATION INDICATORS AND COMBATING DESERTIFICATION AND NATURAL RESOURCES MANAGEMENT															
Regions	Populations		Surface areas		Density: habitant s sq Km	population Dynamics						Surface area fluctuation outputs of some major crops (1950 - 2000)			
	Sizes	% du toal	En Km <sup>2</sup>	% du total		Population in 1977	Population in 1988	Increasing rate	Population forecast (x1000) per region up to 2050						Surface areas hectares
									2000	2010	2020	2030	2040	2050	
Agadez	208,828	2.9	667,799	52.7	0.3	124,985	208,828	4.85	297	364	454	577	746	976	Millet :800 +- 315 Sorghum: un meaningful beans: un meaningful
Diffa	198 091	2.6	156,906	12.4	1.2	167,389	189,091	1.15	266	315	380	466	582	736	Millet: 77900 Sorghum: 15000 +- 11000 bean: 18000 +- 6529
Dosso	1,018,895	14	33,844	2.7	30.1	693,207	1,018,895	3.64	1,543	2,330	3,579	5,605	8,972	14,392	Millet: 779700 +- 67000 Sorghum: 56300 +- 8374 bean: 607500 +- 131253
Maradi	1,389,433	19.2	41,796	3.3	33.2	949,747	1,398,433	3.59	2,101	3,157	4,827	7,522	11,923	19,130	Millet: 1114000 +- 1120000 Sorghum:697650 +- 46454 Bean:838500 +- 150223
Tillabery	1,725,720	23.8	97,506	7.5	17.7	1,171,822	1,725,720	3.65	2,611	3,947	6,190	9,615	15,497	25,390	Millet: 958900 +- 107000 Sorghum: 153025 +- 61277 bean:377900 +- 101907
Tahoua	1,308,598	18	113,375	8.9	11.5	993,615	1,308,598	2.6	1,922	2,625	3,645	5,160	7,431	10,831	Millet: 831400 +- 94751 Sorghum: 281450 +- 59386 bean:537600 +- 125930
Zinder	1,411,061	19.5	155,778	12.3	9.1	1,002,225	1,411,061	3.23	2,111	3,065	4,525	6,810	10,425	16,155	Mil: 1131000 +- 131587 Sorgho:880600 +- 59823 bean: 537600 +- 152406
Niger P. urbain P.rural	7,251,626	100	1,267,000	100	5.7	5,102,990 656,203 4,446,787	7,251,626 1,114,020 6,187,606	3.32 5 3.04	10,851	15,803	23,449	35,754	55,530	87,610	Millet : 489200 +- 342171 Sorghum:2084575 +- 148655 bean: 3279300 +- 440750



**Table II.3. Major projects executed from 1990 to 2000, or waiting for funding, with LCD or GRN aspect**

Projects titles	Source of funding	Amount	Remarks
Project green Tahoua (phase 4)	Netherlands	925.000.000 f cfa	Closed
Project utilization of natural resources of Kouré (PRUNKO)	European Union, French Fund global environment, SNV	820.000.000 f cfa	Closed
participation project of strengthening village institutions for agricultural development PRIVAT (phases 1 et 2)	Netherlands	1.969.500.000 f cfa	Currently implemented
Project North Tera	Netherlands	980.000.000 f cfa	Closed
Project support to the framework program on poverty control (DAP/PCLCP)	UNEP/UNDP	14.877.404 US\$	Currently implemented
Project combating land crops titling Zinder/Diffa	FAO/UNDP	3.253.402 US\$	Closed
Project development management of lands in the southern region of Maradi	FAO	2.198.021 US\$	Closed
TCP support to the management of gum trees	FAO	290.000 US\$	In the launching phase
Project support to the National development plan for a sustainable development (DAP/PNEDD)	UNDP	4.365.710 US\$	
Support program to initiatives of local borassus management (PAIGLR) phases 1 to 3)	Switzerland	4.396.455.408 f cfa	At the end of phase I
Support program to natural resources management of the Aïr and Tenere (PAGRNAT) phases 1 + 2	Switzerland/Denmark	2.750.000.000 f cfa	Launching of phase II
Project Energy II, phases 1 and 2	Denmark	9.403.508.772 f cfa	Launching of phase II
Project building without woods	Denmark	2.902.813.920 f cfa	Launching of phase II
Project-Mainé soroa natural resources management	Denmark	521.700.000 f cfa	Implementation phase
Project-support to natural resources management	Denmark	156.700.000 f cfa	Implementation phase
Environment Education program	Denmark	300.000.000 f cfa	Implementation phase
Project training/ realization of fire break	Denmark	5.775.750 f cfa	Implementation phase
Project-Natural forest development (BAD)	African Development Bank	7.500.000.000 f cfa	Blocked launching
Project support to training and assistance in environment management (PAFAGE)	Italy	500.000.000 f cfa	Launching phase
Regional project of reserved games "Park W"	European Union	1.950.000.000 f cfa	Launching phase
Regional project sustainable fishing in west Africa	Great Britain	34.000.000 US\$ (global A.O)	Launching phase
Keita Integrated project (phases 1 to IV)	Italy/FAO	82.300.000 US \$	Implementation phase
Natural resources management project	World Bank	42.700.000 US\$	Implementation phase

**Publishing and supervision:**

**NATIONAL COUNCIL OF ENVIRONMENT FOR SUSTAINABLE DEVELOPMENT  
(CNEDD)**

**=====**

**EXECUTIVE SECRETARIAT (SE/CNEDD)**

BP: 10193 NIAMEY, TEL: 00227 72.25.59, FAX: 00227 72.29.81, E-mail: [biocnedd@intnet.ne](mailto:biocnedd@intnet.ne)