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**REPORT ON
NATURAL-RESOURCE MANAGEMENT PRACTICES
AND TENURE CONSTRAINTS AND OPPORTUNITIES
IN THE DIAFORÈ WATERSHED,
FOUTA JALON, GUINEA**

by

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in collaboration with

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All views, interpretations, recommendations, and conclusions expressed in this publication are those of the authors and not necessarily those of the supporting or cooperating organizations.

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TABLE OF CONTENTS

	<u>Page</u>
List of figures and tables	v
Preface	vii
Executive summary	ix
1. Study context and methodology	1
1.1 Study context	1
1.2 Study methodology	2
2. Introduction to the Diaforè watershed	5
2.1 Physical setting	5
2.2 Social setting	8
3. Natural-resource use in the Diaforè watershed	11
3.1 General observations concerning use of natural resources in Diaforè watershed	11
3.2 Use of land resources	12
3.3 Use of forest resources	15
3.4 Use of water resources	16
4. <i>Terroir villageois</i> approach to natural-resource management in the Diaforè watershed	19
4.1 <i>Terroir villageois</i> approach to resource management	19
4.2 Defining territorial boundaries in the Diaforè watershed	21
4.3 Complications in applying the <i>terroir villageois</i> approach in the Diaforè watershed: Unequal rights to resource use	22
5. Tenure and management of cultivated land resources	25
5.1 Introduction	25
5.2 <i>Suntuurè</i> or inner fields	28
5.3 Outer fields	29
5.4 Implications for NRM project activities involving cultivated lands	31
5.5 Increasing land security	34
6. Tenure and management of tree resources	35
6.1 Tenure and management of planted trees in inner and outer fields	36
6.2 Tenure and management of natural-growth trees	38
6.3 Tree tenure and adoption of agroforestry technologies	40
7. Tenure and management of grazing resources	45

8.	Tenure and management of water resources	47
9.	Typology of land tenure conflicts in the Diaforè watershed	49
9.1	Within-family land conflicts	49
9.2	Interfamily land conflicts	50
9.3	Disputes between villages over territorial limits	52
9.4	Dispute settlement mechanisms	53
10.	Conclusions and recommendations for project activities	55
10.1	Applying <i>terroir villageois</i> concept to Diaforè watershed	55
10.2	Tenure and management of cultivated land resources	56
10.3	Tenure and management of tree resources	57
10.4	Tenure and management of grazing resources	58
10.5	Tenure and management of water resources	58
Appendix 1	Glossary	61
References		63

LIST OF FIGURES AND TABLES

	<u>Page</u>	
Figure 1	Map of Guinea and sites of Natural Resource Management project sites	xiii
Figure 2	Map of Diaforè watershed	6
Table 1	Water sources and cultivation zones in Diaforè watershed	14
Table 2	Variations in tree tenure in the Diaforè watershed	38

PREFACE

This report is based on information collected during fieldwork in the Diaforè watershed, Fouta Jalon, Guinea, from January through August 1993. The investigation is undertaken for USAID/Guinea under the auspices of its Fouta Jalon Natural Resource Management (NRM) project.

The report presents the findings of an initial research effort completed as part of the Land Tenure Center (LTC) Fouta Jalon research project. These findings will be further analyzed and elaborated throughout LTC's association with the NRM project. The LTC research program is evolving continually as the NRM project progresses; new tenure and resource management issues and questions will arise and need to be resolved before the project can advance.

The LTC team members wish to thank all the people who made this research possible. We especially acknowledge and appreciate the participation of the residents of BRP-Diaforè.

EXECUTIVE SUMMARY

1. Study context and methodology

This is the second in a series of reports produced for the Land Tenure Center's research project on land and natural-resource tenure and management in the Fouta Jalon region of Guinea. The objective of the project is to identify tenure constraints and opportunities for sustainable natural-resource management at the household and watershed levels. The research, financed by the United States Agency for International Development (USAID), is part of the Natural Resource Management (NRM) project currently being implemented in conjunction with the Guinean National Forest Service.

The LTC field research is designed to identify: (1) natural-resource utilization strategies found in these village territories and in the watershed; (2) territories belonging to each of the villages in the watershed and any conflicts surrounding their definition; (3) natural-resource tenure systems found in the villages; (4) institutions and rules governing the management of natural resources; and (5) key tenure and management issues and problem areas for project implementation.

2. Field study results

a. Village territories. This study, which is committed to understanding how villages define their territories, is an initial step in the *terroir villageois* approach to promoting local-level natural-resource management.* The *terroir villageois* is the land area that is habitually used by members of an agrarian community for their livelihoods, with its boundaries recognized by members of the spatial unit and by those residing outside of the territory. It is thus a socially meaningful unit for insiders and outsiders alike.

Some of the villages in the Diaforè watershed are dominant; other villages are dependent. The status of the villagers determines, in part, the population's capacity to manage the resources that it uses. The noble Fulbe in Fouta Jallon did not cultivate historically, and yet they exerted—and continue to exert—control over most of the land. Today, most of the villages, both dominant and dependent, have clear claims to their *terroirs* either through the right of conquest (villages with dominant status) or because the dominant village has ceded rights to exploit the land and natural resources within its limits. For all the villages, however, careful consideration must be given to the management capabilities of existing community institutions, for new structures may be needed to manage *terroir* natural resources. Employing the concept of *terroir villageois* for resource management in the Diaforè watershed must

* This approach has become increasingly popular among government and nongovernment organizations (NGOs) throughout West Africa. See Painter (1991) for a detailed discussion of *terroir villageois*.

remain supple in its operation, with constant awareness of the specificities of the place and social groups to whom it is being applied.

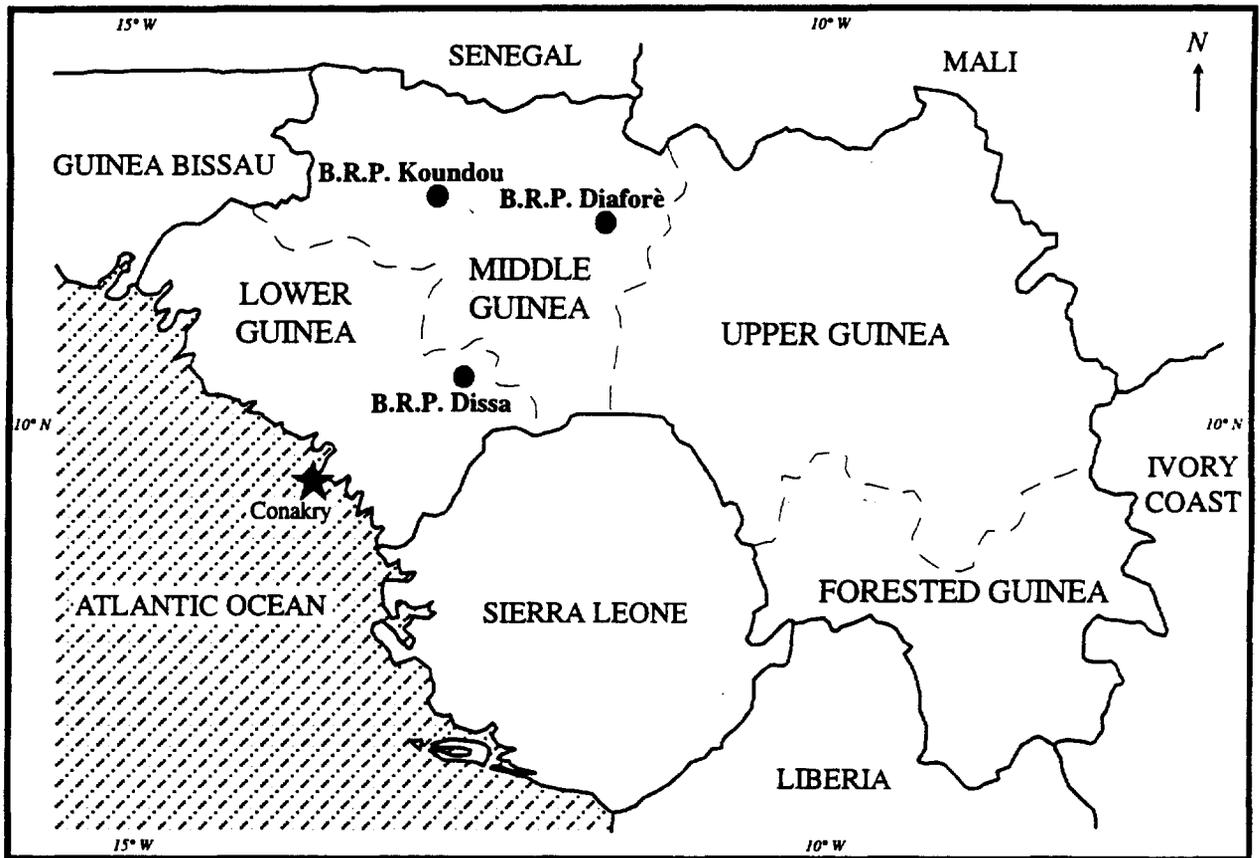
b. Natural-resource user groups. Men and women, young and old, insiders and outsiders, and people of different castes and classes exploit natural resources in the watershed, though these various groups use the natural resources differently. One cannot say that either men or women have significantly higher exploitation or use levels. What is clear is that women are not owners of land in Fouta Jalon, nor are they allowed an independent role in resource management. Captives did not have any rights to land according to traditional rules of society, though this has changed somewhat with the abolition of slavery. Different age groups play distinct roles in the community, and their use and exploitation of resources vary similarly. Active adults hold the dominant role in resource use. Resource use between richer and poorer community members differs greatly, and we observed important variations in rates of exploitation. While poorer members virtually always exploit the resources at higher levels, they often do so for the benefit of (and use by) the richer segments of the population. At the present time, the presence of "outsiders" exploiting natural resources in the watershed is quite low, though this situation could change with transportation and market improvements in the area.

c. Resource tenure and management. There are often marked disparities between those who make decisions concerning resource use and those who are most affected by these decisions. As noted above, women have virtually no voice in natural-resource management. Excaptives are the principal cultivators and users of wood resources, but their tenure rights are limited in relation to free-status nobles. Active adults play a commanding role in decisions concerning the day-to-day management of resources, though they are not the principal adjudicators of conflicts (village elders maintain the central position of conflict resolution). The population's reliance on outside institutions for resource management and conflict resolution remains minimal.

d. Key tenure and natural-resource management issues. Both community and individuals have rights and responsibilities in the resource tenure and management systems. Productive land, water, and forest resources are in short supply in the watershed. Due to increasing demand for these resources, aspects of the local management systems have not been maintained. As such, some local management rules have fallen into disuse over the years. The fallow period, for example, is continually being shortened. Such practices are essential to the protection and regeneration of the community's resources and their loss is detrimental to the vitality of the physical and social environment of the watershed and region.

Resource users in the watershed do not all have equal status and their inequities are translated into differential access, use, and tenure rights. Individuals and groups in the local society will benefit differently from project activities, depending on their social status and the resource-tenure and management rules corresponding to that status.

Figure 1
 Map of Guinea
 and Sites of Natural Resource Management Projects



Legend

★	Capital
- -	Boundaries of Natural Regions
B.R.P.	Pilot Watershed

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1. STUDY CONTEXT AND METHODOLOGY

1.1 STUDY CONTEXT

This is the second of a series of reports produced for the Land Tenure Center (LTC) research project on land and natural-resource tenure and management in the Fouta Jalon region of Guinea. The overall project objective is to identify tenure constraints to and opportunities for sustainable natural-resource management at the farm and watershed level. The research, which is financed by the United States Agency for International Development (USAID), is part of the Natural Resource Management (NRM) project currently being implemented in conjunction with the Guinean National Forest and Hunting Service (Direction Nationale des Forêts et Chasses, DNFC).¹

The specific goals of the LTC research project in the Fouta Jalon are to: (1) identify the formal rules concerning resource access by individuals, households, and groups; (2) explore the impact of these rules on actual agricultural and resource management practices and strategies; (3) investigate the inter- and intravillage economic and social ties, sources of credit, and cooperative associations that may exist; and (4) examine dispute resolution processes related to land tenure and natural resources. This and related information are to be gathered for each of three pilot watersheds where USAID is working.

This report summarizes the findings and analyses of the LTC team's research efforts completed thus far in the Diaforè watershed. Early recognition and knowledge of the resource

1. Under the direction of Ministère de l'Agriculture et des Ressources Animales (MARA).

tenure and management issues—that is, understanding prior to attempting project implementation—will enable the Bassin Représentatif Pilote (BRP) and technical teams to address these problem areas and projected obstacles from the start. Achieving solutions is more feasible and tenable when difficulties are identified early. These issues should not be minimized or marginalized, because project success depends on addressing and resolving resource tenure and management problems. Latent or suppressed tenure issues found in the preproject situation can easily and quickly become barriers to ultimate project success. Rather than diminishing the significance of these hidden concerns, project implementation often amplifies their relevance. This working report, which specifically spells out the obstacles we have found thus far and offers some preliminary suggestions on addressing them in the project context, is meant to serve as a catalyst for creative discussion and debate among LTC research-team members and the BRP-Diaforè staff, not as the final word on any of the issues.

The report begins with a brief introduction to the Diaforè watershed and a summary of natural-resource use in the region for the benefit of readers not associated with the project. Section 4 examines the *terroir villageois* approach to natural-resource management and its application to the Diaforè watershed. Sections 5 through 8 detail the natural-resource management strategies and tenure systems found in the Diaforè watershed. Section 9 outlines the array of tenure conflicts found in the watershed and scrutinizes the dispute-settlement processes employed by villagers. The final section recapitulates recommendations for NRM project implementation.

1.2 STUDY METHODOLOGY

The study was carried out using Participatory Rural Appraisal (PRA), a qualitative research methodology that draws upon the knowledge of local people and incorporates their perspectives—their voices—as an integral part of the investigation process. Just as those implementing a technical project recognize the need for a sense of "ownership" by local participants, the LTC team believes that the local people must also have a sense of ownership of the research phase of the undertaking.

While PRA normally relies on a multidisciplinary team, the LTC venture is composed uniquely of social scientists. To achieve a multiplicity of focus, therefore, discussion among the LTC team and the NRM project technical personnel is a constant, continual process. The methodology employed by the LTC team also entails spending a limited but intensive time at each study site, using a range of techniques to promote active participation of the local population in the collection and analysis of information.

1.2.1 OBJECTIVES

The objectives of research, identified before commencing fieldwork in the Diaforè watershed, were determined largely by the broad purposes outlined in the contract between LTC and USAID/Conakry. The field study component was designed to identify (1) natural-resource utilization strategies found in the village territories and the watershed; (2) village territories of each of the villages in the watershed and conflicts that might surround their

definition; (3) natural-resource tenure systems established in the villages; (4) institutions and rules governing the management of natural resources; and (5) key tenure and management issues and problem areas for project implementation.

Not only was gathering this information for each village considered crucial, but also we sought to understand the interrelationships among villages. For power relationships and tenure disputes do not stop at village limits or upon leaving the watershed—indeed, such boundaries themselves often engender conflicts.

1.2.2 CHOICE OF SITE

The Diaforè watershed was chosen by USAID for project activity prior to the arrival of the LTC research team. The LTC team will now conduct research in all three watersheds where USAID has ongoing undertakings.

During this initial period, the team decided to operate in all of the villages within the boundaries of the watershed. This presence has given team members an opportunity to identify independent and unique issues of individual villages. During subsequent fieldwork, more focused and directed research will be conducted in certain villages or within particular subpopulations according to project needs.

1.2.3 PROGRAM OF ACTIVITIES

The field research has followed a flexible program of activities, with the first field visit beginning on 27 January 1994 and continuing to date. The team worked in each of ten villages for at least a week, returning to the locales when they had specific issues to study.² Preliminary analysis was conducted throughout the fieldwork and during intermittent stays in Labè; final analysis and writing followed the completion of the field studies.

The team used a wide variety of PRA tools in the field to gather the information presented in this report. These techniques included participatory mapping; transects; semistructured individual and group interviews; Venn diagrams of institutional relations; historical matrices; historical profiles; and specific site visits to water sources, fields, and the like. In the evenings the team members discussed the day's findings and analyzed the information collected. On many occasions they spent part of the evening casually visiting with the villagers, finding it a comfortable way to continue gathering information.

2. There are ten (10) villages located within the boundaries of the Diaforè watershed. An eleventh village, Koumbama, was studied even though it is formally found outside of the watershed. This village was included in the initial investigation due to its proximity to the basin and because of its obvious relations with BRP villages. Then, subsequent to our work in Koumbama, we were told that the village has been officially added to the project scope. Since during the initial visit to the village we were concerned mainly with identifying the interactions and associations of its residents with the BRP population, a follow-up visit is now required to record tenure and management issues specific to Koumbama.

The LTC team also met with BRP project members on numerous occasions to discuss its research findings with the technical team. Several times during the fieldwork LTC arranged meetings with the subprefect, seated in Kouratongo, to review land-tenure conflicts and natural-resource issues that he was aware of or had been called upon to resolve.

1.2.4 LIMITS OF THE STUDY

These initial months of fieldwork in the Diaforè watershed have been highly successful, allowing the presentation of important research findings in this report. Great patience and persistence were required from the team members, however, as they met with continued reticence and suspicion from the local population. The main limiting factor to LTC research has been the reluctance of villagers to disclose any detailed information, especially concerning land tenure. The Peul ethnic group is known for its private and reserved nature under any circumstances; the political history of Guinea only adds to the participant's apprehensiveness.

The team intended to speak with a wide spectrum of the population, including women and men, members of different age groups, and people from various castes and classes. Achieving this goal proved difficult, since at times influential members of the community did everything in their power to control whom we saw and spoke with in the village. Through persistence, combined with patience and creative maneuvering, we managed to minimize the biases of such a controlled environment.

Crosschecking information is an essential field technique since the villagers often were reticent and sometimes misled us. We repeatedly verified details and data within and between villages to ensure that the information gathered was sound and accurate.

Assembling information from and about women in the villages presents unique and nagging problems. Women are often either not allowed or not inclined to speak openly with team members about natural-resource management and tenure issues. Both men and women minimize, if not negate, women's roles in natural-resource use and management. The team continues to make every effort to incorporate women and to give them a voice, but we have not found an easy means by which to do this. Women's marginalized position in local society easily translates into a depressed position in the research process.

A final limitation of the field study is the unbalanced composition of the research team from a disciplinary perspective. At times we recognize that having more technical expertise would be helpful, but we hope that our ongoing discussions with BRP project personnel will minimize this disciplinary imbalance and enlighten our research efforts.

2. INTRODUCTION TO THE DIAFORÈ WATERSHED

2.1 PHYSICAL SETTING

The Diaforè watershed (see map, figure 2) is situated in the midst of an expansive *bowal*, or lateritic plain, 120 kilometers northeast of Labé. The watershed covers a total land area of 60 kilometers squared (6,000 hectares), located between 11°27' and 11°39' north and 11°23' and 11°34' west.

2.1.1 LAND RESOURCES

The extent of the cultivation and grazing zones in the watershed is restrained and insufficient for the population actually exploiting these resources in the area. The diminishing land/user ratio has caused the population continually to shorten the fallow period, which currently lasts between five and seven years.

The most outstanding geographic feature found in the watershed is the abundance of *bowal* (approximately 50 percent of the watershed's total area) and the correlated deficiency of tillable land. Quite atypical of much of Fouta Jalon, all of the villages in the watershed, *missidè* and *rundè* alike, are situated along the watercourses in the valleys. These valleys constitute a mere 20 percent of the watershed's area. "Varied slopes" make up 30 percent of the watershed.³ Thus, agriculturally productive land is at a premium in the Diaforè watershed.

The villagers divide the land resources of the watershed into a number of specific micro-ecological zones, including *bowal*, *hansaghèrè*, *n'dantari*, and *dunkirè*.

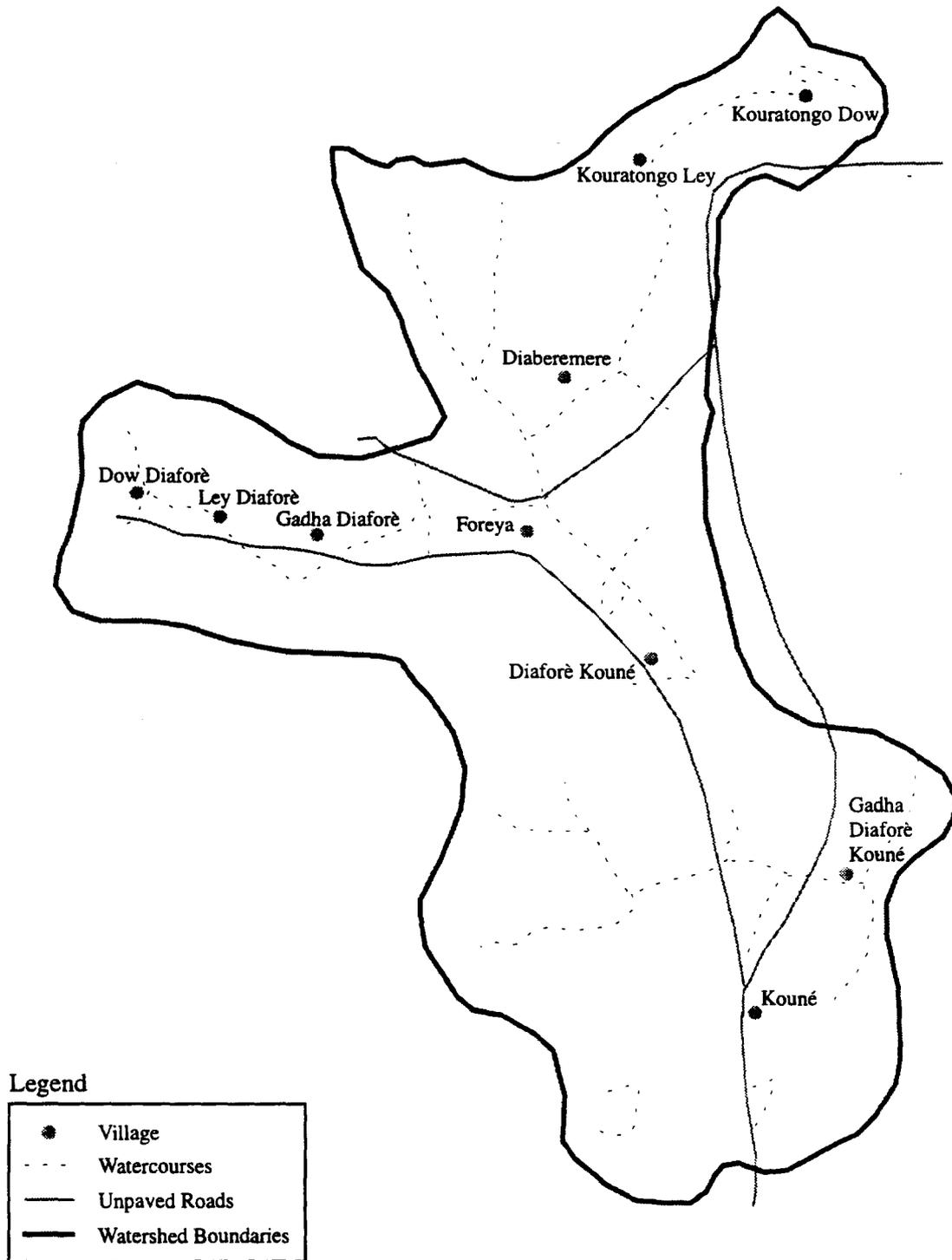
The *bowal* is a plateau that is more or less barren of soil, though it does provide important grazing during the dry season. This zone is burned annually during the dry season to encourage new grass growth. More controlled burning and construction of rock walls in recent years have permitted some rehabilitation of the soils and vegetation of this area.

The *hansaghèrè* is a zone of medium to steep slopes. Erosion affects the soil composition in this area, with the remaining eroded soil being very rocky. This land type is found throughout the Fouta and is the territory most favored for *fonio* cultivation.

The *n'dantari* is the slightly sloping land in the valleys. The thin alluvium soils are homogeneous and compact. Compared to the *hansaghèrè*, water infiltration in the *n'dantari* is good, but these soils acidify easily and lose their fertility.

3. This information is taken from a preproject baseline study completed for USAID/Conakry. See Baird et al. (1990).

Figure 2
Map of Diaforè Watershed



Dunkirè refers to the small zone bordering temporary and perennial watercourses. This land receives clay and sand deposits from seasonal overflow. The soil is humid throughout most of the year. This is the micro-ecological zone—the watershed lowlands—that is the most fertile and productive. Intermittent gallery forests are found in this area.

2.1.2 VEGETATION RESOURCES

Most people's initial response to seeing the Diaforè watershed landscape (in the dry season) is "stark." The lack of vegetation, especially during the dry season after the *bowal* grasses have been burned, gives the area a "moonscape" appearance. Small vegetated islands on the *bowal* and limited swaths of protected gallery forests along the watercourses are the extent of the watershed's forest resources. Vegetation at various stages of regeneration grows in the fallowed hillside and valley fields.

The most common species found in the watershed include *nètè* (*Parkia biglobosa*), *thimmè* (*Milicia regia*), *èndhamma* (*Holarrhena africana*), *kura* (*Parinari exelsa*), *teli* (*Erythrophleum guineensis*), *kaarè* (*Butyrospermum parkii*), *thèlèn* (*Prosopis africana*), and *kankaliba* (*Combretum micranthum*). The incidence of such Sahelian tree species as the baobab (*Adonsonia digitata*) shows that the watershed lies within a savanna transitional zone.

2.1.3 PRECIPITATION AND WATER RESOURCES

The area is considered a transitional zone between Fouta Jalon and Upper Guinea, as evidenced by the lower rainfall received (1,200–1,600 mm) compared to much of the rest of Fouta Jalon (1,600–2,000 mm).

The Diaforè watershed constitutes part of the headwaters for the Bafing, which eventually flows into the Senegal River. The principal watercourse in the watershed, the Diaforè is composed of three major branches: the Kouratongo, the Koumbama/Fulasso, and the Kounè.

Today none of the branches of the Diaforè flows continually throughout the year, and during the dry season the watercourses break into a series of stagnant ponds. There are some permanent springs in the watershed, but the number has diminished over the past several decades. Villagers cited approximately twenty-five springs, including both permanent and seasonal sources. The reasons for the drying up of water sources need to be further examined and the population must come to understand the relationship between land use, ground cover, and ground-water availability.

The population's reliance on these water resources for human and animal consumption, bathing, and washing has diminished with an increased reliance on wells found in many of the compounds in the watershed. Most of the wells have been dug in the past ten to fifteen years; some go dry during the late dry season but most have water year-round.

2.2 SOCIAL SETTING

The Diaforè watershed was home to the Jalonke before the area was taken over by Islamized Fulbe immigrants. Today the population of the watershed is a blend of Fulbe ex captives of diverse origins, with a few families identifying themselves ethnically as Jalonke.

Informants maintain that historically different segments of the population were more specialized in particular resource-use activities than is currently the case. For example, the families of Dow Diaforè were primarily cultivators and hunters, those of Gadha Diaforè were predominately herders, and villagers of Ley Diaforè emphasized field cultivation. Today most villagers combine cultivation and animal owning; fishing and hunting have all but disappeared, and exploitation of forest resources has declined rapidly. The majority of households do not rely solely on exploitation of the natural resources found in the watershed, but send one or more family members out of the zone in search of wage labor.

The separate slave villages, such as Foreya, Gadha Diaforè Kounè, and Diaforè Kounè, were created early in the settlement of the zone. Over the decades the ex captives have gained a great deal of independence and greater equality in relation to the Peul nobles. The assertion that ex captives in the watershed are far less subjugated than in the past is not in question, but the fact that nobles continue to exert incredible dominance over access to land is no less debatable. The exact nature of this relationship varies from village to village but plays a significant role throughout the area. The critical relationship between nobles, captives, and land will be examined in a subsequent section of this report.

Each of the villages classified as a slave village is also home to one or several noble families, with the exception of Foreya. The reasons for this settlement pattern are not yet clear, but it will be important to understand the role of these resident nobles in controlling access to and use of the (otherwise) slave village's natural resources.

The watershed's population (1,805 inhabitants in 1990) is divided between ten villages and hamlets. Kounè and Kouratongo Center are the largest villages; each is also the site of a mosque. Kounè is the original Islamized Fulbe settlement in the area. Kouratongo Center, however, is the present site of the subprefecture, a factor that causes indisputable tension between the villagers of Kouratongo and Kounè.

A third mosque is now being constructed in Koumbama, a large village situated just outside of the watershed limits. Koumbama has been incorporated into the project boundaries because of its close ties with villages in the watershed.

The watershed falls entirely within the administrative boundaries of the Kouratongo District of the Kouratongo Subprefecture in the Tougue Prefecture. The district is one of four that make up the subprefecture; it is further subdivided into seven sectors. Sector and district council members represent the villagers in the Communauté Rurale de Développement, which regroups all four districts of the subprefecture.

Seasonal out-migration during the dry season is prevalent in the Diaforè watershed. Both men and women (especially from the exaptive villages) travel to Mali during the dry season to mine and wash gold. This exodus, even if only seasonal, will affect project design and implementation since the younger and more able segment of the population often leaves. Until these people see that the benefits of project activity warrant their staying, the project cannot count on the labor and initiative of an important portion of the population. If this segment of the population eventually chooses to remain in the watershed, gaining access to productive land may pose problems.

3. NATURAL-RESOURCE USE IN THE DIAFORÈ WATERSHED

In this chapter we describe how the population uses various natural resources found in the watershed, with particular interest in the differences between various user groups. Natural resources are used by all inhabitants, but the population is not homogeneous in the manner of exploitation. Resource use varies by gender, age, social class or caste, residence status, and specific occupational needs. This section begins with some general observations about resource use patterns by the different segments of society. Utilization of land, forest, and water resources are discussed in turn.

3.1 GENERAL OBSERVATIONS CONCERNING USE OF NATURAL RESOURCES IN DIAFORÈ WATERSHED

Gender differences. In a society where roles between men and women are well defined and generally respected, it comes as no surprise that women and men make quite different use of the natural resources in their zone. That is not to say that one group has higher use rates than the other. Both men and women extensively exploit the water, forest, and land resources of their territories. Competition between men and women over resource use appears to be minimal, however, probably because their resource use patterns do not habitually overlap. Another reason for the lack of competition is men's nearly total control over decisions concerning resource use in their community. A woman's use of a plot of land, for example, is wholly dependent on permission from a man.

Differences by age group. Fulbe society is highly stratified by age, with each age group making distinct use of the natural resources available to them. While the older segment of the society may use (in the sense of consume) a greater portion of some of the resources, they are not the primary exploiters of any of the natural resources. Active adults between the ages of 30 and 55 are clearly the principal resource users. While this segment of the population plays an important role in the day-to-day management of resources, the individuals acquiesce to village elders for conflict resolution and more important village- and family-level resource-use decisions.

Caste differences. The resource use differences that exist between nobles and excaptives/casted groups are very significant. That is not to say that these social groups always use resources differently. For example, excaptive women and noble women alike cultivate *suntuurè* fields, and members of all social groups cultivate outer fields. In the past, captives cultivated more than the nobles, whose use of land and forest resources was confined largely to pastoral activities. Today, land is used for cultivation and herding by both excaptives and nobles. Casted people and excaptives, who tend to specialize in wood- and metal-working, exploit more forest resources than other groups.

Residents and outsiders. Little was said about problems with natural-resource use by nonresidents of the watershed. Some villagers maintained that open access to forest resources in their village territory is restricted to sector associates. Most watershed residents did not give any examples of "outsiders," however they chose to define them, coming into the zone to exploit resources.

3.2 USE OF LAND RESOURCES

Agriculture and herding constitute the principal activities in the watershed. Both economic activities make extensive use of the land resources found in the area and beyond its borders. The basic way that land is used and the practices of cultivation have changed little over the generations (except for a brief and disastrous period of tractor cultivation during Sékou Touré's rule). Land-use practices for cultivation of inner and outer fields and for herding are briefly described in this section.⁴

3.2.1 INNER FIELDS

The *suntuurè* fields most often are situated in the interior of a household's compound, surrounding the user's home, though *suntuurè* field extensions may be located on available land toward the limits of the village. All of the *suntuurè* fields in the Diaforè watershed are situated on *n'dantari* soils of the alluvial plain. The soils are fine, sandy clays and can be worked relatively easily. By March most of the soil in the *suntuurè* has been turned in anticipation of the planting season, which begins with the rains (usually lasting from May through October).

Each woman in the village has (relatively) secure access to an inner field through marriage. Men hold ultimate rights to the land, but women exploit the fields. The annual crops that women cultivate in their *suntuurè* vary, but most fields include multistoried production of corn, manioc, sweet potato, taro, and sundry small condiment crops. A variety of fruit trees, including mango, papaya, orange, and avocado, grow in the inner fields. These trees have increased in importance over the years and remain the male property owner's domain.

The intensive cultivation practiced in the *suntuurè* requires that soil fertility be maintained through consistent manuring and mulching. Maintenance of this fertility is the sole responsibility of a woman, and her investment in soil building will vary according to her work load and physical strength (closely related to her age). Most of the *suntuurè* fields were partitioned by ditches, which have been dug to prevent erosion. Cultivation of these inner fields remains intensive and an important source of production, but yields have been diminishing in recent years due to diminished rainfall and increased termite infestations.

4. A more thorough examination of resource use can be found in Fischer et al. (1993), the first LTC-Fouta Jallon report; present discussion is limited to the specificities found in the Diaforè watershed.

Many of the *suntuurè* fields in the Diaforè watershed include a portion of land that the men cultivate in outer-field crops. This accounts for the very large expanses of fenced-in *suntuurè* land.

3.2.2 OUTER FIELDS

The outer fields, whether situated on surrounding hillsides (*fello/hansaghèrè* soils) or in valley bottoms (*dunkirè/hollaadè* soils), are traditionally the men's domain. All the villages in the Diaforè watershed have access to both hillside and valley fields, though some of the cultivation zones are positioned beyond the watershed's boundaries. In particular, Diaforè Dow villagers contend that today they cultivate more land outside their territory than in the past. Gallery forests have been cleared intermittently over the last fifteen years as villagers have sought viable land to cultivate. People prefer cultivating valley-bottom fields, but Forestry Service agents have increasingly prohibited farming in this zone. The villagers have moved into areas less controlled by forestry agents, expanding their exploitation of hillsides and valley bottoms farther from the watchful eyes of the agents. (See table 1 for a list of cultivation zones.)

In the valley fields, *fonio* and rice are the principal crops. On the hillsides, peanuts are added as a possible crop choice. With the decline of rain since the 1970s, the villagers have abandoned long-season, slow-growing varieties. Due to growing population pressures and the restrictions on land use, the length of fallow has been shortened over the years and today averages three to ten years. The length of the fallow depends, on the one hand, on the availability of land and, on the other, on the crop cultivated. On river-bank and valley-bottom land, the fallow rarely exceeds seven years. Fears of reprisals and heavy fines by forestry agents, however, have made some people leave their river-bank fields uncultivated for much longer periods of time than they would otherwise choose.

Today many women cultivate parcels in the outer fields on a portion of their husbands' fields. In the past, the outer fields were more clearly the domain of men, but with the rural exodus of active male workers, women fill the labor deficit in the outer fields.

Over the years women and men in the watershed have attempted gardening projects on outer-field land along the stream channels, but presently most have abandoned their efforts. The villagers cite severe problems with insects, birds, primates, and herded animals as the cause for the failures. A few men, in Koumbama, Kounè Missidè, and Diaforè Dow, have started banana plantations, with others voicing interest in such developments.

Several techniques are used by cultivators to protect the soil and to encourage rapid regeneration of the vegetation. The construction of rock walls in the hillside fields, as an anti-erosion technique, is used effectively by some farmers in the watershed. The population seems to appreciate the efficacy of such measures, though the practice is not used by many cultivators and others admit that it has fallen into disuse. To encourage rapid regeneration, trees are felled at shoulder height. Additionally, many valuable tree species are left standing in fields cleared for cultivation.

TABLE 1 Water sources and cultivation zones in Diaforè watershed

VILLAGE	WATER SOURCES	CULTIVATION ZONES
Dow Diaforè		Bamba
Gadha Diaforè	Bhundu Kadyo (D) Bhundu Mangassabou (D) Bhundu Dagoré (D)	Bamba Dyolol Diabèrèmèrè
Ley Diaforè	Bhundu Dhatal Gollo	Bamba: Kalakou Tongole Hoore Ndantari
Koumbama	Bhundu Dow Saarè Bhundu Nonghnè	Bamba Sabèrè Diabèrèmèrè
Diabèrèmèrè	Weendu Mangassabou	Koolè Buubè, autour du village
Foreya	Weedu Feto Weedu Téli Weedu Neene Boori	Bamba "The dunki and the hillside fields that surround Foreya"
Diaforè Kounè	Tyankun Manga Bala Tyankun Alpha Aguibou	Tyankun Kolèbhè (lent to Kounè Missidè); Daandè Tyangol Gonkudyi (property of Kounè Missidè); Fello and Ley Sèèrè: along the watercourse; Diaforèwol and Dyooli: near the villages
Gadha Diaforè Kounè	Bhundu Diaforè (D) Bhundu Dyooli Diaforè	Ley Sèèrè (to the east) on the hillsides, Ley Tyankun (also to the east), Wuro Fèllo (north-east), Balenga (south), Ndantaari.
Kounè Missidè	Bhundu Dow Saré Bhundu "near the parawol" Bhundu Ka Mirihun Bhundu Ka Hoore Weedu Bhundu Kadjorè Bhundu "near Modi Conté' fence" Bhundu "near Didèrè Nègè"	Along the tyangol (from Foreya, all the way to Mirirè), Fèllo Ley Sèèrè, Dyoolol Ansou, Tyangol Balenga, Tongolè (in the past), Tyankun Kolèbhè, Gonkudyi, Bèèla Kouré, Santa Daarabhè.
Kouratongo Ley	Bhundu Ko Hoorè Tyèekèhi Bhundu Ndu Soppaka Haa Handè Bhundu Ko Thierno Bhundu Wadhundu Dyigi Dyigirè	
Kouratongo Dow	Bhundu Suudhi Ndu Bhundu Mody Ousmane, next to a little hut Bhundu Nongnè	Koolè Buubè, Bananadyè, Barakali, Teliko, Bullèrè, Ndantaari, Pèllè.

(D) = Dries up at some point during the dry season.

3.2.3 USE OF LAND FOR GRAZING

All land that is not fenced off for cultivation is potential grazing land, though the effective use of this land is limited by (1) villagers who control herd movement in the rainy season and (2) seasonal availability of water and forage. During the rainy season, the herds are kept close to the villages and are carefully surveyed to avoid their entering into cultivated fields. While some villagers claimed that they corral their animals at the outer edge of the village during the rainy season, most people simply keep their animals close to the hamlet on fallow and *bowal* land. After the fields are harvested, herds no longer require surveillance. As the grass species become desiccated, the herds move into the moister, greener valleys. The herds of each village have regular dry-season grazing sites where they remain throughout the season. The lack of sufficient water and fodder at any one locale requires that the animals be free to roam. Following the burning of the *bowal*, animals return to that zone in search of new green growth, but their penetration of the *bowal* is limited, once again, by the availability of water.

Informants throughout the Diaforè watershed asserted that, in the past, their herds remained in close proximity to the village year-round because fodder was sufficiently abundant. Only during the past fifteen to twenty years have the herds been forced to wander greater distances in search of pasture.

Excaptives began keeping cattle in the 1950s. Prior to that time members of this group owned goats and sheep but rarely owned cattle. Noble and excaptive women keep herds that they received as part of their dowries.

Herd sizes steadily diminished during the First Republic because of the regime's exploitative and repressive economic policies in relation to animal owners. Presently, the Fulbe and excaptives alike are investing in cattle and smaller livestock. Although fodder and dry-season water sources are difficult to ensure at times, these factors have not limited investments in animals thus far.

3.3 USE OF FOREST RESOURCES

Forest products constitute an important, but diminishing, resource in the Diaforè watershed. Forest resources are used for a wide variety of purposes. The most important species include *nètè*, *karè*, *sindya*, *bani*, *kahi*, *tyèlèn*, *tyimmè*, *lébé*, *lèngè*, *pellitoro*, *tyèwè*, *kèwè*, *kossi*, *malanga*, *kaadyo*, *soomo*, *boylè*, and *buru*. A number of informants noted that *kèwè* is increasingly scarce in the zone since it is widely used for house construction. Most of the wood, of a variety of species, is consumed locally for construction, fencing, and cooking fuel. Other species are exploited for commercial purposes (i.e., fabrication of boards), especially the *tyimmè*, *kahi*, and *soomo*. In the past, men in Gadha Diaforè Kounè cut boards and sold them outside the watershed. In addition to wood, certain tree species are used for their roots, bark, leaves, and fruit; for medicinal purposes; for cooking; and for direct food consumption; they can also supply forage for herded animals.

Villagers reported that their use of wood has increased over the years primarily due to house construction. In contrast, the use of other tree products has diminished over time, especially with the increased use of Western medicinal products and because women employ alternative products for food preparation.

In the colonial era the population of the watershed was forced to collect rubber from naturally growing rubber plants. Villagers were required to pay colonial taxes and fees in-kind with rubber, until Yassine Diallo put a stop to these demands near the end of French rule. During a period of very high demand, the villagers planted rubber to ensure that they would have a secure source, but most of these plants were never exploited because the practice of rubber payments had come to an end before the plants were mature.

Regardless of the use made of the trees, villagers who cut wood use techniques that encourage rapid regeneration. Trees are felled at shoulder level to facilitate regrowth; coppicing is done selectively and with care—branches are cut at a certain distance from the trunk, for example.

3.4 USE OF WATER RESOURCES

According to inhabitants, water is the resource in shortest supply in the Diaforè watershed. Ironically, the Fouta Jalon is described often as West Africa's "water tower." In the Diaforè watershed, the decline of rainfall and the degradation of natural water sources has mounted over the past two decades, presently causing significant difficulties for the population. The villagers increasingly encounter problems in meeting their water needs for direct consumption and production activities. Natural springs, which once flowed continuously even during the dry season, dwindle and compound wells desiccate. Rainfall has declined to a degree that the change has affected land and crop choices. Furthermore, herd movements are restricted due to the lack of adequate water sources. As noted above, the lack of water has not been so severe, however, as to limit the accumulation of herd animals. Many women said that dry-season gardening is impossible unless their water is regulated. As wells and natural springs dry up with the progression of the dry season, women are forced to spend more time collecting water.

Village water needs are supplied from three main sources: household wells, rainwater during the rainy season, and perennial springs. Most wells have been constructed over the past ten to fifteen years. Late in the dry season, when most wells have gone dry, the perennial springs provide the last possible water source for both the human populations and their herds. The number of perennial springs has declined considerably over the years (see table 1, p. 14, for a list of village water sources).

Local efforts to maintain and protect water sources have diminished over the past decade in direct correlation to the installation of household wells. Villagers throughout the watershed have relaxed enforcement of the management rules that regulated the maintenance and protection of the water supply. In Dow Diaforè, the village elders asserted that they no longer needed to protect the Diaforè fount because they now are "protected against the spirits that

once inhabited and controlled the source." While villagers once feared cutting even a blade of grass, they are now cutting trees.

In Kounè, the land surrounding one important perennial water source was first cleared and cultivated approximately ten years ago. According to one elder, such an event would never have occurred in the past. Although the land in close proximity to the source is held by individuals, these people once refrained from clearing land bordering the water fount. Near the end of Sékou Touré's rule, the practices and knowledge of the elders were rejected by the village youth, and with this abandonment of "tradition" came the destruction of many of the natural springs in the zone. Recently both young and old villagers have become more inclined to admit the utility of such historical practices as protecting communal water supplies. According to the elder of Kounè, greater distances are again left uncleared when fields are cultivated near a water source.

4. **TERROIR VILLAGEOIS APPROACH TO NATURAL-RESOURCE MANAGEMENT IN THE DIAFORÈ WATERSHED**

This section outlines the *terroir villageois* approach to resource management and discusses this technique in relation to the Diaforè watershed. The NRM project is designed to work with local populations in the management of natural resources. The *terroir villageois* approach, the use of which is prescribed by the Government of Guinea's (GOG's) national agricultural policy, is seen as a sound way to encourage and facilitate greater decentralization and local-level participation. Some of the positive aspects and difficulties of applying this procedure are discussed below.

4.1 **TERROIR VILLAGEOIS APPROACH TO RESOURCE MANAGEMENT**

This study was concerned, among other things, with understanding how local populations define their village territories as an initial step in instituting the *terroir villageois* approach for promoting local-level natural-resource management. The *terroir villageois* is the land area that is habitually used by members of an agrarian community for their livelihoods, with boundaries recognized by members of the spatial unit and by people residing outside of the territory. The *terroir villageois* is thus a socially meaningful spatial unit for insiders and outsiders alike.⁵

In the Diaforè watershed, it is important not to confuse or equate the *terroir villageois* with a village's resource-use zone. The two spaces rarely coincide exactly, with a village's use space almost always being more expansive than its *terroir*. Defining and bounding resource-use spaces for the purpose of management in the BRP-Diaforè will require careful attention to the realities found in the watershed and demand the cooperation between villages.

Some resource-use activities are bounded spatially far more easily than others. For example, the cultivation zones belonging to or exploited by each village in the Diaforè watershed can be identified relatively easily. Significantly, most villages have important cultivation zones situated outside of their *terroirs*. In contrast, herding activities do not accommodate strict spatial bounding. The area cultivated by a population of a particular village, the zones they use for grazing, the places where they may fish and hunt, and the domain over which they exert political and/or resource-management control may all have different boundaries. Furthermore, village territorial limits often have little meaning in relation to the felling of trees or the collection of deadwood and grasses or the pasturing of animals. The exploitation of different zones for distinct resource-use activities markedly complicates the delimitation of village territories and the utility of such boundaries for management objectives.

5. See Painter (1991) for a detailed discussion of the *terroir villageois* approach.

In the Diaforè watershed, some of the villages are dominant, inhabited entirely by nobles (Dow, Gadha, and Ley Diaforè), and one village is dependent, composed uniquely of ex captives (Foreya). Several other dominant villages have mixed populations, made up of both nobles and ex captives (Kounè, Dow Kouratongo, Ley Kouratongo, and Koumbama), while two dependent villages also have mixed populations (Gadha Diaforè Kounè and Diaforè Kounè). The status of the villagers determines, in part, the community's capacity to manage the resources that it uses. The noble Fulbe in Fouta Jalon historically did not cultivate, and yet they exerted—and continue to exert—control over most of the land in Fouta. Today, most of the villages, dominant and dependent alike, have clear claims to their *terroirs* either through right of conquest (the villages with dominant status) or through abdication (that is, the dominant village has ceded the right to exploit land and natural resources within its limits to dependent villages). Only one village, Gadha Diaforè Kounè, is clearly more dependent than the others concerning rights to land and control over territory. The full extent of Gadha Diaforè Kounè's *terroir* is claimed by the dominant village of Kounè, though this village has ceded full rights to household and inner-field land to their ex captives. While Dow and Ley Diaforè claim that the *terroir* of Foreya theoretically lies within their joint *terroir* boundaries, they have ceded limited transfer rights to the Foreya villagers.

Most ex captives in the watershed appear to hold very strong usufruct rights over the land that they cultivate. Yet, their autonomy to manage tree and water resources or make permanent changes on the cultivated land remains limited to the extent that nobles exercise their historical right to control resource use. The meaning of the *terroir villageois*, and the potential and utility of employing this spatial unit as a resource management domain, will vary from village to village. As a general rule, villages with dependent status will be more limited in managing and controlling the use of their natural resources than will dominant villages.

For all the villages, careful consideration will need to be given to the management capabilities of existing community institutions. New institutions may need to be formed to manage *terroir* natural resources. Furthermore, only through a process of negotiation between neighboring dominant and dependent villages and between local populations and state agencies can territorial management units be delimited and mutually acceptable management rules and rights be mediated. Resource management using the *terroir villageois* approach can work solely if resource users have greater control over their resources. Land-use decision-makers, particularly the forest service (DNFC) and other local political authorities, need to be implicated in the *terroir* resource-management plans. These authorities must be willing and active participants in the process if the villages' rights and efforts to manage their resources are going to have meaning.

The *terroir villageois* technique has heretofore been applied to West African situations where a significant portion of a village's territory is recognized as the commons or communal property of the hamlet. Common-property land resources are virtually nonexistent in the Diaforè watershed and throughout Fouta Jalon. This poses a certain number of problems, since one of the aims of a *terroir* natural-resource management plan is to set aside particular portions of communal land for grazing uses, as protected forest reserve, or for other communal resource-use activities. In the watershed, the villagers will be forced to negotiate

with individual landowners to cede their land rights to the village for communal management and ownership. The project has already begun to explore the necessary steps for acquiring land around particular water sources to put into reserve status. The amount of land that the village will be able to procure in this manner and manage as common property will be limited, however, and this restricts the types of activity that can be effectively carried out.

Employing the concept of *terroir villageois* for resource management in the Diaforè watershed must remain supple in its operation, with constant awareness of the specificities of the place and the social groups to which it is being applied. The *terroir villageois* has proved to be an effective management unit because it is based on a socially meaningful element. If no such spatial unit exists, or if the population using the natural resources is not the same as that which ultimately controls access to and management of the resources, delimiting boundaries and employing the *terroir villageois* approach will be meaningless and, therefore, ineffective.

4.2 DEFINING TERRITORIAL BOUNDARIES IN THE DIAFORÈ WATERSHED

The village elders act as a living cadastre, with knowledge of village boundaries being passed down through the generations. If and when the project staff assists in establishing village territorial boundaries, the elders of each village implicated should be present. In our initial investigations of village boundaries, the ease and confidence with which different village populations delimited their village lands varied considerably. Most informants gave fairly precise indications of their village's territorial limits, especially concerning the limits to cultivation zones. The respondents were slightly less precise concerning the extent of the *bowal* included in their territory. In the process of defining these borders, several boundary conflicts were exposed and some of the difficulties with applying this concept to the Diaforè watershed were revealed.

Confusion quickly mounts when the question of village boundaries is discussed with villagers from the three Diaforès: Dow Diaforè, Gadha Diaforè, and Ley Diaforè. Dow Diaforè villagers initially maintained that no real boundary exists between the three villages—that all land originally "belonged" to the first settlers of Dow Diaforè but was subsequently subdivided between the residents. Only upon realizing that we would pose the same questions in Gadha Diaforè did the head of Dow Diaforè refer to a boundary between the two villages. He argued that the boundary which Gadha Diaforè villagers would advance was not a true limit and was not recognized by anyone outside of Gadha Diaforè. The villagers of Gadha Diaforè, indeed, did have a clear idea of their territorial limits with the two Diaforès on either side. Needless to say, the boundaries given by the two village populations did not concur, with Gadha Diaforè laying claim to far more land than Dow Diaforè recognized. In contrast, the boundaries defined by Ley Diaforè villagers agreed with those of Dow Diaforè. Not surprisingly, Dow and Ley Diaforè villagers claim closer fraternity with one another than with the Gadha Diaforè population.

Interestingly, villagers of Dow Diaforè had no problem defining the boundary between the three Diaforès and Foreya, where their excaptives reside. The villagers of Dow Diaforè

continue to contend that the all of the land used by Foreya residents belongs ultimately to Dow Diaforè. The nobles of Dow Diaforè maintain, however, that they would never attempt to take away land that is being exploited by Foreya villagers, having over the decades ceded to them virtually total rights.

Two exaptive village populations, those of Foreya and Diaforè Kounè, dispute their village boundaries. The controversy erupted when two villagers, one from Foreya and the other from Diaforè Kounè, claimed rights to the same land. The villagers of Foreya assert that the people of Diaforè Kounè are attempting to expand their territorial control. Notably, this border conflict between the inhabitants of two (ex-)captive villages was mediated by their respective nobles in Ley Diaforè and Kounè Missidè, but it remains unresolved.

Kounè disputes its territorial boundaries with two villages situated outside of the BRP-Diaforè, Bella Kourè and Lagui. No resolution has been achieved, but all parties were prepared to call upon the elders of the area to walk each village's boundaries.

No other intervillage boundary disputes have been exposed through the discussions completed thus far. This does not preclude that other conflicts will not surface if a process of territorial delimitation is undertaken. Indeed, additional boundary conflicts should be anticipated.

4.3 COMPLICATIONS IN APPLYING THE *TERROIR VILLAGEOIS* APPROACH IN THE DIAFORÈ WATERSHED: UNEQUAL RIGHTS TO RESOURCE USE

Drawing boundaries around a land area that constitutes a population's use space and securing rights for those users that are adequate to provide sound long-term management of the resources in the territory need not be analogous procedures. They appear not to be tantamount in all situations in the Diaforè watershed. The *terroir villageois* approach tends to view the village community as a homogeneous, largely undifferentiated, independent entity. Such assumptions are clearly inappropriate for the Diaforè watershed (as they are for most situations), where social differentiation has an impact on the ability and autonomy of individuals within specific social categories to manage their natural resources.

Excaptives' rights to make decisions concerning the management of natural resources are limited in comparison with the nobles'. While excaptives have gained clear usufruct to land for continual seasonal cultivation, their use rights are not equal to the rights that nobles retain. The limited rights extended to excaptives translate into restricted tenure security. Security of holding, in turn, influences the land user's ability to make long-term management decisions and to adopt practices to protect and regenerate natural resources. Excaptives' adoption of new land uses or management practices that increase the land user's claim on the land, such as the planting of permanent tree crops, are likely to be prohibited by the nobles, who hold ultimate rights to the land.

Thus, while the excaptives may have a clear sense of a resource use space, they hold only limited license to determine how the natural resources in that space will be used. Sound

natural-resource management requires an extended time frame. Security of tenure increases the resource user's incentive to accept short-term opportunity costs and to make necessary investments in sustainability. The *terroir* approach relies on a "sense of appropriation or belongingness and community responsibility for its useful environment" (Painter 1991, p. 14). Assigning responsibility to ex-captives for natural-resource management in their *terroir* involves a relationship between user and use space that seems tenuous, at best.

A significant bias of the *terroir villageois* approach is that this unit of development intervention is appropriate to sedentary forms of resource use but not to the realities of pastoral resource management or hunting and gathering activities. The local action spaces of all resource uses must be integrated in ways that are acceptable to all users. Natural-resource management in Diaforè watershed villages will require incorporating the needs of all the user groups, which calls into question the effectiveness and appropriateness of the *terroir* technique.

5. TENURE AND MANAGEMENT OF CULTIVATED LAND RESOURCES

5.1 INTRODUCTION

Land resources in the area are divided between villages, with village lands being further distributed among clans and, more specifically, among male family members.⁶ None of the land is farmed on a communal or lineage basis. Clans, and by implication, individuals, do not have equally sized landholdings. On the one hand, this has to do with which clan/s was/were the first arrivals in the village; on the other hand, it has to do with each clan's principal activity or role in local society. The clan that held, and may still hold, primary political power in the village often is the clan with the smallest portion of agricultural land because the clan apportioned their land to win political support.

Individual male family members hold rights to separate portions of the family's land that they have inherited. Each individual asserts autonomous rights over his landholdings. The indigenous land-tenure system found in the watershed—and throughout much of Fouta Jalon—recognizes privatization of rights in land. Complete individualization and privatization of land rights, however, to the point of holding the right to transfer land to someone outside of the lineage without joint approval, do not appear to exist in the watershed at this time.

Land in the Diaforè watershed can be acquired in various ways. The methods of acquisition include inheritance, loans, gifts, appropriation (initial clearing and use of part of the pool of village land), exchange, sharecropping, and sale. Most land is obtained through nonmarket channels, with inheritance being by far the most common method of procurement. Appropriation is increasingly less frequent as yet uncleared land becomes rare. Often land settlements are arranged without problem; other times they are the source of profound conflict. Examples of land disputes are discussed in section 4.

The system of land inheritance in the BRP-Diaforè is founded, theoretically, on Islamic principles. However, there are certain divergences in the local inheritance practices from Islamic rules. In practice, a supple interpretation of Islamic principles by the Peuls permits: (1) the oldest son to inherit the largest portion of his deceased father's wealth; (2) the wife with the largest number of children to inherit the greatest portion of her deceased husband's wealth; and (3) the women not to inherit land.

Lands purchases are uncommon and have heretofore been restricted to compound land, including *suntuurè* fields. In the majority of cases of land sales, excaptives constitute the land purchasers, and the exmasters, the sellers. In other cases, strangers or newcomers have purchased concession land from their village hosts. Land gifts, though they do occur

6. The masculine pronoun is used throughout this section because land in the Diaforè watershed is held uniquely and solely by males.

occasionally, are seen as problematic. The likelihood of eventual conflict between the descendants of the land giver and those of the recipient appears high. Several informants spoke of land exchanges between two individuals who find it to their mutual benefit and convenience to exchange their landholdings; this usually happens because the one field is closer to the other person's compound.

Land lending, an extremely important practice in a society where landholdings are drastically unequal, is becoming increasingly difficult. Landholders are hesitant to lend out their land, fearing that the land will be expropriated by the borrower. Land borrowing is best understood if divided into two distinct categories, short- and long-term. First, there are short-term land loans, whereby the land is borrowed for one to two seasons. This strict time limit is set to diminish the possibility of the land borrower's making permanent claims on the land. Short-term land borrowers are expected to pay a 10 percent tithe, or *farilla*, to the property owner at the end of each season. The land borrower has only limited use rights to the land. The second category of land borrowing involves land that is lent on a long-term basis, usually an arrangement between ex captives and their ex masters. This relationship is quite different from the first category of land borrowing. First, the majority of informants, both ex captives and ex masters, claimed that the tithe was rarely exchanged. Second, the loans are made for long periods of time—sometimes for several generations, whereby the land borrower's rights to the land are transferred to his descendants. Many ex captives argue that this so-called (primarily by the nobles) borrowed land was first cleared and cultivated by their ancestors, who worked the land after laboring most of the day in their master's fields. This land was never cultivated by the nobles or for the nobles. The ambiguity arises because the land was initially cleared and cultivated when the captives were under the command of their masters.

The land rights of this second category of borrowers are much more secure, but they should not be confused with the rights of true landowners. The landowner, or a descendant thereof, can reclaim rights to land at the end of any cultivation season, even if no one in the family has cultivated the field in the past. Furthermore, the land borrower's rights remain limited throughout his tenure as borrower. These land users cannot, for example, plant trees on borrowed land. Nor can the land borrower lend the land to a third party. Many ex master land lenders made it clear that they would keep close track of all project interventions on their landholdings and would not hesitate to reclaim their land if they felt threatened with land loss or wished to benefit from the land's increased value. Thus, the more secure land rights of the long-term land borrowers could vanish in the face of project activities.

The issue of ex captives as land borrowers is complex and could easily be the source of future land conflicts. Some ex captives claim adamantly that they are not land borrowers and that all the land they cultivate belongs to them. The inhabitants of Foreya are especially candid about their secure and total rights to the land within their *terroir*. The villagers of Dow and Ley Diaforè concur with Foreya inhabitants that they have little power to usurp the land found within Foreya's territorial limits, and yet they also maintain that the outer-field land of Foreya belongs ultimately to them and not to the ex captives. Significantly, the villagers of Foreya rarely plant trees in their outer fields, a practice that is more common among nobles. Between Dow Diaforè, Ley Diaforè, and Foreya, however, there is little chance that this ambiguity will cause problems in the future. Dow and Ley Diaforè

inhabitants made it clear that they would not claim rights to land in Foreya no matter what project activity was implemented.

The situation between Gadha Diaforè Kounè (dependant village) and Kounè (dominant village) appears to be far more problematic. Exmasters and excaptives of these villages both agree that a slave cannot be a landowner. Inhabitants of Gadha Diaforè Kounè cultivate the hillside land near their village, and nobles from Kounè would be unlikely to reclaim their rights to this land. The situation is quite different on *n'dantari* and *dunkeji* land. In the words of one Kounè informant: "Each and every *dunkirè*, each and every *parawol*, each and every *thankun*—the tillable lands that are situated between Kounè Missidè and Foreya—all belong to the nobles, without exception." The villagers of Kounè promise to involve themselves in all project activities effected in their dependent villages and expect to receive a just portion of the benefits realized (implying 50–60 percent, according to the nobles).

As mentioned above, landowners are increasingly careful about to whom they lend out land for fear of losing their land rights. When one landowner spoke about land loans, he said that he was willing to lend land to women to garden but would be unwilling to lend the same plot of land to a man. The landowner reasoned that a man was more likely to cultivate banana plants or other tree crops and subsequently declare ownership of the field. Old men and women without children can receive land through a loan that would be denied anyone who has descendants who could make a claim on the land at some later date. In all the villages in the watershed, land loans are a major cause of conflicts.

The market for leaseholds, specifically sharecropping, is relatively rare at present, but does exist between nobles and excaptives. Sharecropping arrangements can be expected to increase, however, where the NRM project implements labor-intensive activities such as irrigation development. The most common sharecropping arrangement involves a fifty-fifty split between land user and landowner.

Two categories of villagers have weaker security in land: the excaptives and women, with women having the most restricted rights. Women in Fouta Jalon hold no independent rights to land, even though, according to Islamic law, females are entitled to one-half of the inheritance of males, including land. Wives rely on husbands for access to land; unmarried women depend on their fathers and brothers. The specific tenure rules that surround women's access to and use of land will be examined below. The range of land rights that excaptives hold is broader today than in the past, but these villagers tend to lack adequate tenure security and access to land in some important circumstances. The exact nature of excaptives' land rights varies greatly depending on a multiplicity of factors, many of which will be reviewed in this chapter.

The specific land rights exercised over particular parcels of land were examined in each of the villages in the watershed. These land rights include limited use rights (rights to grow annual crops and to collect firewood and fruits), full use rights (rights to grow annual and perennial crops, to make certain permanent improvements, to collect firewood and fruits, among others), and transfer rights (rights to lend, rent, mortgage, give, bequeath, and sell). Transfer rights can be subdivided further, distinguishing between (1) "limited transfer,"

whereby the land user has no permanent transfer or alienation rights but may have some temporary privileges to lend or rent the land; (2) "preferential transfer," which refers to permanent transfer rights that are limited to within the family or lineage (transfers between nobles and their excaptives are grouped in this category); and (3) "complete transfer," meaning the total right to alienate land to those outside of the lineage.⁷ This classification scheme was used to distinguish between the range of land rights that exist in the watershed. These land rights and who holds them will be examined in the following sections.

5.2 *SUNTUURÈ* OR INNER FIELDS⁸

The *suntuurè* fields are recognized as the private property (or *maadé*, in Pulaar) of an individual. In all cases men retain preferential transfer rights to this land, but women have full use rights. *Suntuurè* land sales, though infrequent, have taken place in the watershed, typically between nobles and their excaptives. While the husband owns the field, *suntuurè* use rights belong to the married woman. Each woman receives a parcel upon marrying into the household. The inner fields belonging to the household are surrounded by fencing, often with the family's houses situated in the center, clearly delimiting the family's land. The individual holdings of each married woman are less well marked but are clearly defined and known by everyone. The family's field area may be enlarged as the family expands, just as a woman's individual holding can be subdivided and fragmented between her sons as they bring wives into the household.

With no exception found thus far, excaptives hold secure transfer rights to the *suntuurè* land they cultivate and to the land where their houses are located. The excaptive men plant trees freely on this land, and the division of land rights between men, women, and children are the same for excaptives as for nobles.

A woman's rights to the land are limited in several important ways, the most important being her complete loss of use rights if she leaves her husband's household, as in the case of divorce. The woman's male children retain the right to inherit land in their father's *suntuurè* even after divorce. The woman's rights to the land upon death of her husband are less clear, but she appears to retain use rights if she has male children who will inherit the plot in the future. In one case in the BRP-Diaforè, however, a childless widow reserved her use rights to her deceased husband's land even after refusing to marry his brother, which is the customary practice in Fulbe society. Such exceptions to the rules can and do occur.

The *suntuurè* fields are subject to family inheritance and are maintained within the family for generations. As mentioned above, the son inherits his parcel from his mother, to be given to his wife/wives to cultivate and harvest. Girls can be given temporary use rights in their mother's field prior to leaving the household for reasons of marriage but cannot inherit land.

7. These categories are similar to those used by Migot-Adholla et al. (1991).

8. For a more extensive discussion of tenure, management, and inheritance of *suntuurè* fields, see Fischer et al. (1993).

Upon marrying into the husband's household, a woman receives a portion of her mother-in-law's field to manage. Excaptives follow the same inheritance rules as nobles for their *suntuurè* land. Several informants reported that, in the past, estate distributions of a deceased captive were made in the presence of the master. This convention is practiced today in situations of conflict or disagreement between heirs.

5.3 OUTER FIELDS

The original clearer/occupant of a portion of land and his descendants are the rightful holders of that land. An individual's fields are dispersed throughout the village's territory because of the fallow rotation system practiced in the area and the need to have fields in a number of cultivation zones. Some of the cultivation zones of all the BRP villages are located on borrowed land within the boundaries of neighboring territories and/or are found outside of the watershed/project zone limits.

Several clans or lineages may have landholdings in the same cultivation zone, though not all the families of a clan hold land in each of the zones where the clan is represented. Each individual household within a particular lineage autonomously holds a number of outer fields. These fields are bequeathed from father to son, with each son receiving, in theory, an equal portion of tillable land. If the inherited land is small in size, the descendants may elect not to subdivide but will leave the field intact, whereby the eldest heirs have use rights to the field during the first rotation while the younger inheritors borrow land elsewhere. During the following rotation, this arrangement is reversed.

A woman typically has full use rights to a portion of her husband's outer field, the size of which is proportional to the number of working-age children she has. Similar to the men, the women return to the same field segment after each fallow period. Even if a woman is unable to work the outer-field land herself, her husband and/or children cultivate the land for her, with the harvest destined for her granary.

The excaptives hold full use rights to large tracts of outer-field land; over the recent generations, their rights have extended into limited and even preferential transfer rights as the unequal bonds between nobles and captives weaken. There is a clear distinction between the excaptives' land rights on hillside exterior fields and valley/river-bank fields. Hillside fields, which the captive family cleared originally for the noble but have worked exclusively for generations, have become the individual property of the excaptive, with the land inheritor holding preferential transfer rights to this land. Valley fields remain firmly in the hands of the nobles, with captives obtaining rights to the land through a land loan or sharecropping arrangement. Some excaptives claim to hold full use rights and even transfer rights to certain *bas-fonds* fields, but the security of their rights is questionable. Excaptives rarely plant trees in these exterior fields, a practice more common among nobles.

The exact nature of the excaptive's rights in land varies in relation to the individual's connection to his master. The villagers of Foreya strongly assert their independence and their secure land rights, even on land along the water channels. Their exmasters, who are found

in Dow and Ley Diaforè and Koumbama, confirm that the ex captives are largely free from old social ties of subservience and inequality. Furthermore, these nobles do not maintain any claims on the land held and cultivated by the villagers of Foreya within that village's territorial limits. Thierno Oury Bella of Foreya expressed his view: "In any case, those who purchased captives are dead and those who were purchased are also dead. All that remains are people who are united through relations of mutual cooperation and equality."

The nobles of Kounè, on the other hand, exert lasting control over their ex captives and much of the land that they cultivate. When these ex captives gain access to productive valley bottom land in close proximity to their village, their use rights remain limited and controlled by the nobles. The lasting conviction among many nobles remains, "A captive can never possess land himself, since he himself is possessed."

As is clear from the two quotes above, the range of relationships between nobles and ex captives is vast. The interpretations of these relationships varies greatly between nobles and ex captives, and each unique relationship entails different land rights for both parties.

In many cases the customary tithe of 10 percent continues to be given to the landholder in exchange for use of the land. Nobles and ex captives agreed that the tithe was not always given and depended, once again, on the relationship between the land borrower and the land lender. In most circumstances today when the payment is made, tithe can be interpreted broadly as a type of land rent.

We found a number of indications that the ex captives often possess only restricted land rights and a limited sense of security on their outer fields and even on compound land. For example, when conflict arose between ex captives Oury Bella of Foreya and Alpha Aliou of Diaforè Kounè, the former did not hesitate to seek assistance from Thierno Hamidou of Dow Diaforè, who is the descendent of Oury Bella's ex master. A second example arose when Mamadou Bailo needed to consult, and obtain permission from, Modi Conté, a noble of Kounè Missidè, when he wanted to give a piece of land for house construction to Samba Djouma. These examples demonstrate the limited land-appropriation rights of ex captives.

Rumors of NRM project activities in the area have caused much confusion about the security of local land rights. Many inhabitants are under the impression that "the project" (which is often not distinguished from "the state") will be taking land from the villagers to develop and use. Others have the sense that they will benefit from project interventions if such intercession takes place on land to which they show clear land rights. Last year a number of inhabitants planted trees on fallow land or in fields that were being used by someone else but to which they claimed preeminent rights, for they wanted explicitly to demonstrate those rights through tree planting. One example of this strategy is the Dembéankè noble of Kounè Missidè, Amadou Sadio, who recuperated a *dunkirè* field, which he had heretofore never cultivated, at the edge of Gadha Diaforè Kounè and planted fruit trees evenly spaced throughout the area. While no one is contesting Amadou Sadio's ultimate right to the land, many are shocked that such a dormant land right was proclaimed.

5.4 IMPLICATIONS FOR NRM PROJECT ACTIVITIES INVOLVING CULTIVATED LANDS

5.4.1 IMPACT OF UNEQUAL LAND RIGHTS

Rights to land in the Diaforè watershed vary according to social rank, gender, age, and resident status. All men with full resident status, nobles and captives alike, can claim ownership to some land, if only their *suntuurè* and compound holdings. Women cannot own or inherit land, but they do have secure use rights to both *suntuurè* and outer-field land. The complex array of land rights and the variability that exists in each of the villages will affect which project interventions should be selected and for whom. Ignoring land rights and access and use rules would have a detrimental impact on the success of certain project activities.

The project staff should not underestimate the significance of local land rights and the strength with which they can be asserted. Some of the differences in rights lie dormant at present but could come to life swiftly if the landowners feel their rights and land security being threatened. In some cases the landowners may repossess their landholdings, even if they or their ancestors have never cultivated the fields. One land-owning noble of Kounè claimed, "Should the land be developed, the noble/master may well reclaim exterior fields being cultivated by the captives. In effect, these fields belong historically to the grand-parents of the master."

In other cases, the landowners may not attempt actually to reclaim their land but may expect a portion of the returns realized by excaptives from developments or improvements on the land. Many nobles, especially those of Kounè, have made it clear that they expect to profit from any project intervention executed on their landholdings. In the words of one noble, "In situations where the project increases the value of cultivation land, the noble will not evict his excaptive who has been working the land. Instead he will try to control the activities that take place on the land. The noble will demand 60 percent of what is produced, leaving the excaptive with 40 percent, without causing any frustration" (from the noble's perspective, to be sure). This may be a difficult situation to detect because no one will be displaced, but the labor of the excaptive would be severely abused.

Many villagers believe that the project—and by implication the state—has plans to appropriate land on which to realize project activities. As time goes by, and as project actions are taken without the project/state usurping the landholders' rights to the land, this misconception will diminish. Due to this perception, however, project staff should be careful not to take actions or make unilateral decisions that will increase popular apprehension about land loss. Considering the history of state repression with which these villagers have lived, project staff must be extremely sensitive to these fears. Project personnel should not select the land on which to perform project activities; rather, villagers should be involved in the process of choosing where and under what conditions a particular activity takes place. The land rights on the selected field or forest should then be thoroughly investigated, clarifying any ambiguities and resolving any conflicts before the project activity is undertaken. A land user's security in the holding may need to be increased to ensure continued rights after developments are achieved, a topic discussed in part 4 of this section.

Excaptives almost completely lack access to some categories of productive land, specifically, *dunkirè* and *n'dantaji* land in the valleys and along the watercourses, where many project interventions will be attempted. This implies that nobles will control the benefits gained from all activities in these areas. Captives will, however, in all probability, provide the bulk of the labor. Both excaptives and nobles maintain that excaptives who work the land and the landowners will split the harvest fifty-fifty. The frequency of sharecropping arrangements is bound to increase as project developments bring more *dunkirè* and *n'dantaji* land into production. This situation may not be something that can be avoided, nor is it necessarily negative in the eyes of the sharecropper. However, the project staff may be able to assist in negotiating a less exploitative, more secure situation for the land user. This issue is discussed below.

Project staff should be careful when suggesting activities involving women, who will need greater land security than they customarily have. A woman has the greatest likelihood of acquiring long-term use of land from her husband. Procuring land from others would be more problematic for women, though not impossible under certain conditions. Each land transaction involving women should be discussed openly prior to project implementation so that the rights and duties of each party are known.

In most cases both men and women claimed that women would have little problem borrowing land for gardening activities. Access to garden plots should be openly negotiated—written agreements between the parties are preferable—to increase the women's longer-term security, thereby encouraging them to make greater time and material investments in the land.

Women's access to garden land appears more troublesome in several villages. In Dow Diaforè, men doubted if women would be given secure long-term access to riverside land because of its high value and the demand for this type by male landholders. In Gadha Diaforè Kounè, villagers have no access to riverside land bordering their community (all the land belongs to Kounè); therefore, women will have little hope of negotiating access rights.

5.4.2 IMPACT OF SEASONAL DISPLACEMENT

Two forms of population movement may affect project success—dry-season labor out-migration and relocation to distant outer fields during the cultivation season—and must be taken into account when planning and programming project activities. Significant numbers of women and men from the Diaforè watershed leave their villages during the dry season to take up wage labor in the gold mines of Mali. Others travel elsewhere during this agriculturally unproductive time of year. Seasonal out-migration removes the younger, and often more productive inhabitants of the villages. Project activities scheduled for the dry season must consider these temporary labor losses. For example, in some villages many women will be absent during what is typically the gardening season.

The second type of population movement that occurs in the watershed involves people moving to their outer fields during the cultivation season. During certain rotations, the village's fields may be located at a great distance from the village, compelling the cultivators

to remain at their lands. The seasonal absence of these individuals may have an impact on project activities for labor and decision-making purposes. Furthermore, the project staff should not forget the existence of these distant outer fields when planning project interventions.

5.4.3 AIMING FOR SUSTAINABLE TECHNOLOGIES

A rather different resource-management issue concerns the sustainability of rock-bund technology. The project is interested in reintroducing the construction of rock walls in hillside fields. This technology was first introduced in the area during French colonial rule and was implemented widely during Sékou Touré's regime. Most village informants claimed that they have witnessed the benefits that the technology produced. The practice has fallen into disuse since its introduction, however. Project staff should try to understand why the villagers have abandoned this practice and what can be done to make it more sustainable in the years to come. Such knowledge may permit the staff to reintroduce rock-bund technology in a more effective manner.

5.4.4 CHOOSING LAND FOR PROJECT ACTIVITIES

Villagers, not project staff or government authorities in the area, should select where a project activity is to be administered. After the villagers have a clear sense of the intervention being proposed or suggested, they will be the ones most able to make the choice of an acceptable area for the activity. After villagers communicate their selection, the project staff will need to confirm that the place chosen meets the technical criteria and is appropriate from their perspective. This selection process should not occur in reverse sequence—the villagers might feel cornered into agreeing with the project's choice, when in actuality they oppose it.

Allowing villagers to suggest the land appropriate for project operations will avoid problems that the staff may not foresee. For example, certain areas within many village territories have never been cultivated due to the spirits and devils that dwell there. Not knowing that a place is haunted, a staff member might select the site as the perfect location for a certain intervention. Needless to say, such an action could lead to the activity's complete failure because few villagers would be willing to risk working in an area inhabited by spirits.

5.4.5 LAND-USE DECISIONS, STATE AUTHORITIES, AND PROJECT INTERVENTIONS

State authorities have long played a prominent role in land-use decisions in Guinea, and villagers fear and distrust these people. The project staff, while wanting to maintain close contact with government authorities in the area, also need to remain autonomous. Not only should the project continue to be independent from the state, but also the staff must show villagers that the project is truly sovereign. This implies that project decisions with villagers should not be taken in the presence of nonproject government agents, nor should government authorities be openly involved in designating villagers for particular project activities. State authorities, especially those who have been in the area for an extended period of time, possess knowledge of villagers and village affairs that can be invaluable to project staff. Discussions with these people, however, should take place privately and without the presence

of villagers. Project staff alone should contact villagers about their possible involvement in project activities.

Forestry agents control the use of land along the watercourses in the watershed, but the application of state regulations is inconsistent, often corrupt, and frequently abusive. Furthermore, villagers argue that if the state elects to impose a ban on land use, which essentially robs them of their resource, it should be obliged to provide them with some alternative way to gain their livelihood. The project staff should introduce interventions that would resolve this dilemma.

In some villages the forestry agents have imposed a cultivation fee on everyone, regardless of whether or not they have cultivated fields in the zone. Such "fees" fall outside of the law. In other cases, the forestry agents have issued permits to cultivate (for a small sum), only to return at the end of the season to fine the same persons at an exorbitant rate for having cleared the land. The villagers feel that they have no recourse to such abuses. If one project aim is to involve the villagers in the management of their resources, the role of the forestry agents must change.

5.5 INCREASING LAND SECURITY

Land users will not be willing to make important, slowly maturing investments in their landholdings unless they are sure that they will capture the benefits. Throughout this section mention has been made of the insecurity of land rights experienced by particular groups in local Peul society. Further, insecurity in landholdings has increased as landowners grow more unwilling to lend land on a long-term basis. The land tenure system should facilitate the formation of capital by creating incentives for investment. Security of tenure plays this role by guaranteeing the return on slow-maturing investments in the land.

A number of the agricultural interventions planned by project personnel will require addressing the issue of land security. Many inhabitants of the watershed borrow land for one to two seasons; these borrowers' tenure security is inadequate for their being willing to make permanent improvements in the land. The people who exploit the land need greater long-term security in order to invest in the land. On the other hand, the landowners also must rest assured that their rights to ownership are not being usurped. Land contracts or long-term agreements between landowners and land users, negotiated through the project, appear to be a sound method to increase security for both parties.

We have been considering possible solutions to the land insecurity that plagues cultivators in the BRP-Diaforè. In this capacity we visited the Centre d'Etudes et de Coopération Internationale (CECI) project in Lelouma-Centre. Within the context of the rice production and gardening projects, CECI has assisted production group members to negotiate twenty-five year contracts with property owners. A similar approach is being considered for the USAID/NRM project.

6. TENURE AND MANAGEMENT OF TREE RESOURCES

"Leggal dyatai leidi" [The tree gains the land]. Modi Mamadou Saliou of Gadha Diaforè succinctly expresses the relationship between tree planting and land tenure.

In recent years we have come to understand that tree tenure constitutes a system of property rights and rules as complex and variable as land tenure.⁹ Many reforestation and agroforestry projects in West Africa have failed because the local people lack the incentive to plant, protect, and manage trees when ownership (or other forms of long-term land security), access, and use rights are not well articulated at the project's inception. An individual's or group's incentive to plant trees and manage them in a sustainable manner is determined largely by what long-term rights the tree planters have over the trees.

Tree ownership is closely linked to landownership in the study zone. As discussed in the previous section, tree planting solidifies a person's rights to the land; as such, planting trees asserts and strengthens land claims. Therefore, tree planting is strictly regulated in order to prevent nonlandowners from sowing trees. Excaptives and women are the most affected, for neither group is able to plant trees freely; this will have an impact on the choice of project interventions. Details of the local tree-tenure system are discussed in this section.

With few exceptions, the person who owns the land also owns the trees on the land and, in theory, can exclude others from using them. Tree renting, tree pledging, and tree sharecropping are practiced in many West African countries, but we have found no evidence of these arrangements in the Diaforè watershed. The landowner holds exclusive rights to plant, cut down, prune, and harvest the fruits of trees on his property. The landowner rarely strictly enforces any of these rights, with the exception of planting and cutting. The enforcement of pruning and harvesting rights varies according to species, size, and number of trees in the field and quantity of fruit on the trees. Different tree species have different values; the enforcement of one's tree rights varies according to this value.

The project must work to ensure that the ownership of trees, planted with the assistance of the project, is explicitly defined and fully accepted by the local population. The manner in which the benefits are to be distributed must also be clearly established prior to the project's implementation. Failing to explicitly address the tenure issues surrounding trees will render management of reserves, woodlots, plantations, and other tree-planting actions difficult. First, long-term security of tenure is significant with tree or bush planting; the planters must be confident that they will benefit from the use of the products or will profit from the soil improvements associated with the planting. Second, if the tree planters' rights to harvest or otherwise utilize the tree foliage or fruits are not sufficiently exclusive, the return on the labor in planting and protecting the trees may be inadequate for investment.

9. See Fortmann and Bruce (1988) for an overview of the issues.

Management and tenure rules for trees in the BRP-Diaforè can be divided into two broad categories: the conventions that surround the exploitation and control of trees planted by people, and the systems that regulate access and use of trees that take root naturally. Each of these systems is discussed in the following subsections.

6.1 TENURE AND MANAGEMENT OF PLANTED TREES IN INNER AND OUTER FIELDS

Tree planting solidifies land claims and creates security of tenure. Villagers are planting ever greater numbers of fruit trees in their inner and outer fields when they have the right. Exactly who holds the right to plant trees in the fields? The answer is clear and direct: Landholders with transfer rights have the right to plant trees; simple land users and land borrowers do not.

Property owners are anxious to secure their individual property rights, and tree planting is a conspicuous way for them to assert their claims. Landowners increasingly fear that they will lose their land—to the project or state, to land borrowers—if they do not safeguard their property rights. Individual rights and claims to inner fields, but especially to outer fields, can be strengthened through planting trees.

Land borrowers are not allowed to plant trees on borrowed land, even if directly approached. Although the borrower's family may have had held use rights to the land for more than a generation, this does not confer the right to plant trees, for landowners fear that land borrowers will use tree planting as evidence that the land belongs to them, not to the lender. Acquiring temporary access to land already planted with trees is more difficult. When this does occur, the borrower may not cut fruit from trees planted by the landowner.

Gift land is not very common in the watershed, but where land has been so given, the rights to trees are likewise transferred to the receiver. The recipient may plant trees freely on the land without seeking permission from the donator. Much compound and inner-field land currently held by ex captives is considered as gift land by ex masters, who have relinquished all their rights to the land. In cases where concession and inner-field land was purchased by an ex captive, all rights to the trees were also transferred.

Without exception, villagers plant fruit trees on their *suntuurè* land. Informants from Dow Kouratongo claimed that their grandparents had planted *nètè* trees in or close to their concessions so that future generations could collect fruit close to their homes. Other than this case, however, we found no evidence of indigenous tree varieties being planted in *suntuurè* fields, though naturally regenerating trees were sometimes protected. The amount of trees planted per individual was not surveyed, but plantings seem to correlate with the size of the *suntuurè* field and the number of male children in the household.

Trees planted in a woman's *suntuurè* do not belong to her but to her husband or son(s). This happens because planted trees are considered permanent property and, therefore, are

owned exclusively by the landowner, who is always a male.¹⁰ Women in the watershed are not actually prohibited from planting trees in their *suntuurè*, however, nor are they completely opposed to tree planting. Indeed, several female informants stated that they had planted trees in their *suntuurè*. Trees planted by a woman are considered the property of her sons.¹¹ Men view tree planting by women as more problematic but appear prepared to support it under certain conditions. These issues are discussed more fully in part 3 of this section.

Older women are treated somewhat differently than other women when it concerns men's acceptance of women's planting trees. Men are more willing to allow older women to plant trees because they believe that these folks, under any circumstances, are less likely to divorce their husbands or leave the village. Men think that a younger woman (who is more liable to leave her husband's compound) or her relatives might assert rights to trees that she planted while living in the compound. Furthermore, men fear that a woman who has planted trees on her *suntuurè* may try to give them to someone other than a son of the landowner.¹² When planting trees, therefore, it would be advisable for project staff to work with older women or women who have born sons, especially in the initial stages when villagers are wary of project activities.

Even though there is a strong connection between land and tree ownership, trees planted in an inner field can be inherited separately from the land under special circumstances. For example, a son can inherit a tree found on his mother's *suntuurè* land but is not on the portion of land that he has inherited. This occurs because trees in the *suntuurè* are divided equally among all rightful heirs, regardless of the ground in which they are rooted.

Landholders with secure land rights plant fruit trees in their outer fields, a practice that has increased lately and seems aimed at solidifying property rights. The majority of property owners who are nobles said that they had increased their tree-planting efforts on their land along the waterways. Even after the trees had been flooded out several times, the property owners continued to mark their claims through tree planting. On the other hand, we did not speak to or hear of many excaptives who had planted trees in the outer fields where they worked. Without holding transfer rights, the excaptive land users have no right to plant anything other than seasonal crops. This is true even in circumstances where the excaptive has been the only one to cultivate the land since the plot was cleared. In no case did we find women who had planted trees in outer fields. Table 2 shows whether or not villagers plant trees in their outer fields.

10. Bruce and others have described circumstances where trees can be an object of property rights separate from the land on which they are growing (see Bruce 1991b). This situation exists in the watershed but only between male property owners. That is to say, trees on inherited *suntuurè* land may be divided between inheritors separately from the *suntuurè* land itself. Tree tenure and tree planting, however, are indubitably associated with landownership.

11. We found cases where male children have planted trees in their mother's *suntuurè* field.

12. We found one case where a woman who had planted several trees on her current husband's *suntuurè* field planned to give them to her male child from a previous relationship.

TABLE 2 Variations in tree tenure in the Diaforè watershed

VILLAGE	TENURE OF NATURAL-GROWTH TREES ON FALLOW LAND	TREE PLANTING IN OUTER FIELDS
Dow Diaforè	individual	yes
Gadha Diaforè	individual	"in the past"
Ley Diaforè	communal—in relationship with neighboring villages; individual—in relation to "strangers"	yes
Koumbama	communal	yes
Diabèrèmèrè	individual—on fields close to the village; communal—on far fields	
Foreya	individual	no, one exceptional case
Diaforè Kounè	communal: <i>nètè, karè</i> ; individual: <i>tyimmè</i>	no, one exceptional case
Gadha Diaforè Kounè	communal: <i>nètè, karè, kèwè</i> , forage grasses—first occupant has superior claim in cases of conflict; individual: <i>tyimmè, lèngue, kahi</i>	no
Kounè Missidè	communal—except in case of conflict, when first occupant has superior claim; individual—concerns trees located in proximity to concessions	yes
Kouratongo Dow	communal	yes
Kouratongo Ley	communal	yes

6.2 TENURE AND MANAGEMENT OF NATURAL-GROWTH TREES

In the Diaforè watershed, the tenure and management rules that regulate access to and use of trees on fields, fallow, and forested land vary according to species and between villages. The ease with which permission is obtained corresponds with the value of the derivable forest products. With reference to a highly valued species, the landholder reserves the right to harvest the fruit and exploit the trees in other ways. When a field is being cultivated, the land user/borrower acquires rights to exploit the trees left in the field, though the landowner also may retain the right to use the trees. The land borrower does not appear to need permission to cut down and trim trees on borrowed land once authorization to cultivate the land has been given. Others interested in collecting fruit or wood from these trees must get permission from the land user. Trees with little economic value to the local population are managed and held as common-pool resources. A situation of open access to these resources exists until there is disagreement or conflict, at which time the first occupant's rights take precedence. Women

and children are the primary collectors of wild fruits, leaves, and firewood; they are generally free to use tree products found in common areas and on much of the land that lies fallow.

We found some cases where the use of valued species on fallow land is controlled by the property owner; in other cases, access to these trees is open. The arrangements varied from village to village, and we have no clear sense of what accounts for the different systems (see table 2 for a summary of these rights in each village). The species most often reserved for priority use by the first occupant (the person holding transfer rights) include *nètè* (*Parkia biglobosa*), *karè* (*Butyrospermum parkii*), *kahi* (*Khaya senegalensis*), *poopo* (*Mitragyna stipulosa*), *lèngue* (*Azelia africana*), and *tyimmè* (*Chlorophora excelsa*). When found in the immediate environs of the village, these same species are managed by persons who hold exclusive use rights to the trees. When tree use is controlled by an individual, and he or she (in the absence of the male landholder) cannot, or elects not to, harvest the produce, the total yield is split between the user and the harvester. In Dow Kouratongo, villagers maintain that every family head has the right to 100 meters of land behind the family's concession. The landowner manages tree use on this land and is free to prohibit tree cutting and regulate other resource-use activities.

Large trees were left standing in several cases where land had recently been cleared for new concessions. One individual said that the trees were left uncut out of fear of the forest guards—for when he had cut one of the *nètè* on his new concession, he was fined 6,000 FG.¹³ The trees pose several problems for the landowners, including shading the *suntuurè* field to the point of lowering production. The villager realized, to his dismay, that local inhabitants lacked the right to cut trees even on their own compound land.

The community does not appear to play an important role in the management of wild tree species. For example, we found no evidence that villages set opening and closing dates for the collection of wild fruits, a common management practice in other locales. Nor did the villagers appear to actively protect or reintroduce naturally regenerating trees in their fields by fencing, weeding around the seedlings, or adding manure. Many informants contended that they did encourage at least some natural regeneration in their fields by not destroying young seedlings when working the land and by cutting the trees in a way that permits rapid regrowth. The species allowed to regenerate in the fields include the same types listed above. Natural regeneration is encouraged for the trees' food value, fodder, fencing, construction wood, medicine, fuel wood, soil improvement, craft materials, shade, and boundary markers.

Most village informants claimed that they did not need permission from forestry agents to fell natural-growth trees when clearing land for an agricultural field,¹⁴ even if "protected" species were cut. In contrast, felled trees that were destined for commercial use—even if the trees were on land that was being otherwise cleared for field preparation—required a cutting permit. In other words, naturally growing trees cut for sale, no matter where they are found, demand purchase of a permit from the forestry service. Such permits cost between 8,000 FG

13. FG (*franc guinéen*) is the national monetary unit, which equals about US\$9.60.

14. Villagers maintained that a permit from the DNFC is not needed to cut trees that they themselves have planted.

and 16,000 FG. According to some informants, landowners have priority rights to all trees growing on their fallow fields. Even if a person has paid for a permit to exploit trees in a given area, the individual field owner can prohibit this person from cutting trees on his land. Thus, felling trees for sale or woodworking requires permission both from the forest service and the landowner. Other informants, however, claimed that an official permit was all that was needed for cutting trees on fallow land. Most villagers acknowledged that rights to tree resources in a zone were limited to people belonging to the same *secteur*. Anyone not living in the district is considered an outsider having very limited use rights to trees. This was equally true of forest, water, and grazing resources.

Operating as an association of skilled tree cutters, a group of men from Gadha Diaforè Kounè are interested in increasing their wood-cutting activities. These men were very active in the past, but today, with the cost of permits, the opposition of forestry agents, and the lack of necessary equipment, they have greatly curtailed their business. They requested project support to pursue and increase their wood-cutting enterprise. When asked if they would be willing to plant tree stands that could be harvested, they thought that the time delay involved in such a project was prohibitive. Their strong sense is that there are ample naturally growing trees in the zone to continue tree-cutting business far into the future without degrading the environment or overharvesting.

In Kounè, one man who cut trees for the fabrication of boards asserted that he was on good terms with the forestry agents and did not need to buy a permit for the few trees he cut every year. He explained that this freedom was limited to the area within the subprefectoral boundaries. Village territorial boundaries played no role in his selection of where to cut trees; he moved freely throughout the subprefecture and the BRP to cut suitable trees. He was not able to enter the neighboring subprefecture of Kollé and fell trees, however, without encountering problems with those DNFC watchmen.

Villagers complained bitterly about the difficulties and hardships that forest guards cause the local population. Most find the restrictions and regulations—and the manner in which they are applied—extremely abusive and repressive. Some of the villagers' comments, nevertheless, show that some regulation of tree cutting is necessary to prevent overexploitation of the resource. One villager proffered that villagers and forest agents would reach an understanding someday, at which time they will "exploit all of the trees without exception."

6.3 TREE TENURE AND ADOPTION OF AGROFORESTRY TECHNOLOGIES

Recent research has suggested that tenure may have significant effects on the adoption of agroforestry practices and the incentive to plant trees. Policy research on forest codes in the Sahel underscores the need for extending stronger individual use-rights to trees on farms as a basis for encouraging greater farmer investment in agroforestry (Lawry 1991a). The LTC research team has been examining the possible tenure constraints on adopting NRM agroforestry techniques in the Diaforè watershed. An understanding of the tenure constraints likely to occur in the watershed will help project staff develop activities and policies that take these limitations into account, ultimately facilitating greater project success.

First, project personnel must be aware that overlapping claims to land and forest resources may exist within a given village territory. The multiple users may come from the same village or from different villages. Villagers may not be able to exclude certain outside resource users because they lack the strength to control exploitation of their land and trees. Even villagers with adequate control may have difficulty excluding outsiders because they have never established the internal institutions necessary to limit the use of their forest resources. These issues were raised in chapter 4 in the discussion of *terroir villageois* (see pp. 19-21).

These concerns are significant in the watershed setting of dominant and dependent villages. Excaptive villages may lack the authority to make certain decisions about tree planting or tree cutting in their territory without conferring with the associated noble villages. Furthermore, a noble village may elect to reappropriate land that excaptives have made more productive by applying agroforestry and soil conservation technologies. McLain (1990, p. 45) found that the agroforestry strategies that can work in a village will depend in part on how strongly that village controls its land and tree resources.

6.3.1 WOMEN AND AGROFORESTRY INTERVENTIONS

When women were asked directly about their willingness and readiness to plant trees in their *suntuurè*, many voiced an interest while most remained cautious. Women have not customarily planted trees, a factor that produces a clear hesitancy on their part to proclaim that they can and will do so in the future.

A few generalizations can be drawn from the information collected in the BRP. First, most women conceded that they would need to consult, and receive permission from, their husbands before planting trees. Second, the security of tenure from the woman's perspective is great enough to motivate her to bear the cost of planting and caring for trees in her *suntuurè* (on the condition that she has borne male heirs). Third, planting bushes that have a limited life span seems to be a tenable agroforestry intervention for women.

Men seem ready to support tree planting by women under the condition that the women have begotten male children and explicitly recognize and respect both the husbands' property rights and the children's inheritance rights to the trees. Some men maintained that they would welcome tree planting by their wives and that the only reason this has not happened is that the women lack the "know-how" and do not have the "habit" of planting trees. Such responses should be viewed with a certain amount of suspicion, however. The important point to understand is why women do not customarily plant trees, for the response to this question reflects the land tenure realities in the villages.

As mentioned above, older women would meet fewer obstacles to their planting trees largely because men have fewer fears about their making claims on ownership. In our discussions, however, younger women expressed stronger interest in tree planting and claimed that they would not encounter difficulties. They are apparently unaware of the men's point of view on this matter.

6.3.2 EXCAPTIVES, TREE TENURE, AND AGROFORESTRY TECHNOLOGIES

As the principal land borrowers, excaptives are less able—and would be less inclined under the auspices of the project—to plant trees. Project personnel should recognize that if excaptives or anyone else were to plant trees on borrowed land, they would be doing so for the benefit of the landowners and not for their own gain—unless the tree rights were clearly negotiated prior to action. The scenario to avoid is involving excaptives in project tree-planting activities when they do not have adequate land security to guarantee their rights to harvest and utilize the tree products. This situation may be difficult to detect because excaptives may not be free to refuse planting trees even when they know from the outset that they will not get the returns on the labor invested. If land-owning nobles will be the ones to benefit from the trees, they should either plant them themselves or justly compensate the excaptives who provide the labor.

Excaptive males maintain that they would have no problem in locating outer-field hillside land, where they have secure land-tenure rights, to plant trees. The situation differs for valley and river-bank land, where most excaptives have only limited use rights; their planting trees in these areas would be improbable.

Excaptives plant trees in their *suntuurè* with equal advantages as nobles. This tenure "niche" is secure; the excaptives hold exclusive rights and access to the trees and tree products found in these inner fields. They are able and willing to adopt agroforestry technologies in their *suntuurè* under the conditions that the delay in the return on the investment is not too great and the agroforestry interventions do not adversely affect the field's production of other crops (for example, a great increase in shade or use of space).

The implementation of collective agroforestry actions for excaptive villagers will require careful negotiation with both inhabitants of the dependent village and leaders of the dominant village. The excaptives' future rights to the land and trees may need explicit definition, perhaps in a written document signed by all parties involved.

6.3.3 AGROFORESTRY ACTIONS IN OUTER FIELDS

The proportion of villagers who are certain about their ability to plant trees in outer fields is much smaller than those who are prepared to plant in their inner fields and compounds. Tree planting in the outer fields should not take place when land rights are not clearly articulated.

Even when landownership is undeniable and undisputed, instituting agroforestry technologies such as alley cropping in the outer fields may be problematic. The outer fields are used on a rotation basis, whereby cultivation zones may be left fallow for seven to ten years. A similar system caused significant problems for on-farm alley-cropping trials by the International Livestock Centre for Africa (ILCA) in southeastern Nigeria (Francis 1987).

6.3.4 AGROFORESTRY ACTIONS ON BORROWED LAND

In the large majority of cases, land borrowers simply lack the right to plant trees on the land they cultivate. In a few rare instances, the land borrower is allowed to plant trees but loses all rights to the trees if the landowner recuperates the land. Certain segments of the population are more likely to be land borrowers—notably women, ex captives, and immigrants. Their lack of land tenure security will make them less interested in certain agroforestry actions.

Several strategies can be adopted to encourage land borrowers to participate in agroforestry and conservation activities. First, the landowner may be willing to sign a formal agreement giving the land borrower the right to benefit from the planted trees once the landowner's rightful claim to the land is adequately ensured. A formal written agreement is recommended to outline clearly each party's rights and avoid eventual conflict.

A second approach to working with land borrowers and agroforestry technologies is to suggest activities that yield benefits in the short term so that adopting the procedures is to the land user's advantage. Windbreaks, woodlots, and living hedges—actions that produce benefits only in the long term—are best reserved for people exploiting inherited or heritable land.

Further investigation is required to discern if land lenders would be prepared to allow land borrowers to plant common tree species, even when objecting to the borrowers' planting exotic or local fruit species. Likewise, bushes and species used in live fencing may be acceptable to a landowner when trees are not.

In considering the technologies most appropriate for land borrowers, it is important to realize that some borrowers have more secure rights to land than others. For example, a woman with male children and from the same village as her husband holds very secure rights to her *suntuurè* field, as do older women who are unlikely to leave the husband's household. Younger women, especially those from other villages and with no male children, have little tenure security. An ex captive whose family has cultivated a field for decades may feel secure enough to invest the time and energy required to implement agroforestry technologies.

The questions that project personnel should answer prior to selecting agroforestry technologies for land borrowers include:¹⁵

- ▶ What are the rights of the land borrower to the land and trees?
- ▶ What are the rights of the lender to the land and trees?
- ▶ Can the land borrower plant trees?
- ▶ If yes, what are the conditions placed on the tree planting?

15. This list follows the questions suggested in McLain (1990, p. 47).

- ▶ Can the land borrower cut trees?
- ▶ If yes, what species and under what circumstances can the borrower cut trees?
- ▶ Does the land borrower have the right to collect fruits and cut branches from the trees?
- ▶ If yes, are there any conditions placed on the land borrower concerning these activities?
- ▶ How long has the land borrower been exploiting the borrowed land?
- ▶ How likely is it that the land borrower will continue farming the land in the future?
- ▶ Have the land borrower and land lender had conflicts in the past over use rights, including trees, on the land?

The information gained by answering these questions will assist the planners in selecting technologies appropriate for the rights of the land borrower.

6.3.5 LAND/TREE INHERITANCE AND AGROFORESTRY INTERVENTIONS

A son may be given a plot of his father's land to work while his father is still alive. If pre-inheritance land distributions are commonly reworked upon the death of the father, the son(s) using the land may be hesitant to plant trees or make other long-term investments in the land for fear of losing these stakes when the estate is divided.

Similarly, a son will be less likely to assist his mother in tree- or bush-planting efforts within her *suntuurè* when he is not sure which part of the field will be given to him when he brings a wife to the household. We found no indication that portions of a woman's *suntuurè* plot were assigned to her sons at a young age or prior to marriage.

7. TENURE AND MANAGEMENT OF GRAZING RESOURCES

Grazing resources are considered common property and are managed communally, verging on open access. Few precise rules govern use of grazing lands. Seasonal and spatial fluctuations in the availability of herbaceous and ligneous fodder have led to few restrictions and limitations on access to grazing resources. Most informants maintained that neither pastoral management rules nor village limits designate available grazing zones. Some claimed that villagers held intervillage consultations to select communal pasture zones during growing season when herds are restrained.

Informants insist that they have respected pastoral zones in the past. Pastoral zones were areas in fallow or in the *bowal*, far from the cultivation zones in use; they were instituted to limit conflicts between animal owners and cultivators. Even today, during the cultivation season, rural communities confine herds to areas close to the compounds, away from major outer-field activity. Some villagers tether or pen their animals at this time; generally the livestock are herded more closely. Village herds roam freely during the dry season but often frequent the same areas; they crisscross village territorial boundaries with few restrictions. Animal enclosures were also used to protect herds from attacks by wild animals, though this need has diminished greatly in the last several decades.

Women own and manage herds that they received as part of their dowries. Many claimed, nonetheless, that they consulted their husbands before making major decisions about the herd. Today, excaptives keep cattle and small ruminants, just like the Peul nobles; the situation began to change in the 1950s. We have no data, however, for comparing the sizes of noble and excaptive herds. Members of all social groups within the watershed are animal owners, whether small- or large-scale.

Few villagers complained of a decline in the amount of forage land available for livestock, though many maintain that the quality of available fodder has declined and dry-season water sources have diminished. Recent growth of herd size, declining rainfall, and shortened fallows may account for the increased pressure on grazing resources.

Villagers of Dow Diaforè declare that they duly inform the authorities when the number of animals from other locales significantly increases in their village *terroir*. They claim that such an action is necessary to limit field destruction. The quota that the village sets seems arbitrary, and villagers do not establish any spatial boundaries defining the zone from which animals can come.

Bowal land, the vast ecological zone most significant for grazing activities, is held individually with associated transfer rights. The land is not cultivated and the boundaries between individual holdings are not obvious, though the limits are well known by the inhabitants of the villages. The extent of a person's holdings are determined by extending the boundaries of the individual's *dunkirè*, *n'dantari*, or *hansaghèrè* fields to incorporate the

bordering *bowal* until reaching the village's territorial limits. Individual ownership of the *bowal* does not imply that limited access to the grazing resources, for that is not the case; an individual's rights to *bowal* are rarely asserted in an active manner.

Bush fires, long a locally important grazing land-management practice, is now severely restricted and closely monitored by DNFC agents. The BRP inhabitants complain bitterly about the government's policy on bush fires, arguing that local management and control of burning caused far less destruction than current methods. Central control of burning and the policy of early burning do not permit the local people to burn at the most opportune moment. Early burning leaves much of the area unburned and later subject to uncontrolled fires, which whip through and causing considerable destruction.

Conflicts are common between animal owners and cultivators because of the field destruction animals frequently cause when entering cultivated areas. The understanding is that herders must keep their animals under control during growing season; likewise, the farmers must construct fences to avoid problems.

The availability of grazing resources may be negatively affected by project operations. If areas that were once only seasonally fenced off become inaccessible due to permanent fencing and/or year-round use, seasonal use by herds would be eliminated. In contrast, the project could increase the availability of fodder if alley cropping or other agroforestry techniques are implemented.

Through the establishment of village natural-resource management councils, the NRM project could play an instrumental role in creating new common-property arrangements for grazing resources.

8. TENURE AND MANAGEMENT OF WATER RESOURCES

Water resources are considered "gifts of Allah" and, as such, cannot belong to anyone as private property. The elders of the villages acknowledge that there were once active rules regulating the use and maintenance of water resources, but admit that these communal-management systems have disintegrated for a variety of reasons. Local management systems and tenure rules, past and present, are discussed in this chapter.

There are four or five water sources for each village; in addition, a number of watercourses dissect the watershed. Currently, many of the water sources and streams disappear by the end of the dry season. In the past the villagers respected strict rules against cutting all vegetation—trees, bushes, and grasses—in close proximity to the water sources. These prohibitions have slowly faded; no village institution is able to enforce them today.

A significant portion of the water sources are mysterious, filled with spirits and supernatural powers. Until recently the mystic powers of these places protected them from wanton exploitation. Out of respect for—and fear of—the spirits that inhabited these water sources, the village residents did not cut trees and grasses near the fount; they kept the source clean and regulated its use. Eventually people had less fear of the supernatural powers—or individuals with mystical powers sought to conquer the water spirits—and the rules and regulations governing the use and care of the water sources were no longer observed. Furthermore, communal maintenance and use of the village water founts have declined in direct relation with the installation of compound wells, which are common throughout the watershed. Today, most villagers holding land in close proximity to the water sources have no hesitation in clearing the land for cultivation. According to many, the disrespect shown the water spirits—and the correlated failure to follow the rules governing use and maintenance of water sources—has caused many of the wellheads to desiccate. Others imagine that the drying up of water sources is a sign that the end of the world is drawing near. This connection between water sources and water spirits implies that project staff must take special care in selecting sites and activities involving water.

The drying up of water sources, clearing of land in proximity to these sources, constructing wells, disregarding certain water-source use rules, conquering the water spirits, shortening of field fallows throughout the zone, and enduring periods of regional drought all occurred concurrently. Consequently, the local population has great difficulty in determining the cause or causes of the failure of their water sources. Some combination of these reasons was cited by the village inhabitants.

While the water sources and watercourses are considered common-pool resources, the land bordering these assets is regarded as individual property. No one has the right to prohibit the landholder from cultivating this land if the area rightly belongs to him. In several situations recently, land around water sources that had never been cultivated was appropriated by first occupants, who possessed supernatural powers sufficient to clear the area. This

presents certain problems for village management of water and reforestation around the source head. Project success depends on the village's ability to negotiate with the landholder to obtain permanent land rights.

Fishing in the watershed. The territorial conflict between Foreya and Diaforè Kounè does not affect fishing rights to three particular ponds. Inhabitants of both villages fish the ponds freely, without restrictions or limited access. Neither village has rights superior to the other for fishing the ponds. There is no subdivision of the zone; the catches are not partitioned in any way. Each person fishing takes home that which was caught. Fishing is an activity performed by women, men, and children primarily for household consumption.

One person stated that fishing should be regulated to allow the fish to mature and multiply. A management committee, representing all the communities that fish the ponds, should be formed.

9. TYPOLOGY OF LAND TENURE CONFLICTS IN THE DIAFORÈ WATERSHED

An examination of land disputes and conflicts over access to and control of natural resources can provide useful information about existing natural-resource management "pressure points" and "hot spots." Project activities are likely to increase competition for and claims to natural resources found in the zone. A clear understanding of current conflicts is essential for resolving the prevailing problems and for detecting future controversies. Analysis of the disputes may expose which local tenure- and resource-management rules have become dysfunctional or inadequate. The NRM project may need to work with the government and the local population to design new rules that, first, resolve current tensions which inhabitants face and, second, address problems that can be expected due to project activities.

9.1 WITHIN-FAMILY LAND CONFLICTS

9.1.1 CONFLICTS BETWEEN MALE SIBLINGS OF SAME FATHER

This is the most common type of conflict cited by villagers. Such disputes usually concern inheritance rights to outer fields and family concession land.

In Kounè Missidè, for example, Thierno Amadou Sadio and his half-brothers contested each other's rights to their father's concession land that was inhabited by Thierno's mother's co-wife. The controversy was decided in Thierno Amadou Sadio's favor with the ruling that the land should be divided between all the brothers. The dispute was taken to the subprefecture level because the half-brothers refused to accept the village council's decision. The subprefect, who agreed with the council's ruling, redivided the concession land, giving more to Thierno Amadou Sadio as punishment to his half-brothers for not accepting the village-level judgment.

9.1.2 CONFLICTS BETWEEN UTERINE BROTHERS

These conflicts, which occur frequently between children of the same mother, typically concern the management and inheritance of *suntuurè* land. Siblings often will refuse to accept any land other than a portion of their mother's proper *suntuurè*.

9.1.3 CONFLICTS BETWEEN WIDOW AND DECEASED HUSBAND'S FAMILY

These contentions are fairly common. According to local custom, the widow should remarry one of her deceased husband's younger brothers or another family member (leviratic marriage). When the woman refuses, she risks being spurned by her in-laws. If the woman

has borne infants by her late husband, she uses this as leverage to remain in her house and keep her *suntuurè*.

In Kounè, an example of such a conflict was recounted whereby the widow of the village imam refused to marry her deceased husband's brother but also refused to abandon her land. The dispute was settled in her favor but required intervention from the subprefect.

9.2 INTERFAMILY LAND CONFLICTS

9.2.1 DISPUTES BETWEEN LAND LENDERS AND LAND BORROWERS

Clashes occur when a land user attempts to usurp control and permanent rights to borrowed land. Villagers claim that such challenges to land rights are rare because the society employs an array of safeguards and precautions to protect the land lender. Most importantly, the landowner refuses unequivocally to allow the land user to plant trees on borrowed land. Another common practice is to require the land borrower to tithe his grain harvest to the property owner. Third, the landowner often prohibits the land borrower from cultivating the same plot consecutively for more than three years.

9.2.2 CONTROVERSIES BETWEEN LAND BORROWER AND DESCENDANTS OF LAND LENDER

The land user may try to usurp permanent rights to the borrowed land after the death of the original land lender. Typically this strategy is attempted when the deceased landowner leaves only young children. Thus, these contests occur between the landowner's children and the land borrower.

9.2.3 DISPUTES BETWEEN LAND LENDER AND DESCENDANTS OF LAND BORROWER

Strife arises when the descendants of the land borrower lend, give, or sell the borrowed land, which they assume their father bequeathed to them. Sometimes this is an "honest mistake" by the land borrowers' offspring. For example, the children presume that the land which they have seen their father cultivate throughout their lifetime was his own. Thus, conflict occurs when the land lender makes claims to the contrary. Exactly this kind of dispute accounts for the hesitancy of land lenders to loan their land for more than three consecutive years. For this same reason, the landowner usually refuses to reloan the same plot to the same borrower following the fallow period.

9.2.4 CONFLICTS ARISING BETWEEN DESCENDANTS OF BOTH LAND LENDERS AND LAND BORROWERS

Conflicts in this category are frequent; descendants on both sides claim ultimate rights to the land. The descendants of the land borrowers maintain that their ancestors were awarded full rights to the land. The descendants of the land lender, on the other hand, insist on the

land-owning right of the first occupant. These disputes arise regularly when the inheritors on both sides do not have enough productive land.

A subcategory of this type of conflict concerns disputes between descendants of a noble landholder and progeny of the captive land user. Such altercations over land rights occur when the descendants of a noble family reassert their right to a portion of land that they have not actively proclaimed for one or more generations. By the time of the counterclaim, the descendants of the original captive user have come to consider the land as their own, having retained secure use-rights for several generations.

A second subcategory of this type of conflict involves descendants of land lenders who were the first occupants of the village but never cultivated the land themselves (often these people were Koranic teachers and scholars). The land was lent to free-status cultivators, with the loan inherited by the cultivators' descendants. Today, the descendants of the nonagriculturalists are land-poor and looking for fields to cultivate. They claim ownership rights as first settlers of the village.

9.2.5 DISPUTES BETWEEN OUT-MIGRANT LANDOWNER AND LAND USER

These disputes arise when the landowner remains outside of his native village for extended periods of time, during which his land is eventually occupied. If the original landholder returns to the village and attempts to reclaim the land, a confrontation between him and the current land user is inevitable. The affair is further elaborated if the longtime land user has planted trees on the land, an act that attests permanent landownership. Generally, this situation occurs when a sole inheritor acquired the land when very young and subsequently left the village for a lengthy period.

Once again, events in Kounè offer an example of this conflict. Adjudant Manga, the long-absent land inheritor, and Dian Bhoie, the current land user, claimed rights to the same land. The case was decided at the subprefect level, dividing the land area between the two disputing parties. This is an example of the landholder/inheritor losing his rights to land because of the lapse of time since the rights were last asserted.

9.2.6 LAND CONFLICTS BETWEEN TWO CAPTIVE FAMILIES

The conflict situation arises when captives of two different noble clans lay claim to the same exterior domain. The land in dispute ultimately belongs to "their" nobles. The fact that such conflicts are resolved by the concerned nobles attests to the clan's lasting claims on this land. The dispute between Alpha Aliou of Diaforè Kounè and Oury Bella of Foreya provides an example of such intercaptive land conflicts.

Another form of natural-resource use conflict, though not actually a land dispute, concerns the exceedingly common dissension between cultivators and herders. This type of conflict is usually resolved between the disputing parties because cultivators are at the same time herders, and vice versa, and each party knows that their roles could easily be reversed during the next dispute.

Boundary conflicts between neighboring property owners are the most common form of land-rights dispute. The opposing parties each claim that the other has usurped a portion of the land by extending the boundaries of his field. Such disputes may arise between two or more family members or between fellow villagers. Village elders are called upon to resolve such conflicts. The elders act as the "living cadastre" for the village; their decisions typically are accepted without contest.

9.3 DISPUTES BETWEEN VILLAGES OVER TERRITORIAL LIMITS

Several conflicts of this type have been found to exist in the Diaforè watershed, as discussed previously in section 4.2. These conflicts are interterritorial disputes concerning *terroir* boundaries. Three such contests have been identified thus far in the BRP-Diaforè, two of which are blatant; one remains latent at this time.

9.3.1 DOW DIAFORÈ AND GADHA DIAFORÈ

The first dispute between villages involves the latent conflict between the villagers of Dow Diaforè and Gadha Diaforè concerning their shared territorial boundary. Gadha Diaforè claims preeminent rights over a greater area than Dow Diaforè or Ley Diaforè recognize. This claim, made by an individual in Gadha Diaforè, surfaced very recently, when NRM project staff interviewed villagers about village boundaries. Gadha Diaforè controls very little land, according to neighboring villages, and the villagers may have been attempting to increase their territorial limits in the wake of the project. Presently, claims and counterclaims are being exchanged, but no other action or reaction has ensued.

9.3.2 FOREYA AND DIAFORÈ KOUNÈ

The field-boundary conflict between two villagers, one from Foreya and the other from Diaforè Kounè (discussed briefly above), is also a controversy over village territorial limits. According to the inhabitants of Foreya, the boundary between the villages is at the far end of the third pond. The boundary between the two villages follows a specific seasonal stream channel (*djokol*), on which all those of the dominant villages, Ley and Dow Diaforè as well as Foreya, concur. According to the inhabitants of Diaforè Kounè, however, the village boundary lies at Weendu Teli, or the first of the three ponds. The ownership of the third pond, Weendu Nènè Boori, which is closest to Diaforè Kounè, appears most problematic. The villagers of Diaforè Kounè take the position that any project action around Weendu Nènè Boori would belong to them. The villagers of Foreya do not agree, to say the least.

This is a significant territorial conflict for the NRM project because the disputed limit involves the area wherein a dam, fish ponds, and irrigation channels are planned. This conflict will escalate in severity before it will be resolved once both sides realize that major developments are proposed for the zone. The increased land value that the project developments will produce raises the stakes for all.

The exmaster families of each of the disputing parties, from Dow and Ley Diaforè and Kounè, have been asked for testimony concerning village and field boundary limits. The conflict over the field limits arises, in part, because the disputed land had been borrowed for an extended period of time by Alpha Mamadou Kounè when he was the village head of Kounè. No one from Foreya dared to repossess the land while it was in Alpha Mamadou's hands. Alpha Aliou from Diaforè Kounè is using this long-term possession by the head of Kounè to claim permanent rights to the land.

9.3.3 KOUNÈ, BELLA KOURÈ, AND LAGUI

Kounè lays claim to Weendu Santa, a lake which the NRM project has earmarked for irrigation development. Two other villages—Bellè Koura and Lagui (both located outside of the BRP)—also maintain that the disputed land belongs to them. In an effort to resolve the feud, project staff held a meeting with representatives from the three villages. No agreement or understanding has been reached at this time, but the villagers are discussing the matter among themselves and promise to find a solution. It seems as if the villagers of Kounè, in the belief that the NRM project is working solely with villages situated within the BRP limits, was attempting to claim land that does not rightfully belong to them and thought that their false claim would go undiscovered. The lake is located outside of the BRP near the village of Bella Kourè.

9.4 DISPUTE SETTLEMENT MECHANISMS

The issue of conflict resolution has been addressed on several occasions in this report; all that remains is to summarize the principal procedures used to settle natural-resource access, use, and management disputes. According to villagers, conflicts with outsiders are extremely rare. This question must be investigated further due to the reluctance of informants to speak of controversy.

Disputes are resolved on four distinct levels once the family members determine that they cannot settle an issue. First, the conflict is treated by village institutions; it moves beyond this level only if no solution can be reached. The council of elders handles the majority of village conflicts. In the rare case that the elders fail to settle the matter, the conflict goes to sector and district representatives, who are also villagers. From there, if necessary, the case moves outside the village to the district office and, finally, to the subprefect. Several informants mentioned that difficult disputes, especially those involving two different clans, are mediated by the Ligue Islamique Préfectorale. Conflict resolution rarely surpasses the subprefect level. Villagers use a combination of familial, religious, and political/official mediators to resolve land and other natural-resource disputes.

Land disputes on every level can be expected to increase in the wake of NRM project activities and the correlated increase in the value of natural resources in the Diaforè watershed. The importance of detecting and resolving such disputes before project activities are implemented cannot be overstated.

10. CONCLUSIONS AND RECOMMENDATIONS FOR PROJECT ACTIVITIES

10.1 APPLYING *TERROIR VILLAGEOIS* CONCEPT TO DIAFORÈ WATERSHED

Conclusion 10.1.1. The *terroir villageois* is not the same spatial unit as the village's resource-use zone. Villagers exploit resources in an area that is much larger than their actual village territory.

Recommendation 10.1.1.1. The concept should be applied in a way that accounts for resource users' exploiting resources in an area larger than their village territory. Neighboring villages will need to discuss mutually beneficial arrangements to keep their boundaries open to each other for certain purposes.

Recommendation 10.1.1.2. The village's management plan should determine explicitly how best to incorporate the management of use areas which lie outside of its territory. These plans must be approved by those villages that have territorial control over the former's use space.

Conclusion 10.1.2. The village must possess the legal, technical, and financial means to soundly manage the natural resources in its territory.

Recommendation 10.1.2.1. The project staff should work directly with villagers to ensure that they acquire the necessary skills, information, and knowledge of their local natural-resource base to make local-level management feasible and sustainable after the project's end.

Recommendation 10.1.2.2. The project staff and USAID should work to guarantee that a favorable legal environment exists which will be conducive to greater decentralization and village-level control and management of resources. USAID/Guinea should work to ensure that the GOG devolves sufficient power to the local level in areas that are critical to natural-resource management.

Recommendation 10.1.2.3. Investing local communities with management rights and responsibilities does not imply a complete withdrawal of the state from management and regulatory activities. The state will continue to play an important role in the protection and management of natural resources. The state and local communities should work to develop a relationship of comanagement based on cooperation rather than antagonism.

Conclusion 10.1.3. Social status of the villagers determines, in part, the population's capacity to manage the resources that it uses.

Recommendation 10.1.3.1. The project staff should not ignore this factor when working with the villagers. On the one hand, project staff can make every effort to empower the actual resource users. On the other hand, the residents of lower status villages may need to continue their consultations with villagers who retain superior control over the resources in their zone. Ignoring these social realities does not make them disappear.

Conclusion 10.1.4. No village-level resource-management institutions currently exist; they will need to be created.

Recommendation 10.1.4.1. Project staff and USAID/Guinea should promote the creation of local-level institutions through sound education, extension, and technical training. The form and role of such institutions should stem from the villagers' demands and desires as they come to understand the purpose and utility of the organization. The local decision-making body created for the management of natural resources should have real power, which comes from establishing a favorable legal environment but also from choosing local representations with authority at the local level. Such institutions and ideas cannot be "parachuted in"; they must develop from within to be self-sustaining. Creating institutions that are respected, have sufficient authority, and are effective is a very difficult task.

Conclusion 10.1.5. The project staff needs not only to address short-term local needs and priorities but also to work with local populations in analyzing, identifying, and elaborating actions oriented toward longer-term resource management objectives.

Recommendation 10.1.5.1. The "contract approach" is a sound way to guarantee cooperation and to create partnership between all parties implicated in a particular activity. The approach entails drawing up an agreement covering the commitments by local communities and outside agencies (including the NRM project) to both shorter- and longer-term activities. Formal contracts reduce ambiguity and expectations and can be modified by mutual agreement. It should be noted that this method is being instituted in the NRM/Fouta Jalon project this year in relation to agroforestry activities.

10.2 TENURE AND MANAGEMENT OF CULTIVATED LAND RESOURCES

Conclusion 10.2.1. Rights and security in land in the watershed vary according to social rank, gender, age, and resident status. The complex array of land rights and the variability that exists in and between villages will affect what project interventions should be selected and for whom.

Recommendation 10.2.1.1. Project activities that require long-term security in land tenure should be aimed at those members of society who have secure rights in land.

Recommendation 10.2.1.2. Land contracts, as a mechanism to increase a land user's security of holding, should be negotiated between property owners and land users. Land contracts guarantee the landowners their property rights at the same time as increasing the

land user's security in long-term use rights. Land contracts appear to be the soundest means available for securing long-term access to productive land for groups that lack such guarantees. Land contracts, negotiated with the parties implicated in each agreement, harmonize elements of the local tenure rules with the national land code.

Recommendation 10.2.1.3. USAID/Guinea should encourage Guinean policymakers to take advantage of the capacity of the legal system to respond creatively to changing needs by adapting and incorporating local land-tenure rules into the national land code.

Conclusion 10.2.2. There is a widespread fear among villagers that they will lose their land to the state or project.

Recommendation 10.2.2.1. Project staff should be sensitive to villager anxieties and do everything in their capacity to diminish these concerns. In this regard project staff should not select or designate the land to be used for project activities; villagers should choose the land areas where they are willing to implement project operations. The project staff will need to repeat the message that neither the project nor the state is interested in taking land away from local inhabitants, though successful project interventions and personal interactions with local people will be the most effective means for dispelling these fears.

10.3 TENURE AND MANAGEMENT OF TREE RESOURCES

Conclusion 10.3.1. Tree ownership is closely linked to landownership in Fouta Jalon. Therefore, tree planting is strictly controlled to prohibit nonowners of land from planting trees. Excaptives and women are the most affected; neither group is able freely to plant trees.

Recommendation 10.3.1.1. Rights to trees and rights to the land where trees are to be planted should be discussed and defined explicitly before the start of project activities. All participants should be clear and in agreement as to the rights and responsibilities of all implicated parties.

Recommendation 10.3.1.2. USAID/Guinea and project staff should seek creative policies and interventions to increase rights to and security of holding trees for a greater percentage of the local population.

Recommendation 10.3.1.3. When working with land borrowers, women, and others with limited rights to and security in land, the project staff should suggest activities that yield benefits in the short term so that adoption of the technologies is to the land user's advantage.

Conclusion 10.3.2. There are no extensive land areas within the watershed that are common property for planting village tree reserves and woodlots. All tree plantings destined for the benefit of the village will be on private land.

Recommendation 10.3.2.1. When the project intervention involves the creation of village forest or wooded reserves, agreements between the landowner/s and the villagers must be negotiated. A formal agreement will minimize ambiguities and clearly state the rights and responsibilities of each party. The landowners' commitment to take the land out of cultivation and to refrain from cutting the trees will need to be formalized, and the duration of the agreement will need to be fixed.

10.4 TENURE AND MANAGEMENT OF GRAZING RESOURCES

Conclusion 10.4.1. Grazing resources are considered common-pool assets, though the land on which the forage is found is owned privately. The inhabitants of the watershed have very few rules managing and regulating herding activities.

Conclusion 10.4.2. Village territorial limits have little significance in relation to pastoral activities. Herds crisscross village territories, especially during the dry season, facing virtually no restrictions.

Recommendation 10.4.2.1. If local resource-management plans are to incorporate strategies for managing herds and grazing, discussions and planning should take place on a multivillage level. Comanagement of grazing resources by neighboring villages is necessary.

Conclusion 10.4.3. The villagers are not at all satisfied with the state's "early burning" policy for the *bowal*. They argue that application of the policy causes more harm than good, and they resent their loss of autonomy in this resource-management activity.

Recommendation 10.4.3.1. Project technical staff should, first, review the present policy to see if it is technically sound and, then, investigate to see that it is being applied correctly. If the policy requires amending, USAID/Guinea and project personnel should encourage the proper agencies in the GOG to review and amend their plan. If the early-burn policy is sound, widespread education is required to convince the villagers of its efficacy.

Recommendation 10.4.3.2. Whether the existing policy remains the same or is amended, this and other such policies should be applied through comanagement between the state agencies and the villages. The population at the local level needs to understand the resource-management practices being applied in their region. If the state is serious about local-level management, the villagers cannot be completely marginalized concerning their grazing resource base.

10.5 TENURE AND MANAGEMENT OF WATER RESOURCES

Conclusion 10.5.1. Water sources are recognized as common-property resources and are managed communally by villagers. The management rules have fallen into disuse with increased dependence on household wells.

Recommendation 10.5.1.1. Villagers should be encouraged to exercise their management practices once again. The recently created village resource-management committees should be organized in such a way as to make use of the pre-existing knowledge of the villagers.

Conclusion 10.5.2. Many water sources are filled with spirits and supernatural powers, which sometimes affects the local inhabitants' use of the resource.

Recommendation 10.5.2.1. Project staff should take care not to develop or otherwise alter the state of any of the selected water sources without clear consultation with the villagers. Once again, the villagers should pick the appropriate sites for development from among those considered technically feasible for a particular intervention.

Conclusion 10.5.3. More than one village can use a single water source, though all natural springs are located within village territories and are the common property of that village.

Recommendation 10.5.3.1. Establishment of *terroirs villageois* and the use of these spatial units for resource management should be done in a way that does not have a negative impact on intervillage use of the resources. Some allotment should be made for intervillage water-source management in relevant cases.

Conclusion 10.5.4. In the past there has been open access to fish in seasonal and perennial ponds. Project investment in fishing resources may increase the interest in and competition for access to these resources.

Recommendation 10.5.4.1. Discussions and possibly written agreements should determine the distribution of rights and responsibilities of all those involved in the fishing economy. Villagers with ponds within the limits of their village territory will need to decide how the fish resources are to be exploited, who has access, and so on.

APPENDIX 1**GLOSSARY**

PULAAR	FRANÇAIS	ENGLISH
Baïlo	forgeron	blacksmith
Bowal/bowè	plateau latéritique	lateritic plain
Bhundou	source d'eau	water source
Dunkirè/dunkijè	zone de culture au près des cours d'eau	cultivated zones situated next to rivers and streams
Dyolol	versant des collines, cultivé	hillside, cultivated
Farilla	dîme, dixième de la récolte	tithe, 10 percent of harvest
Fello	montagne, colline, versant, cultivé	hill, mountain, cultivated
Hansaghèrè	terrain très en pente et caillouteux, cultivé	terrain with steep slopes and rocky, cultivated
Hollaandè	zone de culture dans les bas-fonds	cultivation zone in the valley
Maade	répère, indication	private, individualized property
Missidè	village qui abrite une mosquée, village des nobles	mosque village or village of nobles
N'dantari/n'dantaji	terrain en pente et en très fines alluvions	hillside land with sandy, compact soils
Parawol	zone de bas-fond, cultivé	valley bottom land, cultivated
Rundè	village de (ex-)captifs	(ex-)captive village
Suntuurè	zone de culture dans les concessions, tapades	inner/household fields
Tyangol/tyankun	cours d'eau	watercourse
Weendu	mare	pond

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