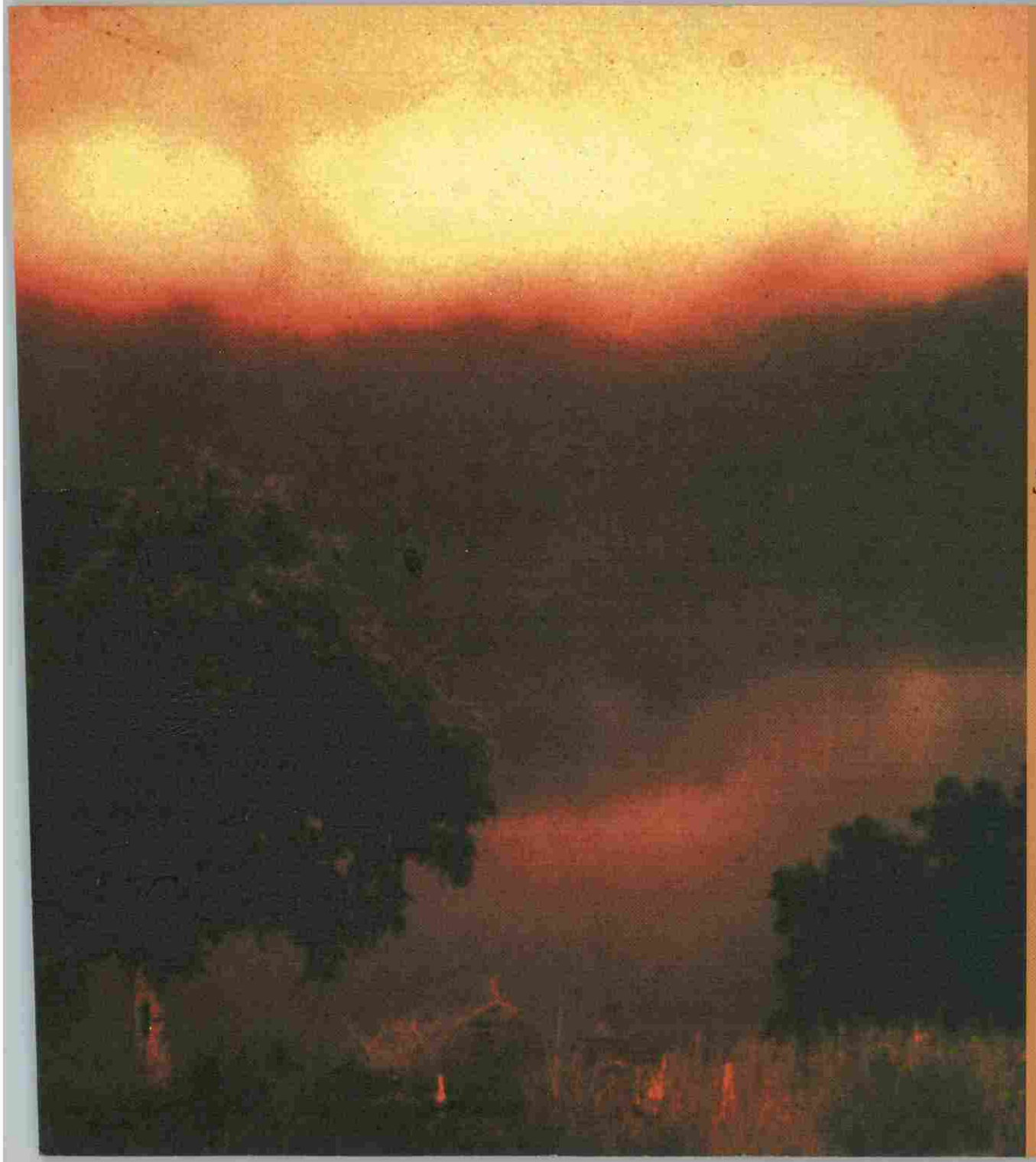

World summit on
sustainable development
2002 – Johannesburg

1069

Sahel:
natural resources, key to development!

Permanent inter-states committee
for drought control in the Sahel

CILSS

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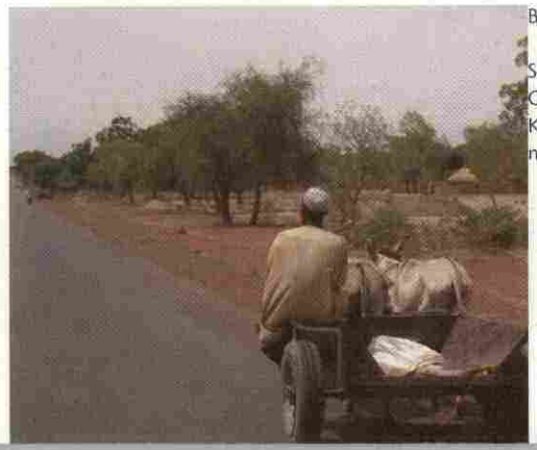

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Foreword : the communities and the summits!

Ten years after the UN conference on environment and development, it is high time to give a clear and uncompromising report on the actions carried out by the different partners in order to set the foundations of a sustainable human development worldwide. Otherwise, we take the risk to add new concepts, to formulate new strategies, or take new commitments without prior serious assessment of the actions undertaken as well as the difficulties. Without this step, we should be prepared to notice again that in 2012, the world resources have continued degrading, the environmental devastation has not been stopped, a sound future has not been guaranteed for the future generations.

Of course, tremendous progress has been achieved, but only those which seem to me essential will be mentioned here. They are, on the one hand, the global awareness from the populations and the public decision makers on the threats on the natural resources, as well as the impact of the human activities and/or bad management; on the other hand, the progressive worldwide consensus on the relations between human development, resource management, and the economic environment. This consensus got established following consultations, cooperation, international negotiations boosted by the UN. It involves today all the actors, namely the States, civil society organizations, private partners, etc whose efforts must necessarily converge to overcome the main obstacles we are facing. Finally, the last progress element to be mentioned is the scientific progress which enables us to better understand the complexity of the phenomena and which are basic and helpful in decision taking.

In the Sahel, the sustained management of environment and natural resources is not a abstract issue; neither is it a choice. On the contrary, it is the only way because the environmental degradation contributes to worsen poverty and food insecurity, to accelerate conflicts for resource access and use, sustain social, political and economic instability.

For over 30 years, the sahelian countries are mobilized with the support of the international community to take the challenge of a sustainable management of natural resources, and to roll back desertification. Since the Rio summit, they intensified their efforts to respect their commitment, bring reforms to their policies, transform deeply their administrative management through particularly decentralization. Their strategies are part of the common approaches defined in the international agreements among which biodiversity, climatic changes, or desertification control.

Whereas Agenda 21 stipulated that "development cannot be accelerated if the developing countries always face the burden of their foreign debt [...], if their access to international market is limited, and if the prices of their basic products and their terms of exchange are depreciated", the international trade conditions are therefore dominated by the interest of the developed countries. Those developed countries allocate the equivalent of the gross product of the whole sub-saharan Africa to their agricultural subsidies. The Sahel provides more than 600 millions to pay back its debt, which represents one third of the development aid!

Whereas Agenda 21 stipulated that "the objectives defined in the 21 action plan about development and environment will require other additional financial resources for the developing countries [...]", in Sahel, the per capita aid has been divided by two for over 10 years!

Should new commitments be taken in Johannesburg, should new global strategies be formulated or simply should we start acting concretely, each one according to his/her responsibilities, bearing in mind solidarity and cooperation in order to address the common worldwide challenges? On our action, we will have to report to the grassroots communities!

Musa S. Mbenga
CILSS executive secretary

Sustainable development in Sahel: an evidence and a requirement

In the Sahel[1] preserving natural resources is a long dated concern. Men's activities and their survival are often directly linked to the nature capacities. This state derives from the precariousness of the natural milieu which is essentially important in satisfying the food needs, and in supplying energy sources. The poor agricultural methods, food and energetic processes turn the Sahelians so vulnerable that the staple resources on which they rely can suddenly change resulting from droughts. Those droughts have significantly affected the Sahel in the 70's and 80's. They have accelerated awareness among the sahelian populations and the international community on the fragility of the Sahel zone and on the serious risks deriving from the conjunction of both natural factors and human activities on the issue of natural resources. Similarly, they have permitted to find solutions to the present and future generations' needs. In addition, the relations between poverty and natural resource management, between environment management and development strategies have been early identified in the Sahel far before it was discussed internationally.

[1] The CILSS member countries which are concerned in this document are: Burkina Faso, Cape Verde, The Gambia, Bissau-Guinea, Mali, Mauritania, Niger, Senegal and Chad.

The sahelian economies, essentially based on natural resources exploitation are more vulnerable than any other to the natural environmental degradation. As main and central problem, desertification affects the whole development dynamics and keeps and aggravates poverty phenomena as well.

Major but insufficient reforms

The sahelian countries have ratified all the so-called Rio agreements related to climatic changes, biological diversity, and to desertification control. The action plans governing the implementation of these agreements have been elaborated with a particular attention to the populations' involvement, to partnership and coordination of all the actors. The countries have sought to integrate all the thematic approaches and to define a global strategy, giving importance to environment in the social and economic development process.

The sahelian countries have considerably strengthened the institutions in charge of environmental issues, and have brought reforms to the governing methods. These reforms are based, on the one hand, on the involvement of the civil society partners (NGOs, farmers' associations, women's groups and associations, etc), and on the other hand on the promotion of transversal, inter-ministerial, inter-sector approaches aiming at raising concerns on the management of resources in the public policies. Finally, they are shown through decentralization of public affairs which implies natural resources management responsibility transfer and of some near public services from the State to the communities.

In spite of those tremendous progress, the institutional, sector and statutory reforms are still dominated by budgetary and macro-economic stakes. The "sustainable development" problem remains hard to address in the daily public business and is practically visible through the implementation of specific projects. Such an approach slows down the capacity to bring deep changes that can affect the whole country and behavior of the populations. Likewise, although the relations between poverty and resource overuse are better understood, the strategic frameworks meant to fight poverty give little importance to natural resource management.

Shared resources are poorly addressed in regional integration policies

Many sahelian and west-african resources are shared by different countries (rivers, forests ecosystems, reserves, etc). The sound management of these resources is a key element to prevent conflicts and establish a regional economic development strategy. The adoption of common rules is also important for a responsible resource management and will help avoid a selfish owning of those resources. The current sub-regional action plan to control desertification has been elaborated for that purpose. For the time being, priority is given to trade and economic integration processes both by the States and the aid agencies. Three years after its adoption, the program has not yet carried out concrete activities that can permit to provide the region with efficient management tools of the shared resources and ensure coherence in nationwide actions.

Between words and actions lies the temptation to selfishness

The international community is now well aware and mobilized on the sustainable development and most of the northern governments have integrated these requirements in their policies. Economies and exchang-

es globalization has accelerated the interdependences between the nations and the need for more space to regulate them. The rising concern on environmental issues is also shown by an acknowledgement that the peoples have a bound destiny: as a matter of fact, environmental problems are borderless and need be addressed together. Yet, there still is a big gap between words and actions. In addition to the non increasing development aid which does not reach 0.7% of the GNP, decided by the international community members, the sahelian countries must build their sustainable development strategies within a particularly difficult international context. This context is characterized on the one hand by the permanent degradation of the terms of exchange, and on the other hand by the debt. Preoccupied to establish the balance of trade and to pay back their debt, the sahelian countries are compelled to increase their financial resources by allocating more space to their cash crops; then, unable to intensify their agricultural methods, they develop a "mining logic" of their natural resources.

Whereas public assistance to sahelian countries for agriculture is strictly monitored, the northern countries have considerably reduced their subsidies. For products such as cotton, cereals, meat, etc, there is an unjust competition which leads the Sahel in dumping its resources to remain competitive on its own markets, as well as on regional and international ones. Furthermore access to developed countries markets remains difficult due to the countless protection standards.

Ten years after the Rio summit, the sahelian countries which expected a lot felt that their main concerns on environment and human development are not really debated on an international scene. International community supports are still subject to liberalization and public expenditure reduction; meanwhile, the restrictions of only the market rules to ensure a sustainable human development are telling day after day. Whether it is about environment or social development, the developed countries always require from their southern partners more efforts, while at the same time they delay or postpone the policy reforms that they control: improving the trade rules, suppressing the dumping strategies on export markets, debt canceling, increasing development aid, etc. All these were necessary to make the northern countries respect the commitments taken in the millennium declaration.

In the Sahel, preserving the environment, fighting poverty and achieving economic development are one and unique complex entity. At the eve of the 21st century, the Sahel is facing a challenge that its partners can help take up if minimal conditions are met. The point is to be able to annihilate poverty, particularly by doubling within 25 years food production to match the population growth, diversifying the energetic resources, and ensuring a sustained growth in the economic sectors. This cannot be achieved without a strict and sustainable management of the natural resources. Therefore, the Johannesburg summit must be the opportunity for an awareness raising from the international community in order to reduce the gap between the North and the South, and to find a worldwide governance that would use trade and commerce for social development and environmental preservation.

Natural resources management and sustainable development in Sahel

Seven Sahelians out of ten still live in rural areas. The great majority of this rural population (about 80%) live in extremely arid, arid, or semi arid areas, and 95% work on farmable lands vulnerable to desertification. Sixty-two percent of this population, that is more than 27 million people live below the poverty line. These data taken alone are enough to show the importance of natural resources in Sahel daily life and they also give an idea on the place that the sahelian populations give to desertification, soils and ecosystems degradation.

If in the Sahel the environmental problems are various, and of main concern for the international community, it remains that desertification and permanent droughts constitute the major problem. Desertification results from the combined actions of both human activities and the local and worldwide climate changes. Implicitly, other environmental problems appear: biodiversity reduction, threats on humid areas, greenhouse effect, etc.

Poverty and resource degradation: a vicious circle

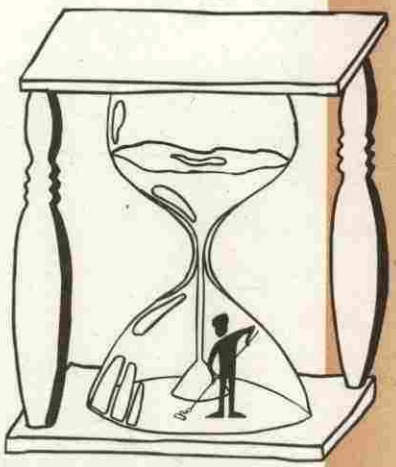
The sahelian countries are strongly characterized by the agricultural sector, despite the urbanization dynamics (urban growth is 6%), and a certain diversification of the economies. During the last ten years, the growth product in the CILSS zone decreased by 5% to come to 16 billion dollars in 1999. Agriculture contribution has even improved to become 31% of the GDP.

This stagnation of the regional gross product is recorded while the population has grown by 32% in ten years to reach today 56 million people, half of which is less than 15 years old! In most of the sub-regional countries, the population growth rate is over 3% per year, despite a slow decrease these recent years. In other terms, despite the structural adjustment programmes implemented since the mid 80's to face the debt refunding crisis, the average revenue in the Sahel has depreciated. Nowadays, the average GDP per Sahelian amounts 284 dollars, and the countries of the zone belong to the least developed countries. Financial poverty has direct impacts on the sahelian populations' food security, as well as on the social development. It is estimated that 17 million people (one Sahelian out of three) suffer from malnutrition and lack of food. In rural areas, the percentage of people living below the poverty line goes from 46% in Cape Verde to 86% in Senegal. The education levels are among the weakest in the developing countries. If these last years literacy rates have improved, more than two Sahelians out three remain illiterate. Nowadays, only 22% of girls and 34% of boys go to school. These rates tend to decrease, particularly owing to the rising needs born from the demographic growth, and to the difficulty to sufficiently increase the resources and the investments allocated to the education sector. Concerning access to basic social services, the situation is not better:

- 58% of Sahelians do not have access to heath services;
- 39% do not have access to drugs and essential immunization;
- 39% do not have access to drinking water.

Because of the good coverage of the public services in urban areas, significant disparities exist between the towns and the villages. In such a context of massive poverty, rural communities extremely depend on the natural resources to ensure their food security, to cover their energetic needs, and to provide themselves with plant and tree products for their traditional medicine...

Moreover, the populations manage to diversify their revenue sources and to reduce their vulnerability in valuing the natural resources: gold mining, hunting, fishing, wood cutting and selling, etc.



Some economic figures for the CILSS member countries

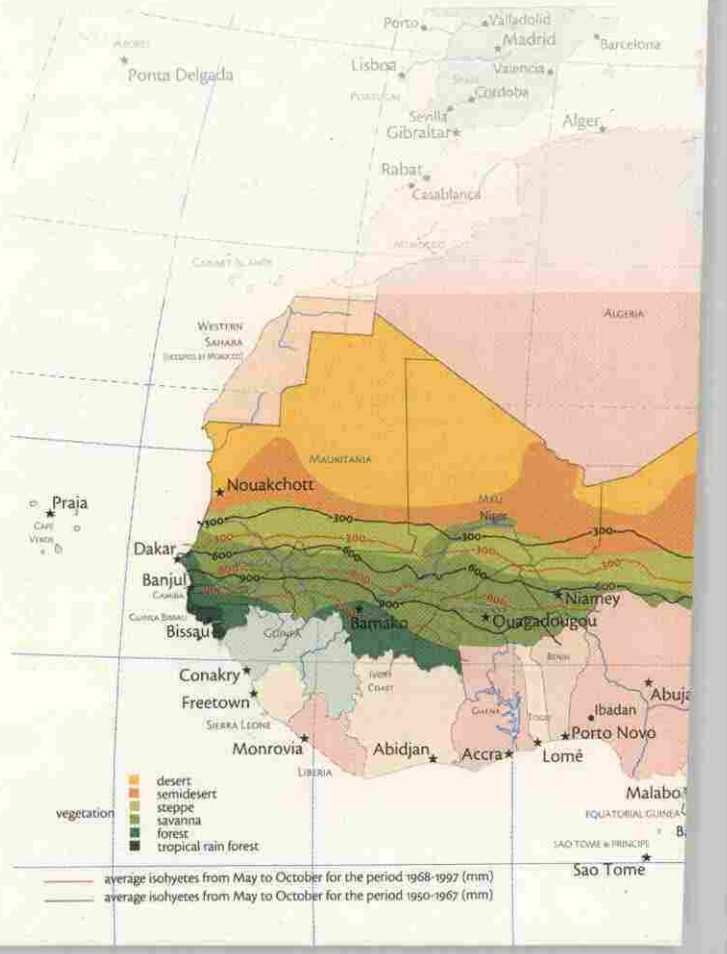
Indicator	Sahel	per cap.
Gross product in 1999 ($ 1,000)	15,948,000	284
Agricultural sector (%)	31	
Industries (%)	22	
Services (%)	47	
Development aid in 1990 ($ 1,000)	2,912,000	70
Development aid in 1998 ($ 1,000)	2,072,000	37
Foreign debt in 1999 ($ 1,000)	15,485,000	276
Debt service in 1999 ($ 1,000)	657,000	11.7
Trade balance sheet 1999 ($ 1,000)	– 1,440,000	– 31

Since the early 60's, there is a loss of ecological balances in the Sahel, with a considerable variety depending on areas. This loss results from a combination of two interacting phenomena:

- An underlying decrease of the rains which results in about a 200 km-shift of the isohyets in the South. Such decrease is accompanied by a greater heterogeneity of the rains in space and time. This change would be likely caused by global warming on the one hand, and by deforestation in the gulf of Guinea countries on the other. For example, the forest in Cote-d'Ivoire which accounted for 8.5 million hectares 40 years ago, accounts today only for 1.5 million.
- An overuse of the resources owing to population growth, to the movement of the cattle southwards that formerly browse in the more arid areas, but which are obliged to go in the more humid areas to find new pastures and water. This movement occurs at the same time the farmers are obliged to extend their farms and feel the need to associate cattle breeding and forestry activities in order to diversify and improve their soils fertility. Reduction of the space allocated to cattle movement and pasture because of these practices questions the traditional complementarities and exchanges (cereals for milk for ex.) between cattle breeders and farmers, and can lead to violent conflicts. Finally, the need in fire wood go along with population, and they destroy hundreds of thousand forest hectares every year. Depending on countries, firewood alone represents between 60% and 95% of energy sources.

Both human activities and climate degradation question production systems which are relatively well adapted in low yield and fragile areas. The severe droughts of the 70's and 80's have, but suddenly worsened the consequences resulting from this conjunction.

In such a context, poverty contributes in intensifying pressure on environment and this questions the durability of these resources as well as of environmental stability. The significant decrease of the main resources which are at the basis of the countries and their populations' socio-economic activities feed in return human poverty, economic stagnation, regional and international migrations.



The Sahel: located between the desert and the tropical forests

The nine CILSS member countries, with a 5,343,545 square meters are in five climatic zones and this gives them a very important agro-ecological diversity:

- An arid zone characterised by the saharian climate and a yearly rainfall less than 200 mm. This desert zone, in the northern Sahel covers strip made by Chad, Niger, Mali and a good part of Mauritania;
- A sahelian zone which has an average yearly rainfall between 200 and 400 mm and a sahelo-sudanian zone with 400 to 600 mm. Harmattan blows for long months. In the North of this zone, only pastoral activities permit to value the poor resources. In the South, cereals are the agriculture essential crops;
- A sudano-sahelian zone and a sudanian zone located between isohyetes 800 et 1,000 mm and which include the southern part of Burkina Faso, the southern regions of Mali, Niger and Senegal as well as the North of the Gambia. This fertile zone with better rainfalls enables an important diversification of cash crops and foodstuffs production;
- A guinean zone with a humid and tropical climate having rainfall between 1,400 and 1,800 mm. This zone concerns the most part of Bissau-Guinea;
- A coastal zone made of the coastal parts of Senegal, Mauritania, the Gambia, Bissau-Guinea and the Cape Verde islands. The climate is strongly characterised by the seaside influence, coupled with relatively speedy winds. The waters, full with fish facilitate a traditionally carried out fishing which in return provides jobs and revenues though it faces a severe competition with fishing boats coming from the northern countries.

The climate is characterised by two seasons: a long dry season and a rainy season whose length goes from one to four months depending on zones and on years.

During the last thirty years, the isohyetes went from 200 to 300 km toward the South (see map). Fortunately, since 1985 the Sahel has not experienced serious droughts but these remain a permanent threat. Despite a global improvement of the climate, we notice a strong variation of rainfalls both in time and space.

The agriculture area is 156.3 million ha of which only 13% are farmable. The grazing area is 138 million ha. 0.46 ha represents the per capita farming area and 73% go to cereals production.

Poor and fragile soils

There are three types of soils in the Sahel:

- **The soils on sandy material with wind origin (50% of sahelian zone soils and 10% of sudanian zone): poor in mineral element and acids, poor water** storage capacity;
- The soils rich in clay (20% of soils in sahelian and sudanian zone): rich in clay, they are heavy, of least permeability, quickly choked and sensitive to water erosion and streaming;
- The ferruginous and iron soils (30% of sahelian zone and 70% sudanian zone);

Soils' degradation causes (Brabant, 1992)

- The deforestation or clearing of the spontaneous vegetation;
- The practices of certain agricultural methods which favour erosion: reduction of fallow durations, the lack of crop waste recycling, of soils improvements, the absence of fertilisers and of anti erosive practices which lead to a chemical degradation with more or less erosion;
- The over grazing which leads to plants destruction, increases the compactness of the soil's superficial layer and gives way to gullies and rivulets. The physical degradation is followed by a water or wind erosion;
- The over-use of trees and shrubs in households, the bush-fires, the domestic animals' wandering. The woody plants are well sought after and the remaining plants are not enough to ensure an effective protection of the soils. There is a physical degradation followed by an increase of the water and wind erosion.

As a whole, the soils in sahelo-sudanian zones are fragile, less fertile, poor in nitrogen and in phosphorus. They are less deep soils with a few clay elements subject to the corrosive effects of the heat, the waters and the winds. The harmattan which blows during the whole dry season provokes an important wind erosion. During this very season, the grassy plants become rare due to the effect of both the drought and the bush-fires. At this moment, the stripped soils bear temperatures that can reach 45 °C (113 °F); these soils are particularly vulnerable to the first heavy rains (streaming, erosion).

The consequences of soils degradation:

- The compactness of the superficial layer;
- The massive compactness caused by the low presence of organic substances;
- The encrustation due to rains.

THE SAHEL: A DRY REGION WITH A HUGE WATER POTENTIAL

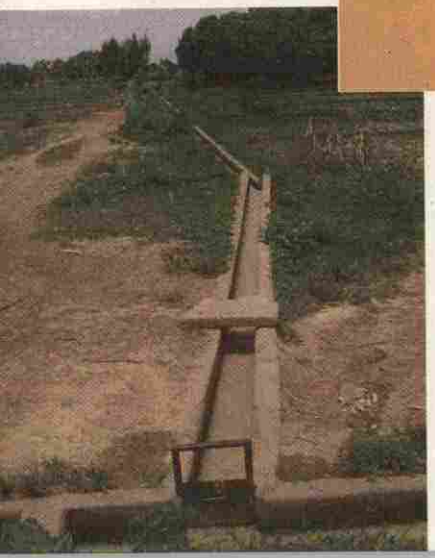
At the hydrographic level, CILSS countries are crossed by permanent and temporary rivers. The main river bassins are:

- The coastal bassins which include the temporary streams of the Cape Verde islands and the main rivers of the Sahel atlantic façade (the Gambia and Casamance rivers);
- The Senegal river bassin including Senegal, Mali and Mauritania. Its hydrographic flow has been modified by the use of Manantali and Diama dams respectively located upstream and downstream;
- The Niger river bassin which serves three Sahel countries namely: Burkina Faso, Niger and Mali. Its flow has been modified by Sélingué dam;
- Both Senegal and Niger rivers rise in Fouta Djallon massif in Guinea.
- The Volta bassins whose upper parts are in Burkina Faso are now undergoing significant hydro-electric and agricultural fittings.
- The Lake Chad bassin is one of the largest in the region. It principally gets its waters from Chari and Logone rivers.

In addition to the above mentioned resources, there are renewable underground waters and non permanent streams fed by the rainy season's rains water. To sum up, for the different uses, only 4.4% of the renewable water resources are valued: human and animal consumption (9.7%), irrigation (89%), industry (1.3%).

The water resources are many and they offer important possibility to value agriculture and fishing. Many countries have got 37% of common resources and this requires a shared management.

About 2.4 million ha (i.e., 13% of farmable lands) are the irrigable soils found in the Sahel. The hydro-agricultural developments represent 479,000 ha, i.e, hardly 20% of irrigable lands.



In the Sahel, agriculture, breeding and fishing are the main activities using natural resources. These activities concern most of the sahelian rural populations. Since the early 90's, owing to population growth, the increased needs, and the better rainfalls, agricultural production in Sahel has relatively improved. However, despite these favourable conditions, the agro business trade balance remains in deficit in the sahelian countries.

The agricultural systems remain after all dependent on the availability of the natural resources which are: the soil and its mineral elements, biomass, and water. In general, farming systems are based on two types of fields: on the one hand, the farms located near the houses and in the shallows which receive most of the organic matters; these fields have a good water retention capacity and thus, are used for relatively intensive farming. On the other hand, the more remote fields which are less favourable to farming are managed through alternating farming and fallow.

During the last 20 years in the Sahel, agricultural yields have increased through extending farmable areas, rather than on intensifying crops and improving production.

In fact, change in agricultural production systems varies according to zones. This difference is not only based on the potential of land development, but rather on the combination of many factors which have a direct impact on natural resource management:

- Land availability and access through a clear land policy, and through fair land distribution rules or through adequate provisions in resource use;
- The connection level of production areas with national, regional and international markets; the dynamics of these markets, stability of the currencies...;
- The possibility to have a total or partial knowledge of the water exploitation systems that can help both secure crops and revenues, and ensure that the investments are profitable;
- The availability of alternate techniques in soil fertility management in accordance with the farmers' capacities (labour or capital availability, the ratio cattle/farmed lands to significantly introduce manure...).
- Access to inputs (seeds, fertilizers, crops protection);

– Access to credit ;
– Access to information, farmers' training and their organisational capacity.

A variety of situations and a progressive change of land coupled with remarkable territories' "backgrounds and specificities".

Troublesome pastoral breeding

Livestock breeding is an extensive activity in the less humid areas with permanent movement of the cattle for grazing and water. This form is the only one which permits to adapt to seasonal climatic changes. After the harsh drought years which decimated countless cattle in the Sahel, and massive meat importations from western countries, the sahelian cattle breeders have gained confidence in the gulf of Guinea markets. The sahelian cattle has improved even though slowly. The number of ruminants living on natural local resources increased because of the health care provided by the veterinarians, which permitted to breed more cattle in the most humid areas. This increase also results from traditional conceptions which urge certain breeders to have many animals (social rank) on the one hand, and, on the other hand, the preventive measures which urge breeders to sell out a good part of the cattle during droughts. Finally this increase is due to the association of agriculture and breeding, to house breeding in urban and sub-urban areas (sheep and goats), and to the apparition of a new class of breeders (civil servants, businessmen) who make theirs this activity. Usually they hire watchers who are careless regarding natural resource management, compared to the traditional breeders who are much careful about the same natural resource they are bound to live on.

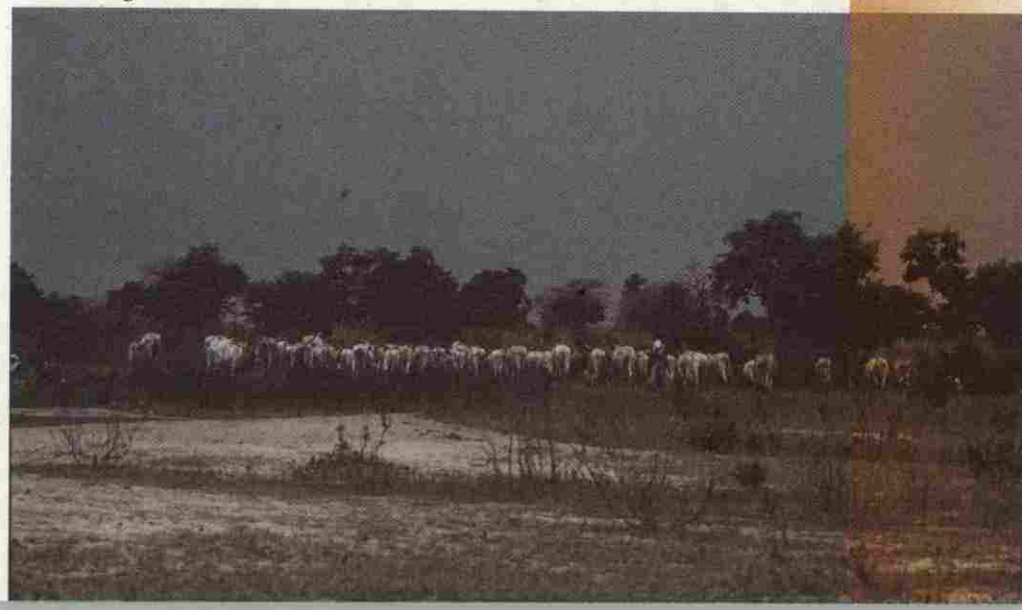
During the last thirty years, pastoral activities were seriously affected by a series of climatic, socio-economic, legislative and institutional factors which have led to amend the regulations regarding access to water resources and pastures, and to establish principles for a community management of pastoral resources based on negotiations between users, reciprocity and flexibility of access rights, conflict settlement procedures between users of the same resources.

Concerning the vast landlocked sahelian countries, this cattle breeding method matches better the severe difficulties encountered in the milieu, plays a key role in the GDP, and in export revenues; this is particularly true for the coastal countries which have serious meat shortage. For all the CILSS countries, breeding occupies 30% of the agricultural GDP; so, to cope with the areas' evolving conditions and to harsh competition on resources, breeding is an important activity for the future of both the communities and sahelian countries.

close view of sahelian livestock in 1999
camels: 2.6 millions
cattle: 23.6 millions
goats: 36.3 millions
ovine race: 30 millions

Accelerated degradation of soils in sahelo-sudanian zone

In areas having between 400 and 600 or 700 mm rainfall, millet and sorghum represent the staple food. In these areas, the increase of the production recorded since the end of the 90's is fully due to the extension of the cereals oriented farms. This extension is carried out on lands which are less and less favourable to farming, thus disturbing the natural farming/fallow cycle. Fallow gives an important biomass reserve which, beside the organic improvement role of the soils it plays, favours the growth of energetic resources on which the human beings can feed, provides shelter for wild life, fodder for cattle, etc. As a whole, the quest for a certain security, and the adoption of farming methods that reduce soil vulnerability are at the center of the farmers' strategies. The economic, commercial, institutional and statutory reforms must be examined taking into account these strategies; these reforms will help reduce the difficulties met by the producers and also help minimize the risks in the short term, secure family resources at the expense of long term investments which are necessary to sustainable resource development strategies.



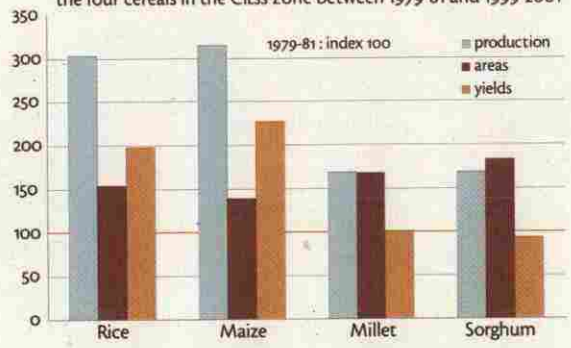
Only rice and maize yields have improved. These two cereals which are grown in better secured areas (humid, watered and irrigated zones) receive most of the inputs and can be grown in diversified areas, with very often a good part of these inputs allocated to cash crops, such as cotton.

Nowadays, the sudanian zones are subject to a very high pressure since they still have important land reserves. New settlers conquer areas formerly destined to shrubby savannah and forest on which they practise clearing and burning agriculture methods. Under such conditions, the soils formally rich in organic matter are very easy to become poor, thus, satisfying an extension logic of farms to be cleared for agriculture. These areas also are located in the vicinity of urban zones with high population growth, and must therefore support an important need for firewood.

In all those farmable areas, soil fertility management is a crucial problem. Beyond a certain space occupation rate, the fallow period is reduced and can lead to a so serious crisis that cart plough helps increase the yields in the farmed areas per farmer: low soil fertility reconstitution, farming marginal lands, poor crop yields, etc. But the intensive use of chemicals meant to improve the yields is far from giving satisfactory results on soils having fast organic matter mineralization, and where the reduction of this organic matter leads very quickly to soil sterilization and destruction. Fallow is known as the best agricultural and economic method to restore farmed lands, but land resource overuse makes it more and more difficult to resort to. Owing to a quick mineralization process, soil fertility restoration through manure is slower and less efficient than in temperate countries. Depending on regions —and with the current breeding systems— plant biomass and the number of cattle are insufficient to produce the necessary manure that can satisfy the soil needs. To improve the yields and safeguard soil fertility, a 0.6 or 1% organic matter is necessary, and that requires additional organic matter amounting about 2.5 to 3 t/ha/year. With the current technical and financial capacities of farmers, they cannot bring that extra manure. Trees manure which is a permanent biomass seems to be the best means to maintain a sufficient organic base that can be further completed by supplementary manure. This situation revives the debate on fallow and its substitutes (improved fallow, agro-forestry, soil fodder). Carbon accumulation through biomass is therefore crucial both for agriculture intensification and durability.

To sum up, farmers' strategies to prevent food insecurity and to minimize climatic uncertainties vary depending on regions: farm extension to minimize climatic uncertainty, seasonal exodus during off-seasons, international migrations... These strategies have impact on the natural resources usage.

Progress of production index of areas and yields concerning the four cereals in the Cilss zone between 1979-81 and 1999-2001



WATER MASTERY: SECURE WATER PRODUCTION AND REDUCE PRESSURE ON ITS RESOURCES

The major challenge that the sahelian countries have to take up is to reduce the pressure on the water resource while increasing agricultural production and revenues. This is possible through intensive agriculture based on sustained techniques. Therefore, water mastery that can at least free the populations from climatic shifts represents the key element for more sustainable agricultural systems. For agriculture to develop, to contribute to the global economic growth, to satisfy the demand, to ensure the populations' food security, and to help increase the rural people' revenues (key element in poverty alleviation strategy), we must:

- Invest to increase yields: by resorting to a minimum mechanization (yoke or small size ploughing machines), building anti-erosive work and manure pits...;
- Bring in additional inputs that can compensate nutrients and restore necessary balance to keep soil fertility, and thus, permitting to gain more.

For that reason, producers must resort to investment and farming credits in compliance with the agricultural sector profit rates. But owing to the climatic uncertainties that heavily influence the producers' revenues, banks are not willing to lend. Nowadays, only cash crop activities benefit from bank credits in the sudanian zones. In these zones, significant change has been recorded in production systems. In all the vulnerable zones, significantly investing in water expertise can help secure the supplying of water to crops and reduce risks and finally bring the farmers to go for intensive agricultural techniques which are obviously costly. It is also true that the market instability represents the other serious factor which prevents from investing in water because people fear its poor profitability. That's why it is good to improve the economic and social environment of farmers for a secured and sustainable agriculture.

For sure, in 20 years, the irrigated areas in the Sahel have been multiplied by three, but this still represents only 480,000 ha, i.e. 20% of soils suitable for irrigation. From an environmental point of view, irrigation techniques must be mastered; otherwise, soils and ground water are submitted to alkali and salt, and fauna is destroyed. Water mastery is often costly, complex, and it demands new competences different from traditional knowledge; it also implies a strict management by the populations themselves. Nevertheless, it is an avoidable manner for a sustainable agriculture in Sahel so as to provide the populations with sufficient food and reduce their dependence and vulnerability.

The economic and commercial context is not extraneous to the evolution of the natural resources in the Sahel. The sahelian countries, facing serious budgetary crises and the debt burden have been compelled to go for daring adjustment programmes for their economies under the pressure of the international financial institutions. Those liberal adjustments have brought the States to reduce their privileges and liberalise their economies, both internally (privatisation), and externally (trade liberalisation). Started in the mid 80's, in order to help the countries gain confidence from the Bretton Woods institutions, and negotiate new international funding, these plans have been dominated by the agricultural sector.

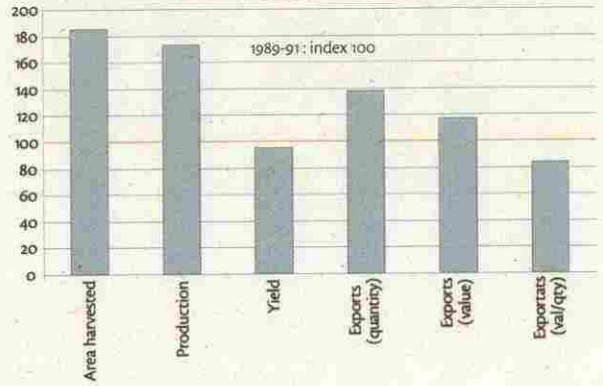
The agricultural sector remains in this region one of the main sources of currency and is therefore a cornerstone to ensure the debt payment, which even though restructured or cancelled, is still a burden. The Sahel has to pay back each year an amount of 657 million dollars, i.e. 18% of its export revenue. Since the free markets process in the Sahel was not multilateral, the sahelian agriculture has been competing with other farming activities strongly subsidized by the States. These subsidies disturb the good functioning of international markets and then decrease the prices. During the last ten years in the cotton sector, the three big producers in the Sahel (Mali, Burkina Faso and Chad) had to increase their farming areas by 77% with an additional 453,000 ha and they had to increase the fibre exports by 40%, to result in a 10% increase of the exportation revenues. This depreciation of the terms of exchange mainly due to american, chinese, and european subsidies has led to a land and input waste. It has also accelerated the competition between food and cash crop farms. The dumping on western export products towards african countries is another reason for the economic stagnation in agricultural sector. Concerning cattle breeding, which is all the same competitive due to its extensive aspect, the breeders face exports of european poor quality subsidized products towards the coastal countries. Drop in sales of animals brings the breeders to keep the cattle, thus increasing their size, and causing overgrazing.

Another important aspect which has been questioned in sector adjustments is the support from public administration to producers. These reforms targeted on the hand the economic aspects of the producers, mainly the credit, input subsidy suppression, veterinarian services improvement, etc. It should be noticed that, for example, that the doses used by the producers were remarkably low so as not to cause damage to the environment. Due to poor soil fertility, additional fertilizers help improve significantly the yields. But with uncertain rainfall which is a key factor in crop productivity, producers no longer take the risk to spend huge amounts of money that they are not sure to make profitable; therefore they give up to bring in fertilizers. The CFA devaluation which concerned most of the CILSS countries has had the same impact. As a direct result there were a loss in soil fertility, and an extensive farming to compensate the low yields. On the other hand, the reforms have affected the institutions. The States had to deeply reconsider their organisation in research and in popularization services. Nowadays the research mechanisms are a real concern, while exist countless needs to accompany producers and agro-business actors for a sustainable modern agriculture. With the farmers' organizations still unable to take up the research work, together with the dismantling of the popularisation services, the producers feel set aside and unassisted.

REGIONAL DYNAMICS AND ENVIRONMENT MANAGEMENT

The regional economic context and the integration dynamics are also very important in the natural resource management issue. The environmental dynamics in the Sahel, the dryness of the soils are mainly at the heart of the regional stakes. On the one hand, the resource over-use in the sahelian and sahelo-sudanian zones are at the basis of migrations towards better zones. These migrations mostly occur in the dry season, with the healthy men leaving for the coastal countries in order to look for and secure their resources; they can also be definitive, in case of mi-

Evolution of the performance of the cotton sector (Burkina Faso, Chad and Mali) between 1989-91 and 1998-2000



gration towards southern zones of sahelian countries or towards coastal countries where they can still find lands for farming or exploitation. These areas are generally forest lands, not fully occupied which they immediately clear for use.

These regular and continued migrations occurring as a preventive solution in most vulnerable areas, can turn into massive ones during droughts, and thus, cause in these more humid zones huge damage on the environment; worse, they can be source of violent conflicts between indigenous people and those so called foreigners. Another phenomenon to take into account is the influence that deforestation in sudanian and guinean zones can have on rainfall in landlocked sahelian countries. It is known that in the Sahel a great part of the rainfall is caused by evaporation in more humid regions, generally following many evaporation cycles and rains. The destruction of coastal forests in the gulf of Guinea and of the hinterlands would reduce the stored water and then going back to the atmosphere. The third phenomenon is the management of shared or common resources. It deals with rivers whose management procedures in a given country can affect the waters of other countries; those procedures must be jointly elaborated. It also deals with certain ecosystems, mainly the forest and the natural reserves. Finally, as in the international economic context, the trade and economic integration dynamics within West Africa are of importance for the competitiveness of agriculture; these dynamics also contribute to provide guidelines for production systems predation or for sustainable resource management strategies.

Energetic supply and forest cover destruction

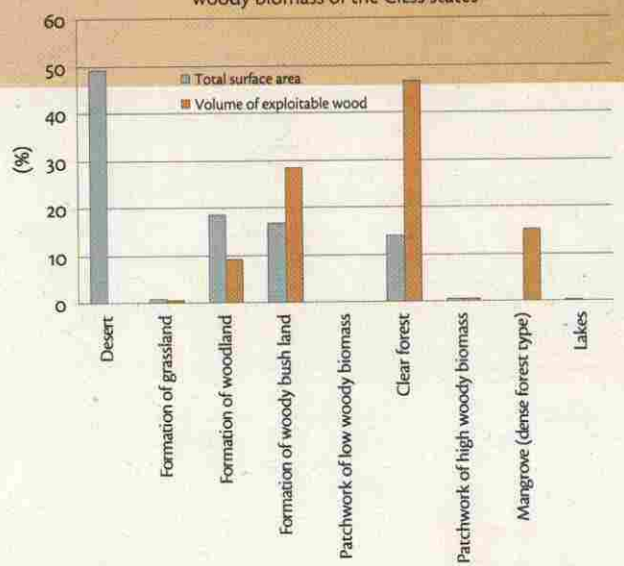
The energy issue is crucial for natural resources future in the Sahel and in West Africa in general. The traditional wood based-energy is a serious threat to the forest resource. In the past, wood was collected in the farms and the forests in the village neighbourhood. Nowadays, this activity requires to go about ten to fifteen kilometres away from the village. The time women devote to this activity often corresponds to the time necessary for other economic activities. Population growth in towns has led to a total deforestation in the neighbourhood, and today people are obliged to go hundreds of kilometres to collect wood. In Sahel there is an excessive woodcutting while the forest cover capacity is low: less than 1.1 to 1.5 m^3/ha/year. In Mali, 100,000 ha of forest are cleared annually to satisfy the needs estimated to 7 million tons of wood. In Niger, the reforestation activities of 5,000 ha per year are far from compensating the annual woody cover loss which is 200,000 ha. In Burkina Faso, 250,000 ha are annually cleared for wood. In the Sahel ¾ of the living wood comes from the light forests which represent 7,380,000 ha, i.e. 14% of the Sahel. These forests are used for agriculture, breeding and as forest reserves. The energetic sources are still wood based. For example, in the three countries, Mali, Niger, Burkina Faso, 86% of the energy derives from fuel wood (wood, charcoal); 10% from fuels; 4% from renewable energy (solar, eolian). For the same countries, the household energy consumption (mainly for cooking) represents 89%, the remaining goes to transport and industry. For the whole West Africa, electricity supply rate is 10% with only 2 to 3% for the rural areas. In the long run, electricity infrastructure development should importantly increase the household needs for energy.

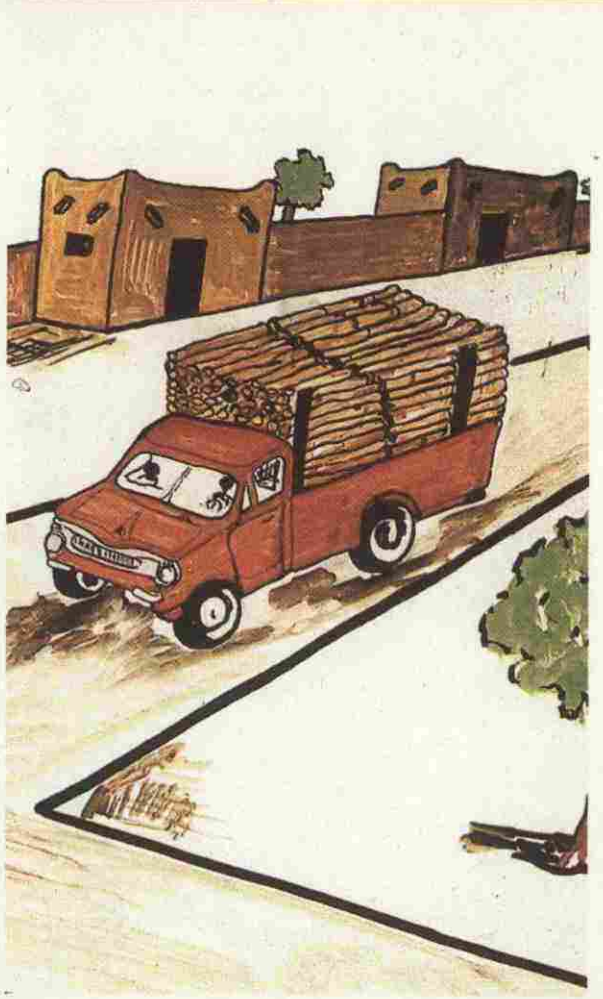
Totally, it is estimated that 10% of the west-african forest cover will disappear in the next 20 years if things do not change.

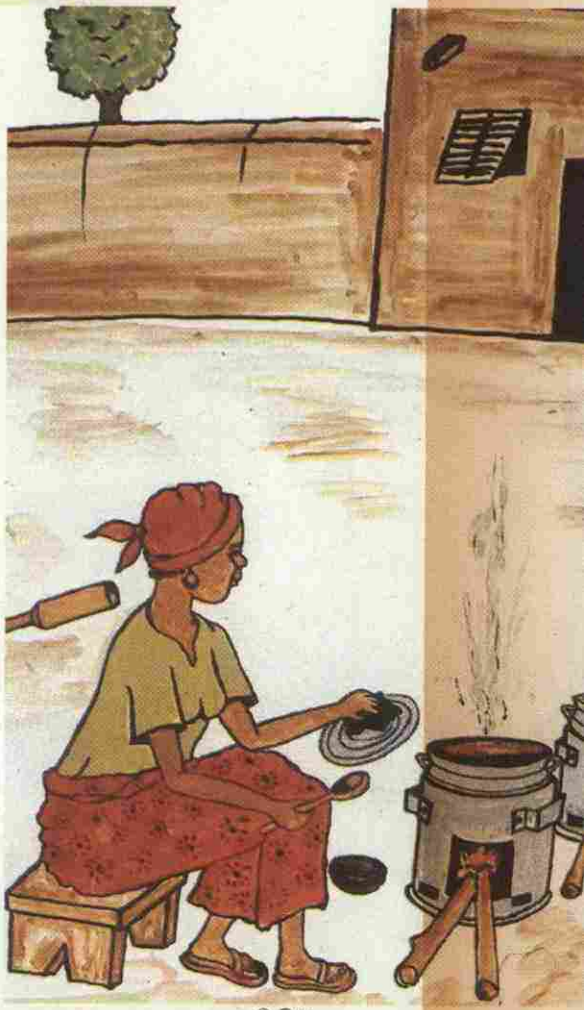
This means multiplying strategies at different levels: on the one hand, by a sustained forest management which will develop managerial methods to limit predation on the resource and which will limit wood removal pace. Furthermore, by finding substitution energies to wood (see box). For this respect, decentralization is necessary through empowering the communities to resource management. That is the approach used in Niger to set up rural markets. On the other hand, in line with the sub regional integration, valuing underground resources owned by certain countries (gas, coal, oil) must permit to reduce the woody resource overuse. But as in the case of the agricultural issue, the households' purchasing power is a major obstacle to the adoption of

new energy sources, particularly in the rural areas where freely wood collection remains a women's activity. In the past, many initiatives taken to substitute wood for renewable energies could not succeed because of poverty. Financial poverty, together with deeply rooted traditions and illiteracy represent another major problem met in the attempt to bring in change. However, most of the excessive and degrading cutting is done by the charcoal burners and the towns' suppliers. In face of such situation, the rural populations are powerless, having at their disposal no legal provisions to regulate the exploitation of these resources —legally property of the State— on their own territory.

Distribution of the types of vegetation and estimation of the woody biomass of the CILSS states







Natural resources degradation in West Africa and the world environment have interaction relations. Climatic change, particularly the world global warming due to the greenhouse effect seem to contribute to the scarcity of rains in West Africa. According to prospective analyses, this phenomenon will get worse, given that the region may face brutal and violent climatic phenomena. Conversely, soil degradation and desertification in Africa are part of the world environment components degradation. The extension of dry zones accentuate global warming through two phenomena which are:

- Because of less and less biomass rising temperatures by a transfer of heat are more important and cooling through evaporation is less important;
- Biomass reduction reduces carbon, and desertification increases greenhouse effects (carbon dioxide and methane) and mineral aerosols emissions related to eolian erosion and to the forests and savannah biomass burning.

Furthermore, arid and semi arid zones are important biodiversity reserves. Some species occur frequently and in the Sahel their destruction would be a loss for the entire humanity. Few complete inventories are available, but resistance or morphologic, physical and biochemical adaptation genes to droughts or other diseases are specific in the sahelian zones. The conservation of this biological diversity is a first rank stake to adapt to the climatic change of dry areas and to supply necessary raw materials for pharmacopoeia and plant protection. It also concerns certain ecosystems. The humid zones in arid areas are biotope which shelter migrating birds. Finally, land degradation affects water resources and their quality. Deforestation, erosion and salt accumulation in soils relatively modify the production potential of coastal ecosystems, can lead to a change of natural equilibrium and to invading phenomena by undesired species.

Desertification control in the Sahel is not therefore the only sahelians' business. It involves the whole planet even if the Sahel responsibility cannot be compared to the responsibility of countries whose industrial development is known as the main degradation cause of the world environment components. Considering the relation between poverty, local development and resource protection, one of the major challenges of the Sahel is to be able to integrate the world stakes in the sustainable development approaches.

For this respect, environmental issues in sahelian rural areas are differently addressed depending on agricultural methods. Simply put, three main issues having direct link with the challenges and the components of the world environment can be distinguished:

- *An intensification issue on the farmed lands.* Maintaining soil fertility goes through the conservation or reconstitution of a solid organic matter in situ or else through biomass transfers from unfarmed lands; it also goes through improving fallows and/or integrating trees and fodder in the farmed areas. This problem, because of its contribution to food security and to poverty alleviation, can be integrated to the global environment plan through a carbon evaluation (CO_2 trapping) and via the preservation of habitats and fragile ecosystems, particularly in the case of humid areas development;
- *An issue on the renewable resource management* which goes through controlling the access to and development of non cleared areas and establishing regulations for lands clearing. If there are technical problems as for determining wood removal lines, the question remains of legal and institutional provisions, particularly with usage rights, and the empowerment of the local communities to decide in the framework of decentralization. This issue is important considering the agricultural stakes, but also the energetic area. It is related to the global environmental issue through carbon storage via the biomass accumulation (carbon reserve), erosion reduction (aerosol emissions and water pollution), preservation of ecosystems and of biological diversity.
- *An issue on adapting to environment changes.* Here, it is mainly about stakes in relation with the biological diversity preservation; on the one hand, it can be about "taming" species which were formerly merely picked, and maintaining and improving the ductility of the of the ecosystems. On the other hand, it is about preserving and promoting the frequently used species and acknowledging the users' rights on the genetic resources. This genetic capital conservation by the populations through the costly and less efficient genes bank systems, is essential for the entire humanity, particularly for all those arid and semi arid zones that will have in the future to find plant selection ways from an equipment suitable for the arid milieu.

Both the States and the sahelian populations give a very good importance to natural resource preservation because these will be for long the foundations of their development strategies. The analysis of the environment dynamics in these arid and semi arid regions shows how difficult it is to match the short term stakes (survival strategies) with the long term ones (resource conservation). Only approaches and policies able to satisfy the populations' immediate needs and at the same time implement a sustainable development strategy including, on the one hand, cultural, social and economic development, and on the other, preservation of local and world environment can durably mobilize the communities which are after all vulnerable.

From Rio to Johannesburg: a mitigated evaluation

Twenty years after the Stockholm conference and the Brundtland commission report, the Earth summit held in Rio in 1992 is a success in the awareness raising process, and in integrating environmental risks worldwide. This change concerns both the content and the method. About the content, the thing is to talk of the resource preservation issue as being at the very gist of the debate on development and on the economic growth basing on a critical analysis of the negative impact arising from the high yield production modal. As for the method, Rio is experiencing a process which will be after confirmed, and which will involve and bring into consultation and negotiation partners from the civil society, economic actors, NGOs, etc, together with the states and the international organisations. For both the sahelian countries and communities, in the early 70's, the main challenges consisted, on the one hand, in integrating the environmental issues in the development strategies, and on the other hand, acknowledging the relation between poverty and resource degradation. These concerns were then debated at the international scale. Rio came out with an action programme called "l'Agenda 21" (Item 21) and with international agreements. This heading aims at giving a short evaluation of the Agenda 21 implementation in the Sahel on some important chapters and the role CILSS has played in regional cooperation.

SOCIAL AND ECONOMIC DIMENSIONS

The Sahel is one of the world's poorest region and most of the countries are among the least developed as far as human development is concerned. Consequently, the chapters of the agenda related to the sustainable development social and economic dimensions are significantly meaningful. In this region, the approach to involve the populations has been privileged for long because it was seen as the only method to prove that the projects satisfied the populations' needs and enables them to make these projects theirs. The main change is on the fact that populations are no longer involved for the projects' implementation, but things were done at a political level. Thus, CILSS has carried out in all the countries a reflection and debate process down to decentralized bodies on the Sahel future. This process called "Sahel 21" has been able to mobilize all the Sahel partners (farmers' associations, businessmen, women, young people, NGOs, grassroots communities, administrations, MPs, journalists, etc) to define a vision of the region for the 21st century and to identify the main priorities.

SAHEL 21...

A vision:
A Sahel which is federated, democratic, peaceful, productive and competitive, health and respectful of its customs.
"Sahelians wish a green Sahel, with its diversified rural productions, based on a rational natural resource management, and also less dependant on nature changes particularly through a good water and soil fertility techniques..."

Five priorities:
- Set up the Sahel development on a voluntary policy which promotes human resources;
- Institutions' capacity building at all levels;
- Ensure the rapid and sustained development of agriculture, livestock, forest and halieutic productions;
- Ensure growth and economic diversification to benefit from regional markets and to have room in the world exchanges;
- Progressively integrate the sahelian economy in a regional and worldwide economic context.

Source: Sahelian communities' forum declaration, CILSS/Sahel 21, 1997

Poverty alleviation

Nowadays, these guidelines are contained in the document entitled "sustained growth and poverty alleviation strategy". At national level, these guidelines are a reference to elaborate strategic framework for poverty alleviation and for sector policy reforms; and at regional level, they provide a framework for commercial and economic strategies (ECOWAS —Economic Community Of West African States—, CEMAC —Central Africa Economic and Monetary Union—, WAEMU —West African Economic and Monetary Union), for the implementation of the NEPAD, the Cotonou agreement, etc. One of the main repercussions of this social democratisation exercise is the progressive organisation of regional networks of partners. It is particularly the case of REFESA

—Sahelian Women's Network—, of Interface —including organised businessmen—, of farmers' unions, and of the ROPPA —Network for West African Farmers and Producers' Organisations.

The sahelian populations are particularly watchful on matters related to food security and natural resources. Thus, one of the practical ramifications on this Item 21 was to work out a "strategic framework on sustained food security in view of poverty control", adopted by the sahelian communities' conference and the CILSS summit. Today it is shown in nine national strategies completed by a regional strategy. The guidelines as far as food security is concerned lay emphasis on the urgent necessity to develop agricultural production which surpasses population growth, but basing on sustainable techniques, both at social and ecological levels. For this purpose, actions to control desertification, population growth, as well as fighting HIV/AIDS are at the centre of the strategy; indeed, the aforementioned actions greatly determine the achievement of objectives for a structural food security, poverty reduction, and population vulnerability.

SET UP A SUSTAINABLE FOOD SECURITY

Knowing that hunger and malnutrition are a daily fact owing to households' poverty, to the agricultural and ecological crisis and to the market weaknesses concerning food products, the "Strategic framework on sustained food security in view of poverty control" aims at creating conditions of a structural food security mainly based on the systematic and sustainable mobilization of food resources which exist in the region, and at improving the prevention and management cyclic crises. Five objectives:

- Promotion of a productive, diversified, sustained and regionally integrated agriculture;
- Development, flow and sub- regional integration of national markets;
- Sustained improvement of vulnerable groups and zones for their access to food and basic social services;
- Improvement of prevention procedures, and of cyclic conflicts settlement mechanisms in accordance with establishing structural food security;
- Actors' capacity building and promotion of a good governance as far as food security is concerned.

CSSA gives importance to issues related to natural resource preservation and to environment, in the framework of agriculture, fishing, breeding and forest development. It bases its approach on transforming and intensifying production systems with an emphasis on sustainable techniques at social and environmental levels as well as on the decentralisation in the responsibility concerning resource management. CSSA approach is in line with desertification control strategies. In particular, it lays emphasis on degraded land recovery, soil fertility, land owning reforms, irrigation techniques development based on environmentally approved systems.

Population and sustainable development

Population growth control is a central element that can permit to create conditions for a new ecological equilibrium in the Sahel. CILSS-countries are aware of it and since its inception they have made it their regional cooperation main axis. Since 1989, the countries have adopted the N'djamena approach on population and development. This programme was reviewed in 1997 in order to integrate the commitments derived from the different international conferences (Rio in 1992, Cairo in 1994, Beijing and Copenhagen in 1995, etc) and to give birth to PAO (Ouagadougou Action Plan) on population and sustainable development in the Sahel. Since then, it is used as a reference and guiding framework to elaborate and implement population policies and development programmes in the sahelian countries. These multi-sector population policies elaborated to reduce poverty and to promote sustainable human development in the Sahel include among others: population growth control through promoting reproductive health care; access to health services; nutrition and access to drinking water; access to education; woman gender promotion; youth promotion; populations' revenues and living conditions improvement, etc. These aspects are from now on the cornerstone of the strategic frameworks to reduce poverty and occupy the first line in budgetary allocations. CERPOD, CILSS major programme which deals with these issues brings technical to the state members on population policies and programme. It also keeps the debate among the countries and the civil society actors, develops a research activity on different themes mainly: migration and urbanisation phenomena, health, gender, links between fecundity and HIV/AIDS, between migration and HIV/AIDS, between population and environment, etc. Finally, it develops data bases on social, demographic and documentary matters, it organises training sessions at national and sub-regional levels to improve the competences of sahelians' managerial staff and carries out advocacy actions through an important network of journalists and publications.

Most of the chapters of Agenda 21 relating to natural resources directly concern the sahelian countries. For that reason, the thematic approach developed in Agenda 21 does not permit to sufficiently take into account the interdependences existing between these themes; neither does it promote the integrating approaches which can satisfy the complexity of environment and development issues at community, national and sub-regional levels. It should be reminded that in the Sahel, desertification is one of the main development obstacles, and most of the other issues on natural resource conservation and management can be addressed in the framework of the impact of desertification and of its control strategies, be it biological diversity preservation, climatic changes, etc.

Desertification control

In Rio, the sahelian countries argued for an international agreement which will permit to have an intervention framework around which all the international community can be committed. Adopted in 1994, the framework has been ratified by all the Sahel countries. The Onc —National Consultation Bodies— set up to sustain cross-cutting, inter-sector and inter-ministry consultations and to carry out debate with the civil society actors have led the participatory elaboration of the Pan/Lcd action plans for desertification control. In most of the countries, these Pan/Lcd —validated in the framework of national and decentralised participative workshops— have been categorically adopted by the governments. Cilss has greatly contributed to this dynamics by providing methodological and financial supports to countries.

Pasr/Ao: increase the synergies

Cilss and Ecowas have been designated as liaison centres to elaborate and implement Pasr/Ao —Sub-regional Action Plan for Desertification Control in West Africa and Chad. Pasr/Ao has been adopted in 1999 by the Heads of state and governments from 17 countries of the region. It has a Csrc —Sub-regional Coordinating Committee— which includes

Pasr: priority areas and leaders

Pasr/Ao has defined eight priority areas built around three "chapters" which are: situation analysis, definition of specific and general objectives, definition of priority activities to be undertaken and determining expected results. For every domain, a leader has been appointed whose role is to conduct the scientific and technical reflections and to create a consultation and coordination environment for the actors.

Sustainable natural resource management:
- Border hydraulic resources (Omvs —The Organisation for the Development of the Senegal River);
- Border livestock and forest resources (Waemu);
- Energetic resources (Riod —International Ngo Network on Desertification and Drought)

Constraints and hazards of natural resource management:
- Pests (Oclalav —Common Organisation Against Locusts and Bird Parasites);
- Early warning systems and drought impact alleviation (Cilss/Agrhymet);

Support to natural resource management:
- Scientific and technical cooperation (Cilss/Insah)
- Information, training and communication (Pan African Development Institute)
- Common market infrastructure (Ecowas).

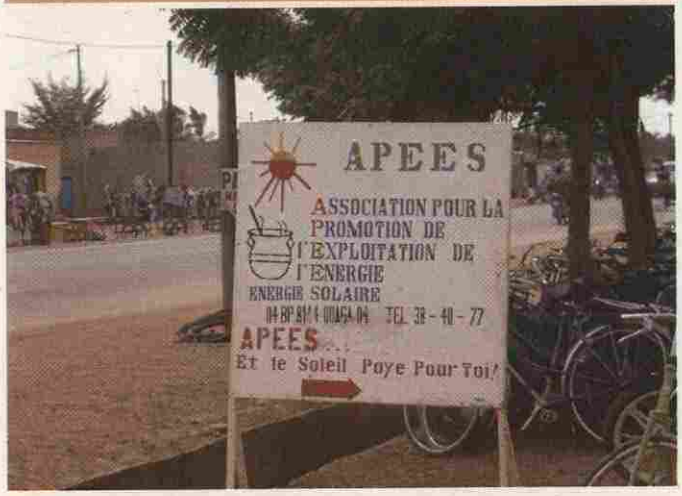
Pasr intends to mobilize local resources with the implication of all the actors (States, Ngos, civil society, businessmen...); these resources will be completed by foreign funding in the framework of sub-regional facilitation funds.

all the actors from public administration and civil society involved with the different issues. The programme is considered as a strategic framework for reference, orientation, conciliation and LCD action coordination in order to obtain as much criticism as possible able to bring necessary changes for a rational, natural resource management. PASR particularly works on domains where interdependences between countries exist and there are common resources to be shared.

PASR lays particular importance on monitoring- evaluation indicators of the environment. The thing is, on the one hand, to have a tool which permits to assess the resources (climate, water, vegetation, soils), their evolution dynamics, and on the other hand, to assess the impact of LCD policies and projects. This mechanism is implemented by AGRHYMET/CILSS site. Information is a key element, particularly for early warning which permits to predict the climatic crises and therefore cause serious food crises, leading to massive migrations and threatening community survival. For this respect, CILSS and the Sahel Club secretariat sustain the food crises' prevention and management network.

IREMLCD: "the regional initiative for world environment and desertification control"

FFEM (French Funds for World Environment) and CILSS have decided to set up a special funds aimed at favouring the elaboration of projects which simultaneously take into account and match the following issues: development, local natural resource protection and world environment. This funds must permit a joint and coherent implementation of the international agreements and support desertification control activities which integrate the impact of desertification on the world environment. The co-fundings are kept for projects which simultaneously take into account desertification control, preservation of the world environment and the social and economic development. A regional and technical team housed in CILSS is in charge of the Committee Secretariat who select projects, examines the documents, brings support to the grassroots communities whose initiatives have been selected; they are also responsible the administrative, technical and financial follow-up of the successful projects.



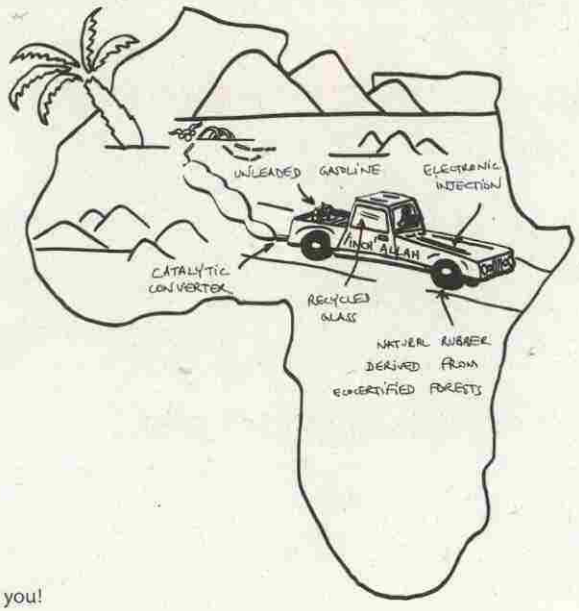
And the sun rewards you!

Biological diversity conservation

All the Sahel have ratified the agreement on the biological diversity and drafted action plans to protect their heritage, be it plant genotype, fauna or ecosystem. For the Sahel the challenges are threefold:

- The preservation of the genetic diversity as a humanity heritage, of endemic species, and of certain ecosystems which are specific to arid and humid zones;
- The preservation of genetic assets for selection reasons particularly for the purpose of adapting certain species to dryness due to climatic changes, or for medical usage.
- The economic valuing of biodiversity through eco-tourism or through the pharmacy business;

Most of the countries have already got a FFEM funding in order to meet their obligations. Some projects have also been funded and in-



clude projects on biodiversity resource conservation, on participatory management, on degraded zones restoration, or on establishment of database. Most of the projects have been implemented at national levels. Some regional projects emerge, such as the Mauritania and Senegal project on arid and semi arid border zones rehabilitation; another project is the rehabilitation of the Chad basin ecosystem, comprising Cameroon, Central Africa Republic, Chad, Niger and Nigeria.

Atmospheric protection

All the Sahel countries have ratified the agreement on the climatic changes and lots of them have already elaborated their national strategies showing the greenhouse effect, the strategies permitting to reduce their emissions, and increase their absorption through pits. As well as measures to adapt to the climatic change. In rural areas, emissions are mainly caused by bushfires and the low carbon level principally comes from deforestation, biomass and soils organic matter reduction. Again, the implementation of this agreement is strictly related to desertification control on the one hand, and on the other hand, to the genetic resource preservation; this permits to develop strategies for the plants to adapt to the climatic change.

Fresh water protection and management

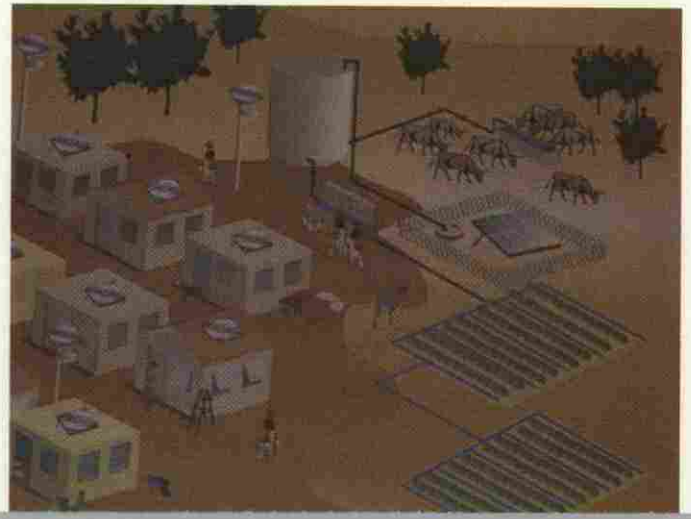
Water resource management is a strategic field in the Sahel. Although renewable water resources are important some countries have an available water potential below the needs of the populations. In addition, the demand will greatly increase in the coming years because of urban and population growth on the one hand, and increasing commercial activities on the other hand (irrigation, industries). The regional approach for water management is fundamental since a good part of the resources is shared among many countries. In March 1998, the west-african countries have adopted the Ouagadougou declaration on GIRE —Integrated Management of Water Resources. It aims at establishing a regional action plan and a regional cooperation framework based on national water action plans. This strategy privileges the stimulation of consultation framework among riparian residents to ensure the shared basin management. This issue is also taken into account in the framework of LCD implementation both at sub-regional and regional levels. A great effort is made to improve the coordination and harmonise the different interventions from the States and the regional and international organisations.

Deforestation control

The activities carried out in this domain at sub-regional levels are essentially based on the domestic energy issue. The strategies used in the Sahel vary from one country to another, mainly for the woody resources, but in general they comprise:

- The rational management of the available woody resources: depending on the availability and production capacity of the woody resources, there is a need to organise wood removal from the supplying bassins of towns on the basis of a participatory management involving the populations and the actors of the fuel wood industry.
- Establishment of fuel wood economy via effective energy use (promoting improved stoves for ex.);
- Substitution with national, sub-regional, or international renewable energy sources (solar and eolian), and valuing fossilized energies (gas, coal and oil).

These strategies are supported at the regional level by two programmes carried out by CILSS; they are: PRSII —Regional Solar Programme Phase II. It permitted to implement 626 pumping systems, mainly in view of supplying drinking water and further irrigation water. It also provided the region with 649 lighting and cooling systems for the community. This programme is at the same time in line with the objective of poverty alleviation through access to drinking water and improvement of rural infrastructure by electrical fittings. The second



programme is PREDAS —Regional Programme for Domestic and Alternate Energies Promotion. Support and assistance to countries are organised under this framework to elaborate "Domestic Energies" strategies, to gather data and tools to monitor resources (mapping); capitalization and know-how sharing will consequently boost.

Rural development and sustainable agriculture

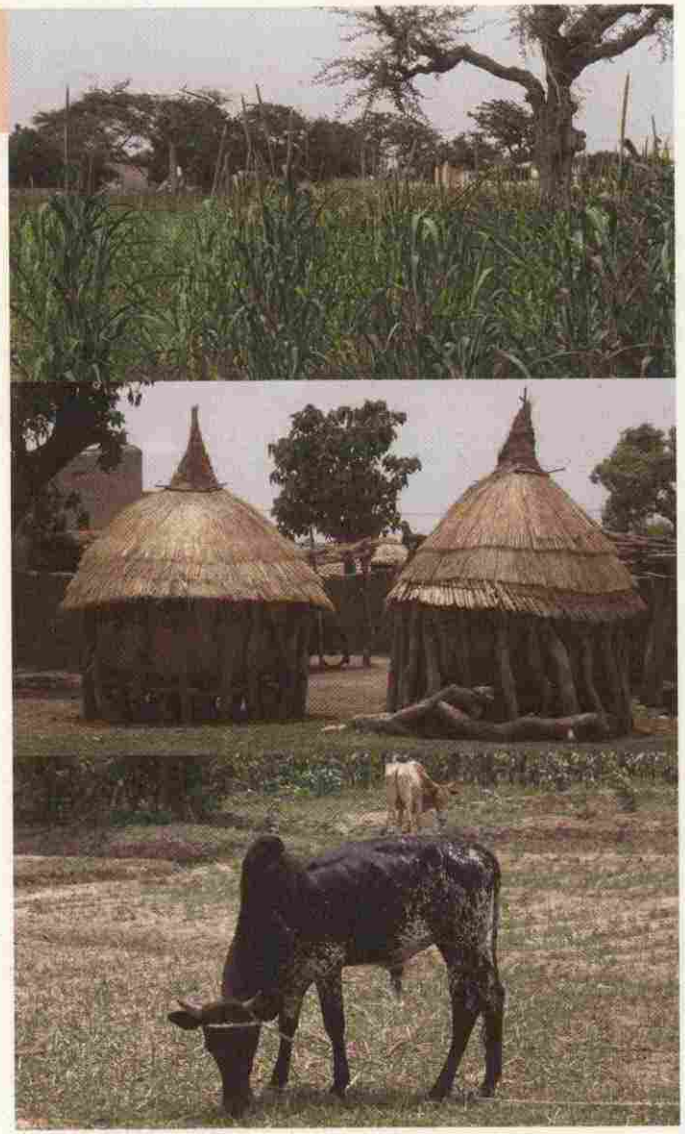
Agriculture, because of its role in employment, national economy and exportations, plays an important part in the sahelian countries. Unlike the developed countries, intensive agriculture is not the nuisance cause on the environment degradation, but rather the methods which disturb soil fertility equilibriums. Sustainable agriculture development strategies turn around three main elements:

- An improvement of the partners' institutional environment, mainly through access to credit and services; then through research and popularisation reforms;
- A "local development" approach which integrates land development, precision on land owning regulations, water mastery, soil fertility improvement, anti erosive achievements, agro forestry, crops and harvests protection techniques.
- An improvement of the producers' trade and economic environment through regional markets integration, the development of production, processing and marketing industries, and through a clear definition of the international trade environment in the framework of the WTO negotiations.

However, the development of a productive and sustainable agriculture in the Sahel cannot be achieved without significant public investments in the sector. Otherwise, the farmers will only increase their pressure on the natural resources which are the only available production factors they can afford.

STRENGTHEN THE ROLE OF THE MAIN SECTORS OF THE SOCIETY

Most of the sahelian countries have decided to go for deep economic reforms. These reforms concern political liberalisation, strengthening democratic rules (multiparty systems, participatory approaches, parliaments, free press), and decentralization processes in administration



management. Concerning natural resources, this progress is essential, since it empowers the users and involves the communities in defining access and usage regulations. At regional level, the present steps in decentralisation are part of a series of evolving approaches supported by a number of conferences which show progressive change in mind. The regional meeting held in Segou in 1989 on land management, the Praia conference in 1994 on land owning and decentralisation issue. Following different ways, all the countries have started competence transfer policies to the local communities, and these transfers concern simultaneously public funds management related to community lands, and close public funds management (access to drinking water, health care services, education, communication infrastructure, etc). These transfers are accompanied with legal and statutory reforms, decentralisation of support services, and the emergence of locally elected staff. All this must contribute to a democratic and participatory management of public affairs. However, there are many obstacles which limit the implementation of reforms put forwards. Among these, are the local actors ' capacity to grasp opportunities they have (training, communication means, etc). The second is related to defining the roles within the communities and the difficulty to integrate in the participatory processes the most vulnerable and under privileged (the poorest women). The third problem deals with the financial resources, since decentralisation is not always supported by financial assistance to the local communities from the central government, and local taxation is hard to achieve. Finally there are the coordination problems of the local and external actors, coupled with the difficulty to integrate them into a true local development strategy, and consequently, to do the necessary conciliations, good for a coherence in the actions.

Despite the significant efforts, obstacles still remain: the first one is institutional, the second is financial. Institutionally, the countries are committed in many attempts to define strategies. All these attempts engaged under the donors' pressure or to respect international commitments aim at developing integrative approaches able to clear obstacles related to sector barriers and to better take into account the cross cutting aspect of development issues. Actually, it is a new form of governance aimed at improving the management and the monitoring evaluation of public policies to make them more effective. Thus, most of the countries have been elaborating strategies on populations, on poverty alleviation, on food security, on desertification control, etc as well as action plans on many environmental issues (water, biodiversity, climatic changes, etc). In reality, the international community states give prior importance, on the one hand to macroeconomic guidelines, and on the other hand to poverty alleviation. In this context, the issues related to environment and to population have difficulties to get their importance and then, to really influence the content of the major sector policies. The financial constraints partly come from these institutional obstacles. The financial constraints of the states and the rising budgeting of the foreign support bodies are logics which often make the environmental issues to be neglected during conciliations. Budgets of ministries in charge of environment to whom Rio agreements implementation has been given have not increased in accordance with the needs and priority theoretically given to these issues. Beyond elaborating action plans, it is difficult to mobilize resources in order to carry out the field activities that were planned.


DO YOU LIKE THIS GARDEN
THAT IS YOURS?
SEE TO IT THAT YOUR
CHILDREN
DO NOT DESTROY IT!

Johannesburg: sahelians' challenges and stands

For the Sahel countries, the three components of a sustainable development are: preservation of the natural local resources and world environment, social development, economic development.

In 2025, the Sahel population will have doubled by 100 million inhabitants who must be fed, cared for, provided with energy and drinking water. This is a serious challenge that the Sahel, Africa and the world, in general, must take up.

Sahelian stands[1]

The sahelian countries have engaged, both, in preparing the Johannesburg summit to assess the implementation of Agenda 21 in West Africa, and in preparing the african conference. As such, they are supportive of the positions elaborated in this framework and detailed in the "african ministers' declaration at the world summit for sustainable development" held in Nairobi in October 2001. Below are some of its main excerpts which directly concern the Sahel:

"Poverty elimination is the first indispensable condition to sustainable development and we renew our commitment to take into account the three dimensions of a sustainable development which are: economic growth, social development and protection of the environment [...];

The development objective can be reached only under an international, favourable environment [...] in order to solve the main problems caused by the development funding, globalisation, access to foreign markets [...], the foreign debt burden on the sahelian economies. [...]

The achievement of the development objectives, as well as the elimination are dependent on a sound public administration management within every country and within the international community in addition to the transparency in financial, monetary and commercial systems. [...]

Little progress has been recorded in the implementation of Agenda 21 because the international community has never fulfilled its Rio commitments regarding the necessary means to implement this programme. [...]

Africa's new initiatives should be the sustainable development framework in Africa [...]. It is an engagement from the african leaders, founded on a common vision with a strong and shared conviction to urgently eliminate poverty and engage their country individually and collectively in a sustained development and growth, while at the same time actively contributing to world economy and to international politics [...].

Food security in Africa has degraded to reach a critical line because more than 200 million people are now underfed and 500 million ha have been affected by soil degradation, 65% of which are used for agriculture. These unfavourable trends worsen the poverty issue in Africa, for, 70% of the poorest population live on agricultural activities which represents 40% of the GDP of the region. [...]

Most of the african economies are on decline [...]. Africa [...] receives but only few investments under the form of foreign private funding, while public development aid decreases and debt increases. [...]

Wars, social troubles and the proliferation of light weapons hamper the efforts made by many African countries [...].

[1] Sahel 21: "No to poverty, opting for sustainable development", April 2002; this document gives detailed analysis provided by CILSS on poverty reduction and on the sub-region's sustainable development strategy, based on sahelian communities' expectations.

Priority areas

Poverty

The elimination of poverty advocated in the millennium declaration is a North/South responsibility. It requires the adoption of a global approach which includes all the priority areas [...].

It is highly recommended [...] to quicken the establishment of necessary mechanisms in the framework of the World Solidarity Funds whose main objective is to help eliminate poverty and to promote the most underprivileged regions of the world, particularly in the forest countries [...].

Agriculture, desertification and food security

The african continent is endowed with sufficient natural resources to ensure its food self-sufficiency. [...] It is absolutely important to reverse the present trends which lead to soil degradation and to exhaustion of water resources meant for irrigation, and to improve the development and the popularisation of agricultural techniques.[...]

We want the integral implementation of the UN agreement on desertification control, knowing that it is on sustainable development and that it is the best tool to fight poverty. We also want additional financial resources to be planned and made available. [...]. We engage to increase the agriculture budget in the global budget and to ask donors and the FEM —World Environment Fund— to significantly increase their contribution to the agriculture

sector. [...]

Africa must not be a dumping ground for subsidized food products and genetically modified foods from developed countries. Therefore, we wish the developed countries stop subsidizing their agriculture and care more.

Human development

Infectious, endemic and parasitic diseases slow down quality and yields. Most of these diseases originate from the poor environmental conditions [...], and from an unsatisfactory access to basic resources such as water, sanitation and adequate food. [...]

HIV/AIDS is not only a health issue, but it is a serious threat to sustainable development. Fighting HIV/AIDS should be included in any poverty reduction and elimination programme; this fight should also be part of the sustainable development and of the economic growth strategy. [...]

In context with TRIPS —Trade-Related Aspects of Intellectual Property Rights— the african countries should be allowed to take all the necessary measures so that their populations can get low price drugs and therefore promote public health and nutrition. [...]

It is important to have the women participate in social and economic development by empowering them at education and information levels, by developing their revenue-earning activities through credit allocations and by ensuring their participation in politics and in economic activities. [...]

Women's promotion and the improvement of their health should be a priority, [...].

Education, valuing human resource and capacity building are key elements in a sustainable development, and thus, it is important to determine clear policies concerning training, education and research in the region [...].

Trade and access to markets

Multilateral trade exchange systems should adequately and effectively address development issues. [...]

WTO should become a truly universal organisation [...] working in full transparency, without any discrimination, fairly and predictably; it also must ensure a full participation of developing countries in decision making; [...]

Accelerate the negotiations on agriculture and services, not adding new issues in the agenda concerning the multilateral negotiations, particularly issues that have nothing to do with trade.

We invite the developed countries to open their markets and to stop subsidizing their agriculture, mainly for their textile and other export products which interest the african countries, in order to permit them to reduce poverty by 2015 according to the objective defined in the declaration of the millennium.

Funding sustainable development

Mobilize in a coherent way all the available resources, including new and additional resources, mainly national resources, foreign direct investments, debt alleviation and public development aid. [...]

Debt to least developed countries must be cancelled in order to permit them to concentrate their resources to poverty alleviation programmes. [...]

We insistently ask for an increase of the public development aid to Africa, and that the developed countries respect the 0.7% of GNP determined by the United Nations. Public development aid should not be subject to conditions and it must be oriented to assist beneficiary countries to allow them to carry out their development programmes.

JOHANNESBURG: A NEW VISION OF THE WORLD

We exhort the Summit to agree on a 'Johannesburg vision' which would show the tangible commitments taken by the international community in the Rio principles and in Action 21, as well as in the declaration of the millennium. These commitments plan a worldwide consensus on the elimination of poverty and inequalities in the world. The world summit on world development is a unique forum to achieve this vision and it must therefore adopt a Johannesburg action programme for which tangible results are expected in known deadlines with clear objectives. The implementation of this programme will require partnership agreements between governments on the one hand, and between governments, businessmen and the civil society on the other hand."

CILSS: REGIONAL COOPERATION TO SERVE SUSTAINABLE DEVELOPMENT

The Permanent Inter-States Committee for Drought Control in the Sahel (CILSS) was created in 1973 and comprises 9 countries: Burkina Faso, Cape Verde, The Gambia, Bissau-Guinea, Mali, Mauritania, Niger, Senegal and Chad. CILSS primarily works for food security and the control of drought and desertification effects in the Sahel.

n its implementation mandate which is defined by the Heads of State, CILSS focuses on:

Collecting and processing data to know and learn better in order to help the countries and the sub-region actors define adequate, efficient and coherent strategies and policies;

Co-ordinating at the sub-regional level research, reflections and activities that will permit to control food security, ecological and population problems which all together hamper sustained economical growth;

Being aware of the development challenges (Sahel 21) through efficient sub-regional strategies elaborated with a large consultation team of actors from sahelian countries and with the Sahel's foreign partners;

Co-ordinating particularly emergency aid, and aid for development policies in general;

Co-operation among Sahel countries, Sahel integration in regional economic environment and advocacy of the Sahel's specificities in international negotiations.

For its missions to be well carried out, the inter-governmental organisation hat is, CILSS) is built around an executive secretariat and two specialized institutions:

he executive secretariat based in Ouagadougou, is specialized in agricultural, ocial, economic, environmental and population issues;

he Sahel Institut (INSAH) based in Bamako specialises in agricultural, socioconomic, environmental and demographic research;

GRHYMET, based in Niamey is in charge of information, training and capacity uilding on climate and hydrology issues.

CILSS organisational system is based on these three bodies in addition to etwork of correspondents from the countries (CONACILSS and the focal nts) which work with both the organisations or the actors' unions from the society (farmers, women, NGOs, young people, businessmen...) and foreign ners.

activities are built, on the one hand, around two main "policy" programs ely:

od security;

N/LCD (natural resources management/desertification control);

on the other hand, around four major "technical" programs namely:

icultural and socio-economic research;

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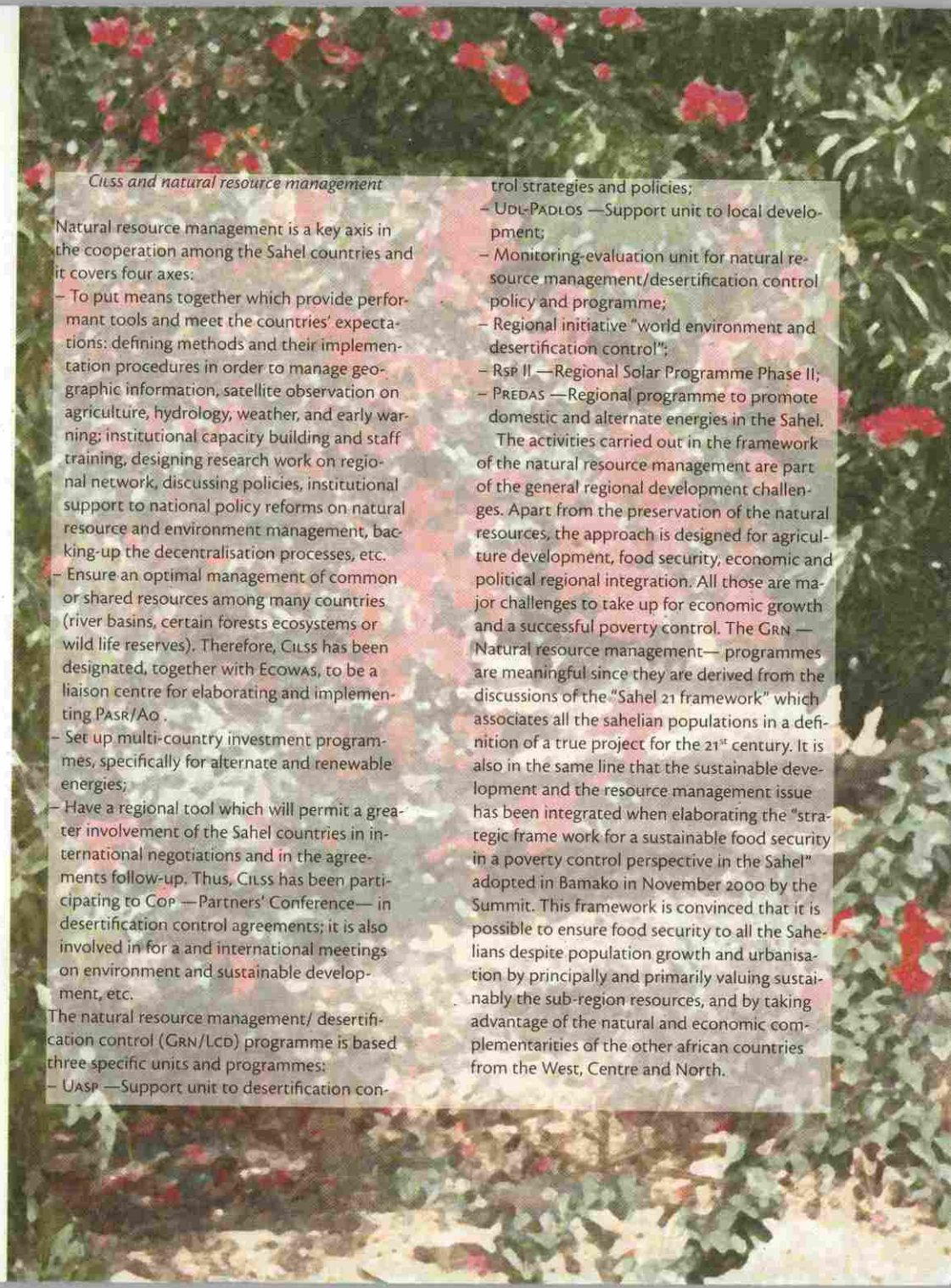
ning on agriculture, hydrology and weather.



CILSS and natural resource management

Natural resource management is a key axis in the cooperation among the Sahel countries and it covers four axes:

- To put means together which provide performant tools and meet the countries' expectations: defining methods and their implementation procedures in order to manage geographic information, satellite observation on agriculture, hydrology, weather, and early warning; institutional capacity building and staff training, designing research work on regional network, discussing policies, institutional support to national policy reforms on natural resource and environment management, backking-up the decentralisation processes, etc.
- Ensure an optimal management of common or shared resources among many countries (river basins, certain forests ecosystems or wild life reserves). Therefore, CILSS has been designated, together with ECOWAS, to be a liaison centre for elaborating and implementing PASR/AO .
- Set up multi-country investment programmes, specifically for alternate and renewable energies;
- Have a regional tool which will permit a greater involvement of the Sahel countries in international negotiations and in the agreements follow-up. Thus, CILSS has been participating to COP —Partners' Conference— in desertification control agreements; it is also involved in for a and international meetings on environment and sustainable development, etc.

The natural resource management/ desertification control (GRN/LCD) programme is based three specific units and programmes:

- UASP —Support unit to desertification control strategies and policies;
- UDL-PADLOS —Support unit to local development;
- Monitoring-evaluation unit for natural resource management/desertification control policy and programme;
- Regional initiative "world environment and desertification control";
- RSP II —Regional Solar Programme Phase II;
- PREDAS —Regional programme to promote domestic and alternate energies in the Sahel.

The activities carried out in the framework of the natural resource management are part of the general regional development challenges. Apart from the preservation of the natural resources, the approach is designed for agriculture development, food security, economic and political regional integration. All those are major challenges to take up for economic growth and a successful poverty control. The GRN — Natural resource management— programmes are meaningful since they are derived from the discussions of the "Sahel 21 framework" which associates all the sahelian populations in a definition of a true project for the 21st century. It is also in the same line that the sustainable development and the resource management issue has been integrated when elaborating the "strategic frame work for a sustainable food security in a poverty control perspective in the Sahel" adopted in Bamako in November 2000 by the Summit. This framework is convinced that it is possible to ensure food security to all the Sahelians despite population growth and urbanisation by principally and primarily valuing sustainably the sub-region resources, and by taking advantage of the natural and economic complementarities of the other african countries from the West, Centre and North.

Master of a knowledge in which the ingenious resources exceed all expectation, man can take the wrong path just like he can opt for the good one.
Sophocle, Antigone, after 441 B.C.

The dignity of only one man is difficult to be noticed. The dignity of a thousand men acts like a war... That is how things are and nobody knows why!
René Char, Le soleil des eaux, 1948.