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**DECENTRALIZED NATURAL RESOURCE MANAGEMENT  
IN THE REPUBLIC OF SENEGAL**

**SUMMARY OF CASE STUDIES AND GENERAL CONCLUSIONS**

**(DRAFT)**

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## Abbreviations

CERP	Centre d'Expansion Rurale Polyvalente
CPC	Comité de Pêche de Cayar (Kayar)
CR	Communauté Rurale
CSKSL	Comité de Solidarité Kayar/Saint Louis
DNRM	Decentralized natural resource management
GAVD	Groupe Africain de Volontaires de Développement
NGO	Non-governmental organization
NRM	Natural resource management
PAPEL	Projet d'Appui à l'Élevage
SONEES	Société Nationale d'Exploitation des Eaux Sénégalaises
UGK	Union des Groupements de Koulouck

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## 1. INTRODUCTION

As part of efforts to support decentralization in the Sahel, PADLOS has commissioned a series of case studies of DNRM in several member countries of CILSS (Burkina Faso, Mali, Senegal). This report presents summaries of four case studies carried out in Senegal<sup>1</sup>, as well as a general overview of DNRM in that country, which includes a final section containing several recommendations.

## 2. SUMMARY OF CASE STUDIES

### 2.1. Kayar: the emergence of a local level jurisdiction for the management of artisanal fisheries

#### 2.1.1. Context

Established towards the end of the nineteenth century by Lebou settlers, the village of Kayar is situated roughly 50 kms to the north east of Dakar. Up until the 1940s, villagers considered themselves to have been both farmers and fishing people; since then, however, fishing has come to dominate the local economy and local villagers have become, for the most part, full-time professional fishing folk. Kayar, because of its excellent port and easy access to the sea, has also become a major fishing center for transhumant fishermen, particularly Guet-Ndariens from Saint Louis. Today, Kayar is one of Senegal's most important artisanal fishing centers, an integral part of what is one of the country's most rapidly growing economic sectors.

While Senegal's maritime fisheries are, in general, rich, those in and around Kayar are particularly so, especially during the main fishing season (lasting from November to May/June) when the upwelling of deep Atlantic waters provides ideal conditions. Demersal (or bottom-dwelling) stocks (e.g. sea bass, red snapper, sole) usually concentrate in and around two main kinds of rocky sea bottom: the "petits fonds", rocky areas close to the coast, and the "grands fonds", which lie further out to sea, on the edges of the sub-sea "valley" which tapers towards Kayar. These demersal stocks are particularly rich in Kayar's fisheries. There are also important pelagic stocks (pilchards, sardinella species) in the coastal waters near Kayar. Around these different fisheries has developed serious competition among local and transhumant fishermen, particularly among those who catch demersal stocks, for which the demand for exports (principally to Europe) is high and the commercial value consequently considerable.

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<sup>1</sup> a more detailed version of these case studies can be found in La gestion décentralisée des ressources naturelles au Sénégal: études de cas, Kane O. & Winter M., 1996, PADLOS/CILSS

Since 1950 the technology of artisanal fishing has developed rapidly. Motorization of canoes has been impressive: while in 1951 there was only one motorized canoe in Kayar, by 1996 nearly all of the 700 canoes using Kayar were equipped with outboard motors. Fishing equipment has also improved over time - from the *khir* (a cotton line) to nylon fishing lines and to "palangres"<sup>2</sup>; from beach nets to the bed net to the purse seine. Today, the most important types of fishing use lines, bed nets, and "palangres" for catching demersal species; and purse seine fishing, which targets pelagic stocks. As fishing technology has become more sophisticated so it has also become more costly, requiring substantial cash investment on the part of fishermen. New technology has also enabled fishermen to go further out to sea and to fish more and more intensively. This intensification of the artisanal fishing effort at Kayar has also been accompanied by an increase in the number of fishermen.

As a result of these changes, fisheries in the seas near Kayar have come under increasing pressure. Certain fish (e.g. sea bass) have become rarer and, overall, fishermen find that they are facing diminishing (but still significant) returns. It is within this context - of a valuable commercial resource and increased competition among fishermen - that a system of local and other rules governing access to fisheries has evolved in Kayar.

#### 2.1.2. Fisheries management in Kayar

Several operational rules exist at Kayar. They can be separated into three types: those governing access to fishing grounds, those limiting allowable catches, and those defining net dimensions.

##### **Fishing grounds**

The Senegalese fisheries code, which applies to the entire EEZ (exclusive economic zone<sup>3</sup>), sets aside an area within which only artisanal fishing can take place: a band 6 nautical miles wide along the entire length of the Senegalese coast. Industrial trawlers are thus excluded from this artisanal fishing zone. The exclusion of trawlers is considered crucial by local fishermen, who correctly insist that trawlers - by dragging their nets across the sea bed - destroy vital breeding grounds. The Fisheries Service at Kayar, which operates a radar facility, is able to detect any trespassing trawlers and, with the help of local canoes, usually

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<sup>2</sup> "palangres" are steel lines, anchored to rocks or the sea bed, to which are attached a large number of hooks; they are usually left at sea overnight by fishermen and recovered, along with their catch, the following day.

<sup>3</sup> extending seaward for 200 nautical miles along the length of Senegal's coastline; rights to fish within the EEZ are granted by the government, which has negotiated several agreements (in return for substantial royalties) with the European Community and other countries.

manages to intercept intruders and then, if necessary, fine them.

Within the six mile limit, following a history of sometimes violent conflict between line fishermen and those using bed nets (which often create problems for fishing lines), a local ruling has banned the use of bed nets in the inshore rocky zone along a 25 km stretch of the coast, marked out by two buoys. For Kayar's fishermen this rule is intended not only to reduce the possibilities of conflict between line and bed net fishermen, but also to enhance the productivity of the fishing grounds. Bed nets, which can be left anchored in the sea for several days at a time, may not be recovered and thus continue to trap fish which then rot, causing the area they are in to lose oxygen and drive away fish stocks. Although it is local fishermen who monitor the application of this rule, it is formally enforced by a committee made up of Fisheries Service personnel, representatives of the local police, and delegates from the 2 main fishing communities (Kayar and Saint Louis). Conflicts arising from the rule have, since 1990 and in the aftermath of some particularly bitter disputes, been arbitrated by the CSKSL (Comité de Solidarité Kayar/Saint Louis), an organization which represents all fishermen in the area.

The use of "palangres" is also proscribed in the same stretch of fishing grounds, for the same reasons as are bed nets: to avoid conflicts with line fishermen and to minimize any impoverishment of fish stocks due to unrecovered equipment. This rule, however, only dates to 1994-95 and was introduced by the CPC (Comité de Pêche de Cayar [Kayar]), a local organization representing line fishermen from Kayar and St. Louis. Implementation is undertaken by fishermen themselves in the course of daily fishing; in the event of non-respect, the fisherman concerned is fined 50.000 CFA francs by the CPC, which relies upon the village chief and his counsellors for back up and arbitration.

A final rule governing access to Kayar's demersal fishing grounds concerns the payment of an entry tax (or permit), paid daily by all line fishermen. Set at 100 CFA francs/canoe, this tax is levied by the CPC and used to finance a number of services (emergency rescues, outboard motor repairs, ...).

#### **Limitations to allowable catches**

Since 1994 fishermen in Kayar have instituted rules governing allowable catches. These rules were originally drawn up in an attempt to calibrate supply to demand and to thus keep producer prices at reasonable levels.

For line fishermen the allowable catch rule dates back to early 1994, in the period immediately following devaluation of the CFA franc, when (for unknown reasons) the price of demersal fish catches dropped dramatically. Intermediary middlemen, acting on

behalf of the Dakar-based treatment factories<sup>4</sup>, refused to raise their prices. In reaction, the fishermen of Kayar went on strike for three days. This withdrawal from the market had the desired effect and the middlemen soon agreed to increase the price paid for demersal fish. During the strike the CPC was formed by line fishermen operating out of Kayar, its objective being to negotiate fish prices on behalf of the group and to set catch levels so that supply does not exceed demand. Since 1994 the CPC has generally set allowable catches for demersal stocks at or around 2 to 3 ice boxes per canoe per day, which ensures that prices are sustained and that line fishermen obtain an adequate revenue.

Applying the allowable catch rule involves the CPC operating at two levels:

- with regard to the middlemen the CPC holds pre-season discussions and - during the season - daily meetings, the former to establish a minimum price, the latter to take into account additional orders or particular problems. Keeping the middlemen to their promise is, according to the CPC, a major challenge. If they do refuse to respect their commitments, the CPC has two courses of action open to its members: either they refuse to fish with ice boxes (thereby, due to EC regulations, rendering unexportable their catches) or they cease fishing altogether, both actions amounting to market "exit";

- with regard to individual fishermen (who are always tempted to exceed the allowable catch) the CPC closely monitors fishing activities. If a fisherman does exceed his quota he is liable to be fined 30.000 CFA francs; since 1994, some 60 individuals have been thus fined. In the event that a dispute arises over the application of this sanction, the CPC appeals to the village chief for arbitration.

It is important to note that the allowable catch can vary depending on circumstances: it is not an inflexible system and takes into account higher orders by exporters, the seasonal presence of particular fish species, etc.

Purse seine fishermen have also, since 1993, introduced allowable catch ceilings in order to stabilize fish prices. In the past their reaction to lower prices was to increase the number of times they would fish during the day - clearly a counter-productive strategy. The decision was then made to limit purse seine canoe teams to one fishing trip per day. This rule is monitored by fishermen during the course of their work and enforced by the CSKSL. Rule-breakers are fined 50.000 CFA francs.

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<sup>4</sup> fish destined for the European market must be cleaned and treated before they can be exported from Senegal.

In both cases fishermen appear satisfied with the results obtained. While allowable catch rules at Kayar owe their origin to a pre-occupation with keeping supply in line with demand, local fishermen also justify them as being - at the same time - ways of reducing the pressure on fisheries and thus sustaining their resource base.

### **Net dimensions**

In theory the fineness of nets is controlled by the Senegalese fisheries code. In practice, however, such rules are not operational, for two reasons. Firstly, local fishermen claim that the use of fine nets is not to their advantage - there is only a limited market for small fish (mainly as bait for line fishermen) and fine nets, which drag in large quantities of algae, become too heavy for manual drawing. Secondly, the Fisheries Service, with its limited resources, is not in a position to enforce code regulations.

#### 2.1.3. Local management institutions

Several institutions intervene in fisheries management at Kayar. The state clearly plays a crucial role in defining the zone exclusive to artisanal fishing and in managing the radar installation at Kayar. In order to apprehend illegal trawlers, however, the Fisheries Service depends on local fishermen making available canoes.

Within the artisanal fishing zone, however, local level institutions have been largely responsible for drawing up and implementing rules. The CSKSL and CPC, both of which represent local fishermen, are the key players at Kayar - defining access to fisheries, setting allowable catches, levying "entry" fees, .. That they are both local, their membership made up exclusively of fishermen, must certainly contribute to the high degree of legitimacy they enjoy in local eyes. In addition, their executive management committees appear to be competent and operate in a highly transparent way.

Traditional authorities, as well as the police force, have also been involved in local fisheries management, particularly in the area of dispute resolution and support for the CPC.

#### 2.1.4. Appraisal

A variety of lessons can be learnt from Kayar. First and foremost, it is quite clear that artisanal fishermen are capable of establishing local level rules for the management of fisheries. They can, if allowed to, resolve many of their own problems.

This has happened at Kayar because fishermen have been allowed to draw up rules for application within a well-defined area. By creating an exclusively artisanal fishing zone, the state has

(perhaps inadvertently) created the space within which fishermen have had the latitude to develop their own rules about resource use. They have undoubtedly been motivated to do so by the fact that the resources in question are of high value and also require important capital investments.

The state, through its Fisheries Service, has also played a valuable supportive role in the emergence of a local fisheries jurisdiction in Kayar. Other sources of authority - including traditional leaders - have also made a valuable contribution to the process, particularly in the field of conflict resolution and rule enforcement.

Kayar also shows that a plurality of institutions (CPC, CSKSL, village chief, the state, ..) can operate. Different institutions at Kayar regulate different resources and practices. It is not necessary to have DNRM in the hands of a single monolithic entity.

Local rules at Kayar are monitored - for the most part - by resource users themselves; this is not only cost-effective, it is also highly successful. In addition, rule-breakers are effectively sanctioned. As a result of both effective monitoring and rule enforcement, there appears to be a high degree of civicism among fishermen. The mobilization of financial resources by local institutions has also been effective; such funds have been managed in a transparent fashion, which has enhanced the legitimacy of the institutions concerned.

Finally, Kayar illustrates the importance of integrating "outsiders" (in this case, the Saint Louis community of fishermen) into local resource management structures. From the beginning, Kayar fishermen have not set out to exclude the more transhumant Guet-Ndariens but have actively tried to obtain their support and participation in the process of local fisheries management.

## 2.2. Thiargny: pastoral resource management in the Joloff

### 2.2.1. Context

In recent times livestock producers in the Joloff of Senegal have come under pressure from two areas. Firstly, from other pastoralists, [i] gradually being "squeezed" out of their traditional rangelands in the Senegal river valley, where irrigated agriculture has made it increasingly difficult for livestock to access pastures, and [ii] facing more & more competition in northern rangeland areas. Secondly, southern agriculturalists, moving out of the Peanut Basin in search of new lands to clear.

Thiargny, lying within Barkedji arrondissement in Linguère département, lies at the heart of the Joloff and illustrates this pastoral problematic. The area was originally occupied by Jengelbé

Fulani roughly two centuries ago. At the time, the Jengelbé only used Thiargny's pastures during the rainy season, moving to Thiel and M'Bulel for the dry season, where shallow wells provided sufficient water for their livestock. In the 1950s this system was altered by the drilling of a borehole at Lindé (some 15 kms from Thiargny), which became the Jengelbés' dry season home. In 1980 a borehole was drilled at Thiargny itself; since then the Jengelbé have become increasingly sedentarized, spending as much of the year as possible there.

Although Thiargny was to become the center of a communauté rurale in 1972, Jengelbé society has never enjoyed a tradition of structured and centralized political power. The canton chiefship of Thiargny, established early on by the colonial state, was initially filled by outsiders and not by the local Fulani. Village chiefs, in both the colonial and post-colonial periods, have been designated auxiliaries rather than customary local leaders. In short, Jengelbé society is highly acephalous.

Today, roughly 2,500 Jengelbé usually live in the area immediately surrounding Thiargny borehole, the majority being agropastoralists owning substantial numbers of cattle. In addition to the Jengelbé there are also other Fulani groups who use the area during the dry season.

#### 2.2.2. Pastoral resources and resource users

Thiargny is typical of the sylvo-pastoral zone: rolling fossil dunes, interspersed with low-lying areas, with a vegetation cover of grasses and hardy trees (acacias, balanites, ..). Annual rainfall is around 400 mm., with considerable inter-annual variations. In the local classification, pastures are of several types, the most important being **bardiol** lands (on clayey soils) and **seno** (on sandy soils). Of the two, **bardiol** pastures are judged to be the best and are grazed during the wet season; **seno** pastures, on the other hand, are poorer and further away from human settlements, but considerably more abundant - they represent a pastoral reserve for the dry season.

Access to these rangelands is conditional upon the availability of water. During the wet season a large number of temporary waterholes allow herders to graze their livestock throughout the area; but in the dry season, the herds and flocks become confined to the pastures in the immediate vicinity of Thiargny's borehole and well (dug in the 1950s but containing little water). Three other boreholes are functional in the CR (at Lindé, Kogué, and Lol-Lol) and are used by the Jengelbé in the event that the pump at Thiargny breaks down or local pastures are insufficient.

If the pastures around Thiargny prove to be inadequate (due to drought or bush fires) or their borehole pump breaks down, the Jengelbé are forced to send their livestock elsewhere. This

strategy of mobility has been used by the Jengelbé on several occasions, particularly during years of generalized drought (1973-74, 1984-85, 1992-93) when they moved to eastern Senegal, the Saloum. and Doli ranch. If the borehole pump breaks down, they usually rely on closer areas, within the CR's boundaries.

Two groups of "stranger" herders - the "egge-egge" - also use the pastoral resources of Thiargny: cattle-owning Sérère farmers from the Baol and Sine-Saloum, and Fulani from Podor and Dagana (in the Senegal river valley). The Sérère come during the rainy season, while the Fulani graze and water their livestock at Thiargny during the dry season. The "egge-egge" from Podor/Dagana, more numerous than the Sérère, are seen negatively by the Jengelbé, who claim that their large sheep flocks are largely responsible for over-grazing in and around Thiargny. Even if these "egge-egge" pay consistently for their water (at higher rates than the Jengelbé) and contribute to monetary flows in the local economy, they are still seen as serious competitors for scarce resources. The cattle-owning Sérère, on the other hand, are much better tolerated.

In the area around Thiargny agriculture is practised exclusively by the Jengelbé. However, elsewhere in the CR Wolof and Sérère farmers clear land for their fields. This is particularly so near Kogué (to the north east of Thiargny) and south of Lindé, at Touba Belel - where a Mouride marabout established his **daara** (village of "disciples") some fifteen years ago.

### 2.2.3. Management of pastoral resources

Decisions about land use - particularly agricultural use - are made by the Rural Council of the CR. Requests for farm land are initially examined by village chiefs and rural councillors at the level of the CR's five sub-zones (Lol-Lol, Thiargny itself, Lindé, Kogué, and Wendu Seno). On condition that the land requested does not lie next to a water point, is not already occupied, or does not lie on a livestock track, the local land use commissions usually agree to the demand. Requests for unsuitable land are counter-matched by an offer of another site.

CR decisions on land use are submitted to the sub-prefect for approval; the sub-prefect thus plays an important role. External pressure is also exerted in some cases, particularly if the supplicant has political connections - as was almost certainly the case for the Mouride marabout at Touba Belel. The process is also subject to bribes and deals which can obviously influence CR decisions, irrespective of "objective" considerations.

In general, access to pastures at Thiargny is more or less free. Even though over-grazing is seen as a genuine problem by the Jengelbé, herders remain free to graze and browse their livestock in the area. Nevertheless, all users respect local tenure rules concerning gum trees (acacia senegal), which are traditionally

owned by individuals. Herders are also expected not to over-cut browse species.

Although there have not been any major bush fires at Thiargny for two or three years, the CR and local populations continue to invest collectively in the making and maintenance of firebreaks.

Recently, however, the Jengelbé have begun to react to the presence of "egge-egge", particularly when the latter establish their camps close to those of local families. Such "egge-egge" are usually asked to move further away, so as to reduce direct competition for pasture. Following discussions with the PAPEL (Projet d'Appui à l'Élevage) the Jengelbé have also begun to consider the idea of deliberately controlling where herds and flocks are grazed; for the moment no such management strategy has been implemented.

The extent to which access to pasture is relatively uncontrolled seems to be a reflection of the Jengelbés' need themselves for access to other areas in the event of drought, bush fires or the breakdown of the borehole pump. In order to have that possibility, it is clear that the Jengelbé cannot exercise exclusive rights of access to the pastures around Thiargny: there is a need for reciprocal openness. The importance of mobility for livestock production, then, plays a major role in determining the kind of land tenure regime in place.

While waterholes and wells are apparently freely accessed, access to water from the borehole at Thiargny has been, and remains, controlled. From 1980 to 1984 management of the borehole was handled by SONEES. But since 1984, following a change in national policy, borehole management has been "decentralized" to local level management committees, chosen by the resident population. Correctly managed, the borehole at Thiargny is capable of providing enough water for local needs.

The first committee managed the borehole from 1984 to 1987. Its management is judged to have been particularly incompetent and corrupt: revenues were frequently pocketed by committee members and, as a result, breakdowns from fuel shortages were frequent. The first committee was eventually replaced, in 1988, by another - which, due to internal conflict, only lasted until 1989. The current management committee was elected in 1989.

Access to borehole water is currently conditional upon the payment of monthly user fees - 50 francs per head of cattle and 25 francs per small ruminant for local Jengelbé, and 75 francs per cow and 35 francs per sheep/goat for "stranger" livestock owners. Calculations of herd sizes are made, for local Jengelbé, on the basis of vaccination cards and, for the "egge-egge", on rough estimates. Revenues thus generated are intended to pay for recurrent costs (fuel, spare parts, repairs, ..); 10% of gross

revenues are also allocated to members of the management committee as remuneration for their services.

Management of the borehole faces two major problems at Thiargny:

[1] according to the management committee, local Jengelbé are poor and irregular payers of user fees. Whatever the initial reason for refusing to pay might be for some users, the result is that nobody is motivated to pay. The committee admits that non-payment should result in a denial of water for the livestock concerned; in practice, however, it has proved impossible to thus "punish" non-paying kin and neighbors;

[2] the Jengelbé, on the other hand, insist that members of the management committee systematically misappropriate cash paid by "egge-egge" herders, whom everybody recognizes as being regular payers of user fees. "Egge-egge", it is claimed, do not get receipts for their payments, thus making difficult (if not impossible) any attempt to audit the management committee's finances.

Whatever the cause, the effect is low levels of liquidity in the borehole management account which, in turn, result in an inability to pay for repairs and other costs. In June 1996, for example, the borehole's diesel motor broke down - a shortage of cash meant that the necessary repairs were not undertaken for over a month.

In theory, a corrupt or incompetent management committee can be replaced by local users. The population of Thiargny appears to believe that it is up to the President of the CR to dismiss the existing committee; the current CR President, although highly critical of borehole management, is not convinced that a change of committee members would lead to any real improvements. It should also be noted that re-electing a new committee requires the participation of the departmental prefect and the national water service, which considerably increases the transaction costs involved.

In addition to dishonesty and a lack of transparency, several other factors also contribute to poor borehole management. Firstly, the committee has never benefitted from adequate or appropriate training in financial management. Secondly, and mainly because of the large variety of equipment makes among borehole pumps and motors, there is no local supplier of spare parts, the nearest being in Dakar. Thirdly, the water service in Linguère is woefully equipped and often unable to travel to boreholes in order to carry out repair and maintenance work.

#### 2.2.4. Appraisal

The absence of local, customary authorities - who might be

able to manage natural resources - at Thiargny is remarkable. There seems to be an institutional vacuum, which is probably linked to local history and to Jengelbé society, which has been traditionally structured along acephalous lines. This lack of local level power structures has had serious consequences for DNRM.

Natural resource management in Thiargny takes place at two levels. In deciding on the competing claims of agricultural and pastoral land use the CR, despite being aware of the stakes, has adopted an ambiguous stance - if in the immediate environs of Thiargny agricultural encroachment seems to be kept at bay, elsewhere the expansion of fields appears to be poorly controlled. External influences are probably at play here.

Within Thiargny's rangelands, despite the existence of concerted efforts to control bush fires and a local tradition of gum tree management, pasture management is minimal. The Jengelbé seem unable to orientate the use of pastures by "egge-egge" herders. This open access regime reflects the Jengelbé's need to guarantee their own access to other rangelands in the event of grazing or water shortages at Thiargny.

Where there is active management - of the borehole - it appears to be problematic and incompetent. The borehole management committee is unable to insist on local herders paying water fees, who effectively profit from subsidies paid by "egge-egge" pastoralists. Payment of user fees by the latter are also badly managed, committee members being able to misappropriate such funds. As a result, monetary resources are often insufficient to pay for borehole repairs. These problems are compounded by a lack of training for committee members, no local supplier of parts, and inadequate service facilities.

### 2.3. Koulouck: natural resource management in a degraded area of the Peanut Basin

#### 2.3.1. Context

Originally settled by Wolof and Sérère farmers in the 1860s, the area of Koulouck today consists of a series of small villages clustered in and around a fossil valley. Lying to the immediate south east of Thiès, Koulouck is a part of the old Peanut Basin, heartland of Senegal's principal cash crop.

Koulouck remained an area of in-migration until the 1950s. However, the introduction of animal drawn farming equipment in the 1940s and rapid demographic growth soon led to a complete occupation of farm land. Agricultural expansion was also accompanied, for a short period (1968-72) by wood cutting for charcoal production. Over the last three decades there has therefore been a decline in fallow and a noticeable deforestation, both of which

have had consequences for soil fertility and the availability of firewood (the collection of which has become one of the most time-consuming tasks of women). A decline in rainfall since the 1960s has only made matters worse.

Today there are no longer any common lands in Koulouck, all land now being appropriated by individual family units. Farmland is principally cropped with pearl millet, the area under peanuts having declined since the drop in world prices for peanut oil, increasing difficulties in procuring good seed, and the rise in the cost of chemical fertilizers. Agricultural production in the area is highly variable due to rainfall conditions, crop pests and low soil fertility.

In order to deal with agrarian decline, Koulouck's inhabitants have adopted a variety of strategies. Livestock herds, which used to spend the entire year on village lands, are now taken to the Saloum where pasture is sufficient. Families have diversified their portfolio of activities, undertaking seasonal (and sometimes permanent) out-migration to urban centers, taking up market gardening, growing more and more henné trees, ..

The local population has also organized itself in new ways so as to deal with certain problems. In 1987-88, encouraged by an especially far-sighted villager, several of Koulouck's communities established the UGK (Union des Groupements de Koulouck), initially made up of 14 member groups (7 men's groups and 7 women's groups, representing 7 villages/hamlets) and 155 paid-up members. Later on that year, UGK managed to obtain a grant from OXFAM, a British NGO, which was used to finance a market gardening initiative (which was to prove a failure); additional funding was also provided by OXFAM for other activities - petty commerce, a grain mill, a village shop - which have proved more successful. Starting in 1993 OXFAM then funded a two year development program, made up of several components (cereal bank, grain thresher, literacy training, ..) including an environmental conservation project; funding also allowed the Union to recruit a full-time advisor from GAVD (Groupe Africain de Volontaires de Développement). After a short period of interrupted funding, the UGK eventually negotiated a new two year program (building on the earlier one) with OXFAM in 1996.

Between 1988 and 1996 UGK grew considerably. The original 14 groups and 155 members have been joined by a further 38 groups and just over 2,500 new members, bringing UGK up to 52 groups and 2,700 members, of whom the majority live within an 8 kms radius of Keur Ndeme, "capital" of the organization. UGK has two executive committees, one for women, the other for men, each of which has 7 members, elected every two years by general assembly (to which each constituent group sends 3 delegates). For each activity (e.g. cereal bank, revolving credit, ..) a management committee is designated, responsible for monitoring and supervising everyday practice.

Although UGK was certainly created to access external funds, it nonetheless seems firmly anchored in its community. The executive committees are subject to scrutiny, and elections for committee membership have occurred regularly: at the last general assembly, for example, a new President (for the men's committee) was chosen even though the previous one was standing for re-election. Those responsible for managing Union activities are also closely monitored: recently, the cereal bank store-room keeper, who was discovered to have misappropriated funds, was taken to the courts in Thiès and is now serving a jail sentence. The structure and transparency of UGK management have certainly been factors in the Union's relative success - it is commonly assessed as being the best performing rural organization in Fissel arrondissement.

### 2.3.2. Environmental conservation activities

UGK's environmental conservation project derives, in large part, from a similar initiative undertaken in the neighboring CR of Thiénaba, where the Rural Council had established, during the early 1990s, a system of protection for Kad (acacia albida) trees. Several UGK members were able to visit Thiénaba and learn about this; encouraged by what they had seen, UGK proposed to begin its own protection scheme for field trees, in general, and Kad, in particular. Although OXFAM was initially reluctant to fund the project, an agreement was eventually reached to do so. The protection scheme was, therefore, very much a local level initiative, and not something introduced by an outside agency.

Several different environmentally-related activities have been undertaken by UGK.

#### [1] protection of Kad:

Acacia albida, or "Kad" in Wolof, is the quintessential Sahelian field tree. Particularly appreciated by farmers for its positive effects on soil fertility, acacia albida in fields usually allows for higher crop yields. As a result, the Kad has become the dominant tree species present in Peanut Basin fields, including those in Koulouck.

Despite being highly valued by farmers, Kad trees have not been entirely spared from increasing pressures on them. Because they are among the only trees left on village lands, they have become one of the only sources of browse and firewood. Cutting by herders, tacitly encouraged by local women (who can use the cut branches for firewood), represented a serious threat to local Kad.

In order to reduce the pressure on Kad trees, UGK has established a new system of protection, implemented by local forestry auxiliaries (of whom there is one per group, paid a current monthly salary of 5,000 CFA francs). At first, in 1993, all cutting (of all tree species including Kad) was banned. The

forestry auxiliaries, supported by the forestry agent from Ndiaganiao, enforced this rule, relying especially upon "sensitization" of local users. In the event that shepherds refused to respect the new ruling, auxiliaries would ask the nearest village chief to intercede. In extreme cases, UGK auxiliaries could request the forestry agent based at Ndiaganiao to intervene and, if necessary, fine recalcitrants - such sanctions, however, have never had to be applied.

The monitoring work of auxiliaries is supervised and controlled by the senior auxiliary, who simply patrols village lands to ascertain the state of field trees.

The total ban on any tree cutting was maintained for the first year. Local users - and, in particular, women - however, soon made it clear that the ruling was too strict and that it was becoming nearly impossible for them to obtain either firewood or other ligneous products. UGK management committee members thus decided to alter the ruling, allowing local farmers to cut or pollard trees situated in their fields once they had obtained permission to do so from the senior auxiliary. In addition, the rule was altered so as to allow farmers to cut quiera senegalensis, a small and vigorous tree, during field preparations. Finally, it was also decided that the Union establish a training and extension program for improved wood and charcoal stoves (aimed at helping women to reduce the amount of fuelwood consumed during food preparation) and employ women auxiliaries.

This system has remained in place since 1994. Although there continue to be a few cases of illicit cutting, most users now appear to respect local rules.

#### **[2] assisted regeneration of Kad:**

In order to facilitate the regeneration and growth of young Kad trees, which are frequently uprooted during ploughing, UGK has undertaken a program of "visualizing" them. The technique is simple: just before the rainy season starts, forestry auxiliaries look over their respective territories and mark as many young Kad as possible with red paint (purchased by UGK). This visualization - which has concerned several thousand trees since 1993 - is intended to facilitate the identification of young trees by those using ploughs, enabling them to therefore more easily avoid them.

#### **[3] tree nursery and planting:**

Two forestry auxiliaries, with technical support from the local forestry service - manage a small collective tree nursery for UGK. Production from this nursery is used for planting of a collective woodlot and for individual plantations. For the most part, eucalyptus, prosopis, and leucaena species are produced by the nursery.

#### [4] composting:

Although the technique of composting has been part of the CERP's agricultural extension package, it has only been adopted by market gardeners in Koulouck. Composting for the main wet season crops has not proved appropriate due to the large amounts of water it requires in the off-season.

#### [5] improved cooking stoves:

Women forestry auxiliaries, supported by the Ndiagianiao CERP's woman extension worker, have successfully trained a large number of women in the construction of "ban-ak-suf" (clay) stoves. Because they do seem to reduce fuelwood consumption, "ban-ak-suf" stoves are much appreciated and have been adopted by the vast majority of households in Koulouck. In addition, UGK has also introduced portable metal stoves (the "sakanal"), which are now fabricated by local blacksmiths (who received appropriate training).

Overall, UGK's environmental conservation project is highly appreciated by the local population. The Union itself has demonstrated its satisfaction by having financed the project out of its own funds in the period between its two biennial programs (when external funds were unavailable) and by deciding to pay for male auxiliary salaries for the period 1996-98. Local farmers insist that Kad trees are in a much better state than before and that this has contributed to improved yields, even though this is difficult to demonstrate in an unequivocal way. Women, who have almost certainly found it increasingly difficult to collect firewood since the start of the projet, have nonetheless received partial compensation through wood stoves and, perhaps more importantly, from other UGK activities (particularly the grain mill, which has reduced the amount of time spent on preparing millet). Rules about cutting were also made more flexible so as to make the system more palatable to women. Herders, although they have "lost out" from no longer being able to cut Kad branches for browse fodder, have found that the protected Kad now produce large quantities of pods, which are eaten by their animals. Finally, it is clear that the whole project has had a significant "psychological" effect: local people now realize that it is possible to do **something** about environmental degradation, on condition that the political will to do so exists.

#### 2.3.3. Appraisal

In general, UGK's experience in the field of NRM has been positive and successful. A number of lessons can be learnt from what has happened in Koulouck.

Perhaps the most important is that local populations can make long term investments, even if in the short term these will involve some necessary sacrifices. Protecting and regenerating acacia

albida are unlikely to produce immediate benefits, and it may be several years before a real impact will be felt. In the meantime women must forgo relatively easy access to fuelwood and herders must go without a valuable source of browse fodder. The relative scarcity and high value of Kad have probably helped to make these short term sacrifices tolerable.

Another important lesson from Koulouck is that local populations need access to information if they are to be able to establish their own NRM practices. It was on the basis of what they were able to learn at Thiénaba that local leaders established UGK's environmental protection project.

The state has also encouraged local level NRM in Koulouck by effectively ceding tree management functions to UGK, even though this has only been partial, the local forestry officer still being the only person empowered to fine rule-breakers. The tenure "space" thus created has also coincided with clearly defined traditional territories, a factor which has contributed to successful implementation of local level NRM.

The rules protecting Kad in Koulouck have also been flexible: whilst the system began with draconian rules on tree cutting, it has evolved - through inter-action at the local level - into a more "liberal" and tolerable set of rules.

Finally, Koulouck shows that it is possible to take into account the particular needs and problems of women. While women have probably been the biggest "losers" in the environmental conservation project, UGK has nonetheless tried to provide them with some kind of compensation - through improved stoves and the provision of milling facilities. Even if these have not entirely made up for the increased workload created by new rules about trees, at least Koulouck's men have been aware of it.

#### 2.4. Fuelwood supply, tree cutting, and forest management in the "communauté rurale" of Maka Coulibanta

##### 2.4.1. Context

The supply of wood fuels in Senegal has been historically dominated by the production of charcoal, consumed by a large urban population (roughly 43% of the country's population is urbanized), which has taken place in areas increasingly further away from the center-west of the country. Charcoal production has also been governed by a state-managed quota system, very unlike other Sahelian systems.

Although the colonial state did attempt to control charcoal production, it was during the 1970s and 1980s that the system became highly centralized. The Senegalese state, operating through

its forestry service, gradually became entirely responsible for deciding on the amount of charcoal to be produced, where wood was to be harvested, when it was to be transformed into charcoal, and who was to be allowed to do this.

Recently, however, the state and its forestry service have opted for a policy of decentralization with regard to forest management. The new forestry code, adopted in 1993, has, for example, introduced the possibility of the state ceding forestry rights to local government units. This year's legislation on decentralization has also foreseen a transfer of increasing responsibilities for NRM from central government to CRs and regions. However, a closer look at the new laws tends to indicate that they are both less radical than expected and also somewhat self-contradictory.

The Senegalese fuelwood market is also organized in a distinctive way, unique in the Sahel. The principal operators have been the **patrons**, charcoal entrepreneurs, who - organized into forestry "cooperatives" - are granted wood-cutting quotas. The **patrons**, in turn, hire **sourgas**, woodcutters who then produce charcoal and sell it to the **patrons**. Traditionally, both **patrons** and **sourgas** have been non-Senegalese, mainly Guinean Fulani. Once charcoal has been produced it is transported to urban markets by the **patrons**, who re-sell it to a network of wholesalers and retailers.

#### 2.4.2. The CR of Maka Coulibanta

The arrondissement of Maka, situated some 50 kms from the town of Tambacounda, is made up of three CRs - Maka Coulibanta, Ndogo, and Kahène. To the south lies the Gambian border and, to the north, the arrondissements of Koussanar and Koumpentoum. The village of Maka Coulibanta lies some 30 kms south of the main tarmac road leading to Tambacounda.

The first inhabitants of the area were Mandingue groups, later joined by Pulaars migrating in from the Futa Toro in the sixteenth century. Later on other ethnic groups also moved into the area, particularly pastoral Fulani, other Mandingue groups, and, more recently, Wolof and Sérère farmers in search of new lands. Indeed, Maka remains, to this day, an area of in-migration. Most villages are relatively recent, a factor which probably explains the limited extent to which village "terroirs" are only vaguely defined and demarcated.

The current population of the CR is around 15.000 people; population density, by Senegalese standards, is low, at about 16 persons/km<sup>2</sup>. Relatively high rainfall (some 700 mm./year) allows farmers to grow a variety of crops: millet, maize, peanuts, cotton, .. Because of low population densities it is still possible for farmers to practise fallow periods. Livestock raising is widespread

and, for the most part, sedentary, a comparatively abundant vegetation allowing animals to spend the whole year in the area. There are important stretches of natural forest cover and a wide range of tree species - combretae, "dimb" (carolya pinata), "vène" (pterocarpus eurinaceus), anogeissus, ..

#### 2.4.3. The evolution of forest exploitation

##### **From disputed wood-cutting ..**

Large scale commercial woodcutting first took place in the CR of Maka Coulibanta between 1975 and 1980, undertaken by "stranger" **sourgas**, most of whom were Guinean Fulani. In 1980, as part of a policy of rotational cutting, the forestry service closed the area to woodcutting, although illegal cutting apparently continued.

The area was re-opened to commercial woodcutters again in 1993, without local authorities or populations being consulted by the forestry service. Local reaction to this can be examined at two levels:

- at the village level, certain communities were in favor of renewed forest exploitation, others against. Those in favor were usually so because they hoped that their young men would be able to find employment as **sourgas**. Among those opposed to woodcutting and charcoal production were some forty villages surrounding Bokô forest, lying to the south of the CR on the Gambian border, fearful that renewed cutting would compromise their dependence on the forest for pasture and domestic uses;
- at the CR and arrondissement Council level, opposition to renewed woodcutting was, above all, due to the way in which it was expected to occur, without any real benefits to local government and to the local economy (charcoal not being stocked at Maka, no cooperatives being from Maka, no fiscal rewards to local government).

In spite of such different points of view, local protestors were able to have woodcutting temporarily suspended until negotiations had taken place. At a meeting between central government representatives, forestry officials, **patrons**, and local authorities, the latter made a number of specific requests:

- that a forestry brigade be established in Maka, with the authority to collect cutting permits and taxes. Up until then, woodcutting in the arrondissement was officially managed by forestry brigades in Koussanar and Koumpentoum, even though woodcutting in those arrondissements had been on the decline for some time. At stake was a question of fiscality: as long as forestry taxes were collected beyond the boundaries of Maka arrondissement, no rebates (then thought to be in the offing under a new decentralization policy) would be granted to the

communal budgets of its constituent CRs. Hence the insistence upon a forestry brigade being established at Maka;

- that **patrons** open up charcoal depots in Maka. If charcoal depots exist in a village, where **patrons** can gradually build up stocks of charcoal until they have sufficient for a lorry load (which can then be sent to urban markets), increased economic opportunities occur. Laborers are needed for loading-/unloading, transporters need restaurants and other services, petty commerce receives a boost, etc. At the time no charcoal could be stocked at Maka because the forestry service refused to issue such permits, arguing that the laterite road from the village to the main tarmac highway was unable to handle full lorry loads;

- that local villagers be taken on as **sourgas**, instead of being recruited from among Guinean Fulani. This demand reflected not only a recognition of the income generating opportunities provided by charcoal production, but also a customary reluctance to have "strangers" on village lands;

- that the state recognize forestry cooperatives based in Maka, in order that local entrepreneurs share in the lucrative profit margins obtained by **patrons**; at the time, only one local man was a **patron**, as a member of a forestry cooperative registered in Tambacounda;

- that the forest of Bokô be divided up into an area open to commercial woodcutting and another from which it would be excluded, thus conserving a zone for pastoral and domestic uses.

With forestry service officials and other state representatives apparently agreeing to meet these demands, woodcutting was allowed to recommence. At the beginning of the following forestry season, however, when it was clear that little had been done to satisfy those demands, local protest brought woodcutting, once again, to a halt. This time the forestry service reacted rapidly - in 10 days a forestry brigade had been established in Maka and a new policy for installing woodcutters put into practice. Woodcutting was then allowed to resume.

#### **.. to current practice**

Two years after the "events" of 1993-94, charcoal production continues in Maka Coulibanta, as well as in the CRs of Ndogo and Kahène. Although there have been a few changes, for the most part the system of forest management and exploitation remains unchanged.

Charcoal production quotas continue to be set, as before, in Dakar. For the Tambacounda region as a whole the 1996 quota was set at 375,000 quintals of charcoal (roughly 41% of the national

production quota), with 103 officially recognized enterprises having individual quotas allocated to them by the state. Not one of those organizations is headquartered in Maka. These organizations were informed of their quotas and told where they would be expected to cut wood by a regional commission at the beginning of the year. For 1996, the quota to be produced in the département of Tambacounda was set at some 280,000 quintals, to be "managed" by four forestry brigades, each having responsibility for sub-quotas:

Koussanar	164,494 quintals
Missira	58,236 quintals
Koumpentoum	38,750 quintals
Maka	21,760 quintals

It is important to note that sub-quotas are allocated to forestry **brigades** - and not to geographical areas. Thus, although the brigade at Koussanar was allocated a quota of nearly 165,000 quintals to manage, not one quintal was intended to be produced within the boundaries of Koussanar arrondissement; the entire "Koussanar" quota was to be produced in the territories of the CRs of Ndogo and Maka Coulibanta. For 1996, in fact, the arrondissement of Maka was expected to provide a total production of around 200,000 quintals of charcoal (22% of the entire national quota).

During 1996 **patrons** and **sourgas** have been allowed to cut wood on village lands following written approval on the part of village chiefs, the CR president, and the sub-prefect of the arrondissement.

Although in some villages the **patrons** have recruited **sourgas** from among young residents, the majority of woodcutting laborers are still Guineans. Once established in an area, the **sourgas** tend to cut trees wherever it suits them, village chiefs and local councillors apparently having little influence over them - except when the **sourgas** are young men from the village in question. According to local leaders, it is not uncommon for the **sourgas** to cut wood in areas immediately neighboring village compounds.

In theory, the **sourgas** are only supposed to cut combretae - coppicing being the recommended technique - and dead wood. If locally recruited **sourgas** seem to respect this rule (because they are, after all, on their own lands), "strangers" are much less likely to do so, particularly since it is not they who are fined in the event of an infraction but their **patrons** - who have paid for the cutting permit and are thus legally responsible. **Sourgas** should also be registered with the forestry brigade at the beginning of the charcoal production season - unregistered woodcutters are liable to be fined or imprisoned. Forestry service personnel are expected to monitor the **sourgas**, in order to make sure that cutting is done according to prescribed practice and that all woodcutters have been officially registered. In practice, because the forestry service has very limited resources at its disposal, hardly any

serious monitoring takes place - both illegal cutting by un-registered **sourgas** and prohibited cutting techniques are common in Maka.

Once charcoal has been produced by the **sourgas**, **patrons** arrange for its transport and for obtaining circulation permits from the forestry service. Circulation permits - delivered as charcoal is produced - are intended to limit charcoal marketing to legally produced charcoal. In reality, it is almost impossible to know where a **patron** has obtained his charcoal from. More often than not, **patrons** purchase charcoal from unregistered woodcutters.

The way in which woodcutting and charcoal production take place in Maka does not appear to be very decentralized. It is still Dakar which decides how much charcoal is supposed to be produced. The installation of **sourgas** is often preceded by a preliminary visit to the village concerned by the **patron** in question, who usually only negotiates his access to local forests with the village chief, without the latter necessarily consulting other residents. Local people also have the impression that they cannot refuse access to **patrons**, charcoal production having already been agreed to by the forestry service. And once the **sourgas** are in village forests, villagers exercise little authority in deciding where they can or cannot cut wood, especially when the **sourgas** are "strangers".

In general terms it can only be concluded that the current system of charcoal production is of little benefit to local populations. While some **sourgas** are local residents (and thus benefit from income generation) many are not; in addition, almost all **patrons** are outsiders - and the **patrons** are the actors who make the largest profits out of the charcoal trade. Local women are clear "losers": dead wood has become increasingly rare, and the labor expended in collecting it has thus risen considerably. In Bokô forest, where local communities had requested that woodcutting be limited to certain areas, the **sourgas** have paid little heed to pastoral or other reserves. Nor has the local economy benefitted as much as it might have done: there is still no charcoal depot in Maka, and Koussanar, sited on the highway, continues to reap the knock-on effects of a charcoal "boom" which owes its origins to forests in Maka. Nor has the CR received any rebates on forestry taxes, although it may have reaped some benefits from the rural head tax levied on **sourgas** (and all other residents). Finally, it is quite clear that Maka Coulibanta's forestry resources - which are being exploited in a more or less uncontrolled way - are being subjected to an unsustainable level of offtake.

#### 2.4.4. Appraisal

In terms of DNRM, what has happened and continues to happen at Maka can only be described as profoundly disappointing - especially so within the context of new policies and laws which are intended

to encourage increased local level participation in resource management. Maka Coulibanta raises the issue of the Senegalese state's political will to decentralize forest management - the impression obtained on the ground is that the forestry service is deeply reluctant to allow local institutions to make decisions about how forest resources are to be used and prefers to "manage" forests directly itself.

And yet, it can also be seen at Maka that the forestry service is not in a position to manage competently - woodcutting and charcoal production in Maka are largely uncontrolled, whatever the foresters claim. The forestry service does not (and never will) have the resources necessary for it to implement sustainable management.

Finally, it can also be seen at Maka that in spite of all this, local populations are beginning to defend their right to have a say in what happens to local natural resources and to argue that they have, in so doing, a legitimate claim.

### 3. SYNTHESIS

#### 3.1. Decentralization in Senegal: current trends

##### 3.1.1. Historical context

Compared to other Sahelian countries, Senegal has enjoyed a long-standing tradition of decentralized administration. During the colonial period several towns - particularly the four "communes" of Gorée, Saint Louis, Rufisque, and Dakar, but also the "communes urbaines mixtes" - enjoyed a certain degree of administrative autonomy. Since independence decentralization has been sustained by a series of reforms - in particular those of 1972 (which created "communautés rurales"), 1990 (whereby increased powers were handed over to local government), and 1996 (when a new "code de collectivités décentralisées" established ten "regions" and transferred still more prerogatives to local government units). If, in many other Sahelian (and, indeed, African) states decentralization is a relatively recent element of national policy, in Senegal it has been an integral part of the historical process of governance.

Today, Senegal is made up of several hundred local government units, of which some 320 are "communautés rurales" (CRs). CRs, which can include anything between 15 and 65 villages and a population of 5,000 to 30,000, are the local government units most directly involved in natural resource management. Governed by Rural Councils (made up of between 18 and 28 elected councillors), CRs

have a number of responsibilities<sup>5</sup>, the most important of which are:

- the administration of rural taxes;
- the management of community budgets;
- the management and allocation of national domain lands within their territorial limits.

For the moment, these responsibilities are met under state supervision - provided by arrondissement sub-prefects - which allows the state an "a priori" oversight of all decisions made at the local level.

### 3.1.2. Communautés rurales and DNRM

The involvement of CRs in land tenure issues is clearly the prerogative which links them with decentralized natural resource management. The national domain, established in 1964<sup>6</sup>, covers approximately 95% of Senegal's surface area and is made up of 4 zones - urban, "terroirs", "classées", and "pionnières". Following legislation in 1972, the newly created CRs were given the responsibility for managing the "terroirs" zone of the national domain as well as provided with detailed guidelines as to how they were expected to do so. CRs are the units of government which make decisions about the allocation of land to users and thus about the way in which many natural resources are to be managed.

This very brief overview of the institutional "landscape", however, should not obscure what occurs on the ground in rural areas of Senegal. In reality, the theoretical powers held by CRs are circumscribed from both "above" and "below".

"Above" the CRs, the central state, in certain cases, continues to intervene actively in natural resource management, thus stifling local initiatives on the part of both CRs and other institutions. There is, on the one hand, the formal power of the state, sustained by juridical prerogatives. CRs, for example, do not manage all lands within the national domain: forested areas - both gazetted and non-gazetted - remain under the direct control of the state, as has been seen at Maka Coulibanta. This control is legitimated by the national forestry code which, even in its latest and most liberal form, clearly reaffirms the state's preeminent tenure rights over natural forests. With respect to marine

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<sup>5</sup> although the 1996 reform will eventually broaden their powers, CRs are yet to exercise these new prerogatives.

<sup>6</sup> law 64-46 "relative au Domaine national", which abolished customary and private property rights.

fisheries the state also sees itself as sole owner and thus the only institution legally entitled to manage them. Finally, even with regard to that part of the national domain which they do have the right to manage, CRs are subject to state oversight: sub-prefects are powerful arbitrators of decisions provisionally made by Rural Councils.

Informally, the state also maintains a grip on NRM. In the sylvo-pastoral zone CRs are apparently pressurized into allowing agricultural expansion, conducted by marabouts who, whatever is said to the contrary, are important political actors at the national level. Even if central influences on CRs are only tacitly exercised, local populations certainly perceive them as being pervasive.

CRs' capacity to manage natural resources is also constrained from "below". At both Koulouck and Kayar, CRs are notable by their absence in NRM - in both cases, local populations neither need nor want their respective CRs to be involved in the process of management. Two issues are at stake in this tendency by those "on the ground" to marginalize the role of CRs in DNRM:

- the **relevance** of CRs as management units: other, smaller scale units may often be more appropriate for NRM. In Maka Coulibanta, for example, it is villages which have the operational capacity to decide about wood-cutting; at Koulouck it is UGK - a community-based organization of Ndiagianao CR - which seems the best suited for making decisions about Kad trees and implementing them. In short, considerations of **subsidiarity** tend to render CRs inappropriate NRM institutions at the local level;

- the **politicization** of CRs, which - by law - are run by councillors elected on party slates. Political infighting among parties at the national level, endemic in Senegal, is echoed at local levels. Many rural people, more interested in routine issues about their own livelihoods, suspect that CR involvement in NRM would only result in an even more widespread politicization of everyday life.

From both "above" and "below", then, communautés rurales find themselves "emasculated" - at one and the same time, of limited relevance and power. Their role in DNRM thus often appears to be marginal. These are clearly serious problems which will need to be addressed.

### 3.1.3. Everyday management of natural resources: lessons from the field

While CRs seem to play a limited role in DNRM, other local institutions are more frequently active. The four case studies carried out in Senegal, to different degrees, illustrate this. What

are the main points that emerge from these case studies ?

In the light of the case studies, a first important finding is that rural groups and populations appear to be fully aware of the stakes involved in natural resource management. This, of course, should not be surprising - rural people are those who most directly dependent on natural resources and who live, on an everyday basis, in close proximity to them. What is perhaps more important is that most rural groups have a clear understanding of the need for local level resource management and of the potential for this. In addition, farmers, herders, fishing folk, and others know that they are probably the best-placed to manage natural resources. In many cases - as seen in Kayar and Koulouck - there is no question of waiting for the state to do something, even if all agree that it does have a role to play in DNRM.

When does this local understanding of the issues at stake translate into genuine natural resource management ? It is certainly not automatic and among the four case studies there are major differences:

- at Kayar, among artisanal fishermen, an unequivocally local and effective management of fisheries has been developed;
- at Koulouck, among farmers of the Peanut Basin, local solutions to problems of NRM have been applied - although less strikingly so than at Kayar;
- at Thiargny, in the pastoral zone, there have been attempts to manage natural resources, but without much success;
- at Maka Coulibanta, however, where charcoal production has attained high levels, there are few signs of a decentralized management of forestry resources.

How can such differences be explained ?

The crucial factor seems to be related to the **opportunity**, the possibility, of local management. Where the state allows - and still better, actively supports - for local level management to function, it is likely to do so.

This is the case at Kayar, where a local jurisdiction for the management of fisheries has emerged, partly because the state has been pre-occupied by regulating industrial and foreign fishing, has created a maritime zone exclusive to artisanal fishing, and - through a particularly effective Fisheries Service - has actively encouraged local fishermen to manage resources. The same goes for Koulouck, where the CERP has proved to be supportive of local efforts to protect acacia albida.

In the CR of Maka Coulibanta, however, neither the Rural

Council nor the villages have had the opportunity to manage forestry resources. The way in which charcoal production is "regulated" from Dakar more or less eliminates any genuinely local participation in decision making.

The notion of **opportunity** to decentralize NRM can be reformulated in another way: where local institutions and populations find themselves with "**free space**", within which they can or are allowed to develop local management, they will usually do so. If there is no such space - as at Maka Coulibanta or at Thiargny (where "external" forces encroach on decision-making) - it is much more difficult for DNRM to occur.

This factor is also inextricably related to another: the extent to which resources are **appropriated** (or even perceived to be appropriated) as **defined spaces**. Thus, at Kayar and Koulouck, where local territories are demarcated in clear ways, local populations defend their tenure rights and have gradually established new management practices for the resources over which such rights are seen to be exercised. Where territorial limits are ambiguous (for whatever reason) and the sense of appropriation somewhat less developed (in Maka because villages have yet to map out their "terroirs", in Thiargny because pastoral space is necessarily devoid of clear boundaries), local level management becomes much more problematic.

There also seems to be an extent to which DNRM is associated with resources of a **particularly high value**, either because they produce goods for which there is high market demand or because they are relatively scarce. Where this is not the case and resources are of low value or abundant, DNRM is less likely to develop. Kayar is an especially good example of this: the considerable market value of demersal fish stocks and the competition which surrounds them are certainly factors which have encouraged local initiatives to regulate access to them. At Maka Coulibanta, on the other hand, where forestry resources are still relatively plentiful, local villages are less inclined to invest heavily in resource management.

If these factors go some way to explaining why decentralized natural resource management develops in some contexts and not others, another range of parameters seem to determine the extent to which local management is **effective**.

The first of these concerns the extent to which local institutions have the **capacity and will to carry through management decisions**. Where rules are forcefully applied, DNRM can be successful. A preliminary to this is the existence of sanctions and their use against free riders or rule breakers. At Kayar, the CPC seems to be effective precisely because it manages to fine fishermen who do not abide by its rules. At Thiargny, on the other hand, the borehole management committee appears unable to deal with

the problem of local Jengelbé refusing to pay user fees - for "social" reasons, it is unable to deny water to such herders' livestock, thereby encouraging others to participate in free riding. For decentralized NRM to work, then, there must be a kind of local "rule of law" (whereby none are above local rules) and some sort of public "civicism", whereby users expect others to respect rules and thus themselves conform. Related to this factor is the need for local institutions to have **recourse** to mechanisms for rule enforcement and conflict resolution. At Koulouck, for example, forestry auxiliaries have recourse, successively, to local village chiefs, UGK leaders, and - ultimately - the forestry service in the event that users persistently break rules relating to Kad trees. Similarly, at Kayar, the CPC can appeal for support to the village chief and, if necessary, to the Fisheries Service and the police.

In order that a local "rule of law" operates, decentralized management must ensure that there is **an effective monitoring of users and rule observance**. There is clearly little point in establishing rules about resource use and then not monitoring users. From the case studies it can also be seen that the best way of doing this is by having resource users themselves carry out monitoring. Fishermen at Kayar, for example, monitor others in the course of their own activities: this enables widespread surveillance and a rapid identification of free riders or rule breakers. This, in turn, encourages all fishermen to respect local rules, precisely because they know that they are likely to be found out if they do break rules.

Rules governing natural resource use also need to be realistic if they are to stand any chance of being successfully implemented. Successful DNRM demonstrates a capacity to be **flexible, iterative, and open-ended** - qualities rarely associated with centralized management regimes. At Koulouck, for example, UGK began its program of protecting acacia albida with some draconian rules; later on, having realized that such rules were too strict (and thus unlikely to receive sustained support from Union members, especially women) the group made its rules more flexible. The same flexibility is shown in rules governing allowable catches among line fishermen at Kayar.

For decentralized NRM to be successful it also needs to be conducted in a **transparent** way - without transparency, management loses legitimacy in the eyes of local resource users. The "nebulous" management of Thiargny's borehole, for example, does little to encourage local herders to pay regularly for water - why pay when it is almost impossible to know how any funds are managed? Local managers at Kayar and Koulouck, on the other hand, either do not seek to "hide" their practices or are subjected to persistent scrutiny, the end result being that DNRM is open and public.

Finally, effective DNRM requires that local populations have

the skills to manage competently. The borehole management committee at Thiargny has never received training in financial or accounting procedures (despite the fact that it handles important sums of money); it is perhaps unsurprising that its management of funds leaves a great deal to be desired.

#### 3.1.4. A few words on "special" groups..

##### **Women**

In the majority of the case studies the degree to which women participate in NRM is low. Fishing in Kayar is an exclusively male activity, although women are obviously dominate drying & salting and are important actors in marketing. Unsurprisingly, then, it is men at Kayar who define the rules governing artisanal fisheries. At Thiargny the situation is similar: men dominate decision-making about land use and allocation and "manage" the borehole. For the case of Maka - where DNRM is remarkable by its absence - women are clearly not involved in decision-making relative to forestry resources. It is only at Koulouck that women participate in a limited way in DNRM - and even there one must ask oneself whether this is because their "participation" is the "price" paid by men in order to access external funding.

The consequences of NRM are often negative for women. Commercial woodcutting in Maka Coulibanta and the protection of field tress in Koulouck have both resulted in firewood becoming scarcer, thus increasing the workload for women (who, as elsewhere in the Sahel, are responsible for collecting it). However, at Koulouck the problem has at least been recognized and there have been attempts to compensate women by making available grain mills, improved wood stoves, funding for income generating activities, .. Poor management of Thiargny's borehole favors nobody, but nonetheless seems particularly detrimental to women, who are not only livestock owners but also largely responsible for providing their households with water. Fisheries management at Kayar, although a male activity, does not seem to discriminate against women, who are likely to benefit from the long term positive consequences of sound resource management. In the short term, women at Kayar also appear to reap benefits in higher or sustained prices for fish.

##### **Pastoralists:**

Livestock producers are particular in that, in a context of irregular rainfall and general uncertainty, they need access to resources on a widespread basis. As a result, on their own "home" territories, access to pastoral resources is relatively open. Because of this, pastoralists in Senegal (as elsewhere in the Sahel) face a double dilemma:

- on the one hand, demographic growth among farmers (many of whom are led by Mouride marabouts) has led to an expansion

beyond the confines of traditional agricultural regions and into the pastoral zone. Agricultural colonization of rangelands has brought with it not only a reduction in pastoral space but also new, more exclusive, tenure practices;

- on the other hand, as rangelands have been gradually "squeezed" and population growth has taken place, pastoralists are increasingly competing among each other; such competition, as can be seen at Thiargny, has often taken the form of conflict between "locals" and "transhumants".

These changes, all too evident in northern Senegal, are gradually forcing many pastoral communities to rethink they way they appropriate resources. Although the legal framework remains favorable to farmers, herders are beginning to realize that something needs to be done - soon - if they are to sustain their pastoral livelihoods. And, in the face of increasing competition (over ever scarcer resources) among themselves, some pastoralists are beginning to reflect on new ways of defining access to rangelands.

### 3.2. Some provisional recommendations

In order to support the process of DNRM, a number of recommendations can be made to Senegal's decision makers.

An essential preliminary must be **the creation of "local spaces"** - territorial and regulatory - within which DNRM can evolve and develop. What is needed - everywhere - is the kind of "space" enjoyed by artisanal fishermen at Kayar, where the state recognizes and upholds a special fishing zone exclusive to them. Other user groups need the same privilege if they are to be able to develop sustainable and local resource management systems. Such a policy must be **systematic and coherent**, linked to a **close correlation between policy statements and legislative practice**, and based on a **realistic appraisal of the state's capacities and limits**:

- **systematic and coherent**, because the state continues to pursue a "two-speed" policy: Koulouck, for example, is allowed to develop new, local rules governing the use of and access to field trees; Maka Coulibanta, however, has no such latitude in deciding how (or even whether) its forestry resources are to be used. At Thiargny, local populations are given almost complete responsibility for managing the borehole, but remain subject to state rules when it comes to deciding on land use issues. There are obvious contradictions here, which need to be ironed out;

- **a close correlation between policy statements and legislative practice**: while the state appears to espouse a policy of genuinely decentralizing natural resource management, the legislative measures which would allow such policies to

translate into practice fall well short of the mark. If the preamble to the 1993 forestry code makes it seem as if Senegalese citizens are about to become the owners of their forests, the subsequent text itself quickly - and emphatically - reasserts the state's monopoly over forest-related decisions. The Fisheries Code is equally categoric - and, indeed, unlike the forestry code, does not even allow for the "possibility" of the state entering into co-management arrangements with local user groups;

- a realistic appraisal of the state's capacities and limits is needed because there is a persistent tendency for the Senegalese state to deceive itself into thinking that it can successfully manage natural resources, despite persistent evidence of degradation to the contrary. Monitoring of coastal fisheries, for example, is uniquely a responsibility of the state, even though the Fisheries Service must rely on the assistance of artisanal fishermen and the loan of their canoes to pursue trawlers. The case of Maka Coulibanta, however, is by far the most revealing - the forestry service continues to claim that it does manage forests (something it tacitly assumes is beyond the local population), despite the fact that commercial woodcutting and charcoal making proceed in a largely uncontrolled way.

In short, the state needs to appreciate its limits, rigorously apply the principle of **subsidiarity**, and commit itself to creating a legislative framework within which local institutions are empowered to manage natural resources.

The definition and maintenance of local NRM "spaces" - **sine qua non** for any meaningful DNRM - should be articulated with the "communauté rurale" structure. How might this be achieved ?

Despite their weaknesses and limits, there are good pragmatic reasons for supposing that "**communautés rurales**" remain the most appropriate institutions to which the state should devolve rights and responsibilities. Legislation has already established this tendency, and re-writing such laws is neither realistic nor practicable. Completely rethinking the existing corpus of Senegalese laws on decentralization and land tenure - even if, in the best of all possible worlds, it might be desirable - would also take far too long. What seems more important is to qualitatively reinforce the way in which rights and responsibilities are transferred to CRs, going beyond what is currently foreseen in the new legislation on local government. The forestry service, for example, should accept that CRs enjoy full tenure rights in forests and that they (rather than the forestry service) should be the institutions which make decisions concerning the management and use of forest resources. This process - of reinforcing CR prerogatives in the field of natural resource management - should be accompanied by a corresponding reduction in state "tutelage", a process already

underway in new legislation, which will alter state oversight from being "a priori" to "a posteriori".

Recommending that CRs became increasingly powerful actors in NRM may seem contradictory in the light of what has been said earlier: it has already been seen that CRs are rarely the best placed for effective resource management and that other, smaller, institutions are usually better able to do so. The argument here is a pragmatic one: **local level institutions** (such as the CPC and CSKSL at Kayar, UGK in Koulouck, the borehole management committee at Thiargny, villages in Maka Coulibanta) **can more easily negotiate their right to manage resources with their respective CRs than they can vis-à-vis the state.** Indeed, rural councillors probably know - better than state employees - that they cannot provide adequate management of natural resources and are thus more likely to delegate rights and powers to those who can.

Such a DNRM policy is, of course, **not without its dangers.** Some CRs may be tempted - in the face of official or illicit rewards - to cede resource management to outsiders, thus alienating resources from the local population. In other CRs, political manoeuvring may result in some local groups being rewarded with NRM powers while others may find themselves excluded. Nonetheless, the recommendation to reinforce CR prerogatives can be sustained for two main reasons:

- firstly, the same risks are already run by existing arrangements. The gradual "eating away" of pastoral rangelands owes much to external influences (both formal and informal) on CRs; in other areas of Senegal, particularly those close to Dakar, the allocation of land is currently subject to a variety of "under-the-table" negotiations. The current system is made somewhat more complex by the interplay of the state, prefects and sub-prefects actin to limit local powers;

- secondly, empowering CRs in the field of NRM would probably indirectly empower local level institutions as well. At Koulouck, for example, the CR of Ndiaganiao can hardly ignore the UGK, whose negotiating power with the CR is considerably greater than it is with the state. Villages in Maka Coulibanta, for example, also enjoy more rights vis-à-vis the CR than they do with regard to the forestry service. And, if more is at stake, it might be argued that local level institutions will be more motivated to negotiate the delegation of natural resource management to them.

There is no miraculous panacea for DNRM in Senegal; but if rights and responsibilities are genuinely devolved to CRs, local actors should find themselves better placed than they are now to defend their interests and to insist upon both a more sustainable and more profitable management of resources. If, for whatever reason, such powers cannot (or will not) be devolved to CRs, they might

alternatively be handed over to the new "regions", ten of which will exist. The important thing is for the state to distance itself from the preponderant responsibility for natural resource management.

What role should the state therefore play in NRM ? Four functions seem appropriate to the state:

- the definition of constitutional rules governing the structuring and operation of local NRM institutions;
- the definition of "lois-cadre" for natural resource management, which specify basic principles for local level rules (e.g. respect for domestic usufruct rights, protection of certain species for purposes of maintaining biodiversity, conformity with international conventions, ..). "Details" (e.g. locally protected species, criteria for resource allocation, time limits, etc.) should be left to local management groups;
- conflict resolution, with the state acting as the last recourse for local level institutions. At the same time, the state also needs to legitimate lower level procedures and mechanisms for conflict resolution;
- technical support for NRM, such that local level institutions receive active and appropriate support in putting into action their management plans.

At the same time as the Senegalese state redefines its role in NRM and promotes - via the CRS - local governance of natural resources, it is recommended that other activities occur which will strengthen DNRM. These are as follows:

- **reinforcing and improving local skills and capacities**, through the provision of training and information. Providing local people with the possibility of becoming responsible for NRM without helping them to live up to those responsibilities is, to say the least, unhelpful. The "decentralization" of borehole management in the pastoral zone, for example, has not been accompanied by any real effort to train local committees. This kind of decentralization is, in practice, simply a way for the state to relinquish certain functions because it can no longer afford to carry them out: it is irresponsible. Local populations, although they often have very clear ideas about the objectives of DNRM, will just as often need help in working towards those objectives;
- **reinforcing local powers**, by supporting the development of local conflict resolution mechanisms. Such mechanisms need to be close to hand, legitimate in local eyes, and inexpensive.

The role played by the village chief of Kayar, for example, illustrates well the potential of this kind of initiative;

- **increasing the value of natural resources** to local users. This does increase the likelihood of sound management. Charcoal production, for example, is currently structured in favor of "outsiders", who do not have the same interest in responsible forest management as do the local populations; the latter must be allowed full access to forest resources. Another aspect of this concerns fiscal issues: local institutions need to be able to mobilize financial resources from and for DNRM (as Maka Coulibanta's CR has cogently argued);

- **promoting suppliers of services to DNRM institutions**: in the pastoral zone, for example, decentralized borehole management is made more difficult than it need be by the absence of a maintenance and repair service capable of meeting local needs. In forest areas, decentralized management will need to have access to technical advice and support (not just from the forestry service) if sustainable practices are to be introduced. Encouraging such services might take the form of offering entrepreneurs fiscal advantages (e.g. tax exemptions) to establish themselves;

- finally, local institutions need to be structured or encouraged to structure themselves, if possible, in ways that facilitate the participation of women. This, it is readily admitted, is much easier said than done - although the "Union des Groupements de Koulouck" is, as has been seen, an encouraging example of what might be achieved. To do this on a widespread basis is clearly unrealistic and it is thus more than likely that women will remain, in most cases, the unempowered citizens of local governance units.