Changing Places?

Women, Resource Management and Migration in the Sahel

Case Studies from Senegal, Burkina Faso, Mali and Sudan

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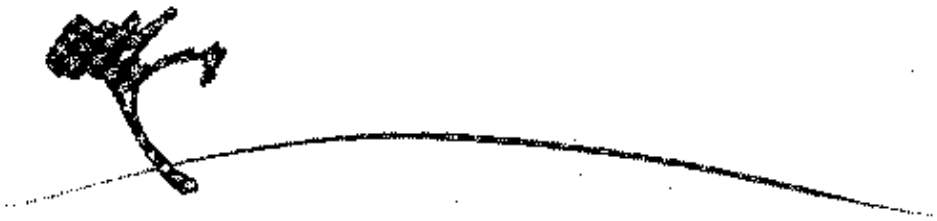

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Rosalind David

Glossaries

Senegal

Borom keur	Head of the compound
Deck	Clay soil
Dior	Sandy soil
Iler	Long-handled hoe traditional to this area
Kalifa	Religious guide
Keur	Compound
Lamane	Head of the lineage and often the village chief. This title no longer exists.
Màgaal	Annual *Mouride* feast commemorating the death of the Khalife Ahmadou Bamba
Marabout	Religious notable
Mouride	Islamic brotherhood founded by Ahmadou Bamba
Shaikh	Religious leader with disciples
Tabaski	Feast at the end of Ramadan
Talibé	Religious disciple of a *Shaikh*
Toll keur	Intensively farmed plots of land nearest the village

Burkina Faso

Bas fonds	Low-lying marshy areas
Beologo	Individual's plot of land
Boodoo	Clan
Champs de brousse	Farming plots about 2-4 km from the village
Champs de cases	Intensively cultivated plots nearest the village
Daba	Traditional hoe
Diguettes	Stone bunds
Dolo	Millet beer
Guendo	Shallow planting pockets
Jujube	Wild fruit of the *Ziziphus mauritiana*
Machete	Axe
Passages de parcours	Transhumant routes used by pastoralists
Puugo	Family plots of land managed by the head of the compound
Saaka	Quarter of the village inhabited by one clan
Sosoaga	Cooperative work group
Soumbala	Food spices made from the fruit of the *néré* tree (*Parkia biglobosa*)
Soudure	Hungry period
Tengsoba	Earth priest or 'chef de terre'
Tô	Millet, sorghum, cassava or maize porridge
Terre zipellé	Soil with an encrusted, sealed surface
Zaka	Family compound

Mali

Allamodiou	Institutions which monitored social morality and resource use in the region, in the pre-colonial and pre-independence eras
Beignets	Small fried snacks made with wheat flour
Baracum	Fields at a distance from the village where rotation fallow is practised
Bonbo	Strips of fertile land found near the foot of the Bandiagara Escarpment, which are the course of the small streams which descend the cliff into the plains during the rains.
Bouillie	A spiced millet gruel served in the evenings
Cueillette	Tree-fruit harvest during the rainy season
Daba	A hoe used to cultivate millet and sorghum
Dah	Hibiscus plant from which sauces and snacks are made
Dolo	Beer made from millet or sorghum
Fonio	A grain crop, *Digitaria exilis*
Galette	Small fried snack made from millet flour
Griot	A caste of performers/public speakers and artisans
Jihad	Muslim holy war
Kosodjo	A caste group of dyers of cloth
Lara	Lineage or family fields which directly encircle a village and are fertilised and cultivated with millet and haricots every year
Marabout	Muslim leader and teacher
Noble	Used to describe non-caste Dogon farmers
Pagne	A piece of cloth worn by women as a wrap-around skirt
Soudure	The hungry period which comes just before and during the rains when grain supplies are low
Toguna	A verandah in the centre of a village where men, particularly elders, sit and discuss or debate; women are forbidden to sit under it
Ton	An institution which monitors the use of tree-resources and punishes for misuse; a general term for an Association
Tô	Millet porridge, the staple food of the Dogon
Trousseau	The collection of goods acquired by a woman as she enters marriage
Voandzou	Groundpeas, *Vouandzea subterranea*

Sudan

Dahwa	Morning work period
Dukhun	Millet
Dura	Sorghum
Fariq	Nomad's temporary camp
Gardud	Clay soil
Goz	Sandy soil
Hafir	Reservoir
Jubrakas,/jibarik (pl)	Women's garden plot
Khor	Seasonal watercourse
Kitr	*Acacia mellifera*
Karkade	*Hibiscus sp.*
Nafeer	Communal work party
Serba	Afternoon work period
Sim-sim	Sesame

Maps and Illustrations

Overview

Senegal

Burkina Faso

Mali

Sudan

Overview

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Introduction

Migration is not a new phenomenon in the Sahel. Survival strategies have hinged for centuries upon movement: in search of land to farm, of pasture or of trading opportunities to supplement agricultural and livestock incomes (Amin 1974, Ricca 1989, Gugler 1969, Prothero & Chapman 1985, Adepoju 1991). Over the last forty years however, out-migration from rural areas in the Sahel has reached new proportions. Movement to the cities has contributed to the quadrupling of Sahelian urban populations between 1954 and 1984 (Rochette 1988). This trend continues: the flow of (mainly male) migrants to the West African coastal fringe, to Europe and the Gulf States remains largely unabated. As one area of opportunity closes up, another seems to open. Government restrictions on entry, international terms of trade and fluctuating exchange rates seem merely to alter migratory routes rather than significantly affect the trend.

Much of the recent population movement experienced in the Sahel is a response to environmental stress. Changing rainfall patterns and the long-term trends to lower total rainfall currently affect many of the countries bordering the Sahara. Statistics portray this harsh experience. If two thirty-year periods, between 1931-1960 and 1961-1990 are compared, rainfall in the Sahelian region has declined by between 20 and 40 per cent (Hulme & Kelly 1992). Although rainfall levels in many regions have seen a slight improvement since 1984, long term damage to vegetation cover is still apparent, especially in the Sudano-Sahelian zone (Warren & Khogal 1992). As dry season job opportunities (reliant on higher rainfall levels) die out, expectations change and harvests become even more unpredictable, many people are seeking alternative ways of ensuring food security and meeting their cash needs. Given the dearth of off-farm income possibilities in much of the rural Sahel, people travel to towns or centres of economic activity to earn money.

Though most migration throughout the Sahelian region is both voluntary and spontaneous, bilateral agreements between West African states have opened up the paths for Sahelian people seeking to diversify livelihood strategies. In the post-colonial period, many governments took positive steps to encourage labour movements between countries. Agreements, between former Upper Volta and the Ivory Coast/Gabonian governments in the 1960s, and the founding of the Economic Community of West African States (ECOWAS) in 1975, are said to have heavily influenced migratory flows. Similarly, the founding of the *Communauté Economique de l'Afrique de l'Ouest* (CEAO) paved the way for an agreement in 1978 guaranteeing the free movement of people between Burkina Faso, the Ivory Coast, Mali, Mauritania, Niger, Senegal, Benin and Togo. Bilateral agreements between West African states and European countries (in particular, France) similarly opened up legal routes to European employment. While the Sudan had no fixed strategy on out-migration, government policies encouraged labour movements to the Gulf emirates. Favourable exchange rates, land concessions for migrants, and exemption from customs duty on imported goods encouraged Sudanese to leave to find jobs and send remittances home (Russell *et al.* 1990).

It was not until the early 1980s that many Sahelian countries attempted to check labour movements in and out of their countries. Having previously been perceived as a benefit for communities - a way to invest and to introduce new technologies and ideas - emigration came to be seen as a drain on them. Policies were devised to stem the flow of people leaving rural areas. These entailed investing in infrastructure and agriculture (as in Burkina Faso and Senegal) or encouraging out-migrants to register with Labour departments (in Sudan). At about the same time, countries receiving a substantial number of immigrants began to tighten border controls. In 1983, Nigeria expelled 1.2 - 2 million illegal immigrants and by 1988, the Ivory Coast, Ghana, Guinea Bissau, Sierra Leone and Sudan all reported policies in place to restrict immigration from neighbouring countries (UN Population Policy Monitoring Report 1989, as reported in Russell *et al.* 1990). Regular expulsions of undocu-

mented workers and tighter policies have however been more effective in some countries than others and it would be premature to suggest that stricter controls necessarily lead to a reduction in cross-border migratory movements (Ricca 1989, Appleyard 1989, Russell *et al.* 1990). International links which have developed over decades are still sustained today. Relatives in neighbouring countries, or cities, act as foci for migrants leaving the rural Sahel.

Both official and popular perception of migration is still negative today. Governments throughout the Sahelian region are concerned by migratory movements which are seen to put increasing pressure on urban infrastructure and to drain rural communities of useful labour. Governmental, international and voluntary organisations have initiated projects throughout the Sahelian region which attempt to stem the flow of rural out-migration. Projects work with local people to diversify livelihood strategies, increase investments in the long-term productivity of the soil and improve environmental management. The fieldwork for this study took place at the sites of four such environmental projects (see Map 1.1):

- the International Fund for Agricultural Development's (IFAD) Agroforestry Project in Diourbel (Senegal)
- SOS Sahel's Environmental Protection Project in Bankass (Mali)
- IFAD's Soil and Water Conservation and Agroforestry Project based in Passoré (Burkina Faso)
- SOS Sahel's Natural Forest Management Project in El Ain (Sudan)

All these areas are characterised by predominantly settled rainfed agriculture, and are prone to land degradation and high levels of male out-migration.

Case Study Sites

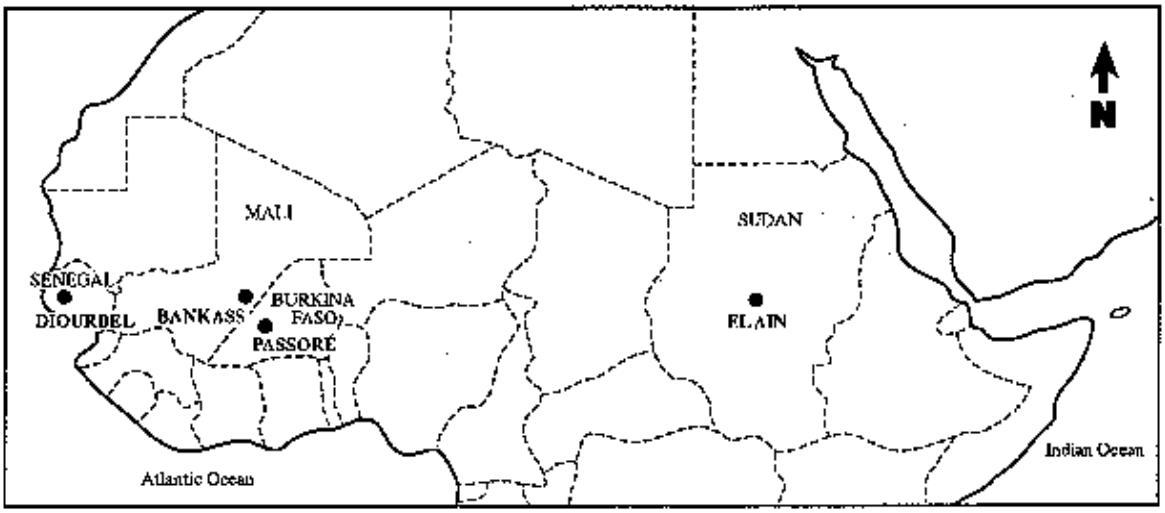
Diourbel (Senegal)

The region of Diourbel lies in the heart of the Senegalese 'groundnut basin' and is one of the most densely populated and environmentally degraded regions of the Sahel. This area has an average population density of 113 people per km², suffers from steadily declining rainfall and has little potential for agricultural expansion. Due to the historical production of groundnuts in this region, communities are heavily integrated into the cash economy, use animal traction, and are reliant on inorganic fertilisers and bought food. Population growth and enlarged field sizes (due to the use of animal traction) has led to the near-absence of non-cultivated land and the breaking-down of fallowing systems. Lack of pasture and forage has virtually put an end to cattle-rearing in the region. Livestock are confined to smaller ruminants and traction animals and there is a consequent dearth of animal waste to enhance the soil. The reliance on the monetary economy has led to high levels of seasonal male out-migration. In some villages, it is difficult to find any able-bodied men during the long dry season.

Passoré (Burkina Faso)

The province of Passoré lies on the Central Plateau of Burkina Faso. This region receives declining, variable rainfall (500 - 700 mm) and has fragile and infertile soils. Though lower than Diourbel, the population density is still fairly high (55 people per km²) and widespread environmental degradation has led to falling

Map I
The Research Sites



agricultural productivity. Vegetative cover is denser than in Diourbel and rotation is still practised albeit with declining periods of fallow. Livestock raising is impeded by competition from food crops, and residual 'bush' areas are used as pasture for what remains of the livestock herds of farmers and pastoralists. Declining rainfall, falling harvests, diminishing herds, growing cash needs and a lack of alternative income opportunities in the region precipitate male out-migration.

Bankass (Mali)

Bankass shares the Sahelian climate, with unpredictable rainfall, varying from as little as 225 mm in a bad year to over 700 mm in a good one. Average rainfall has declined since the wetter period which lasted until the late 1960s. The population density in the study region is relatively low with only 37 people per km^2. Soil fertility has declined as a result of the trend of lower rainfall, the decrease of vegetative cover and resulting erosion from wind and rain. Out-migration from this region is increasing as young girls, as well as adult and young men feel an ever greater need to acquire cash.

El Ain (Sudan)

El Ain in Sudan is the least densely populated of the four case study areas with approximately 12 people per km^2. It lies to the southwest of Khartoum in the province of Kordofan. Until the 1960s this province was not only self-sufficient in foodstuffs but also produced agricultural surpluses (especially gum arabic and livestock) for sale. Over the last thirty years productivity has fallen by a third. Declining rainfall and over-utilisation of the soil put an end to gum arabic production from *Acacia senegal* and the severe droughts of the early 1970s and 1980s killed a high proportion of the livestock which had formerly sustained communities during the dry season. As land productivity falls and alternative cash incomes dry up, people are obliged to look elsewhere for ways of supporting their families.

Rationale and the initial hypotheses

What is the relationship between male out-migration and women's management of natural resources? Various scenarios depicting the effects of migration on rural communities have been presented in the literature. Two main views are that:

1. male out-migration reduces aggregate pressure on natural resources by relieving population pressure as people move to cities or to resource-rich areas; and
2. the loss of labour in rural areas undermines labour-intensive investment in the land, and the resultant inability to carry out soil and water conservation and other land improvement activities destabilises the productive sustainability of rural communities.

In one scenario, migrants' remittances are invested in agriculture, improving productivity and ensuring future livelihoods. This assumes that adequate labour is available to continue farming activities. External investment enriches and sustains rural livelihoods.

In another scenario, communities suffer a net loss. Labour gaps are not filled, labour-intensive investments in the fertility of the land are not maintained and agricultural production declines. Remittances are neither invested in the agricultural sector, nor sufficient to pay for hired labour. Instead, migrants' earnings are spent on food which temporarily bridges the deficit between production and consumption. Falling incomes and unequal rural-urban terms of trade eventually force women to seek off-farm income-generating activities in order to meet family needs. Finally, women are forced to abandon their rural communities and follow their husbands to urban areas (Figure 1.1).

As these two scenarios suggest, research has been particular and inconclusive. Furthermore, as Palmer (1985) points out, migration literature has paid little attention to the real options and issues faced by a growing body of women left behind when their male relatives migrate. The research described in this volume was thus designed to look at migration from a gender-based perspective, and examine the possibilities open to women in the Sahel. It aimed to understand how the out-migration of men influences: a) women's ability to carry out labour-intensive activities which improve and sustain the natural resource base; and b) women's economic behaviour and the effects this may have on natural resource use. Whereas much of the research on these issues had focused on areas in Eastern and Southern Africa (see Palmer 1985), the aim of this study was to examine these ideas within Sahelian communities. A number of hypotheses informed the design:

1. High levels of male out-migration lead to labour shortages at household level, which impede the uptake by women of labour-in-

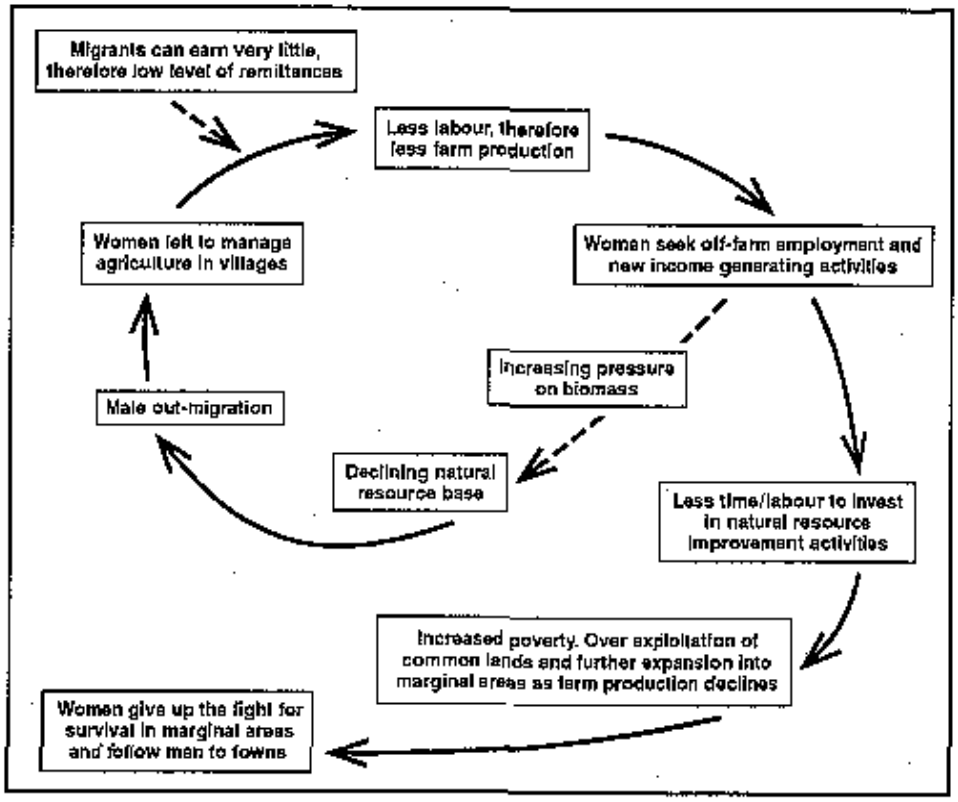


Figure 1.1 Out-Migration and Environmental Decline

Source: based on O'Keefe & Wisner (1977), adapted for Reclaiming the Earth. *Channel 4 production (1990). The original diagram is based on research in Kenya.*

tensive soil conservation activities and management of the natural resource base (Gisbert *et al.* 1992, O'Keefe & Wisner 1977).

2. Women, left behind, seek income-generating activities in order to meet household needs. These activities may either increase or decrease pressure on the natural resource base. The latter because relatively less agricultural activity takes place, and the former because there is a tendency for vulnerable groups to supplement their living by selling wood products (eg firewood, charcoal) or by selling cooked food - activities which consume often scarce resources (Leach and Mearns 1989).

3. Migrants' remittances, sent back to their wives and families, are invested in either agricultural equipment, facilitating the expansion of agriculture into more marginal land; or in livestock, which competes with other uses for scarce natural resources such as water and pasture. Equally, remittances can be used to hire local labour. This has the double effect of increasing rural employment and distributing the benefits of migration among rural communities (Abdelgadir 1990).

4. Due to competitive demands for labour and the untimeliness of field activities, male out-migration increases problems of household subsistence (Plath *et al.* 1987, Chipande 1987, El Sayed 1981, Nelson 1992) and, after a time, families give up trying to survive in marginal areas and join the rural exodus (Monimart 1989, Smale 1980).

The aim of this study was therefore to clarify how and in what circumstances male out-migration influences natural resource management in resource-poor areas of the Sahel. Earlier work, carried out by SOS Sahel, had indicated that migration is severely affecting women's lives throughout the Sahelian region (Cross and Barker 1991). More specifically, the research was designed to complement ideas put forward by Marie Monimart (1989) whose study of Sahelian women's struggle against desertification in six Sahelian countries catalogues the negative impact of labour shortages in rural areas. She writes:

> *Male migration is largely perceived as a direct consequence of desertification. Women are abandoned for months if not years. Above all, this is the most destructive phenomenon of desertification.* (Monimart 1989)

The research thus aimed to improve knowledge about the socio-economic and demographic parameters of "desertification" processes in the Sahel. In practical terms, through examining women's involvement, and perceptions of, activities to improve the fertility of the land, and their changing survival strategies as men migrate, it aimed to suggest steps development projects could take to place women at the centre of project perspectives on natural resource improvement and conservation.

The research employed a distinction between the terms 'natural resource management' (NRM) and 'natural resource improvement' (NRI) activities. The former refers to the general management of the natural resource base which includes all interaction between people and their environment (for example, decisions about livestock management, the use of water, soil and biomass) while the latter is the term used to denote specific investments made to improve the fertility of the soil (recycling animal waste products, mulching, composting, crop rotation, building stone bunds, planting grasses, trees, hedgerows etc). While both NRM and NRI activities are studied, greater emphasis is put on looking at the constraints and opportunities open to involvement in natural resource *improvement* activities in each area.

Methodology

Migration means different things to different people at different times in their lives. The research therefore had to define what kinds of migration to explore. Was it concerned with commercial journeys, with journeys to stay with relatives, with movements of cattle traders, students, *marabouts* or merchants?

In practice, each case study had a definition of 'migrant' which was in keeping with the interpretation in each region. Overall, 'migrants' were broadly defined as those who went away in the hope of acquiring cash or other material wealth. Within this category: short term migrants were defined as those who had left for 1-2 years; medium term migrants were those who had been away for 3-5 years; long term migrants were those who had first left the village more than 5 years before; and seasonal migrants were defined as those who came back during the year, generally to help with agricultural work during the farming season. In Mali the study included women migrants as well as men. As the study was primarily concentrating on the effects of these movements on migrants' wives, families and communities, it did not examine the permanent relocation of entire family groups.

The research was conducted somewhat differently in Mali, but uniformly at the three project sites in Senegal, Burkina Faso and Sudan. At these three sites, due to the seasonality of livelihood systems (and of migration itself) the study was carried out in two phases, one phase in the dry season and a second in the wet season.

The First Phase

The first phase of each study took a 'quantitative' approach. Research villages were chosen in the project site area. Six villages were chosen in each of Senegal and Burkina Faso, but because of the small size of villages in Sudan, eleven villages were chosen in El Ain. In each of the villages a sample frame of migrants' wives was compiled and an unstratified sample of interviewees was randomly chosen from these lists. At each of the project sites, structured interviews, using questionnaires, were carried out with 50 migrants' wives and (for the purpose of a 'control') with 20 women whose husbands were still resident in the village. The study did not include widows or unmarried women although the former were often represented in the category of migrants' wives because in some Sahelian societies a man marries by inheritance his deceased brother's wife or wives. Wives of residents were defined as women whose husbands were living with them in the village during the time of the research, and often included women whose husbands had formerly been on migration but who had come back to live in the village. The choice of women with resident husbands was dependent on women's availability and willingness to be interviewed. Data collected included information on household and compound structure; remittances; off-farm income-generating activities; the nature of migration; and the impact of migration on labour needs in each of the households/compounds. For the purpose of this research a *compound unit* was defined as a group of people who live together under the direction of one person (the compound head) who controls the resources of the group and makes the final production and consumption decisions. Each adult male, his spouses(s) and children make up *household units* within the compound. However, as compound composition is diverse throughout the Sahel, an explanation of family structure is given in each of the case studies.

As women's resource management can be understood only in the context of that of men, focused interviews with men were also an integral part of the research. Discussions with community leaders, compound heads, and separate groups of men and women were an integral component of both phases of the research. Separate group discussions with men and women were based around a set of questions on migration, agriculture, livestock, income-generation and natural resource management. A sample of the husbands (of selected women) were also interviewed. These men (some of whom had previously migrated) gave useful insights into the reasons for migration,

migrants' opportunities and conditions they faced while away, as well as perceptions of agriculture and resource management practices at home. Detailed discussions with a sub-sample of migrants' wives also helped to clarify ambiguities which arose from the questionnaire.

As the work progressed, researchers became more adept at dealing with sensitive topics in different communities. In some countries it was difficult to talk to women on their own without first gaining the confidence of men. In others it was impossible to broach certain subjects in an open forum. Different research methods were appropriate for different topics and the next phase of the research took a new slant.

The Second Phase

The second phase of the research in each country gave more emphasis to 'qualitative' information. In order to maximise local knowledge and understanding, this phase of the research was directed by women from each of the countries (if not from the particular area) where the study was done. While the first phase of the research had been dominated by structured surveys, the second phase drew on a wide range of Rapid Rural Appraisal and interview techniques. Most activities took place with self-selected groups or individuals within a sub-sample of villages where the first phase was carried out. Whereas six (and in the Sudanese case, eleven) villages had been involved in the first phase of the research, two (and in the Sudanese case, four) villages were chosen for the second phase. This allowed more focused study in each of the villages and reduced the time spent travelling. Second-phase villages were chosen according to their accessibility during the rainy period and the openness and receptiveness of the residents. Informal research activities included: thematic plays/sketches; village and resource mapping; intergenerational discussions; workload calendars; biographical interviews; village transects; venn diagrams; flow diagrams; and focused group discussions. Due to the nature of this type of research a plethora of subjects were aired. Topics ranged from the perceptions and problems of stone bund building to HIV infection and migration. The variety of activities and issues seemed to capture people's attention while at the same time providing a 'safer' medium through which people could express their personal views.

The Mali Research

The Malian case study was the last to be done and, in the light of the accumulated experience from the three other studies, the research methodology was modified.

Firstly, although a questionnaire approach had proved invaluable as a way in to people's lives and experiences, it had also proved difficult to compare situations between different ethnic groups in the same region, let alone between countries. Indeed (as others who have used this form of interviewing will affirm) the explanations qualifying the answer to each question proved more illuminating than the answer itself. The task of compiling a questionnaire which would adequately cover the multifarious nature of people's situations from Senegal to Sudan proved impossible. In the Malian case therefore, it was dropped completely in favour of the less structured form of interviewing used in the second phase of the research in the other countries. Like the second phase, elsewhere, research in Mali covered two villages.

Secondly, the research in Mali differs from that carried out in Senegal, Burkina Faso and Sudan because it had one phase rather than two, and the research period was extended to cover the end of the rainy season and some of the harvest. The research findings were supplemented by information gathered through Participatory Rural Appraisal (PRA) exercises by SOS Sahel extension staff during the preceding dry season.

Thirdly, it was decided for the Mali case that the scope of women's natural resource management should be broadened to include the trading activities of women who do not farm but who are nevertheless involved in processing and managing natural resources. The research thus compared the effects of out-migration on natural resource management in a village where women do farm, with those in a village where women do not. This choice of sites highlights the economic importance to women, not only of local trading activities, but also of migration to urban centres.

Finally, while earlier research had concentrated on the differences between resource ac-

tivities carried out by migrants' wives compared to wives of resident men, the research in Mali took a wider look at the effects of out-migration on women's and men's resource management. By concentrating on two villages, this case study illustrates how out-migration influences resource management at village level.

Project Support, Secondary Material and First-Hand Accounts

The research at each of the four case sites relied on support and information provided by the host projects visited. It drew heavily upon both written and oral information provided by SOS Sahel project staff (in Sudan and Mali) and by IIED project staff (in Senegal and Burkina Faso). Logistical support for the research and introductions to villages, given by project staff, were invaluable to the success of this study.

While concentrating on empirical evidence from each of the case study areas, the research has also drawn upon secondary material (eg project reports, evaluations and PRA studies) in order to provide a clear and broader picture of resource management practices and migratory movements in the regions studied. Largely, however, the case studies rely upon the first-hand accounts of people in each of the villages visited. Statistical data are used to illustrate trends and tendencies when they were supported by oral testimony. Due to the diversity of the case-study situations, data are not always comparable between countries; however, where included, they are considered an accurate representation of the individual situation.

Quotations and personal accounts of people's experiences are heavily drawn upon in the case study reports. Where possible, the person's name is given; where a name is not included, this is due to confidentiality around sensitive subjects. Migration (and especially how this affects women's lives) is a contentious issue and the initial distrust and suspicion with which external researchers are sometimes received should not be underestimated. It was only with the support and introduction of trusted project workers that much of the research was possible. Often, asking for names and identities in a group discussion incited mistrust and lack of confidence (especially among women). The desire for anonymity of many of the villagers is therefore respected.

Lessons Learnt

As with any study of this nature which tries to span such a large region, the researchers were constrained by time. This manifested itself in a number of ways but primarily affected the choice of villages and the composition of the sample frame. After randomly selecting villages in the project areas it became obvious that the distance between villages put even greater pressure on the research timetable; hence the second phase of the research (in Burkina Faso, Sudan and Senegal) was carried out in only a sub-group of villages in each of the project zones and the research in Mali was confined to two villages.

Secondly, although it was overwhelmingly an advantage, the fact that the research was carried out under the auspices of different projects had one main drawback. Each of the projects has an excellent rapport with the villages, but people were inevitably motivated to give certain impressions because projects are seen as potential sources of wealth and influence. Consequently they sometimes tried to second-guess questions and give what they thought to be appropriate answers. The qualitative research methods (plays, sketches and extended individual interviews) were an invaluable alternative route to check information, perspectives and ideas.

Above all, the research has demonstrated the value of working with individuals. The personal nature and variable meaning of 'migration' is related to individual survival strategies which together constitute their livelihoods. Though many people appear to be pursuing similar strategies, they are rarely pursuing them in the same combination or in quite the same way. It is these small differences which often explain why one family becomes rich and the next, destitute. Attention to individual experience and biography reveals the complexity of difference or division within a community, and makes us aware that 'development' can rarely help a whole community at once.

Young boys digging half moon catchments in Mali

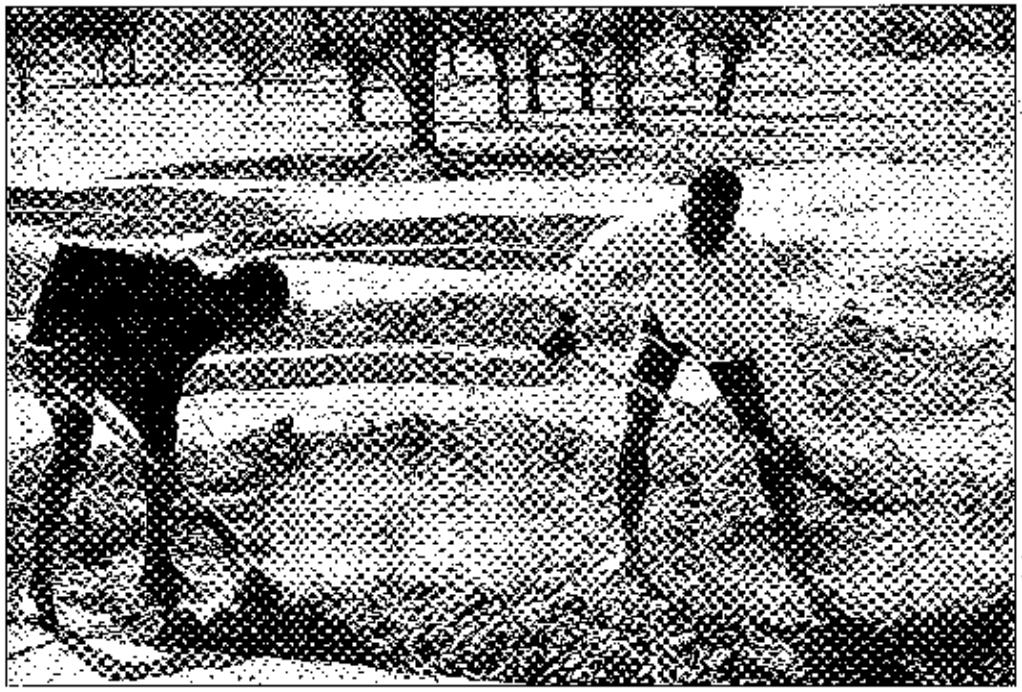


Photo: SOS Sahel

Subjects Covered

The research documented in this report reflects the researchers' views and findings during their visits to each region at particular points in time. In total, three to four months was spent in each region. The participation of local consultants, who could draw on long-term knowledge of the regions, was therefore invaluable. Naturally, a study of this length cannot cover all ideas and questions pertaining to out-migration from rural areas; it does not attempt to quantify the impact of male out-migration on either the family economy or on investment in the land, nor does it attempt to look at the macro-economic reasons for this movement. What it does cover is the implications of out-migration for women's, men's and groups' decisions to invest time, money and effort in activities to enhance and improve the natural resource base. It looks at NRI activities on particular plots of land and what constrains or influences these investment decisions. Detailed analysis of what men, women and children do where and why enables us to understand the rationale behind people's activities and opens a way to supporting their initiatives.

Overview of research findings

Hypotheses generated in the migration literature (see pp 5-6 above) dealt with three principal orders of possible effects of male out-migration:

1. demographic and social impacts on the status and roles of women
2. natural resource effects resulting from changes in patterns of agricultural and other productive activities
3. effects on household viability and on rural economies in general

The research findings challenge the perception of migration in the Sahel as a homogeneous movement with constant causes, motivations, meanings and effects. They throw light on the nature of the relationship between male out-migration and women's natural resource management; question assumptions about the inter-relationship between migration and environmental change; and show how much women's involvement in natural resource improvement (NRI) and natural resource management (NRM) varies between ethnic groups and locations. The variety of experiences, options and interests of women and men, throughout the region, are illustrated by the four case studies from Diourbel (Senegal), Bankass (Mali), Passoré (Burkina Faso) and El Ain (Sudan). However, some of the salient points from these studies are summarised below.

Male out-migration in the Sahel has diverse forms and effects

The research clearly shows that migration is both diverse and constantly changing. Migrants react to circumstances influenced by dynamic economic and social forces, and the effects of this movement on different communities are as varied as its causes.

The seasonal out-migration of men affecting El Ain (Sudan) has different implications from the long term migration which affects Mossi villages in Passoré (Burkina Faso). In the latter case, longer term migration (on average seven years) affects labour allocation at village level and can be said to influence investment decisions in natural resource improvement activities. In the former it cannot. Furthermore, we should not assimilate the effects of seasonal migration in Diourbel (Senegal) - where approximately 70 per cent of men migrate to find dry season job opportunities - to those of seasonal migration in El Ain (Sudan). The closeness and frequency of contact between Senegalese migrants (mainly living in Dakar) and their home communities, and the high level of remittances, are not mirrored in Sudan (where migrants have little contact with their wives during the dry season) and so lead to very different effects for these rural communities. Additionally, as the research in Mali illustrates, out-migration is not always an exclusively male activity. Young women from the Bankass region embark increasingly on the migratory journey to earn money for their dowries. Equally, as some of the case studies show, migration of whole families from resource-poor areas in the Sahel is now also a relatively common occurrence.

Male out-migration does not create large numbers of female headed households. Its effects are felt by women in general rather than by migrants' wives in particular

Migration from these regions does not usually create a vulnerable category of *de facto* women heads of compound. The extended family structure in the three West African cases means that, in the absence of their husbands, most migrants' wives continue to live in their

Women walking to market in Bankass, Mali

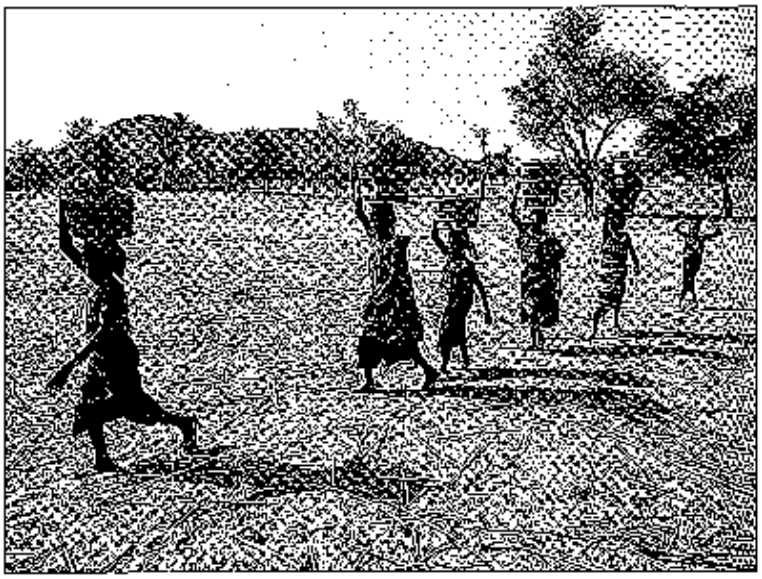


Photo: John Reader

husbands' compound, or in the charge of his extended family, and are normally supported by the male head of the family (typically the father-in-law). In cases where all the men in the compound have migrated (which was frequently the case in Diourbel (Senegal) during the dry season) a migrant's wife continues to live in the compound with her sisters-in-law under the supervision of her husband's mother. In this case the mother-in-law becomes the *de facto* head of the compound and, as such, she is often relatively well-off. Not only can she call upon the financial support of all the migrants who have left the compound but, because of the proximity of Dakar (where many of the men live) she can also ask for advice from her husband. It is only in El Ain (Sudan), where much smaller conjugal units (rather than extended families) are the basic unit of production and consumption, that some women become *de facto* heads of household and are more vulnerable. However, even here, this is a minority (approximately 20 per cent of the sample) and because of the tight-knit relationships within villages there is a great deal of inter-household support.

Overall, the research indicates that, because of the high degree of reciprocity in the study areas, very few migrants' wives are left to fend for themselves. Co-wives and sisters-in-law help each other and neighbours and relatives all support women who are alone. Most migrants' wives have more responsibility for their immediate family, and in some cases are required to work even harder in the fields (in Passoré) or at their trading activities (in Bankass) but they should not necessarily be singled out as a vulnerable group.

Contrary to expectation, the study found very few 'abandoned women' or women whose husbands had been away for a substantial number of years and who had given up hope of receiving help from him. None of the migrants' wives in Diourbel and only 8 per cent of the women in El Ain (Sudan) were abandoned. Similarly in Bankass only three out of nineteen women (16 per cent) who took part in the interviewing were considered deserted. The proportion was higher in Passoré (Burkina Faso). Here 24 per cent of the migrants' wives were abandoned but more often than not these were older women who had been inherited as wives by their migrant husband. Their husbands had therefore left them in the charge of their families rather than taking direct responsibility themselves. The support of the family is paramount and, in most cases, abandoned women are looked after by their husband's family.

Out-migration leaves women and children as the greater proportion of the stable working population

Whether or not women are involved in NRI activities, they often make up the majority of the stable active work-force in rural areas of the Sahel. This situation is pronounced in Passoré (Burkina Faso), where the absence of men, due to out-migration, leaves women as approximately 62 per cent of the active working population in the villages studied. Here female and child labour is replacing male labour in agricultural and NRI tasks on family farms. Women's free time is squeezed as they try to take on additional work as well as carry out their normal domestic tasks.

In Diourbel (Senegal) the gender disequilibrium is most marked during the dry season when most men leave the village in search of employment. Despite men's frequent visits home during the agricultural period (often to supervise and plan rather than to execute), women and children have mainly taken over the manual agricultural tasks. Although women are the stable core of Diourbel communities, they are not involved in decision-making about agricultural and natural resource improvement activities. Women here, despite being the *de facto* managers, are not the active decision-makers about the environment.

In El Ain (Sudan) the situation is slightly different. Although seasonal out-migration leaves women as the majority of the village population in the long dry months, men still prioritise agriculture and return *en masse* to carry out the agricultural tasks. Women's farming workloads and roles remain largely unchanged.

In Bankass, because of its predominantly seasonal character, out-migration again leaves women as the significant majority during the dry season but does not produce a skewed population in the farming season when men come back to work in the fields. Migration is also on a smaller scale than in Passoré and Diourbel: a rough count in one of the villages studied showed that approximately 7 per cent of men migrated in the dry season of 1992-3 leaving women as about 53 per cent of the population.

The rigid gender division of labour and decision-making power means that women's workloads are not significantly affected by out-migration.

Male out-migration has no significant effect on patriarchal patterns of decision-making nor on the normative gender division of labour

Due to the nature of the family structure and the degree of inter-household support, the research showed no evidence that male out-migration from these regions significantly affects women's ability to make decisions about agriculture and natural resource improvement activities. Even in Diourbel (Senegal) where, during the dry season, women become *de facto* heads of compound, women defer decisions about agriculture and natural resources to their husbands. The proximity of Dakar, and migrants' frequent visits home, enable men to remain responsible for these activities. In El Ain (Sudan), as in Bankass (Mali) and in Passoré (Burkina Faso), such decisions are usually made by the father-in-law or the head of the family, who will rarely migrate himself.

Activities which have traditionally been 'male' (such as driving horses, using carts and clearing new lands) largely remain so. If there is no alternative, women will take on these 'male' tasks, but (in all cases) this was found to be uncommon. Furthermore, throughout the Sahel, it is traditionally men who decide about the allocation and use of land, the division of labour between fields and the resources invested in land-improving activities. Sahelian women have weak tenurial rights and manage only the produce yielded from their small garden plots. Male out-migration does not seem to have greatly affected women's decision-making power - or lack of it - and responsibilities in these respects.

Few generalisations can be made about the effects of male out-migration on labour availability for agriculture in rural areas

As the forms of out-migration, the level of agricultural technology, the agricultural system and calendar and the gender division of labour vary throughout the Sahel, so too does the impact of out-migration on labour needs. In Passoré (Burkina Faso) the absence of able-bodied men is keenly felt. Here most agricultural activities are carried out by hand and men's absence leads to a 'labour gap'. As a result, women in Passoré say that they are working longer and harder in the compound's communal fields. Consequently, women have less time to work on their personal plots of land.

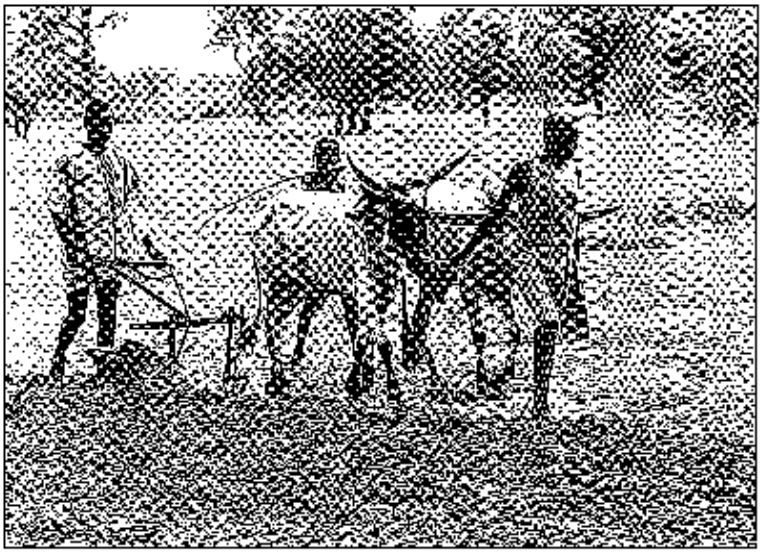


Photo: SOS Sahel

Ploughing still remains a 'male' task in many areas of the Sahel

By contrast, in Diourbel (Senegal), land rather than labour is the major production constraint. The widespread use of animal traction and agricultural machinery means that production can be carried out by fewer people. Here, seasonal out-migration of men is the norm, with men prioritising off-farm work over agricultural work (only two to three men from each compound usually come back to help with the agricultural activities). Due to the use of animal traction, labour gaps are less of a problem, although labour 'bottlenecks' (especially during weeding times) and delayed activities (due to men not being present at certain times to carry out certain activities) are said to reduce productivity. As in Passoré, scarce male labour means that women concentrate their agricultural activity on family plots to the detriment (and sometimes exclusion) of production on their small plots of land.

In El Ain (Sudan), labour shortage is a constraint but this is unrelated to the phenomenon of male out-migration. Migration from this area is mainly seasonal and most men come back for the duration of the rainy season to work in the fields. Men seem to prioritise returning for agricultural work over their (usually) impermanent jobs in town. In some villages, with many longer-term migrants, women work longer and harder to replace absent male labour, but inter-household support for 'male' tasks (like land clearance) means that women only occasionally have to take on 'male' roles.

Photo: Alex Mavro

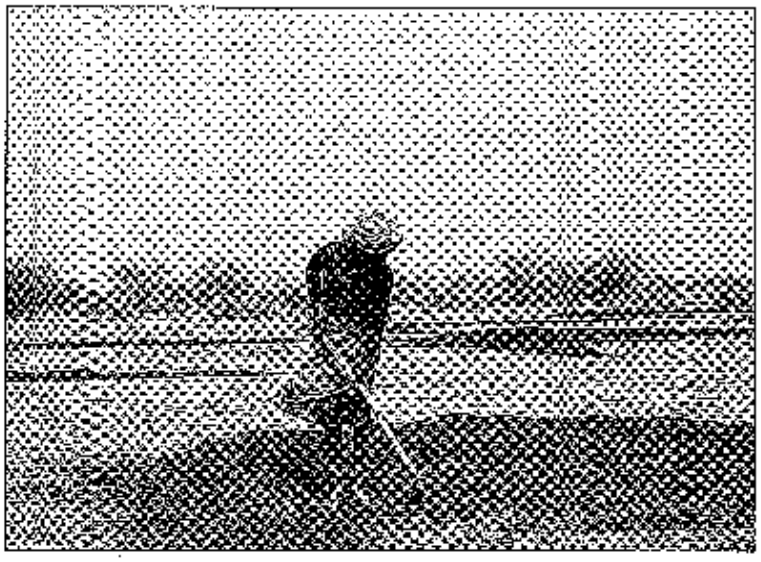


Photo: SOS Sahel

(Top)
In Bankass, Mali, men often come back to help with the harvest

(Bottom)
Women are involved in digging microcatchments in El Ain, Sudan

As in the El Ain area, seasonal migrants from Bankass (Mali) sustain a commitment to return home to farm for their families. Approximately 50 per cent of the migrants from this region are seasonal and 50 per cent are longer term. However, the very distinct division of labour between men (who work on family fields) and women (who work almost exclusively on their own plots) has different implications on labour availability on different plots. The labour gap created by the absence of migrant males is widely felt by men in Bankass who have less labour to draw upon to carry out the labour-intensive weeding of family farms. This is felt not only by families with long-term migrant members, but also by those with seasonal migrant members who return for only *part* of the farming season. However, male out-migration does not affect women's agricultural workload directly, since women prioritise work on their own land. Unlike women in Diourbel and Passoré, they have no formal obligation to supplement labour needs on family farms. Dogon women are, however, indirectly affected by male out-migration because, due to the shortage of labour on family farms, the labour of children and unmarried girls is more urgently required to help the men. In addition, (and sometimes because of this,) unmarried girls migrate. So it is often because of male out-migration that women are deprived of their children's assistance on their own plots.

The effects of male out-migration on women's natural resource improvement activities are diverse and in each case depend on the gender division of labour, land tenure, women's decision-making power and women's workloads

The research results highlight the different levels of interest, opportunities and options open to women as 'carers of their environment'. Sahelian women are not necessarily the driving force behind natural resource improvement activities, in terms of both motivation and initiative as well as labour power, that they are sometimes held to be in the rhetoric of development projects. Family structures, the division of labour, women's decision-making ability, their tenurial rights and the amount of time they have available, all shape the activities that women want, or are able, to be involved in. Male out-migration influences women's NRI activities to varying degrees and sometimes not at all.

In Diourbel (Senegal), there is a growing dependence on bought food, and maintaining and investing in the environment seems to be almost secondary in people's minds. Many people used to use fertiliser on their land but are now unable to buy it. Agroforestry is traditional in the area, but people are despondent about the prospects and benefits of planting trees or hedges. They maintain that the fall in the water table diminishes the chances of seedlings surviving. Women do little to improve the quality of their land. They are neither able (due to lack of tenure rights) nor currently motivated to plant trees. The seasonal migration of men to Dakar is not in itself a significant factor affecting women's NRI initiatives.

In Passoré (Burkina Faso) the situation is entirely different. Women play a major role in helping men to build stone bunds; plant trees; add household waste and manure to the land;

dig micro-catchments and mulch their farms. Most of these activities take place on communal family fields. Women provide labour for these NRI activities but are not often trained or encouraged to carry them out on their own. In addition, labour and tenure constraints prevent women from carrying out as many labour-intensive activities on the plots of land they personally farm. The absence of men due to male out-migration means that women are more involved in NRI activities on family farms, often to the detriment of investment in their own plots.

In El Ain (Sudan) very few NRI activities are carried out: manuring, mulching and anti-erosion work are virtually unknown. Despite increasing evidence of erosion, soil fertility is not seen as a problem and there is still enough land available for long fallows to be practised. Women have recently constituted the majority of the workforce in Food-for-Work micro-catchment building schemes, but it remains to be seen whether they would continue these activities if no food were given, as they are severely constrained by lack of time and may not prioritise such land improvement activities. The seasonal out-migration of men does not influence women's involvement in NRI activities either way.

The Dogon of Mali are renowned for their intensive land-improvement techniques. Men, with the help of children, cultivate the family's millet fields and their own secondary crops using water-conserving and regenerative techniques, such as organic mounds (formed during weeding) and planting pits. Women also use these techniques, though less intensively, on their ground-nut and groundpea plots. Women apply household waste to their often degraded groundpea plots and, like men, protect naturally regenerated trees and grasses around their fields. However, women do not transport manure to their land; this is a responsibility of men. Women's prerogative to cultivate and own the produce of a small plot is firmly upheld among the Dogon and there is little evidence that women's NRI activities and their ability to farm their own plots are affected in any significant way by the out-migration of men.

Remittances are not usually invested in agriculture

The nature and level of remittances varies widely throughout the Sahelian region. The degree of accessibility to the home village largely dictates the regularity of remitted goods and money. The profitability of employment opportunities and the cost of living equally affect the amounts of money migrants can send home. On average (although self-declared figures on incomes are inevitably only indicative), remittances were found to be low. However, the sums sent home are vital to food security as they are a way to diversify risks and to provide support in times of harvest failure. The average sum sent by Sudanese out-migrants from the El Ain region was found to be about 700 LS per month (about 2 US$ in March 1994) but there are large variations depending on the migrants' occupation. Remittances to Passoré (Burkina Faso) also appear to be low and infrequent. Here the money is sent to male heads of compound who distribute it among the other members. Some compound heads said they can receive about 30,000 - 50,000 FCFA (approximately $105-171[1]) a year from absent migrants. The proximity of Dakar and easier access to more lucrative urban employment enables male out-migrants from Diourbel to send more money, clothes and food back to their families. Here migrants' wives in the sample said that they themselves receive an average of about 7500 FCFA (approximately $27) a month[2]).

Photo: SOS Sahel

Acacia albida are protected in the fields by Dogon farmers

Very little of the remitted money was found to be spent on agricultural investment in three of the case study areas. The high price of chemical fertiliser prohibited all but the very few from making this type of investment. People in Passoré (Burkina Faso), El Ain (Sudan) and Diourbel (Senegal) said that, on the whole, the money is used neither to hire labour, buy

Photo: SOS Sahel

Women and children play a major role in NRt activities in Burkina Faso

agricultural materials (fertiliser, animal traction etc) nor to invest in livestock. Disparities between food produced and food consumed means that, in all the areas, much of the money is spent on buying extra food. Investing in agriculture is perceived as risky. Indeed, the cheap price of imported food, particulary in Senegal (before the devaluation of the FCFA in early 1994), and the poor terms of trade between agricultural and manufactured goods, encouraged people to buy food rather than grow it. We have yet to see what the consequences of the 1994 devaluation will be.

Bankass (in Mali) is the exception. More fertile land and less population pressure means that most people in this region are still able to grow enough food to cover their annual food requirements. Combined with the region's relatively undeveloped cash economy, this makes for a situation where agriculture is still a secure investment. Here migrants said they prioritise expenditure on carts, ploughs, traction animals, livestock and sometimes pay for extra labour with their savings.

Additional costs and the changing material requirements of rural dwellers are also met by remittances. Status items such as smart clothes (particularly in Diourbel and Bankass) imported kitchen ware and consumer technologies like cassette players, are high on the list of priorities throughout the Sahel. Cash is needed for taxes, medicines, school uniforms and fees, as well as the more traditional expenses of dowries and ceremonies. Rising expectations are fuelled by the further integration of rural communities into the urban and cash economy.

Male out-migration does not increase pressure on renewable natural resources through off-farm income-generating activities

No evidence was found at any of the case study sites to support the hypothesis that the out-migration of men leads women to seek off-farm income-generating activities which increases pressure on renewable natural resources. While some migrants' wives do seek alternative activities to supplement their livelihoods during the dry season, these activities do not appear to be more environmentally deleterious than those carried out by men before they left.

In Passoré (Burkina Faso), commercial opportunities open to women are slight, and a number of other reasons were given to explain why most migrants' wives do not seek new ways of supporting their families. Women whose husbands are away say they spend more time and energy on agricultural production. The absence of local markets, the shortage of 'spare' time, the labour-intensiveness of their domestic tasks and the long distances women have to walk to fetch the water and fuelwood necessary for food processing, discourage such commercial initiatives. It is the younger, fitter women who profit most from off-farm income-generating activities during the dry season and women's involvement was found to be unrelated to male out-migration. In Bankass (Mali) women make *dolo* (millet beer), dye cloth, extract peanut oil, carry out market-gardening activities and invest in cattle - all of which certainly increase the rate of consumption of natural resources. Some women said that the absence of their husbands means that they try to do more of these activities. However, in the context of what their husbands were doing before they left, one cannot maintain that the absence of men increases pressure on the environment.

In El Ain (Sudan) opportunities for income generation are limited and profits are low. Here, most migrants' wives do not seek alternative income-generating activities. However, the research here found a positive correlation between female heads-of-households (20 per cent of the sample) and engagement in some sort of off-farm cash-earning activity (handicraft, firewood sale, charcoal making etc). However, as in Bankass, it was not found that such activities put extra stress on the environment - these women are generally continuing their

husband's former business on a smaller scale.

Women in Diourbel (Senegal) are more integrated into the cash economy. Most women sell part of their annual harvest from their own plots of land and some older women are involved in trading activities outside the village (travelling as far as Dakar to buy and sell). Their income-generating activities largely revolve around buying and selling raw agricultural goods rather than processed foods or crafts. Though women's activities are related to migration, they do not directly increase pressure on natural resources.

Out-migration does not necessarily lead to the freeing-up of land in rural areas

While the logic of out-migration from rural areas in the Sahel suggests that it relieves population pressure on natural resources (decreasing demand for new land, fuelwood, building materials etc) the research suggests that it is not leading to an net increase in fallow land.

Where land is under pressure, there is no significant evidence of a freeing-up of land due to male out-migration. When men leave from Passoré (Burkina Faso), their land is normally taken over and worked by other members of the compound or village. Very little extra land is left fallow as a result of migration. Similarly, in Diourbel (Senegal) the absence of men on seasonal migration does not increase fallow periods. Here the use of agricultural technology, such as seeding and hoeing machines, since the 1960s, has increased field sizes so much that fallowing is rare. In El Ain (Sudan), even though labour (not land) is the major constraint, there is very little change. Here, seasonal migration is the norm with men coming back in the agricultural season to farm the land. Although most farmers complain that they are unable to cultivate the full extent of their holdings, this is unrelated to migration. It is only in Bankass (Mali) that the absence of younger men sometimes leads to an increase in fallow land. Farmers here complain that they haven't enough labour to farm the same land area. As with the other cases however, the high rate of population growth ensures that in spite of migration, land is cultivated with the same or diminishing fallow periods. If this is not done by the direct claimants of the land, then it is by another family which is short of land or has recently migrated into the area.

Male out-migration postpones initiatives to improve agriculture in the village

The movement of men away from rural areas (whether short- or long-term) has not significantly disturbed the gender *status quo* in the rural Sahel. In all the case study societies, men have largely retained the right to decision-making and control over agricultural and environmental management. Women, who stay behind, are both unable to take decisions that may affect their environment and untrained in conservation technologies. Therefore, while out-migration may partly reflect a declining commitment to agriculture, it also perpetuates, or even encourages this decline.

In Sudan respondents suggested that since men began earning money on a regular basis during the dry season they have become less willing to contribute their labour freely. The demise of '*nafirs*' (communal work parties) has been one result. Amongst other things, '*nafirs*' were responsible for clearing grass lines to reduce the risk of bush fires in the El Ain area. The absence of men from villages has also been said to contribute to the declining ability of village *Sheikhs* in Sudan to negotiate (and enforce) agreements over land/pasture use with pastoral groups and neighbouring villages and to preserve and protect the village resources from illegal fuelwood cutting and charcoal production.

In the West African case studies, similar trends are suggested. As the young dynamic members of each community leave, it is the older male members who continue to take decisions and manage the land. Gerontocracy is reinforced and ensures a continuation of existing management priorities and values. As men leave, women do not move into decision-making roles in natural resource improvement and agriculture. Although they become a more integral part of the agricultural workforce (sometimes at the expense of other roles), their decision-making powers remain weak.

In these low-investment and low-yield systems, the integration of rural society into the cash economy, also delays the transformation of agricultural systems. Declining yields and changing climatic conditions have forced men to look for alternative ways to ensure family food security. But in turn, this movement undermines new rural initiatives which might help to ensure long-term productivity. The absence of concerted attempts to redress envi-

ronmental degradation may in part be because men, and increasingly women, now think in terms of earning money to buy, rather than of growing food.

Migration is a strategy which sustains rural livelihoods

The research indicates that out-migration is a reaction to declining rainfall and growing cash needs and is a rational response to livelihood-insecurity in the areas visited. The decision to migrate is normally taken at the family level by the head of the family and his sons. Generally people only leave if there is enough labour left to continue producing adequate food to feed the family. Of course, the absence of migrants, while it may adversely affect the harvest, also relieves pressure on the family granary. Villagers pay the social costs of migration because it is a way to diversify risks and ensure monetary support in times of harvest failure. In all the areas studied, the (even small) sums of money received by families are considered vital to food security.

Migration does not necessarily signify a rejection of a rural livelihood. Rather, it demonstrates that the survival strategies of rural Sahelians are not only rooted in their immediate vicinity, but are also linked into economies in other rural and urban locations. It is precisely this inter-linkage which supports rural communities and helps them to survive in such climatically unstable environments. While out-migration threatens to make communities more vulnerable, by draining the fittest and strongest labourers, it also gives them a life-line of support.[3]

Conclusions

The research has been a lesson in diversity. The fieldwork took place in 25 villages across the Sahel, and variability in conditions, responses, perceptions and strategies was evident not only between regions and countries but between villages and groups, and even between families.

In itself this lesson must be a major part of the conclusions to be drawn; both as a response to attempts to generalise about the nature and effects of male out-migration, which provided the starting points and initial hypotheses; and as a response to projects and practitioners intervening in rural development in a context of high out-migration, and searching for an appropriate set of strategies to deal with it or to take account of it.

The research did not set out to address, and does not claim to have answered, macro-economic or macro-sociological questions of labour and capital in the development of rural sub-Saharan African society. Its ambition was rather to provide micro-level "thick description" accounts of case study areas which would show, from the standpoint of people in these places, how labour migration is being conceived, managed and internalised. From this perspective, the homogeneity which might have been apparent in the phenomenon at the macro-level disappeared, and was replaced by a multiplicity of forms and meanings which could not be aggregated or easily generalised.

Absorbing this lesson of diversity could be seen as important both for the "theory of migration" and for the practical stances to be taken by agencies working in areas of out-migration and indeed in "rural development" more generally. If the constant factor of labour migration can only be properly understood as part of a pattern which varies so quickly and importantly over time and place, is it possible also that what is often taken for a "community" or "village" system is in fact a rather arbitrary bundle of livelihood or survival strategies?

Some general conclusions (although not new in themselves) are nevertheless worth emphasising, on the conceptual level which informs (or should inform) planning.

Firstly, although male out-migration is leaving women and children as, often, the greater proportion of the stable working population in the countryside, it is not creating "women heads of households" as an identifiable category in significant numbers. The problem is more intractable and more complex; the finding is that this demographic shift is not accompanied by a shift in power and authority towards women nor in the *normative* gender division of labour. Women are, as is often claimed, doing more soil and water conservation in many places than men; but they are not on the whole deciding on and directing this investment, and are not creating through it resources which will be under their control.

Secondly, it is clear that although specific

development interventions draw on the macro levels of analysis, there are no general solutions to the problems which arise from migration, nor standard prescriptions for working with men and women in rural areas to improve environmental management and livelihood strategies. Projects need to understand the constraints and opportunities that migration poses for men and women's farming and investment initiatives *in each area*. Development organisations should be aware of the wider arena or "action space" in which people encounter and manipulate these constraints and opportunities, and which extends beyond their immediate rural surroundings and natural resources: the conflicts between agriculturalists and pastoralists, the growing problems of shortage of fertile land and of increasing cash needs, the network of contacts and influence in towns and cities.

Some tentative conclusions of a general kind can be drawn from the detailed but inevitably incomplete picture composed in the course of the research.

- Overall, migration seems to have neither an overwhelmingly positive, nor overwhelmingly negative effect on rural communities. It has developed as a survival strategy to diversify risks and effectively maintains, rather than undermines or transforms, rural communities. As rainfall levels become even more unpredictable, people seek new ways of ensuring adequate incomes to buy food in times of hunger and to finance changing needs (school fees, medicines, clothes, transport etc). Contrary to expectations, there is no evidence to show that migration is leading either to an increase or to a significant reduction of pressure on renewable natural resources. It is true, however, that without migration, existing resources (particularly grain) would be inadequate.

- The survival strategies of rural communities are inextricably inter-linked with the cash economy, as long as there is little or no opportunity for off-farm employment in rural areas, it is highly unlikely that migratory movements will decline or cease. Environmental projects, working in these areas, are making positive inroads into supporting long-term agricultural production but they do not seem to be influencing decisions to migrate. Stone bund building, agroforestry and agricultural intensification initiatives are the job of those who stay behind. It would seem that, until there are alternative forms of local employment, people will continue to leave. Governments, international organisations and NGOs need to recognise the importance of cash incomes to farming communities. They could do this by investing in rural areas through building infrastructure and supporting off-farm income-generating activities and other local employment.

- Male out-migration is resulting in a demographic disequilibrium in many rural areas of the Sahel. Women are the stable players in village life. They already have environmental and educational responsibilities. It is therefore important that these should be recognised and incorporated overtly into project initiatives to improve and conserve the environment. If projects do try to work with women, they should take their priorities and concerns into account. Women should be consulted at the earliest stages of project design; they should participate in decision-making processes so that the aims and the results of programmes are meaningful to them, and be given responsibility (alongside men) to conserve and use their natural resources in a sustainable way.

- The research clearly illustrates the major disincentive to women's participation in natural resource management and natural resource improvement activities. Throughout the Sahel women face insecure tenure rights and lack of decision-making power with regard to their environment. Women do not generally partake in village-level discussions nor make management decisions about family land. On the whole, women have control over only the small residual plots they are given to farm by their husbands. In some areas women are actively involved in NRI initiatives on family farms, but in others they are not. In the light of considerable male out-migration (which is unlikely to stop) it would seem that this situation is unsustainable. Governments need to rethink strategies for increasing women's incentives and involvement in land improvement schemes.

- On a wider scale, the research shows that the juxtaposition of national land tenure laws and traditional tenure systems seems

to have led to confusion at village level. With the increase of state intervention in rural resources since independence, the traditional resource management and monitoring structures of the village have become disempowered and ineffective. Indeed, in many of the areas visited, it was hard to determine what, if any, are the ways through which the community monitored and protected the resource base. A root feeling among rural people is that they no longer control the resources on which they depend. As men move away, villages remain under the authority of a gerontocracy, but this structure of authority itself has been whittled away by the heavy hand of the state. Communities need to be given back a sense of ownership, and decision-making ability about their village resources. Existing village authorities should be given more official powers to grant people a stake in, and responsibility for, preserving and conserving their environments. At the same time, the importance of female labour and the role of women in resource use should be fully recognised. The opportunity must not be missed to give women more of a prominent role in village-level decisions about resource management.

Notes

1. The fieldwork for this study was carried out before the devaluation of the FCFA in January 1994. Unless otherwise stated, the value of the FCFA will reflect the pre-1994 rate of exchange. The conversion to Sterling is made @ 8.5 FF to the pound and into US dollars at 1.5 US$ to £1.

2. The amount ranged from about 5,000 to 10,000 FCFA depending on the man's employment opportunities and the amount of children the women had to feed.

3. A research project carried out by SOS Sahel (funded by NOVIB and the Ford Foundation) is currently researching these rural-urban linkages, specifically the role of Migrant Associations.

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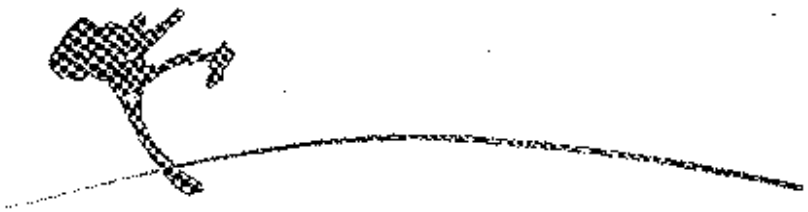

Case Study

Diourbel, Senegal

Rosalind David and
Oumoul Khayri Niang

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Summary

Male out-migration from Diourbel is a logical response to the modernisation of agriculture and declining food security. While farming inputs were subsidised by the government, the process towards extensified and mechanised agriculture functioned effectively, but since the end of the 1980s, when subsidies were withdrawn, communities have suffered. Today, there are few trees to protect the soil, little vegetation matter to mulch, and competing demand for highly-valued manure. Fallow is a thing of the past and soil fertility is rapidly deteriorating. Male out-migration is an effect of a changing agricultural system, rather than a cause of environmental decline. However, project initiatives working with communities to plant trees and improve the environment are thwarted by the absence of men, the dependence of the villagers on a cash income, and women's lack of tenure rights.

This chapter explores changing environmental management, the development of the groundnut economy and the current integration of the population into the cash economy. It traces the links between groundnut production and the rise of Mouridism, and takes a look at how male out-migration is currently affecting natural resource management initiatives in Diourbel. It concludes that:

- long-term environmental initiatives are undermined by the out-migration of men;
- while women are concerned about the changing environment around them, they are in a weak position to do anything about it; and
- measures to regenerate soil and vegetation must begin by putting the control of natural resources back into the hands of rural communities.

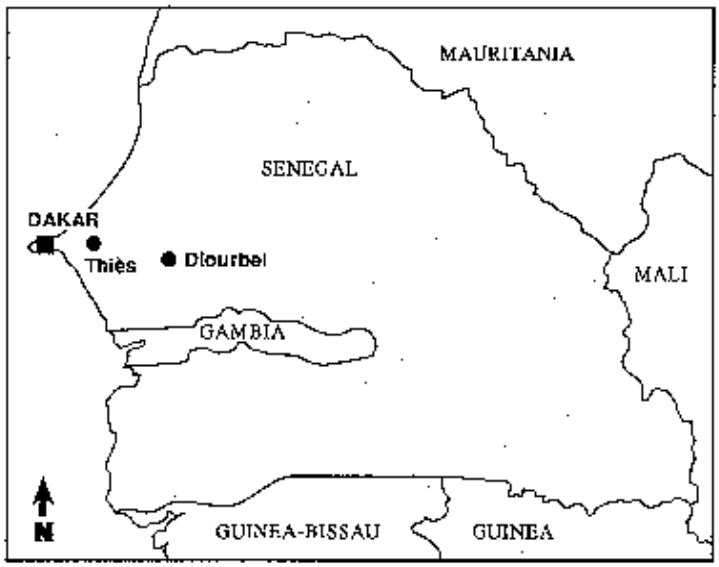
Introduction to Diourbel

Overview

The region of Diourbel lies at the heart of Senegal's Groundnut Basin. This region is one of the most densely populated and economically important regions of the country. Exports from Diourbel have driven the economy for much of this century. Even today 75 per cent of the country's groundnuts, millet and sorghum come from this region and, despite attempts at diversification, Senegal is still highly dependent for foreign exchange on the export of groundnuts, or groundnut derivatives, from this area (USAID 1990a).

Diourbel covers an area of 4359 km^2 and is bordered by the regions of Thiès, Louga and Fatick (see Map 2.1). The region falls in the Sudano-Sahelian zone, receiving variable rainfall ranging from 230mm to 500mm per annum. Like the rest of the Sahel, this semi-arid area experiences two main seasons: a long dry season lasting from November to April, and a short, intense rainy season lasting from May to October. Again, like much of the rest of the Sudano-Sahelian Zone, the last twenty years have been considered 'drought years' with an above-average number of years with below-average rainfall (USAID 1990a). High evapotranspiration rates, coupled with the erosive capacity of wind and water, have exacerbated soil erosion in the area. Declining agricultural productivity and increasing dependence on bought food have combined with an increase in the levels of male out-migration.

Map 2.1
Diourbel, Senegal



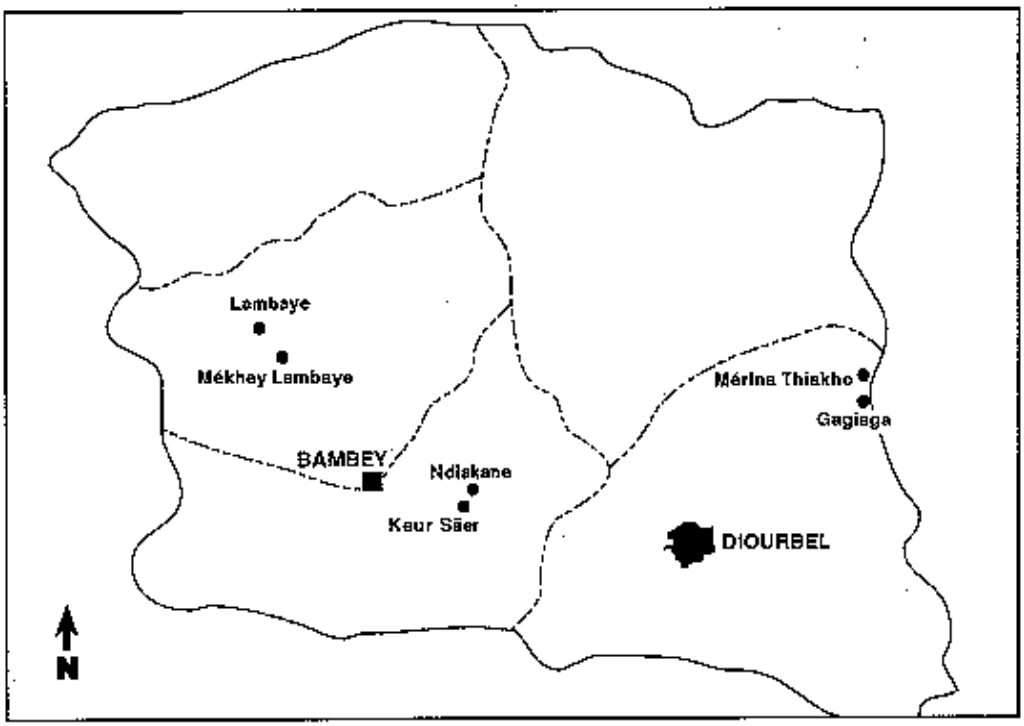
Methodology in Brief

The first phase of this research was carried out during the dry season of 1992 in six villages in the region of Diourbel: four in the Department of Bambey (Mékhey Lambaye, Lambaye, Keur Säer and Ndiakane) and two in the Department of Diourbel (Mérina Thiakho and Gagiaga) where the IFAD Agroforestry Project is based (see Map 2.2). The villages were selected due to their high rates of male out-migration, and in the case of three of them - Mékhey Lambaye, Gagiaga and Ndiakane - their involvement with the IFAD Agroforestry Project. The dry season research was both qualitative and quantitative, comprising: individual interviews with 70 women (50 whose husbands had migrated and 20 whose husbands were present in the village - the sample was randomly chosen from a sample frame of 442 migrants' wives compiled by the research team); focused and open discussions with individual women and community leaders as well as groups of men and women; and participant observation in the villages surveyed.

The wet season research was carried out in Lambaye and Mékhey Lambaye. These two villages were chosen by the IFAD project because they experience particularly high rates of seasonal out-migration. The methodology for this second phase drew on a wide range of Rapid Rural Appraisal and interviewing techniques. Activities included: thematic plays/sketches; village/resource mapping; intergenerational discussions; workload calendars; village transects; venn diagrams; flow diagrams; and focused group and individual discussions (further details about the methodology are given in the Overview section of this report).

The Project

The IFAD-funded Agroforestry Project has been working since 1990/91 in two depart-



Map 2.2
The Departments of Bambey and Diourbel, and the six villages where the research was carried out

ments of the Diourbel region - Bambey and Diourbel itself. Its primary aim is to work with farmers to carry out 'DRS' (*défense et restauration des sols*) activities. To this end, it encourages villagers to plant live hedges, wind-breaks and *käd* (*Acacia albida*); to make compost pits, and to protect naturally regenerated trees. The project works with volunteer male heads of compound ('contact farmers') who are encouraged to be involved in all aspects of the DRS programme. The contact farmers are given barbed wire to fence off one hectare of land, and *salune* (*Euphorbia balsamifera*) to plant as live hedging around this land. Inside the hectare they are encouraged to plant fodder species (*Prosopis juliflora*) as a windbreak and *käd* to increase soil fertility. Those participating in project activities are also encouraged to make their own compost to improve their fenced-off land.

The Agroforestry Project also has a programme specifically targeted at women. It works with women's groups (*Groupements de Promotion Feminine*) with an aim to 'diversify the sources of small holders' income... by encouraging off-farm income generating activities' (IFAD 1988b, p.9). This project, like all IFAD projects, works through government institutions. The responsibility for project implementation thus rests with the Ministry of Environmental Protection, and the project works through existing extension services of the Ministry of Rural Development.

The People

There are six main ethnic groups in Senegal: Wolof, Serere, Toucouleurs, Diola, Peulh and Manding. Of these, the Wolof are nationally the most powerful and the most populous in the region of Diourbel: 67 per cent of Diourbel's population is Wolof. The second largest population in the area is the Serere which comprises 25 per cent of the region's total. The dominance of the Wolof in Diourbel is reflected in the sample of migrants' wives interviewed: 80 per cent of the sample were Wolof and 20 per cent were Serere. Although the Wolof are traditionally cultivators and patrilineal, and the Serere are agro-pastoralists and formerly a matrilineal group, the monetisation of both societies has obscured their differences and little distinction can now be made between their farming and natural resource management activities. It should, however, be noted that the Serere are less integrated into the monetary economy than the Wolof. The latter group have a longer tradition of cash-crop farming and migration, whereas the Serere economy is based more closely on subsistence activities. Women's agricultural obligations differ slightly between these groups. Where this was found to influence women's natural resource management, a comparison will be made between the Serere and Wolof communities.

Both the Wolof and the Serere in the area

are Muslims and the rise of Islam has played an important role in shaping the development of the Groundnut Basin. All the women in the sample were Muslims and most men and women in the area belong to the Mouride Brotherhood which took a firm hold at the beginning of the twentieth century. The area of Diourbel forms part of the ancient Baol Kingdom which had its capital in the village of Lambaye (Map 2.3). After the destruction of the Baol Kingdom during the French colonial conquest, Islam and, in particular, Mouridism became very popular in the area. Indeed, some studies claim that up to 75 per cent of the Baol people belong to the Mouride sect (Diop 1981, p.285). Religious leaders, alongside the French colonials, encouraged and facilitated the progressive movement from subsistence agricultural production into cash crops, in particular the production of groundnuts. At the same time as feeding the growing overseas markets, the sale of groundnuts supported the rise of the great Mouride leaders who needed money to build mosques and live in the style to which they became accustomed. As Cruise O' Brien writes:

> *Mouride power is based on the Brotherhood's active participation in the economic life of modern Senegal. Economic involvement is encouraged by a religious ideology which accords great value to manual labour in the service of God... The Mourides have played a vital role in the geographical expansion of the groundnut civilization throughout the Wolof zone* (Cruise O'Brien 1971, p.2)

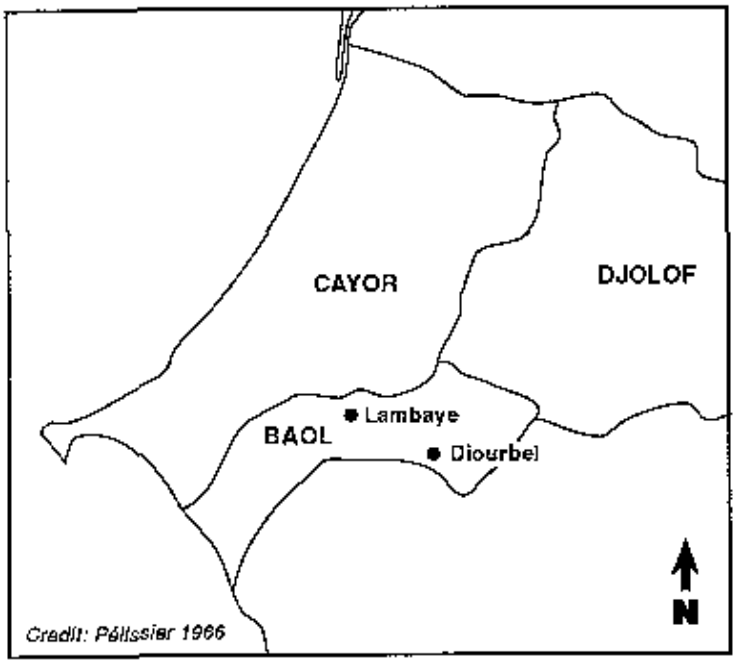
Historical overview of agricultural changes

The Pre-Colonial Period

The Serere, who dominated the region now known as Diourbel from the eleventh to the sixteenth centuries, were traditionally agro-sylvo-pastoralists (Pélissier 1966). The importance of trees for increasing soil fertility through biomass regeneration and soil stabilisation was widely recognised and great value was attached to specific varieties such as the *käd* (*Acacia albida*) and *soumpke* (*Balanites aegyptiaca*). *Acacia albida*, for example, sheds its nutrient-rich leaves at the beginning of the rainy season, thus fertilising the land. There is also more animal dung under their canopy because livestock gather under the trees in the dry season for shade and to eat seed pods. Millet and groundnuts planted under these trees are said to give three times the yield of those planted elsewhere. The mutually beneficial relationship between livestock-raising and agricultural cultivation was also appreciated and readily exploited. Cattle were pastured on crop residues and land benefitted from animal waste deposited on the fields during the dry season. Village-level decisions were taken about where to pasture animals and which land ought to remain fallow. This intensive system of cultivation allowed for population increases to occur within small areas and the Serere settled on small pockets of highly productive land.

The Wolof were more expansionist and moved into the region from the north around the sixteenth century. By the end of the nineteenth century they dominated the states of Djolof, Cayor and Baol (Map 2.3). Whereas the Serere people were predominantly peasant cultivators and had developed sophisticated farming practices, the Wolof population was composed of aristocrats, warriors and artisans as well as peasants. As the Wolof were less dependent on agriculture, when they moved into the region, they brought with them more extractive forms of agricultural production. The *Lamane*, or head of each lineage, claimed land for his descendants by circling the forest on horseback and burning the vegetation cover. Wolof peasantry practised itinerant agriculture, burning the land, farming it and leaving it to recover. Although they raised cattle, manure was not systemically applied to the fields as their livestock was often farmed out to the Peulh. However, the benefits of manure were not always lost as the Peulh frequented the area regularly during their transhumance from the north to the coastal regions. An informal, mutually beneficial relationship with the Peulh existed which involved the bartering of milk and milk products for millet and forage for their animals. Peasants would designate a piece of land each year for the Peulh encampments.

The rotation of fallow land was fundamental to the maintenance of soil fertility among the Serere and the Wolof. Low population densities allowed land to be farmed for two or three years and then left to recover for over twenty years. The availability of land and vegetation allowed people to incorporate mulching techniques into their farming system. Millet and sorghum stalks (whether by default or by intention) were left to decompose in the fields (or be trampled by animals) and later hoed back into the land. Some farmers, especially the Serere, intensively farmed small garden plots (or *toll keur*) near their houses. These hedged fields were heavily treated with manure, and were continuously farmed with subsistence crops. A ring of *toll keur* often circled each



Map 2.3
The Ancient states of Baol, Cayor & Djolof

village. Both the Serere and Wolof employed mixed and inter-cropping techniques in order to diversify risks and allow for minimum soil fatigue.

The agricultural systems described above underwent profound changes following the dismantlement of the Wolof states under the colonial regimes, the rise of Mouridism in the former Baol Kingdom, and the introduction of cash crop farming at the end of the nineteenth and beginning of the twentieth century.

Mouridism and the Development of Groundnut Production

The French conquest of former Wolof states in the late nineteenth century paved the way for the dramatic rise of the Mouride Brotherhood, particularly in the Baol Kingdom. The French formed smaller, more manageable *cantons*. Under the new regime, former village chiefs became civil servants and aristocrats and warriors were forced to begin new lives as peasant farmers. The peasants themselves continued farming but were obliged to grow cash crops instead of subsistence foods. As the French dissolved the old state, the Mouride leadership progressively filled the vacuum left by the discredited chiefs and nobility. As Cruise O'Brien writes, 'the Mouride Brotherhood was a means of reconstructing the social order on a new religious basis' (Cruise O'Brien 1976, p.15). Rather than resisting the growth of this religious order the colonial regime began to support the development of Mouridism, and cooperation between the French colonists and the Brotherhood became mutually beneficial. It allowed for the development of capitalism through the expansion of groundnut production which benefitted both the French and religious leaders financially. Mouridism was important to cash crop development because it kept its followers submissive while encouraging them to work.

As the Mouride Brotherhood grew stronger, *marabouts* (religious notables) began to take over the system of land distribution from the *Lamanes*. In this way religious leaders and *marabouts* acquired huge tracts of land which were given over to groundnuts and farmed by religious followers or *Talibés*. 'Wednesday fields' or *marabouts*' land farmed by devotees, became an increasingly frequent phenomenon in Baol villages and by 1966, the great Mouride notables owned two-thirds of the land under groundnut production (Cruise O'Brien 1971). However, although these fields were important, the majority of *Talibés* gave only a few days a year to this form of communal production. Instead they were encouraged to develop their own groundnut fields and show their devotion to their religious leaders in the form of offerings of money. What was effectively a system of religious taxation soon developed.

The death of the Mouride leader, Ahmadu Bamba in 1927, and the instatement of his son the *Khalifa* (or successor), saw a change in the Movement's philosophy. Cruise O'Brien writes:

> *Although well-educated in Islam, he [the Kalifa] was in many ways typical of the 'new generation' of Mouride marabouts, active, materialist, without any of his father's taste for austerity, meditation or study.*
> (Cruise O'Brien 1971, p.62)

As the *Kalifa* encouraged the movement of Mourides into new territory, the expansion of agriculture for cash crops was promoted more than ever, and was facilitated by the extention of the Touba- Diourbel railway. The *Talibés* acquired land through clearance, in the name of their *Shaikh* (religious leader), and progressively moved onto land which had formerly been frequented by Peulh pastoralists. As a result, the Peulh gradually became disenfranchised. More and more land was given over to groundnut production forcing the pastoralists to alter their transhumant routes. When land disputes arose, they were settled by the might of the stronger power (the Mourides). As well as being more populous than the Peulh, the crusading *Talibés* received political backing from both their religious leaders and from the French colonial regime. The authorities favoured Mouride expansion because they valued cash crop production over the less productive land-use systems of the Peulh. In a similar way, the Serere who tried to resist the spread of Mouridism, were displaced and moved on by the superior force.

With the domination of groundnuts, livestock populations in the area declined. The former integration of cattle farming with agricultural production lost its significance. The cattle-herding populations of the Serere and the Peulh were gradually displaced by the ex-

panding Mouride population, who rarely kept cattle (Cruise O'Brien 1971). Pressure on the land increased, and the techniques of applying manure to the land and practising fallow, which had formerly been the principle ways of maintaining land fertility, proved more and more difficult to sustain. At the same time, subsistence crops continued to decline in importance. The success of groundnut production was replacing the necessity for subsistence agriculture. As the decades progressed towards independence, the trend towards monoculture was encouraged by the high market value of groundnuts which enabled people to buy food In 1971 Cruise O'Brien (1971) suggests that millet would have to be 47 per cent higher priced to compete successfully with groundnut production.

Population Growth, State Intervention and Climate Change

Though the development of groundnut production is the single most important factor affecting natural resource management in Diourbel, a number of other factors have affected land management in this region. The growth of groundnut production was allied to the expansion of the region's population - particularly the Mouride population - onto uncultivated land. At the same time, better sanitation, health care and nutrition on a national level encouraged population growth throughout Senegal. Between 1900 and 1970, the Senegalese population rose from approximately one million to nearly four million. In this same period the number of Wolof rose from about 400,000 to 1,400,000, with the highest population increases occurring in Baol amongst the Mourides (Diop 1981, p.21). By the late 1950s the Mourides constituted approximately one sixth of the total population of Senegal, and therefore the Mouride population had grown three times faster than the population as a whole (Cruise O'Brien 1971). Today, the region of Diourbel has one of the highest population densities in the Sahel. While the national average population density is approximately 35 people per km^2, Diourbel has an average of 141 people per km^2 (Population census data from 1988 quoted in 'note de conjoncture,' Caisse Centrale de Coopération Economique, 1991a with this figure reaching 191 people per km^2 (Ministère de l'Intérieur 1991, p.47) in the ancient Baol capital of Laubaye.

In conjunction with Mouride leaders, the colonial and then the Senegalese governments influenced and supported the development of groundnut production and changing land use in the Diourbel region. Cruise O'Brien writes:

> *The Mourides kept their followers submissive but also encouraged them to work and the colonial administration rewarded the marabouts by making land, machinery, seed and credit available to them for the establishment of their groundnut estates*
> (Cruise O'Brien 1971, p.71)

At Independence the drive to 'modernise' this sector was stepped up with far-reaching

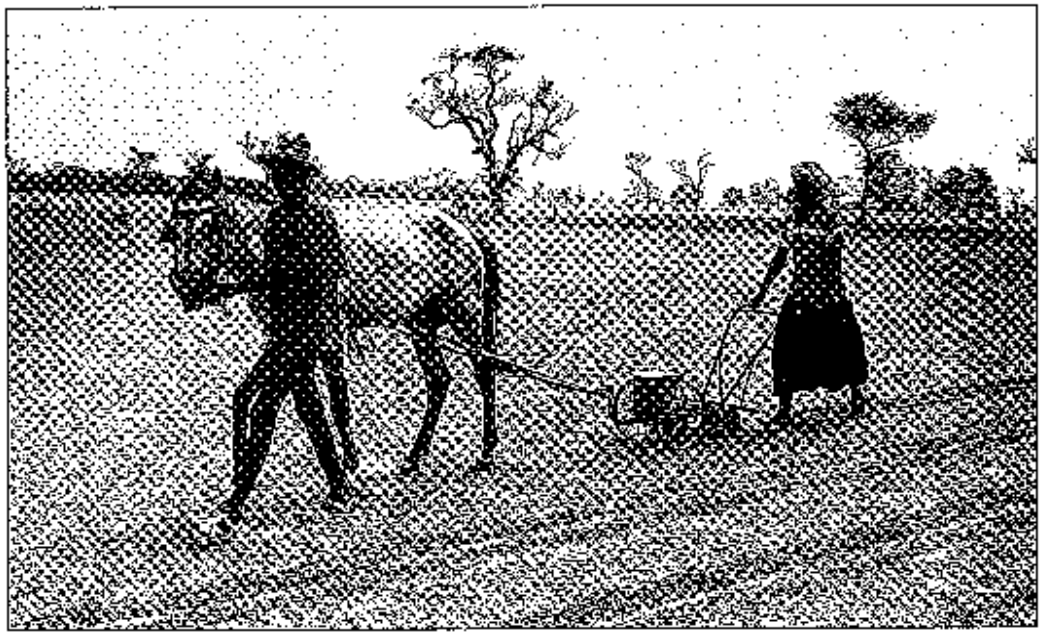


Photo: SOS Sahel

Men using a seed sowing machine in Diourbel

consequences. Between 1960 and 1980, aid, technical assistance and credit was bountifully distributed in this region which had become Senegal's centre of economic growth. Simple animal-drawn sowing machines (*Supereco*) and cultivators (*Sine, Arara* and *Ariana*) were widely bought on credit and the new technology was accompanied by highly subsidised fertilisers/pesticides and new seed varieties. A direct consequence of this 'modernisation' was the extensification of agricultural production. With the help of animal traction, farmers could successfully cultivate far greater areas of land. Farm sizes increased dramatically, and more marginal land came under the plough.

The change in the land tenure law in 1964 further encouraged this extensification and movement onto marginal land. Prior to this date, the dominance of *marabouts* and *shaikhs* had led to the development of a neo-feudal system of land tenure. These Mouride leaders had become absentee land-owners of huge estates and now dominated the singularly most important groundnut-producing region of Diourbel. The National Domain law was passed in 1964 as part of the post-independence drive to modernise agriculture. By nationalising land and giving farmers only usufructuary rights to areas which they actively cultivated, the law attempted to put an end to the practice of absentee landlordism (Colan 1988). All land transactions, including inheritance, were placed under the administration of elected rural councils who had the power to take away land if it was poorly used. However, while attempting to solve the problems of inequality of ownership in a feudal system, the new law had negative repercussions for land-use and management. Whereas prior to 1964, leaving land fallow had been a vital way of improving fertility, land-owners and farmers lost their insurance that they could reclaim land which they left uncultivated. As a result, farmers systematically increased the land they could farm with newly acquired machinery. Communal land disappeared, fallow became a thing of the past and natural vegetation cover diminished. As Kandge Mbajneck, one local forestry agent, explained: 'Now all the land is taken. It is all farmed. Only the land that is flooded in the rainy season is left uncultivated. There is no bush fallow left.'

The expansion of agriculture into former bush and fallow land naturally influenced tree cover. The widespread use of animal traction in fields interfered with the natural regeneration of trees and as pressure on forest resources increased, tree cover dramatically declined. Changes in tree tenure have also affected tree cover and tree usage. While, at the beginning of the century the abundance of trees and tree products had allowed for an 'open access' policy, the introduction of state control took management out of villagers' hands. In 1935 the French colonial administration established state rights to manage forest areas and set out guidelines to regulate the management of trees. The powers of the state extended to trees on farms, woodlots and natural forests. Throughout the country villagers were allowed to collect dead wood, fruits, leaves and nuts for their own use but had to get permission to cut green wood (McClintock 1991). The introduction of state control meant that people gradually saw trees as the property and responsibility of the state. Even today caring for trees is seen as the job of the Forestry Service rather than the community.

Exogenous factors such as climate change and prolonged drought have also affected land management in Diourbel. Since 1970, the region has suffered seven droughts. Average rainfall has steadily fallen from 635mm in 1960-1966 to 375mm between 1981 and 1984 (USAID 1990b, p.2) and now totals between 230-500mm. In the post-1970 period, rainfall has several times fallen below the minimum required to successfully grow groundnuts, cotton, sorghum and maize (Colan 1988, p.5) and many of the crops formerly grown in the region such as cassava and cotton are no longer viable. Falling agricultural production, due to diminishing rainfall and a decreasing biomass, has upset the delicate ecosystem. Between 1968 and 1972 it is estimated that over 40 per cent of *käd* (*Acacia albida*) died in the Groundnut Basin (USAID 1990a). Perennial forage grasses were killed by drought and, in the absence of these, livestock had to feed on browse and branches lopped from trees. As productivity fell and bush land decreased, the absence of biomass naturally influenced fuel availability (like firewood, cow-dung and crop residues), fodder, agricultural fertilizer (cow dung, organic manure, green mulch and forest litter), building material (like timber and thatch) and medicines (for example, herbs and roots).

The Agro-Ecological Environment Today

Rapid deforestation, loss of natural vegetation cover and intermittent drought have precipitated the environmental crisis that is evident in Diourbel today. The soils in this region are deep and sandy (*diors*) with very low clay (*deck*) content, small proportions of organic matter and low moisture retention. Sand content in some soils is as high as 95 per cent (IFAD 1988b) with minimal decomposition due to lack of vegetation cover. Lack of vegetative biomass renders the soils poor and destabilised, and soils throughout Diourbel are subject to degradation due to wind erosion and salinisation (USAID 1990a).

The vegetation cover can be described as 'park savanna' with very little trace of natural woodland. The few remaining trees are predominantly *kàd* (*Acacia albida*), *soumpke* (*Balanites aegyptiaca*), *sidème* (*Ziziphus mauritiana*), *gouye* (*Adansonia digitata*), *dakkar* (*Tamarindus indica*), *ngere* (*Guiera senegalensis*), *nguiguis* (*Piliostigma reticulatum*) and *new* (*Pterinari macrophylla*). Other species are particular to individual villages. For example in Mékhey Lambaye, *ronier* (*Borassus aethiopum*) and *beintegne* (*Celba pentendia*) are common. Though there is little bush cover, what remains is mainly composed of young *sawat* (*Combretum aculeatum*) and *nguere* (*Guiera senegalensis*). The persistent pruning of trees for fuelwood and fodder has, at best, left skeletal remains or, at worst, killed them off. And, whereas the optimum density of *kàd* (*Acacia albida*) would be about 40-60 trees per hectare (IFAD 1988b) research by USAID in the Groundnut Basin put the figure at 4-6 trees per hectare and falling fast (USAID 1990a, p.14).

The absence of tree cover naturally increases the difficulties of finding fuelwood, fodder and wild products. As Dierra Seye, a 64-year-old woman from Lambaye, explains:

Before it wasn't difficult for us to find firewood but now it is nearly impossible. We used to ask the pastoralists to cut it for us while they fed the leaves to their animals but now this is banned. You have to have permission from the men from 'Des Eaux et des Forêts' to cut anything and this costs a lot of money.

Indeed cutting live wood is banned by the government, and forestry agents stationed in each area try (largely unsuccessfully) to enforce this rule. Women are expected to find dead wood and increasingly to use fuelwood substitutes such as dung and crop residues. Some women even buy wood. In Mékhey Lambaye, one woman estimated that she spends approximately 500 FCFA (US $1.75[3]) every second day on firewood.

Fruits, leaves and berries - which were formerly an important part of people's diets - are now also hard to find. The absence (or near absence) of some tree varieties has thwarted some traditional activities. For example, people in Diourbel now rarely make *Shea* butter from the fruit of the *Butyrospermum parkii*. Other important fruits such as the those of the *Ziziphus mauritiana* and *Balanites aegyptiaca* are still available but in small quantities. However, whereas open access to these goods was the common rule, land pressure and usufructory rights over common land means that individuals now claim ownership of wild products found on their land. As a result, women in this region can no longer rely on the collection and sale of Baobab (*Adansonia digitata*) leaves or Tamarind (*Tamarindus indica*) fruits if they and their family are hungry.

Baobabs (Adansonia digitata) dominate the landscape in some parts of Diourbel

Photo: SOS Sahel

Declining rainfall and increased demand has also put pressure on water sources in the Diourbel region. Although (as explained above) the Peulh have largely been displaced from this region they still travel through on transhumance from north to south. However, competing demands for water between domestic and animal requirements, have created tension over the years which has resulted in pastoralists avoiding villages where water shortages are greatest. Many wells in the region are 30 metres deep and falling at a rate of between 10 and 30cm each year (Ministère de Développement, Direction de Génie Rural et de l'Hydraulique, 1991). Women complain of the time it takes these days, to draw water and/or wait for water levels to replenish before they can draw the water they require. Because of the pressure on short supply, fetching water can take as long as two to four hours daily. A few villages have water pumps but even in these cases, water shortages are experienced regularly. During the dry season, this is the case throughout the region, and, as the IFAD Project has shown, this renders agricultural activities in the winter months, such as market gardening, or even the sustenance of individual plants, largely impossible.

Subsequent to the gradual decline in livestock-raising which followed the expansion of the Mouride population and groundnut production, the pockets of pastoral activity which continued in the post-Independence years, have been severely hit by the droughts during the late 1960s and the mid-1970s and 1980s. Today, the prohibitive cost of reconstituting herds and the growing shortage of forage still discourage people from raising and keeping stock in the region. Whereas, at the beginning of the century, animals had been fed at the edge of the villages or on fallowed land, there is little fallow or common land left. Many people have not fallowed their land for the last thirty years. Assang Ngom, aged 74, from Lambaye explained these changes:

Before we cultivated our fields but we reserved an area for the animals - the cattle, goats and horses. This was left fallow for the animals to browse. After several years we'd use it again to farm. Now everything has changed because of the lack of land. This is because of the new machinery we use to cultivate the fields. Nowadays one man can do what eight men used to do. Now even I have too little land and I practically cultivate alone with the help of only four children.

As feeding animals became harder, the Serere have been forced to migrate to find fodder for their animals, and the few Wolof who keep large animals continue to place these under the guardianship of the Peulh. The animals that do remain in the village through the dry season are largely fed on crop residues (mainly cowpea and groundnut hays). In the rainy season, animals are kept tethered and fed on weeds from the fields. Lactating cows are kept in the village to provide milk, and oxen, donkeys and horses are kept for work. Sheep, goats and chickens are also frequently kept in the compound. However, while the traditional value of animals as a source of labour and a form of investment and prestige has not been lost over the years, the amount of manure available to farmers to fertilise their land has greatly reduced (see below).

In Diourbel today, groundnuts still dominate agricultural production and are usually mono-cropped using annual rotation with millet. The reduction of state intervention and support for the groundnut industry has, however, created deep changes in the agricultural sector of the region. Whereas, in the pre- and post-independence periods, the French and then the Senegalese governments gave considerable financial and technical support to the groundnut industry, since the beginning of the 1980s, state subsidies have gradually been withdrawn. In 1984 the new agricultural policy attempted to decrease the role of the state while increasing the role of private enterprise in groundnut production, and in 1988 structural adjustment policies reduced subsidies to both producers and processing companies. Producers were hit from all sides: government support was withdrawn at the same time as the price of groundnuts in the international market declined. In the late 1980s, producer prices for groundnuts dropped from FCFA 90/kg to FCFA 70/kg and the price of fertilisers and pesticides rose dramatically. As a result, fertiliser consumption throughout Senegal fell from 1.23 kg/ha in 1979/80 to 0.5kg/ha in 1980/91 (World Bank 1993), and the land area given over to millet increased. Despite these changes, groundnut oil remains an important export crop and farmers still rely on selling their groundnuts to meet their consumption needs.

Focus on the compound

As well as an historical overview of the Diourbel economy, an appreciation of the village and family structures which shape the practices of resource management is equally essential to understand how migration has developed and influenced farming in the region. What follows is an overview of the gender division of labour, rights of access to resources and the decision-making power of family members in their environment.

The Family

Each village is made up of a number of extended families usually belonging to the same lineage and headed by the *Lamane* - commonly the village chief. Extended families live in compounds (*keurs*) and are headed by a *borom keur* (compound head) who is normally the oldest male. Each compound can be divided into semi-autonomous and/or dependent households. The *borom keur* is given land by the *Lamane* and usually makes final production and consumption decisions. He therefore has decision-making control over the land, labour and the instruments of production. Households are traditionally composed of each adult male, his wife or wives and children.

The integration of communities into the cash economy is said to have led to the progressive disintegration of the extended family units, (Pélissier 1966, Savané 1983) and compounds today are extremely diverse in terms of their size and the division of responsibilities within them. Emancipated or independent households may be found within, or outside, the compound structure and family sizes can range from nuclear households to complex extended units. The former consists of a husband, his wife or wives and their children and the latter of the *borom keur*, his wife or wives, unmarried children, his married sons, their wives and his grandchildren. Other family members such as the *borom keur*'s deceased brother's wife (or wives) and his mother(s)-in-law and divorced daughters, may also be living in the compound as might seasonal wage labourers during the agricultural period. The research carried out during the dry season showed a preponderance of fairly large compounds (an average of six women, one man and fourteen children) and with a tendency for all the members of the compound to be eating together as one unit (68 per cent of the compounds were functioning as one consumption unit during the dry season). Male out-migration to urban areas gives an additional dimension to compound units: men from each family live together in towns and their wives and children visit them there. Thus the composition of compound units can vary dramatically from day to day.

Access to Land

While households may separate economically from their parent compound, they remain under the *borom keur*'s authority in matters of land-rights and social etiquette. The *borom keur* is given the *droit de hache* by the *Lamane* and he is responsible for land distribution within the family. In turn, the *borom keur* gives land to each of his married sons, who traditionally work their own land, as well as providing labour for production on the family plots. Due to population pressure, land in Diourbel is in short supply. The average area of land farmed by a compound is approximately 4.36 hectares, made up of one or two large communal plots and adult men's plots, if they have them. High population densities mean that per capita holdings are small, with an average of 0.5 hectares (IFAD 1988a).

While men have usufructuary rights to land, women in general do not inherit, bequeath or have traditional rights to land. So, although both the 1964 National Domain Law and Islamic law give women usufructuary rights to land, this is rarely upheld in practice. On the whole, women acquire access to land through their husbands who normally give them a patch of land to farm each year. Individual women's access to land is directly linked to the wealth of the compound, the land it commands, the ratio of adults to land area and its access to seed. Age and marital status also affect land entitlement. The *borom keur*'s older wives are given priority of access over younger, newly married women. In general, with population

pressure on land and the extensification of agriculture, women's access to land has diminished. Prior to the mechanisation of farming, women (especially Serere women) had access to one or more plots of land on which they grew millet and groundnuts in rotation. However, now that land is a constricting factor, if the family is short of land it is usually women who must borrow land from neighbouring compounds. Indeed, although the 1972 Land Law stated that land cannot be the object of monetary exchange, land is frequently borrowed in villages, with people repaying the owners in kind. In Lambaye, two women explained: 'Before there was more land because everyone used smaller areas but now with machines, men are able to farm more and the women suffer'... 'Women's land has diminished whilst men's has grown.'

Most women are unable to cultivate the same land for two years in succession. In the cases of the women who borrow land (8 per cent of our sample), continuous cultivation would infringe on the rights of the 'land owner'. For the majority of women who are given land to plant every year by their husbands, family crop rotation practices prevent them from cultivating the same piece of land for two consecutive years. This is a major reason why women lack the incentive to invest in longer term activities to improve the fertility and strength of the soil.

Allocation of Labour to Farming Activities

Labour is divided between fields and between agricultural activities. Priority of the means of production is always given to the family fields managed by the *borom kour*. The family land is the most fertile. It is planted with the best seed and most of a family's labour and manure are given over to improving the quality and quantity of family production. Serere and Wolof women assist in groundnut and millet production on both family plots of land and on their husbands' plots, as well as farming their own plots. It is only when a woman takes her turn to cook that she is excused from work in the fields. Isern (1990) notes that while Serere women have traditionally grown minor crops independently on their own small plots of land, Wolof or Mourides women were required to work in the collective fields owned by the *marabout* as well as to help cultivate their husbands' fields, and as a result, are said to have less commitment to their own peanut or condiment fields. This is still true today. Serere women tend to have slightly more land and more commitment to their own plots, relative to Wolof women. However, all women must wait until the work in the family, and men's fields, is completed for the day before work on their plots can begin.

Men and women have different agricultural tasks. Men and young boys (usually over the age of eight) clear the fields and operate all the machinery for seeding, weeding and harvesting. They manage the large animals, drive the carts, uproot and beat the groundnuts (to separate the husks from the stalks) and are in charge of the storage and management of the crops. Women do not use machines or carts. While the men and boys do the mechanised work, women mainly do the manual work. They are responsible for: the hand-weeding of the millet and groundnuts using the *iler* (traditional long-handled hoe); dehusking and treating the groundnut seeds ready for planting; manual sowing; thinning; winnowing; and harvesting the groundnuts as well as the vegetables and fruits. Men and/or boys carry out certain tasks for women on their plots. Men help women by clearing land, using the machines and helping with particular harvesting tasks. However men, like women, wait until work on all other fields is finished before they start work on women's plots.

Inter- and intra-compound reciprocity is an essential source of support for most people. Links between kin in the village are strong, particularly as most women (68 per cent of our sample) marry within the village (ideally to a first cousin). Women share child-care and help each other in the fields, and village resources are pooled at major feasts (eg *Màgaal, Tabaski*) and at baptisms, circumcisions and so on. The absence of men for much of the year leads to a good deal of neighbourly help as the few men remaining in the villages help migrants' wives by carrying out traditional 'male' tasks such as driving carts and repairing compound walls. Furthermore, due to the historical growth of groundnut cultivation, there is also a tradition of hiring seasonal labour in this region. In the earlier part of the century men used to come from as far afield as Mali and Guinea to work on groundnut plantations, but with the collapse of the groundnut market and the dismantlement of huge estates, it is mainly landless la-

bourers from neighbouring regions who come to Diourbel to seek agricultural work. Labourers come into the region at the beginning of the rainy season hoping to find compounds that need extra manpower. With the high rates of out-migration from this region (see below) and the strict division of labour, both women and men often welcome extra hands; 31 per cent of the compounds in our sample hired seasonal male labour. The majority (72 per cent) of hired men are paid in seeds and land to farm, with only a minority being paid in money and in food (18 per cent and 10 per cent respectively). Though land is in short supply, the absence of men (due to out-migration) relieves population pressure and families often find land for seasonal labourers to work.

Men and young boys have the principal task of looking after the animals, but women are also involved in this activity. Although few people have large herds of cattle, smaller animals (goats, sheep, chickens etc) are an important part of the household economy. Most compounds have at least six sheep and/or goats and a handful of chickens. Women often own small ruminants in their own right and keep them for sale in emergencies. Animals are also important as gifts for the *marabout* and for sacrifices at feasts and celebrations. Traditionally men do the buying and selling of the animals for their womenfolk and are the owners of larger animals (horses, donkeys, oxen and cattle). If a farmer were fortunate enough to have a herd of cattle these would normally be put in the hands of the Peulh, or a male member of the family would take them off to pasture elsewhere. While very few people in the villages studied own cattle, nearly every compound in the survey was found to have traction animals with at least one horse and one donkey. It is only the poorest households that have neither.

Women's Role in the Family

> *As a result of Islam, women find themselves in an inferior position. Whilst being unable to take the responsibility of head of family or head of household, they are also prevented from fulfilling any religious role during ceremonies.*
> (Kuperus 1990, p.17)

As the gender division of labour is marked, so too is the division of decision-making roles between men and women. Under Islamic law, a man should provide for his wife and children and have over-all responsibility for maintaining the family. Men in Diourbel are in charge of the larger livestock, the maintenance of the land, the provision of food, the use and care of the machines and traction animals and the maintenance of the house. Women take responsibility for the home, the kitchen, the produce from their own fields, the collection of water and fuelwood and the child-care.

Although women were given legal rights under the 1972 Senegalese law ('Droit de Famille') they still have very little visible power in villages. Women are not represented on village committees and are not involved in village-level decisions about land rights, environmental management or the economic and social development of the community. Although some older women have a greater decision-making role, in general male heads of compound/household make decisions about land management, education, circumcision, marriage, divorce and migration. However, if all men in the compound have migrated, the first wife of the male head becomes *de facto* head of the compound and assumes greater responsibility over the management of the communal granary, the division of labour between the women remaining in the compound and the division of remittances sent home by the men, and the management of other women's trips to see their husbands in the cities. In spite of this new responsibility, female heads of compound still defer major decisions to the *borom keur*. Decisions over the management of land, marriage negotiations and children's education are taken by their husbands.

Within the household a woman's status is dependent on her age and position in the conjugal system. If there are many wives in the compound, it is the first wife who controls and directs the work of the other women. She makes decisions with her husband and monitors the fair distribution of the family grain. A strict hierarchy is adhered to. Older women (particularly *de facto* heads of compounds) have more decision-making power, freedom and leisure whereas newly-weds follow the instructions and wishes of their mothers-in-law. Young, unmarried girls are at the bottom of the social hierarchy. They help their mothers in every aspect of their work, and when they are old enough, can take their places in the fields. As with all domestic tasks, women in each compound take it in turns to prepare the daily meal.

Table 2.1 Women's Most Important Income-generating Activities

Activity	Percentage of the sample	Average amount of money earned per month (FCFA)
Selling part of their annual harvest	42	6,700
Buying and selling other goods (fish, *kola* nuts, vegetables, fruit, etc)	14	3,700
Selling processed food (groundnut/ millet cakes, groundnut oil, etc)	8	4,500
Embroidery / dying and selling cloth	4	2,700
Plaiting hair	1	20,000
Trading in non-agricultural goods (mainly kitchenware)	1	3,000
Selling labour to neighbouring compounds	5	-
No income generating activity	25	-

Only the older women no longer cook. Instead they oversee the work of their younger relations.

Income-Generating Activities

The generation of income is the priority for people in such a cash-oriented economy, and people in Diourbel are as involved in off-farm income-earning activities as they are in farming. Men's dry season activities mainly take them away from the village on seasonal migration, and those who stay normally do so because they are too old to work or have a way of earning an income in the village. Men earn money as mechanics, drivers and as livestock and agricultural traders. Local markets are thriving, and transportation, whether by taxi (in the more prosperous villages) or by carts, is relatively developed and efficient.

As can be seen from Table 2.1, the income-generating activities of women are diverse in the amounts of work and investment they require. The most widespread way in which women generate a personal income is through the sale of produce from their plots: 42 per cent of women in the sample said that they earn most money from selling part of their annual harvest. Women normally grow groundnuts, cowpeas, okra (*Hibiscus esculentus*), peppers (*Capsicum annuum*) sorrel (*Hibiscus sabdariffa*) and *bissap* (*Hibiscus sp.*). When they have enough land and time, women grow small amounts of millet, although this is rare. While most of a woman's produce will be sold, some will be kept to supplement the family's food supply, and a small portion will be stored for re-sowing the following year. The proceeds from their sold produce are primarily spent on immediate needs, but in the wake of a good harvest, women are able to invest in goats, sheep and chickens which are kept as investments and can be sold in response to contingencies. Women said they make an average of about 6700 FCFA (approximately US $23.64) a month from selling part of their harvest. Those who do not sell their produce tend to be involved in other income-earning activities such as trading in non-agricultural goods, processing foods and embroidery. Older women have more freedom to travel and more capital to buy and sell produce. These women make on average 3,700 FCFA (approximately US $13.05) a month. Other activities and the average sums earned from them, are given in Table 2.1. There was no significant difference between the activities of migrants' wives and those of wives of resident men. Women said that they spend their savings from these activities on buying food to make the sauce (when it is their turn to cook) and on clothes, soap, cooking utensils, jewellery and personal luxuries. Women in Baol and the rest of Diourbel are highly integrated into a cash economy and, like their men, live up to their reputation as hard bargainers.

Ways of maintaining soil fertility today

All the soil is degraded. The only difference is what you do to the soil
(Papa Ndeye from Lambaye)

Both men and women in the Diourbel region are aware of the decreasing returns from the land. However, due to the changing agricultural production systems detailed above, many of the land improvement techniques formerly practised in this region are no longer possible. In addition, various natural resource improvement (NRI) techniques (such as bunding, fencing and terracing that have been developed in other parts of the Sahel, are either not appropriate to the agro-ecological environment or are simply absent from this region. A summary of the different ways people improve their land is given in Table 2.2. In order to identify the influence of male out-migration on these activities, a distinction is made between activities carried out by women and those carried out by men or boys.

Factors which enable, or prevent, people carrying out certain investments are specific to each activity. A breakdown of the different activities and the reasons, given by people in this region, for their (dis)continued use follows the table.

Adding Fertiliser

The earlier support and recent withdrawal of government subsidies for fertiliser has significantly altered resource management regimes in Diourbel. During the 1960s and 1970s subsidies given by the government and external agencies made it possible for large numbers of small-holders to buy fertiliser. As a result of abundant fertiliser and increased pressure on land (due to the expansion of cash cropping and population increases) traditional ways of ensuring the fertility of the land were neglected. Thus when the state withdrew financial support in the 1980s, farmers were left floundering. Fertiliser prices rose from 600 FCFA/100kg to 7500 FCFA/100kg (US$ 2.1 - 26.46) rendering it unaffordable to the vast majority. Barriers of access are today compounded by inefficient and unreliable distribution. Whereas all farmers used chemical fertiliser regularly at the beginning of the 1980s, only 38 per cent of the compounds in our sample had members who said they buy fertiliser today if and when they can afford or find it. If it is used, fertiliser is applied to the millet on family fields.

Applying Manure to the Fields

Due to the inaccessability of fertiliser, the application of manure is once again the principal way through which people try to improve the fertility of the land. However, manure is a precious commodity. Population pressure on the land, lack of fodder and the consequent reduction in herd size means that the amount of waste that can be amassed during the dry season is now pitifully low. Furthermore, manure is also used as a burning fuel during the dry season by the women who cannot find enough wood. Cow dung and sheep and goat waste is used for cooking, especially in the dry season. Horse manure is not generally used because of the smell. Wood is saved for burning in the wet season when it is hard to ignite faeces. As the Chief of Lambaye explained:

Table 2.2 Comparison Between the NRI Activities used on Women's and Family Fields

Natural resource improvement activities	Carried out by women on their personal plots	Carried out by men and boys on family/men's land
Adding fertiliser	-	+/-
Spreading manure on fields	-	+
Adding household waste	+/-	+
Adding ash	+/-	+
Mulching with millet straw	-	-
Mulching with other vegetation	-	-
Using agroforestry techniques	-	+/-
Planting live hedges	-	+/-
Composting	-	-
Rotation cropping	+	+
Mixed cropping	-	-
Practising fallow	-	-

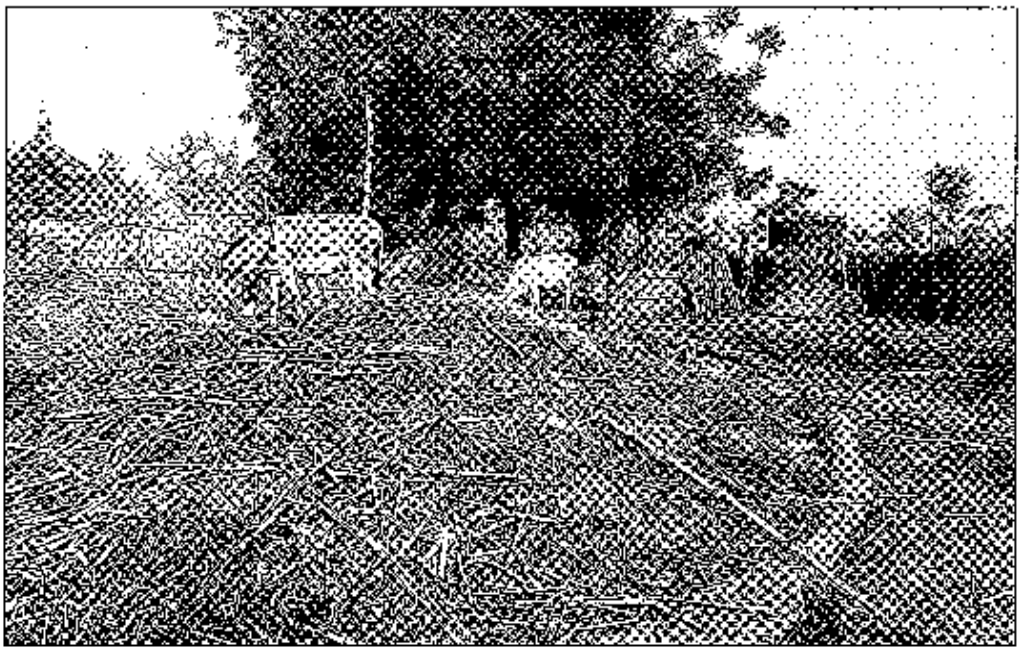


Photo: SOS Sahel

Manure and household waste is piled in the compound to be spread on the fields before the next rains

Before, people were pastoralists and cultivators...now there are very few animals because all the pastureland has been taken... there is not enough manure to put on the fields.

The manure that can be saved is stored until the end of the dry season when it is spread on the fields usually by men and/or teenage boys. Horses and carts are used to transport the manure from the village to the fields. Priority is given to the family's millet plots.

Women, in the villages surveyed, said that they do not spread manure on their small plots for two main reasons. Firstly there is rarely enough manure to go around and secondly because fields are generally too far away for them to transport the manure manually (As noted above, it is not customary for women to drive carts or use draft animals). Since women are given land to plant each year by their husbands, this land may, or may not, have been treated with manure by the men. One man from Keur Säer explained:

The manure and the most fertile land is always kept for the head of the family because this land feeds the family whereas the produce from women's plots goes into their pockets.

Applying Household Waste/Ash to the Fields

Both the waste from around the compound and the ash from the fire is often added to the manure piles outside the compounds. The household waste includes animal droppings and millet and groundnut residues and so on. This is spread on the family fields along with the manure. Women, in the six villages surveyed, said that they are more likely to take the household waste and ash and put it on their fields than manure because they have more direct access to the former, which is less of a precious commodity.

Mulching with Millet Straw and Other Vegetation

No compound visited during the course of the research uses mulching techniques to improve the fertility of the land. Although these methods increase organic matter and biological activity in the topsoil, mulching is no longer practised. Villagers used to leave some millet stalks in the fields (for the animals to eat and tread back into the soil) and plough back vegetation (that grew during the fallow periods) into the earth. Mulching is no longer widely practised both because land today is rarely left fallow and there is a dearth of vegetation, and because there is increasing competition for millet stalks. Millet stalks are also in demand for four other uses:

1) as a primary source of animal feed;
2) increasingly for use by the women as fuel for cooking;
3) as the principal material used for making fences/granaries;
4) as a supplement to cash income as villagers now sell millet stalks to town dwellers for fence-building.

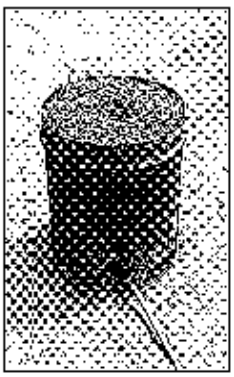


Photo: SOS Sahel

Millet chaffs are burnt in improved stoves

An old man in Mérina Thiakho explained: 'people come from as far as Touba [50km] to buy our millet stalks'. Original vegetation cover in the region has mostly been used up, and the possibility of mulching has decreased with it. Other organic remains have competing uses. For example, groundnut straw and millet chaffs are both required for feeding animals and cooking.

Using Agroforestry Techniques

Although agroforestry was practised in Diourbel in the past, several factors have led to the reduction in the number of both mature and young *Acacia albida* and *Balanites aegyptiaca*. Among these are the falling water table and excessive lopping, both of which cause trees to die. The natural regeneration of trees is also impeded by destruction from sowing and weeding machines and from the goats and sheep that roam freely in the dry season. Even during the era of agroforestry, people did not plant trees, and this is still true today. Few compounds in the sample had actively planted trees, although some key contact male farmers are encouraged to plant 'trial' plots by the local IFAD project. Each farmer is given enough *Salane* (*Euphorbia balsamifera*) to plant around one hectare of land and barbed wire to protect the field from animals. Farmers are then given *Prosopis juliflora* saplings to plant as a windbreak inside the fence's perimeter and enough *Käd* (*Acacia albida*) to plant at five metre intervals inside the plot. Farmers are encouraged to allow natural regeneration of *Käd* and are shown how to prune saplings to allow for the machines to pass without damaging them.

Tree planting is predominantly associated with men's group activities. Women, on the whole, do not partake in this form of long-term investment. As explained above, women do not own land and often have to borrow land from neighbours. The 'owners' of the land are reluctant to let 'land-users' plant trees as this would give the 'user' a long-term stake in the land and jeopardise the 'owner's' usufructuary rights. Although in theory (and with their husband's permission), women could plant land-improving trees on family land, they feel little incentive to do so. Women throughout the area suggested that they would be more inclined to plant fruit and other trees from which they derive direct financial benefit. However, fruit trees are not planted on farmland, both because they require regular watering and because they would take up valuable space. As the Chief of Lambaye explains, family land is not the place to plant trees which are for the benefit of the individual: 'If the benefits [of planting trees] go to the whole family, there is no problem... but if women try to take the benefit before the family is fed, there will be strife.'

Therefore, given the current roles and responsibilties assumed by women (i.e., as non-owners and non-inheriters of land), it is unlikely that they will be interested in planting trees which are considered appropriate for family land. The lack of women's participation in such long-term land improvement activities could also be interpreted as a response to their continual disclusion from project programmes attempting to promote such measures. Hawa Fall from Lambaye explained: 'the idea of trees is still vague in women's minds. We have not been involved in such programmes.' No women in the sample survey had planted trees on their individual plots or on land managed by men. Despite concerted efforts by the project, men and women in the villages expressed a reluctance to plant trees because: if the young saplings are not planted at the correct time, they must be watered daily through the dry season; and past failures and the death of even fully grown trees, discourages farmers from wasting their time.

Planting Live Hedges

This region of the Senegalese Groundnut Basin is largely devoid of hedgerows. Insecure tenure rights mean that very few people in the sample villages have planted hedges in recent years. Even if farmers wanted to plant hedgerows this would be hard. *Salane* (*Euphorbia balsamifera*), which was commonly grown as hedging, (particularly around *toll keurs*) is no longer abundantly found in this region. The local IFAD project has to collect *Salane* from the neighbouring region of Thiès (see Map 2.1) to enable contact farmers to plant hedgerows around trial plots. Destruction by animals is a serious problem which is why the project also gives contact farmers barbed wire to protect plots. Nevertheless, delayed planting has thwarted success and the survival rate of hedgerows is again fairly low. No women in the six villages had been involved in hedge-planting activities.

Applying Compost to the Land

Composting is a newly introduced NRI activity in Diourbel. The local IFAD project is

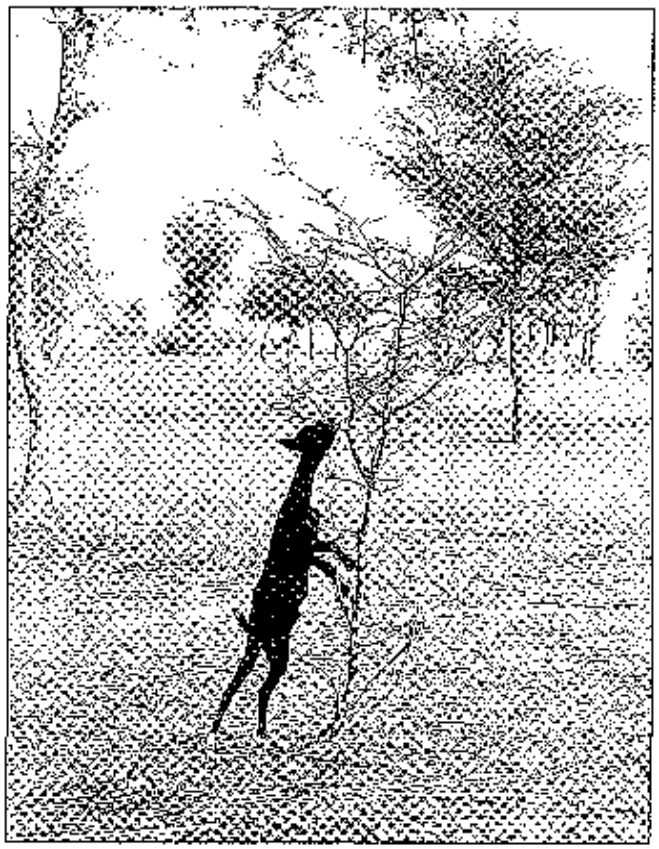


Photo: SOS Sahel

Goats are a constant threat to young saplings

encouraging composting as a way to increase biological activity in the topsoil. A handful of men in the sample villages had started to make 9m³ compost pits which they line with cement. The cement ensures moisture retention, allowing biological activity to occur and decomposition of the organic matter to take place. These pits are filled with vegetative remains and manure during the dry season, which decomposes during the rainy season. An inherent difficulty is the competition for scarce crop residues and manure with which to fill the pits. A few farmers have been given phosphate to add to their compost to increase the speed of decomposition which is slow due to lack of moisture. None of the farmers involved in this scheme had, as yet, applied compost to their trial plots. No women farmers participate in this activity.

Mixed/Rotation Cropping

Although mixed cropping was common in this region before the 1960s, the introduction of machines has all but put an end to this practice. Most land is mono-cropped in lines allowing for weeding machines to pass between the crops. Rotation cropping is still commonly practised in the area. Family land is subject to groundnut/millet annual rotation. The few women who have large enough plots of land, also practice rotation and some women mix crop their groundnuts with nitrogen-fixing cowpeas.

Laying Land Fallow

Neither women nor men regularly lay land fallow in this area of Diourbel. Many interviewees said that they have farmed the same land for the last thirty years. There are a number of reasons for this:

- the widespread introduction of draft animals since the 1960s led to an increase in land holdings;
- population pressure has brought even marginal land under the plough;
- absentee landlordism and tenure laws are still a problem in the region.

If land is left fallow it is done so involuntarily due to lack of inputs (seed and/or labour) rather than as part of an agricultural strategy; only 5 per cent of the sample said they had left land fallow during the previous year.

In summary, farmers in this region have very few ways to enhance and increase the fertility of the land. As traditional techniques, such as agroforestry, fallowing, mulching and agroforestry declined, people began to use chemical fertilisers to increase the soil's fertility. However, the withdrawal of state subsidies during the 1980s means that purchased inputs are no longer an option.

Out-migration from Diourbel

The big migration started after the drought in 1966. We didn't harvest anything that year. Everything died. All those who could, left the area. Some have never come back.
(Old man from Mékhey Lambaye)

Migration is not a choice; it is motivated by constraints.
(Saying from Lambaye)

A number of factors have contributed to high rates of male out-migration from the Diourbel region: the increasing reliance on cash commodities and bought food; population pressure; declining soil fertility; falling rainfall levels; tax demands; contributions to religious funds; and the obligation to meet changing cash needs, are among them. The cash-crop economy was developed by the government in the post-Independence period, but since the 1980s aid and government subsidies have been stopped, groundnut prices have fallen and people now struggle to meet their food requirements as well as their other cash needs. As one migrant from Mékhey Lambaye explained:

If each of us had enough to feed our family at the end of the harvest none of us would go..we have no option because there is nothing here. At least in Dakar we can make money to live.

Table 2.3. Migration from the villages visited

Village	*Percentage of men who are absent from the village each dry season*	*Percentage of migrants who go overseas*
Mékhey Lambaye	75	8
Lambaye	80	10
Gadiaga	70	None
Mérina Thiakho	60	50
Ndiakane	75	5
Keur Säer	80	None

The magnitude of the exodus of able-bodied men from Diourbel today cannot be underestimated. In all six villages visited it was difficult to find women whose husbands still live with them throughout the year. As one old man in Gadiaga pointed out: 'it is only those with white hair and white beards who stay behind.. the young and able have long since left'. Another man from Mékhey Lambaye said: 'their absence speaks for itself... people need to have a lot of money to stay in the village'. In all the villages surveyed it was estimated that about 70 per cent of the all able-bodied men leave during the dry season to seek remunerated employment either in urban areas or else abroad. Indeed census data show that 61 per cent of the population in the Diourbel region are under the age of 20, reflecting the degree of out-migration of men between the ages of 20 and 45 (IFAD 1988b, p.3). Mékhey Lambaye, Lambaye and Mérina Thiakho were said to have the highest rates of out-migration in our sample (Table 2.3). Most men migrate to Dakar where they work in the informal sector in precarious, poorly paid jobs. A small proportion of migrants are able to find work abroad.

Income-Generating Opportunities Open to Migrants

The majority of migrants (70 per cent of our sample, Table 2.4) have left this region to find work in Dakar. However, due to the close prox-

Table 2.4 Location of out-migrants

Location of migrants	Percentage of sample
Dakar	70
Italy	8
Casamance	5
America	5
France	5
Diourbel	5
Ivory Coast	2

inity of Dakar and transportation facilities, ties between the villages and the city are very strong. Most of these migrants based in Dakar are able to come back to see their families every two to three months or when there are major feasts or crises. Regular transportation routes and the recent addition of telephones in some wealthier villages (Mékhey Lambaye) enable migrants to stay in close contact with their families.

The largest group of migrants leaving Diourbel was found to be seasonal migrants (Table 2.5). Whereas, in other countries seasonal migrants are those who go away for the dry season and come back to work in the fields during the rainy period, in Diourbel this did not apply. Most seasonal migrants from this region: a) come back frequently to see their families throughout the year; and b) do not necessarily help out in the fields. Seasonal migrants commonly come home every two to three months (or when there is a major feast or crisis) but are not necessarily present in the villages during the agricultural period. Longer-term migrants (migrants who first left over five years before) were the second largest group. These men formed 18 per cent of the sample. Many of the longer-term migrants were also in Dakar but had found more permanent employment as tailors or mechanics or indeed as permanent labourers. The few migrants from this area who have succeeded in finding paid employment abroad mainly work as taxi/lorry drivers and travelling salesmen. For example, those in Italy commonly work as salesmen in the clothes industry.

Table 2.5 Type of out-migration

Length of time away	Percentage of sample
Seasonal	52
Short-term (1-2 years)	4
Medium-term (3-5 years)	18
Long-term (5+ years)	26

It is no coincidence that a market place in Dakar is named after Lambaye - the ancient capital of the Baol Kingdom. Over the century the Baol people have become famous for their trading activities which they pursue in earnest in Dakar today. 'Parc Lambaye' is crowded with migrants from the Diourbel region who trade everything from empty bottles to second hand fridges and televisions. Other migrants have set up their own shops in the more prestigious areas of the city such as Avenue Lamin Guèye where everything from construction materials to electrical goods are sold. Though men frequently go back to their villages they are more or less permanently settled in the capital. Wives and children come to visit them there.

A few women in the area also migrate. Older women mainly leave the villages during the dry season if the harvest has failed and they need extra money to feed their families. These women leave their children with co-wives and go to find jobs as cooks, cleaners or waitresses in the city. Some young girls (normally aged between 16 and 20) also go off to earn money for their dowries. However, as the out-migration of girls is frowned upon in many communities, this movement is limited. A steady stream of women do leave these villages, however as co-wives take it in turns to visit their husbands in the cities during the dry season. If the *borom keur* is absent, his wife presides over the these journeys and ensures enough women are present in the compound to keep the home running. Older women have more freedom to travel and are frequently involved in petty trading initiatives which take them regularly to Dakar, Thiès and Diourbel.

Table 2.6 Migrant's work

Type of employment	Percentage of sample
Street seller	46
Owns shop	4
Electrician	2
Taxi/lorry driver	18
Manual labourer	4
Tailor	6
Mechanic	6
Travelling salesman	12
Other	2

Remittances

The benefits of migration are amply displayed in villages where migration is highest. The villages of Lambaye and Mekhey Lambaye are dotted with concrete houses with corrugated iron roofs, high stone walls and well-equipped kitchens. Lambaye has an impressive (though half-built) mosque and a village water pump. Mékhey Lambaye is endowed with a maternity, dispensary and Koranic school. Other villages are less well-off and the Serere villages (which benefitted less from groundnut production and are less familiar with migration) are relatively poor. People in the villages acknowledge the benefits of migration both to the family and to the village. Men in Lambaye heartily agreed: 'the families with most migrants are the richest in the village'. Meanwhile, women throughout the region coax their husbands to leave because: 'at least there will be enough food to feed the family'.

All migrants' wives in the sample receive remittances from their husbands and most of the women (64 per cent) also receive clothes and food. Money is normally sent to the *borom keur* but if he too has migrated, it is sent to the first wife who has taken over her husband's role (32 per cent of the compounds in our sample were managed by women at the time of the research). Remittances vary dramatically. Employed workers send an average of 11,000 FCFA (US $38.82) and self-employed migrants an average of 6100 FCFA (US $21.52) per month to each of their wives. All women in the sample said they receive money from their husbands although the amount and the regularity of payment depends on their husbands' fortune and the number of children they have to feed. The average remittance in this area was found to be approximately FCFA 7500 (US $27) a month - an amount barely enough to feed a women and her children (see below). Women whose husbands are overseas are the best provided for. Migrants who are overseas tend to send a small sum regularly while saving up to bring a lump sum home. Their wives often live in concrete houses and wear the finest clothes.

Although substantial amounts of money are sent back to the village, remittances are primarily spent on food, since harvests generally provide food for only four to five months in a year. Due to decreasing harvests and the high cost of purchasing food, many women in the area said they needed at least FCFA 10,000 (US $35) a month to support themselves and their children, a sum which the average remittance fails to match. While the bulk of remittances is spent on such essentials, the close integration of these communities into the monetary economy means that their requirements change fast as new commodities become available. Imported rice, french bread and coffee are examples of 'needs' which have recently evolved. Today, imported rice is eaten regularly throughout the Baol region. Other expenditures in order of priority are (as were prioritised by a group of migrants in Mekhey Lambaye and Lambaye): house construction, carts and horses, clothes, stone perimeter fences around the compound, and the payment of taxes and debts.

Most migrants said that they do not invest in agriculture, other than in carts and horses. People from Diourbel have witnessed a decline in agricultural production and appear to be resigned to an understanding that production will not improve. As the costs of chemical inputs have risen and the price of groundnuts fallen, people have responded by looking for an alternative way of life. Cheap, imported foods have, on the whole, replaced the necessity to grow food. The 50 per cent devaluation of the FCFA in January 1994 may however, considerably alter this situation. It is too early to say how devaluation will influence opportunities for migrants in Dakar and the incentive to improve agricultural production at home. At present, it is highly likely that the cost of fertiliser will become more prohibitive, and that the availability of organic fertiliser will continue to decline. The prospects for the successful revitalisation of agriculture in the area appear to be slight.

Male out-migration and natural resource management

Women Take Over the Farming but not the Decision-Making

Male out-migration from Diourbel has left an interesting situation in the villages. A large number of compounds, are effectively managed by women, yet are headed by men. Of the compounds in our sample, 32 per cent were managed by the *borom keur*'s first wife as he was temporarily absent in Dakar for the dry season. Yet, despite their physical absence from the village, male heads of compound maintain their control over the family and as the primary decision-makers in the villages. As Dierra Seye from Lambaye explained:

> *Women don't have the right to take decisions about agriculture - it is the men who take them. When necessary, a woman will send a letter with the taxi-man to her husband in Dakar to ask his advice. Three taxis leave Lambaye each day for Dakar. The answer will come back with the return of the vehicle. The husband will send money if this is required or he will give his answer - 'yes' or 'no'... A woman is only able to take decisions about allowing Peulh to come to the farms. That's because when she tells her husband, she knows he'll be happy.*

A man from Ndiakane reiterated this opinion:

> *Men and women take decisions but it is the men who are in control... Women work under the cover of the men. They farm but they must ask men what to do. It is men's land and they decide.*

Thus while women are the active managers of agricultural production in the village, they are not the decision-makers. The research found that, although 50 per cent of the migrants leaving the area are seasonal migrants and regularly come back to see their families, only a minority are actually involved in farming. While an average of five men are absent from each compound, only two come back to help with the farming in the rainy period. It is the men (or boys) working in the least permanent jobs who come back to help the women and the children in the fields. In Mékhey Lambaye, one woman explained: 'When there are no men to help us we do all the work, but this is a rarity. Usually at least one man comes back to help us in the fields.'

However, men do not always come back for the duration of the rainy period. In Lambaye, men's roles are often limited to the supervision of activities, particulary those carried out by children. A recent government study in Lambaye exemplifies this point. It makes a rough assessment that in the farming season of 1991, women were farming 128 out of 185 plots or fields in the village of Lambaye (Ministère de l'Intérieur 1991). In general, however, men come back to help with: the clearing and sowing of the fields and the first weeding (in June); and the harvesting of millet in early September and of groundnuts in October. Between the months of July and August many migrants go back to the cities to resume their paid employment while the remaining men, women and children tend the crops and carry out the second and the third weedings. The use of machines, hired labour and the participation of children makes it possible to continue the agricultural cycle in the absence of much of the male population.

While men retain their decision-making capacity at the levels of farm and family, the capacity of all villagers to make broader decisions which concern the whole village has reduced dramatically since Independence. Changes in tenure law and the role of the state in managing woodland has long since removed resource management decisions from village forums. People are aware of the changing environment around them but feel powerless to act. Instead of cooperating with the forestry agents, many feel opposed to them. One such agent explained: 'there is solidarity among the villagers: everyone knows who cuts trees but no-one tells us.'

Out-migration and On-Plot Management

It is not a lack of labour *per se* but rather the gender division of labour and women's lack of decision-making power which limits women's involvement in land improvement activities in Diourbel. Women do not apply manure to the land, are not involved in tree-planting or protecting young saplings, and do not buy fertiliser. Thus, the absence of men due to out-migration can influence people's on-plot farm management very directly.

Applying Manure and Household Waste to the Land

The absence of men reduces the possibility of timely application of manure to the land. Manure and household waste is normally transported by horse/donkey and cart, and women do not work with these animals. The work could be done by older male children if they are present in the compound but, due to schooling requirements, this is not always the case. In the complete absence of men, women have to seek help from neighbours and/or seasonal immigrants to help them. However, although it is common for compounds to hire seasonal labour, they can do this only if they have surplus land and seed with which to pay the immigrants. Many compounds have no such surplus available.

Tree-Planting and Protection of Naturally Regenerated Trees

Male out-migration limits the potential for greater community involvement in agroforestry activities. While a few women in the villages visited have been involved in the planting of village woodlots, women's lack of tenure rights generally precludes them from being involved in such activities. The current shortage of men in the villages is thus directly curtailing the potential of efforts by the IFAD project to increase tree cover.

Applying Fertiliser to the Land

As outlined above, since the withdrawal of government subsidies, it has been impossible for most farmers in the region to buy chemical fertiliser for their farms. Although all compounds buy pesticides and insecticides, only 39 per cent of compounds in the sample had members who said they would use fertiliser if they could afford and obtain it. However, among these compounds, the presence of men would implicitly facilitate access to fertiliser, since it is they, and not the women, who would buy it.

Table 2.7 Land previously farmed by out-migrants %

The land is farmed by the family	86
The migrant's wife is farming the land	2
The migrant has no land	12

Contrary to expectations, the absence or presence of men does not significantly affect the practice of fallow. The widespread use of animal traction has made it possible for a small number of people to farm areas which were formerly farmed by many. In Diourbel, it is land rather than labour which is in short supply. 86 per cent of the sample of migrants' wives said that the land, previously farmed by their husband, is now farmed by the rest of his family; 12 per cent said that he had not farmed any land before he left, and 2 per cent said that they themselves now farm this land (Table 2.7). Only 5 per cent said that some of the family's land is left fallow. Consequently, land left by migrants is not often left uncultivated. In circumstances where there is not enough labour or seed in the compound with which to plant the land, seasonal immigrants are given this land to farm.

In summary, male migration does not increase fallow in Diourbel, neither does it influence women's NRM or NRI activities directly. Women's involvement in agriculture and agroforestry remains limited. However, the shortage of men in the villages throughout the year does jeopardise the timely performance of certain agricultural tasks, and the potential of tree-planting and other on-plot management programmes. Men are aware of how they limit the range and success of farming plot management techniques by their absence, and yet they make the choice to migrate. Faced with declining yields and unreliable rainfall, migration appears as a more viable and secure strategy.

Male out-migration and compound coping strategies

While male out-migration is not directly altering women's NRM and NRI activities, it is affecting household coping strategies and women's lives in the region of Diourbel in a range of ways. The research findings indicate that, subsequent to male out-migration:

- women and children replace male labour in family fields;
- women receive declining returns from their own plots;
- dependence on bought food is increasing;
- employed labour carries out the tasks previously performed by men;
- household structures are changing;
- women become more involved in off-farm activities and begin to migrate.

Women and children replace male labour in the family fields

In all the villages studied, women were said to work harder in the family fields due to the absence of men. As explained earlier, seasonal migrants come back to the village to perform specific 'male' tasks while the women perform most of the manual labour activities. Thus the labour gap on family fields is filled by women, children and any seasonal labour they can employ. Serere women are most affected because they are less likely to employ wage labourers. Indeed in the poorer Serere villages (for example, Ndiakane) Serere men said that if the harvest is poor, they may even be forced to find agricultural work during the following rainy period. However, in these villages, migration levels are not as high as among the Wolof.

From an early age young boys and girls help in the fields. By the age of eight, boys are driving carts and spreading manure on fields. Girls are equally as active, although their primary obligation is to carry out domestic tasks in the compound. The absence of men due to migration has increased the burden for all those left behind. One old man from Ndiakane was among the several who remarked: 'women are worn out by the amount of work they do in the fields now that most of the men have left.'

Women receive declining returns from their own fields

As a result of the greater concentration of women's labour on family fields, the timing of inputs on their own plots suffers. Women throughout Diourbel complained that their yields per hectare have consequently fallen. Research by Guigo and Lericollais (1988) in the neighbouring Serere Sinn area has quantified this decline. While productivity from women's and men's fields was comparable in 1967, yields per hectare from women's fields in 1987 were clearly inferior. According to women in Diourbel, yield discrepancies can be attributed to poorly-timed labour inputs.

Those women who borrow land (8 per cent of the sample) from their neighbours face additional problems. They must wait until their neighbours have sown their crops before they can request land to farm. Thus their own agricultural activities are delayed. Women's declining harvests and lack of agricultural independence is borne out by the absence of their own granaries. Whereas in the past, most women had their own granary, today their produce is often kept in piles in a storeroom. Furthermore, in the women-headed compounds (32 per cent of the sample), women tend not to cultivate their own land. Instead, they receive a portion of the harvest from the communal fields in return for their labour.

Dependence on bought food is increasing

Despite the heavy reliance on animal traction and the hiring of male migrants to help with 'male' tasks, out-migration from Diourbel has also negatively affected productivity on family fields. Although the predominance of extensive farming practices has greatly reduced the labour needed during the agricultural cycle, there are still some tasks which must be done by hand, for example, weeding between plants and harvesting. Out-migration often leaves families starved of the labour they still need to carry out these manual tasks, the timeliness of which can very directly affect the size of the yield. Poor timing and poorly-performed tasks which result from this situation, are said to decrease agricultural productivity on family as well as women's plots. As one women in

Lamabaye explained: 'the more people there are to help in the fields the better the work is done and the greater the harvest'.

Despite this, interviewees throughout the region were in agreement that, although harvests would be better if there were more men to help in the fields, the presence of men does not ensure a good harvest; ultimately, this is dependent on rainfall. As a result, people feel more confident investing in urban employment rather than agricultural production. As long as this attitude prevails, agricultural production in Diourbel seems fixed into a downward spiral: declining harvests lead to more migration resulting in the further loss of yields. The absence of men increases with the dependence on remittances to buy food, and people prioritise their security in relation to the commodity market, rather than their farm production in the village.

Employed labour carries out the tasks previously performed by men

Due to the absence of men and the gender division of labour, women rely increasingly on reciprocal labour exchange and immigrant labourers. As explained, certain tasks are not done by women. Thus, in households where men are absent for a large proportion of the year, women are either forced to employ labourers and/or get their husbands to ensure that a close relative or neighbour will perform certain tasks during the year. Contrary to ideas mooted in the migration literature, remittances are not used to pay for this extra help. Seasonal workers are normally employed as sharecroppers and are given seed and land to plant in return for their labour. At the end of the harvest the seasonal labourers are expected to repay the seed to their hosts/employers. As explained above, however, migrant labour can only be employed if a compound has spare land and seed. All men and women said they would like to employ migrants to help them, yet only about 31 per cent of compounds in the sample were able to take advantage of this help.

Household structures are changing

The research indicates that male out-migration influences household structure. Compounds, which were formerly split into a number of individual consumption and production units, seem to become united in the dry season. In many compounds, the absence of the *borom keur* has led to everyone now eating and working together: 65 per cent of compound heads (both male and female) in the sample say that this is the easiest way to provide for everyone in the unit. Correspondingly, migrants send remittances and sacks of rice to the male or female compound heads as well as to their individual wives.

Women become more involved in off-farm activities and begin to migrate

Women's labour input into agricultural production at the household level has increased dramatically with the absence of most men for most of the year. However, over a similar period, the returns which they personally can draw from this work have declined: not only has the price of groundnuts fallen sharply since the 1960s, but as women prioritise work on family plots to replace lost male labour, they are less able to farm their own plots intensively and effectively. Furthermore, the cash requirements of women continue to multiply. Consequently, women seek alternative, off-farm ways of ensuring a personal income for themselves and their children. An increasingly popular way to do this is to migrate to centres of economic activity during the dry season. Women leave their children with co-wives/mothers-in-law and join their husbands in the cities. Here they seek temporary, unskilled work. Some women (usually those who are older and have a small capital to invest as well as more freedom to travel), become involved in buying and selling agricultural produce. More and more women from this area are making money by trading between Dakar and their home villages. This dry-season movement is accepted as a way of adjusting to the decline of income from agriculture and their ever-increasing cash needs.

The IFAD project runs a number of programmes which attempt to develop the income-generating opportunities for women and men in their villages. At present, the project promotes village grain mills and cereal banks with women's groups known as *Groupements de Promotion Féminine*. The project's long-term aim is to encourage the women to use the capital saved through these schemes to finance their own income-generating activities. Women are shortly to be offered credit to finance the buying of sheep and goats, and will also be included in the project's market gardening programme.

Conclusions and recommendations

The reality stares you in the face. In the dry season there are hardly any men here; there are old men, women and children. There is no project in this region that really keeps people on the land.
(Chief of the village of Lambaye).

The research shows that male out-migration has assumed a permanent and necessary role in the coping strategies of families in Diourbel. The area has a history of migratory movements and migration is shown to be a logical response to the changing environment and expectations of the people. As agriculture has been modernised, labour released from the land and labour-intensive land improvement activites replaced by chemical inputs, farming in Diourbel has been transformed. The roots of this transformation lie in the early twentieth century, when the dominant Mouride and French communities promoted the development of the groundnut cash-crop and the mechanisation of agriculture. As agricultural tasks have been lightened by animal traction, men have responded by investing their labour in the cities. Women have continued to farm in the absence of men, prioritising work on the family fields, to the detriment of their own, small plots. In an attempt to find alternative sources of personal income and to fulfill their cash needs, they also pursue independent, off-farm initiatives.

Despite the effectiveness of women farmers, the current situation continues to undermine the possibility of investment in the long-term improvement of the soil for two main reasons. Firstly, many of the migrants interviewed suggested that long-term investments in improving agriculture posed no real alternative to migration. One man from Mékhe Lambaye said:

Nothing will keep us here: there isn't enough land, the rains are bad... we have to go. At least one man stays home to look after the women and help with the agriculture. The rest of us have to earn money.

In short, sustaining a cash flow has now become the priority for people in Diourbel, and investing in the land can at present provide no such 'cash security'. The cycle of declining productivity, integration into the market economy and out-migration of able-bodied men continues, and as they become ever more rooted in an urban way of life, it seems increasingly unlikely that they will resume their old farming lifestyle. Out-migration is the principle source of wealth for most people, and subsidises life in the villages. Many of the migrants today have never farmed their own land nor had a permanent place in the farming community.

The problems encountered by the IFAD project in its natural resource improvement programmes, serve to illustrate this point. The project has worked with the residual male heads of compound in an attempt to set up trial plots to encourage men to stay in the villages. However, although commendable, the initiative has been dogged by the frequent absence of men who leave to pursue their personal economic activities in neighbouring locations, as well as by unreliable rainfall patterns and the ill-timing of planting.

Secondly, although the widespread absence of men means that women and children are today the permanent and more stable elements in the community, women do not assume the role of agricultural decision-makers in the place of men. They do not operate machinery, own or inherit land, nor take most decisions regarding its management. Women therefore feel little incentive to invest their time in labour-intensive, long-term, natural resource improvement activities, since such activities have not traditionally been their responsibility. As long as the women remain without rights to land and an assured role in decision-making, this situation is unlikely to change. The project acknowledges these constraints and has worked with women to pursue their own prioritised interests - to increase their off-farm income.

The challenge which now faces projects is not to persuade male migrants to stay and farm, but to work with those men and women who remain in the communities and support them in their chosen livelihoods. Given the current

priorities of, and the constraints faced by, women and men in Diourbel, it is possible to make certain recommendations within the existing framework of the IFAD project.

Women's responsibilities and land rights

Because women are now the main labourers on the farm, and men - the traditional owners and decision-makers - are absent for much of the year, there is a strong argument that women should begin to take on responsibilies which have traditionally been male, in order to be in a position to invest in the improvement of the land. There is evidence that some women are very keen to take on long-term land improvement initiatives, but find themselves constrained by their immediate need for cash and their lack of land. As one exasperated women explained: 'We would plant trees if the men would allow us, but we don't have fields... We realize that desertification brings hunger. That's why we need to make money to feed our children.' Getting women to participate fully in such activities will not be an easy task, and perhaps it will be necessary to try out a number of different arrangements. Despite their lack of incentive to plant trees on land owned by men, women are in a position to look after naturally regenerated plants and new saplings. It is they who stay in the villages during the dry season and can protect the seedlings from the goats; and it is they who weed the fields by hand and can prune and protect new saplings from destruction by the plough.

Women's income-earning activities

The project has already established programmes which support and encourage women in their independent, income-earning activities; although these initiatives are still small, they have achieved unqualified success. Most women in the area are now members of groups known as *Groupements de Promotion Féminine* (GPF), and receive credit from the project to finance grain mills and cereal banks. In some villages, women are efficiently managing these communal assets, and are progressively more involved in small livestock initiatives. The women of Diourbel show an aptitude for enterprise which should ensure no shortage of enthusiasm and ideas for the project's programmes. The words of Benda Diouf, from Ndol-Ndol Coudou Ngoy, illustrate this enterprising spirit. When asked what the women would do when the credit for their mill was repaid, she replied: 'We want to save up, buy another mill and let it out, at a profit, to the next village'. These GPFs hope to acquire the status of GIE's (*Groupements de Promotion d'Intérêt Economique*) which are legally recognised by the government and, as such, can apply for further credit.

In theory, after the group loans have been repaid, the GPFs will be able to lend money to their members on an individual basis. However, this has not yet happened, and some women have become exasperated with waiting for this facility which would liberate them to invest in their independent activities. In the meantime, they are continually preoccupied with earning enough cash for their day-to-day needs.

The project should strengthen and broaden women's income-generating initiatives. Being already a successful aspect of the project's work, such initiatives could be more of a priority, and receive a higher proportion of resources and well-trained monitoring staff. The programmes would benefit from closer links with similar government initiatives, in order, for example, to ensure the availability of spare parts for mills. Finally, in the short term, the project could consider making available small loans to individual women to invest in personal activities, while waiting for the loan facility of the GPFs to materialise.

Tree-planting

Farmers (men and women) should be trained in treating and propagating seeds, and thus reducing the likelihood of saplings dying due to late planting and logistical difficulties. The involvement of women in this programme would be encouraged by offering them a tangible incentive to raise trees. By being involved in commercial tree nursery activities, women could benefit from the extra income this would provide. Furthermore, including women in the programme would ensure that awareness of tree issues would be raised in the community at large, and not simply among the contact farmers supported by the project.

Decentralising the management of natural resources

Finally, the success of all environmental improvement initiatives depends on the sense of responsibility felt by rural communities. This chapter has outlined how the Senegalese Government, in centralising decision-making about land and trees, disempowered rural people from managing the natural resources on

which they relied; furthermore, this research revealed how far village level decision-making about resource management is absent from the region. Although individual agroforestry plots promoted by the project are a step in the right direction, it is only by putting the management and decision-making processes back in the hands of the people that significant environmental regeneration can be achieved.

Forestry agents are mainly technically trained and have little time to reach out into communities, and little awareness of what such a process of decentralisation would entail. Over the years, their role has become one of 'policing' the environment rather than of working with people to raise awareness of tree management. Agents should be both better trained to carry out the educational aspects of their work, and given logistical support - as well as extra personnel - to make this possible. Greater emphasis must be put on educational and awareness-raising programmes, and particular efforts should be made to involve women, since they are the most significant group of permanent village residents, as well as resident village chiefs and other men. The IFAD project could take a lead role in rekindling community responsibility for local environments.

NOTES

As this study was carried out during 1993, the value of the FCFA is given at pre-1994 exchange rates. The conversion into Sterling is made @ 8.5FF to £1 and into US dollars at 1.4 US$ to £1.

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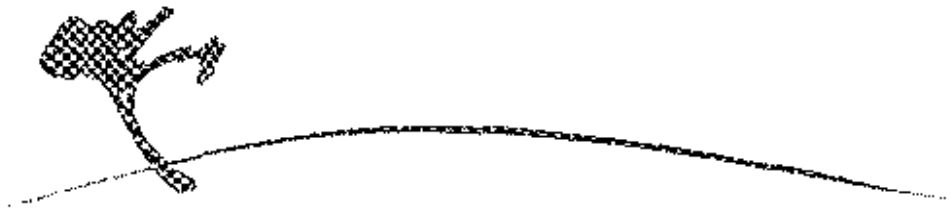


Case Study

Passoré, Burkina Faso

Rosalind David and
Pauline Yabré

Acknowledgements

The fieldwork for this study was carried out during the dry season months of January, February and March 1992 and during the rainy season months of September 1992 and September 1993. The authors are indebted to Colette Traoré and Mariam Maiga (Six S, Ouahigouya) who helped carry out initial fieldwork and offered considerable advice during the course of this work. The authors would also like to thank the IFAD staff based in Yako for logistical support, encouragement and help during the course of the fieldwork. In particular, we would like to thank Jean-Paul Kambiré (Project Director) for his support, and Souleymane Sankara who gave much of his valuable time to introduce us to the villages and whose knowledge of the area proved invaluable to this research. Special thanks also to Souleymane Yelkouni who came out of retirement to drive us around the region and Jean-Paul Kablé (Director Six S. Yako) who was always there to help out in times of crisis.

Most of all, the authors would like to thank the people who live in the six villages of Douré, Toessé, Gonsen, Banlou, Ouonon and Yargo where this study was carried out. It was thanks to their generosity with their time and knowledge that this study was made possible. We hope that the ideas expressed in this chapter accurately reflect their views. Special thanks to the many friends that we made during our short stays in these villages, especially to Pospoko, Talata Kalaga and Zida Issaka from Toessé and Mardu and Sankara Issaka from Douré.

Summary

Mossi farmers have attracted international attention for their labour-intensive activities which reclaim degraded soil. Over the last thirty years a range of natural resource improvement activities have been developed which combat declining production. Migration, over this period, has increased due to the devastating droughts of the early 1970s and 1980s and the longer term climate change which is affecting the whole of the Sahel.

Contrary to conventional thinking on migration and natural resource management, male out-migration from the Mossi plateau does not create a disadvantaged group of women heads of household, nor does it lead to migrants' wives selling their labour, or seeking off-farm income- generating activities which negatively affect the environment. Instead the research found that all women, living in extended family compounds, are affected by migration. The 'labour gaps', created by absent men, are being filled by women and children who spend more time on production and improvement of family farms. As well as continuing to produce food for family consumption on their own plots, women are an increasingly important source of labour on family farms.

The research shows that international environmental projects are not sufficiently recognising the importance of female labour and the food security issues which are interlinked with women's access to, and control over, the produce from different farms. Equally, the research questions whether male out-migration relieves aggregate pressure on natural resources and whether piece-meal initiatives to improve the fertility of the land are enough to compensate for long-term environmental decline.

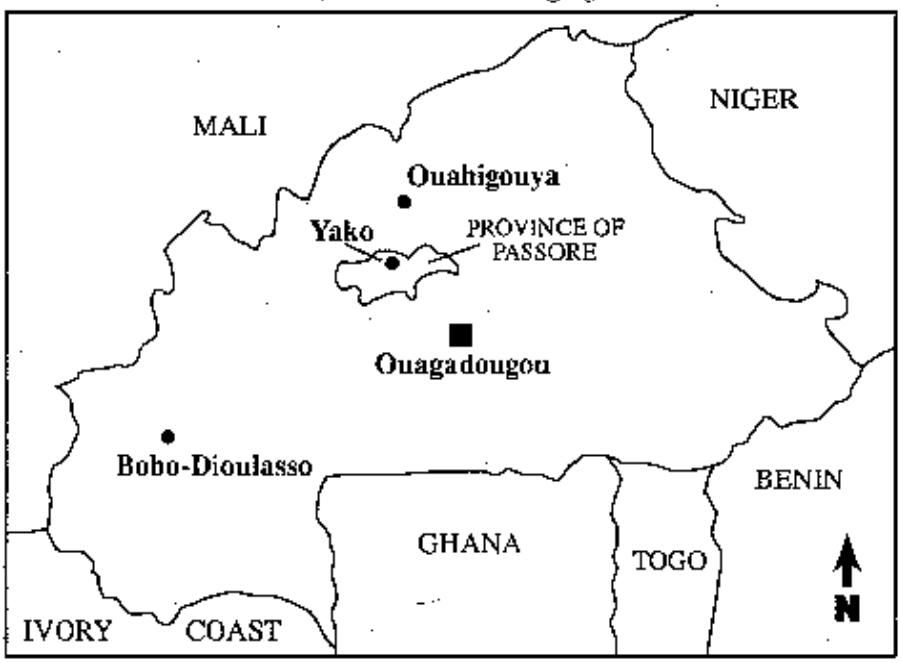
Introduction to Passoré

Women whose husbands are always away have a hard life. Women whose husbands are present also have a hard life - but at least they can share their problems.
(a woman from Baniou)

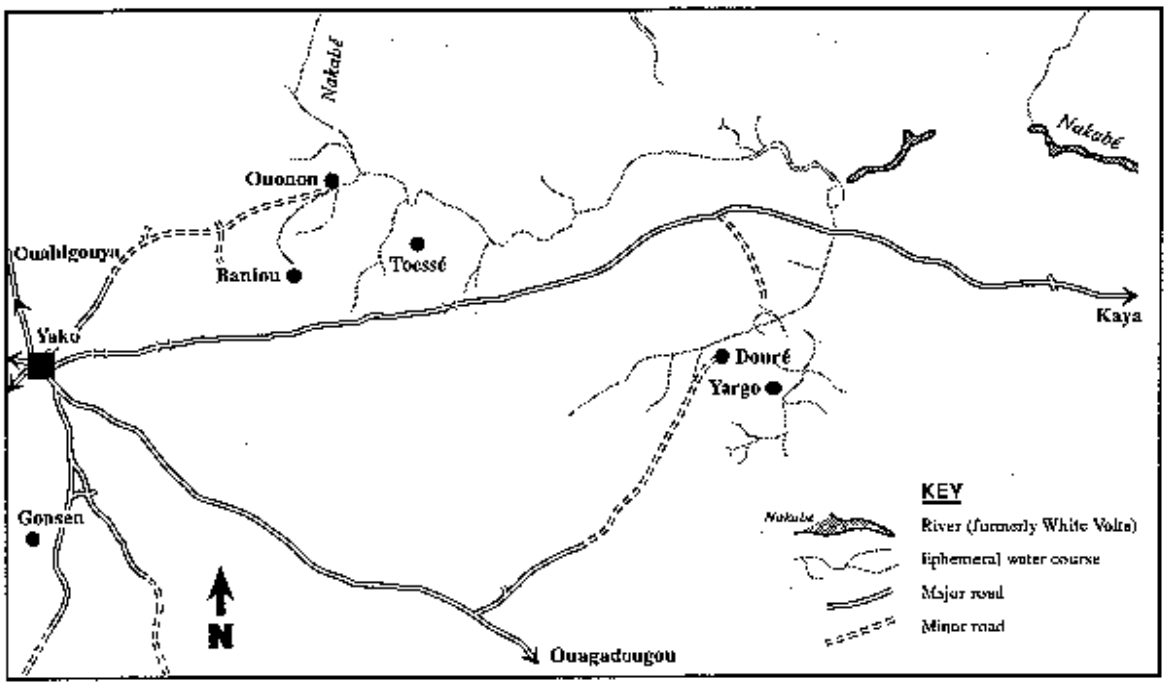
High levels of male out-migration and declining natural resources have become synonymous with Burkina Faso. This country has experienced widespread environmental degradation and food insecurity due to population growth and erratic rainfall. Burkina Faso is one of the poorest countries in the world: it has a high external debt equivalent to 26 per cent of GNP in 1990 (UNDP 1993), and an average GDP per capita of only $618 per year. Burkina Faso is also ranked fourth last on the UN Human Development Index; life expectancy is only 48 years (UNDP 1993). Despite harsh climatic conditions and fragile soils, however, Burkina Faso is one of the few sub-Saharan African countries to have achieved an economic growth rate equivalent to its population increase. Between 1980 and 1990 the economy grew at an annual average rate of 4.1 per cent. The population of Burkina Faso is estimated at just over nine million, and despite considerable out-migration, this figure amounts to more than twice the total population of 1970 (Bryson & Saito 1992). The annual average growth rate between 1960 and 1991 was 2.4 per cent (UNDP 1993). The natural growth rate is higher but migration accounts for the difference. An estimated 1 to 2 million Burkinabè live outside the country (World Bank 1990b).

The expanding economy is largely a result of an expanding agricultural sector, which grew at a rate of 5.5 per cent between 1982 and 1990 (Bryson & Saito 1992). Agricultural growth, however, is mainly due to expansion into the fertile valleys in the south and southwest of the country. Migration from areas of higher population density, such as the Central (or Mossi) Plateau, where this study was carried out, has fuelled this growth. However, population redistribution has not solved the inherent problem of extensive agricultural practices. High population pressure, coupled with declining fallows and falling productivity rates per hectare still characterise this sector of the economy. Given that the Burkinabè population is expected to double by the year 2016 the situation would seem to be unsustainable (UNDP 1993).

Burkina Faso is divided into thirty provinces covering three hundred departments. The research for this study was carried out in the province of Passoré which lies on the Central Plateau northwest of Ouagadougou (Map 3.1). Here population levels are relatively high (55 people per km^2 as opposed to a national average of 29 people per km^2) and widespread environmental degradation has led to falling agricultural production. Most of the fertile, cultivable land (67 per cent) is under production (Sawadogo & Larivière 1993). Hence, given existing technology, the expansion of agriculture means moving into less fertile soils with declining productivity levels. Relatively high population densities, combined with low resource endowment and productivity levels, induce male out-migration which is very widespread in this region.



Map 3.1 Yako and the Province of Passoré, Burkina Faso



Map 3.2
The six villages where the research was carried out in the Province of Passoré

Methodology in Brief

Passoré is divided into nine departments. The research covered three of these. It was carried out in six villages: the villages of Douré and Yargo in the department of Kirsi; Toessé, Baniou and Ouonon in Gomponsom; and Gonsen in the department of Yako which is also the capital town of the region (see Map 3.2). The IFAD Soil and Water Conservation and Agroforestry project (Conservation des Eaux et des Sols et Agroforesterie) is active in three of these villages - those of Douré, Ouonon and Baniou.

Due to the seasonality of people's farming activities, the research for this study was carried out in two phases, the first in the dry season and the second in the wet season. The dry season work covered all six villages and took place in January, February and March 1992. This phase was both quantitative and qualitative in approach. It comprised: individual interviews with 70 women (50 wives of men who had migrated from the village and 20 women whose husbands live in the area); focused group discussions with community leaders and groups of men and women; semi-structured interviews; and participant observation. While the migrants' wives in the sample were randomly chosen from a sample frame compiled by the researchers, the choice of other interlocutors was reliant on people wanting to participate in discussions.

The wet season research was carried out in a sub-sample of villages - those of Douré and Toessé. These villages were chosen because of their accessibility during the rainy season and the receptiveness of the villagers. The wet season research was carried out during the months of September 1992 and September 1993. In September most of the laborious farm work has finished and people are generally waiting for the crops to ripen before harvesting. The wet season research drew on a wide range of RRA and interviewing techniques. Activities included: thematic plays/sketches; village resource mapping; intergenerational discussions; workload calendars; recording personal biographies; village transects; venn diagrams; and focused group and individual discussions.

The ethnic composition of the villages studied is mainly Mossi. All the women in the sample were of Mossi parentage, although some were Silmi-Mossi or Mossi-Peulh. All were agriculturalists rather than agropastoralists or pastoralists. The main religion in Burkina Faso is animism: 60 per cent of the population are animist; 10 per cent are Christian and 30 per cent are Muslim. Of the interviewees - 37 per cent were animists, 34 per cent Muslim, 24 per cent were Catholic and 5 per cent were Protestant. There are no slave groups in this area although a very structured hierarchy dominates village life. Those related to the village chief have a higher social status than new arrivals or those of lower status groups such as *griots* or blacksmiths. Access to land and some other resources is structured accordingly.

Natural resource management in Passoré

Overview

Passoré is in the South Sahelian climatic zone. It receives declining variable rainfall (500-700 mm) spread over about fifty days during the year. Rainfall figures from the Yako station indicate a slow decline in rainfall levels. Between 1945 and 1954 this area received 835 mm per annum. Between 1985 and 1990 this had fallen to 540 mm spread over an average of 41 days (Table 3.1).

Table 3.1 Rainfall figures for Yako, 1945-1990

Period	Average rainfall (mm)	Average no. of days of rain	Rainfall as a percentage of 1945-1954 values
1945-1954	834.7	55.3	100
1955-1964	791.8	55.9	94.86
1965-1974	639.6	57.4	76.55
1975-1984	664.6	51.7	79.62
1985-1990	540.1	40.8	64.70

Source: Sankara 1993

Due to the intensity of rainfall between June and September, sheet erosion is a major problem. Indeed, over-cultivation and deforestation of the light, sandy soils has led to high levels of degradation. Poor, lateritic soils, with thin topsoil layers and limited biological activity, have little protection against harsh climatic conditions. Soil erosion figures, calculated by Roose & Piot (1984) (cited in World Bank 1990b, p.21) indicate the general severity of erosion on the Central Plateau. Erosion rates were found to be greatest (16-20 tons/ha/yr) on land which had been cultivated but was left barren.

The Mossi once harvested 700-900 kg of millet per hectare, whereas present production levels are as low as 250-800 kg (Broekhuyse & Allen 1988). Indeed 400 kg/ha is now considered a normal production level (IFAD 1987b). Low production levels, and lack of alternative incomes, render Passoré one of the most food-insecure provinces in Burkina Faso. This region experienced severe food deficits in 1989/90 and 1990/91 and a minor food shortage in 1991/92 (Table 3.2). Moisture stress, surface crusting and low fertility are widespread problems in the area. Poor soils have encouraged the parasitic weed of the *striga* family. *Terre zipellé* - land which has an encrusted, sealed surface - is typical in Passoré.

Table 3.2 Cereal production and requirements in Passoré 1989-92 (tons)

	1989-90	1990-91	1991-92
Cereal required	44,020	44,580	44,902
Cereal produced	41,273	19,400	50,100
Loss & seeds	6,222	3,445	7,515
Overall deficit	**-8,970**	**-28,865**	**2,317**

Source: CRPA du Nord, Rapports techniques d'activités 1989-1992; quoted in Savadogo & Larivière 1993

Vegetation in this region is characterised by grassland interspersed with trees and shrubs. Over the years, thick forest has disappeared to be succeeded by grasslands. Bush fires, pruning, and clearing for agriculture and firewood have led to a sharp fall in woody biomass. The national rate of biomass exploitation is estimated at 10.3 million m^3. However, due to imbalances between biomass cover and population concentrations, the country is said to experience an overall biomass deficit of 2.7 million m^3 each year (FAO/CP 1990. Study quoted in World Bank 1990a pp.32-33).

The central plateau is one of the worst-affected regions. Dominant species remaining in Passoré are, *Acacia albida, Adansonia digitata, Tamarindus indica, Bombax costatum, Lannea microcarpa, Butyrospermum paradoxum subsp parkii, Parkia biglobosa* and *Ficus capensis*. Other species found mainly on long-term fallow or abandoned land are *Terminalia avicennioides, Sclerocarya birrea, Anogeissus leiocarpus, Vitex doniana* and *Diospyros mespiliformis*. The few remaining wooded areas are mainly made up of shrubs such as *Guiera senegalensis, Combretum micranthum, Combretum glutinosum, Piliostigma reticulatum and Piliostigma thonningii* (Zida 1990). Grasslands are dominated by species of

Pennisetum pedicelatum, Loudetia togoensis and *Andropogon acinodis*. The area is drained by tributaries of the Nakabé (former White Volta). Flora are concentrated on alluvial deposits and close to water sources. Two of the villages studied - Ouonon and Toessé - are particularly close to ephemeral tributaries of the Nakabé. No perennial water courses cross this region.

The absence of dense vegetation cover has precipitated a dramatic fall in the animal population. The abundant wild game of twenty to thirty years ago is now represented by rodents, birds, reptiles and a few hyenas in the hilly areas. Local testimony bears witness to the environmental changes in the last half century. An old man from Toessé remarked:

50 years ago there were lions and wild animals here in Toessé. You couldn't go into the forest at night because of the wild animals. We would lay them traps with dead animals to try and capture them. At the time there wasn't really any migration, people would leave for the [dry] season and come back at the beginning of the rainy period to work in the fields. It was mainly the young that went.

Changes in Mossi Farming Practices

The Mossi regard land and its resources as on loan from the ancestors. It is to be preserved for the use of future generations (Sankara 1993, Compaoré 1993, Fahrenhorst 1992). Over the years, however, endogenous and exogenous factors have put pressure on traditional practices which largely consisted of barriers of access rather than coherent management regimes.

Land was traditionally allocated at the local level within the Mossi kingdom. Apart from cultivated land, other areas were designated for pasture, hunting and gathering, worship and reserve areas. Villagers were not allowed to cut green wood, the heads of trees or products with specific community value such as fruit trees - especially the *karité* (*Butyrospermum parkii*), *néré* (*Parkia biglobosa*) *tamarinier* (*Tamarindus indica*) and *raisinier* (*Lannea microcarpa*). Trees which had spiritual significance, such as the Baobab (*Adansonia digitata*), were also preserved. Most resources were, however, considered in abundant supply and people enjoyed more-or-less open access to extra land (to which they obtained rights through clearance), to fruits and berries, to wild animals and to firewood. Soil fertility remained high due to long periods of fallow (up to twenty years) which allowed natural regeneration and a replenishment of soil nutrients.

In the pre-colonial period, most villages practised a mixture of agriculture and animal husbandry. Villagers normally communally agreed where to feed the animals and the location of the pastureland was changed each year. Peulh pastoralists also used the region's resources. *Passages de parcour*, or transhumant routes across Passoré, were negotiated between village chiefs and nomadic herders. A mutually beneficial relationship existed between the Peulh and the Mossi. The Peulh fed their animals on crop residues while the Mossi benefitted from the manure left on the fields. Mossi farmers attracted Peulh to their land by offering them millet and sorghum in exchange for milk and manure from the cattle.

A series of influences have affected the relative state of equilibrium which existed on the Mossi plateau before colonial times. Vegetation cover, grass and bushes have been diminishing since the end of the nineteenth century.

Traditional Mossi granary

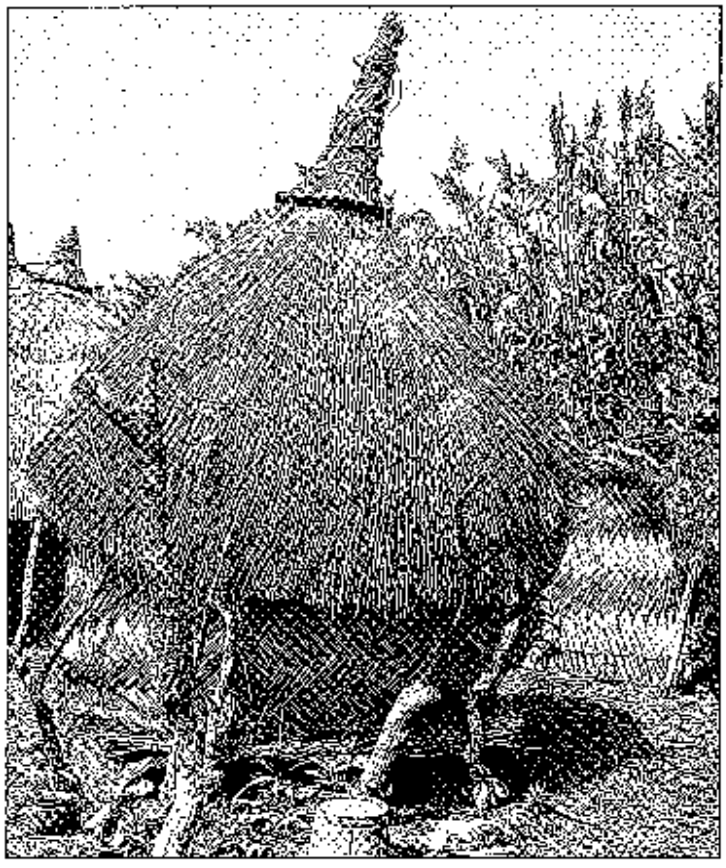


Photo: SOS Sahel

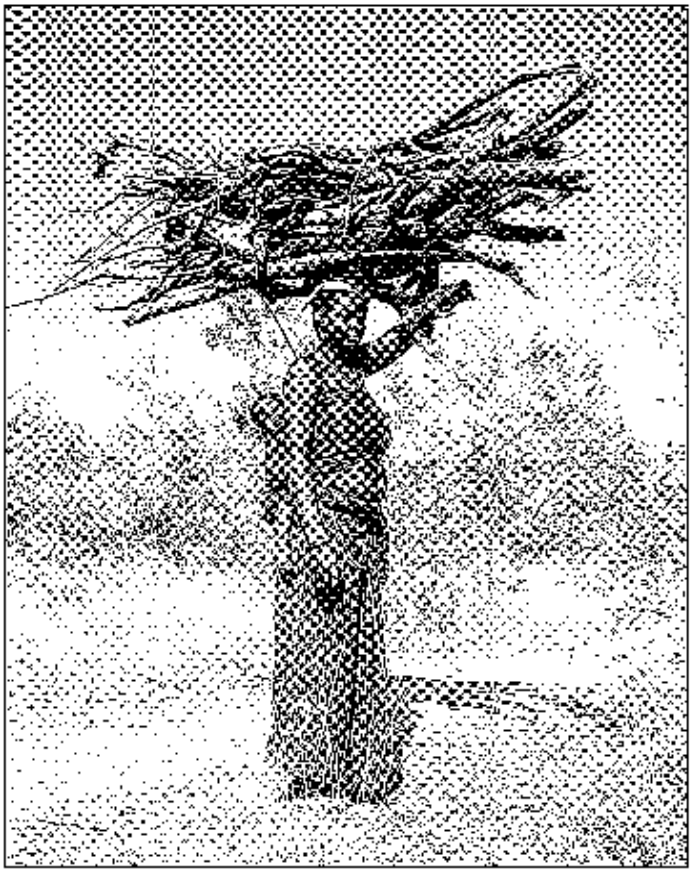


Photo: SOS Sahel

A woman collecting firewood near the village of Banion

This process was facilitated by the introduction of a number of innovations such as the *macheté* and the gun. Improved medical care and a reduced death rate, since the beginning of the twentieth century, have lead to an increasing population which has also profoundly affected natural resource use (Broekhuyse & Allen 1988). French colonial rule, the introduction of taxes, cash crops and external management systems also affected resource management practices in the region (See Fahrenhorst 1992, Gervais 1987, Gregory 1974).

Current Management Practices

A number of other factors have contributed to environmental instability on the Mossi plateau: successive droughts, the shortage of land and conflicts between pastoralists and agriculturalists have created a sense of environmental vulnerability. The droughts of the early 1970s and 1980s destabilised this region. People reacted by further expanding cultivated areas in an attempt to compensate for uncertainty and falling yields. At the same time growing populations demanded extra land[1] and even more marginal land came under cultivation (see below). Natural bush areas and communal land disappeared; all land has now been appropriated and no virgin bush remains. Waste land, used for pasturing animals and collecting fuelwood, is either land which has been abandoned or is being fallowed by its owner. As one old man from Toessé explained: 'Apart from the sacred land, and the areas where there are demons, there is no land that can be considered land belonging to the community.'

The absence of pasture and the loss of livestock during the droughts has upset the balance between agricultural and livestock husbandry. Estimates of livestock vary enormously. Figures from 1987 indicate that there were approximately 30,000 cattle, 127,000 sheep and 155,000 goats in Passoré (DEP/Enquête nationale sur les effectifs du cheptel, quoted in Sawadogo & Larivière 1993). The numbers of cattle in the area are, however, decreasing as forage declines. In one of the villages studied (Douré) only about 10 per cent of villagers owned any cattle. Other animals - poultry, goats, donkeys and sheep - are becoming more important to the household economy. In Douré for example, approximately 80 per cent of the compounds possessed a donkey. The few herds of cattle which villagers do own are generally grazed on the denuded, abandoned land at the edge of the village or are looked after by Peulh herders outside the area. A compound head in the region is likely to own half a dozen sheep, a few goats, a donkey and a dozen chickens or guinea fowl. Horses are owned by a minority. People are more likely to invest in raising goats and sheep which are easier to feed than cattle. The absence of larger animals naturally affects the availability of manure (see below).

As the environment has changed so too has the relationship between the Peulh and the Mossi. As fertile land diminished, farmers began to encroach upon the Peulhs' *passages de parcour*. Land and water conflicts have become increasingly common in this region (see Sankara 1993). The growing absence of adequate fodder has forced many pastoralists to find alternative routes across the region or to move southwards permanently. The Peulh, who still frequent the area, are dissatisfied and worried. As one ageing Peulh pastoralist, from Kirsi, explained:

The bush is finished... the farmers have done it... they even try to cultivate in our

paths... There were lots of Peuhl in this area when we first came... now many of them have gone. They have all gone south...The young have all gone with their herds.

Village-level resource management regimes have not adequately developed to take account of environmental, livestock and population changes. The *chef de village* and *chef de terre*[3] still hold nominal positions in overseeing village natural resources but, given the additional pressure on the system, local Mossi laws restricting rights of access and conditions of usage have proved insufficient to maintain resource equilibriums.

State intervention (first through colonial powers and then post-independence governments) has also been unsuccessful in actively encouraging sustainable resource management in villages. Thomas Sankara's revolutionary government (1983-87) proved more interventionist, but the 'three-pronged struggle' (*les trois luttes*) - which fought against the cutting of green trees, uncontrolled pasturing and bush fires - did little to create a comprehensive system of resource use. Nationwide attempts were made to start reafforestation programmes, promote agroforestry, encourage the use of improved stoves, abolish colonial management systems, and establish village and district level revolutionary committees (Fahrenhorst 1992). However, while these initiatives raised awareness, the heavy-handed methods used by forest guards failed to develop a sense of communal responsibility for village environments (Guèye & Laban 1992).

The Agriculture and Land Reform Act of 1984 juxtaposed the state and customary tenure systems. All land was put in the hands of the state giving individuals the right to use the land but not own it. Today much of the land in villages has been claimed by older clans and a high proportion of land is lent out to 'younger' families (see below). Overall, village communities have little control over their 'terroir'. While they are using the land, they are disempowered from taking responsibility for the management of the village area.

An ambiguous split between government and traditional control still prevails today. Although the Popular Front Military Government took power in 1987, this new regime has not departed greatly from the previous government's policies. Structural adjustment in the early 1990s has succeeded in relaxing pricing controls and the economy is moving towards liberalisation. Farm-gate prices are still low, although the effects of the recent (January 1994) devaluation of the Central African Franc (FCFA) have yet to be seen. The Popular Front has also restructured the government extension services, although intervention into village natural resource management is still overstretched.

Although village-level management practices have not evolved from the traditional barriers to access described above, environmental vulnerability has led to individual efforts to improve land fertility. A whole range of natural resource improvement (NRI) activities has developed over the last thirty years. Some initiatives were influenced by external projects while others have been developed by local people. These, often labour-intensive, initiatives have received international acclaim (see below).

Out-migration from Passoré

Overview

The impact of migration on Burkina Faso generally, and Passoré in particular, can not be over-estimated. In 1975 official figures showed 334,715 Burkinabè living abroad. By 1985, this figure had risen to 741,507 (Some & Gbangou 1991; figures are taken from the 1975 and 1985 censuses). Migration figures, however, vary dramatically and the actual number of migrants living abroad is thought to be very much higher than these figures suggest. Some sources estimate that as many as 1 to 2 million Burkinabè live and work abroad (World Bank 1990b). This could indeed be possible given that the Ivory Coast's 1975 census counted 774,101 Burkinabè in this country alone. The majority of Burkinabè living and working in the Ivory Coast originate from the Mossi plateau.

Since colonial times, Burkina Faso has been a source of labour for developing the more prosperous economies in neighbouring countries, and later for armies. During the First and Second World Wars the strongest and the fittest men were enlisted to support the Allied Forces. Following the end of the war, village chiefs were still made to supply quotas of men to help turn the wheels of economic growth in neighbouring French colonies.

In the more recent past, male out-migration has been seen as a response to market forces; a *way of labour reallocating itself more efficiently*. Indeed, bilateral agreements have encouraged labour movements and the Burkinabè economy has become reliant on remittances as a source of income. Remittances are currently estimated to amount to an annual flow of about 8 per cent of GDP (Russell *et al.* 1990). It was only in the last decade that some of the negative effects of this movement on the country were recognised. In the 1980s, steps were taken by the new Revolutionary Government (1983-87) to try to stop out-migration. Social and infrastructural welfare in villages was vigorously promoted to stem the flow of people leaving rural areas.

Internal migration is also prominent in Burkina Faso. Nomadism, commercial trading and seasonal migration have been a way of life for centuries. Spatial mobility is widely recognised as a way of coping with harsh environments. A number of factors have influenced the rise of internal migration in Burkina Faso: the attraction of urban areas; the increasing need for a cash income; and environmental instability (especially declining rainfall) are reasons frequently cited.

Skewed population distribution in Passoré

Passoré is one of the provinces most markedly affected by out-migration (Map 3.3). The 1985 census showed that over 27 per cent of *people born in Passoré live outside the province*. Indeed, according to the 1985 demographic census, Passoré has the 'weakest retention level' in the country (INSD 1990, p.75). As the vast majority of migrants are men, villages are left with a skewed population distribution (Female migration is virtually unknown in the villages studied. The few women who do leave on their own are normally banished from the family and end up as prostitutes in the local gold mines or in the larger cities. Some men do, however, take their wife or wives with them when they leave the village for long periods of time). The demographic pyramid (Figure 3.1) indicates the greater proportion of active women to men in Passoré. Population statistics from individual villages indicate

Toessé during the rainy season

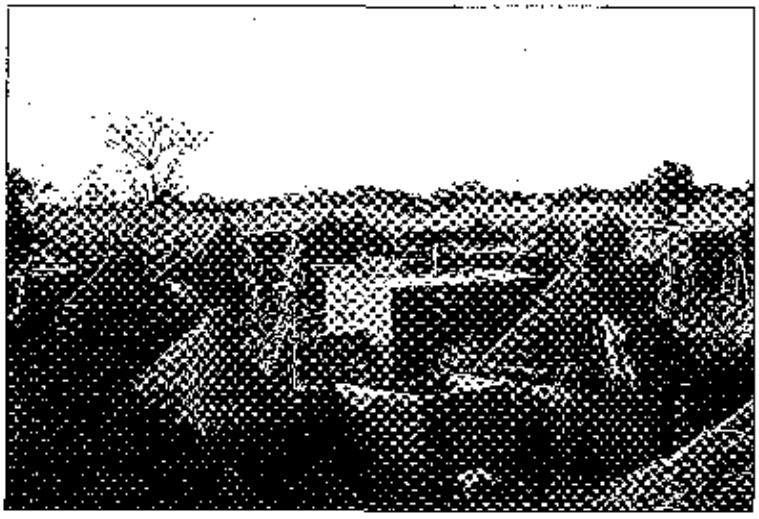


Photo: SOS Sahel

that this imbalance is found almost everywhere in the region (Sawadogo & Larivière 1993).

Population figures from the six villages studied are shown in Table 3.3. In each of the villages there are more working women (aged 15-65) than men. Banlon is severely affected. As can be seen from the figures, approximately two out of every three active workers are women.

Migration in Transition

The research findings indicate that migration is changing. In the past, mainly young men (aged 19-26) left the villages to look for a cash income and adventure. Now both older and younger, married and un-married are also leaving due to necessity. Although the greater proportion of migrants are still unmarried men (one out of every two men aged 20-29 has left the region (Sawadogo & Larivière 1993), other men are joining the exodus. Declining rainfall, poor harvests, greater cash needs, higher prices, unequal terms of trade and lack of any opportunities to generate an income force men to leave to find work. As Zida Issaka from Toessé explained: 'it is the older and the weaker who stay... Although migration is not particularly good for the village, it is the only way we can be sure to have enough to eat.' Ouedraogo Zénébou - a migrant's wife - points out the dilemma which many people face:

The advantages of migration are less than they were.. if a man leaves the harvest can fail..but even if he stays and the rains fail the harvest is still bad. It makes sense for men to leave.

Many voices reiterate the same perspective. Dianda Nadi, the head of a large compound, said:

We prefer to let our younger brothers and sons leave because we calculate that it is worth it. If the harvest is bad in the village, they can help us. They are there if

Map 3.3 Net Migration as a percentage of population in the provinces of Burkina Faso

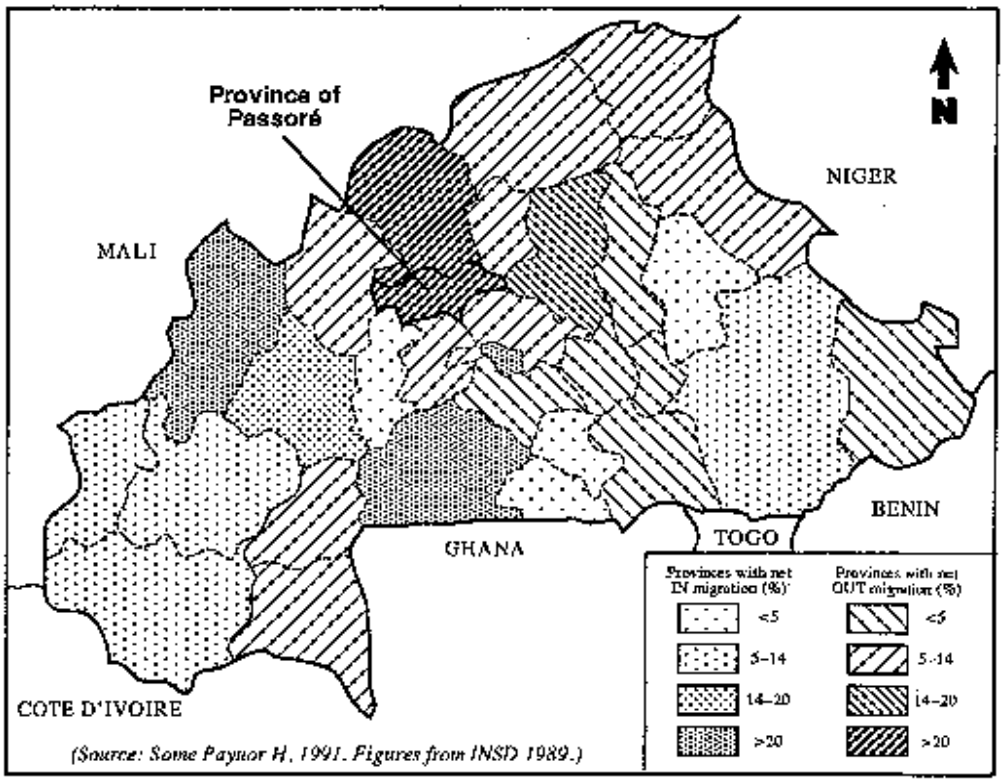


Figure 3.1 Population pyramid, showing distribution by age and sex in the Province of Passoré

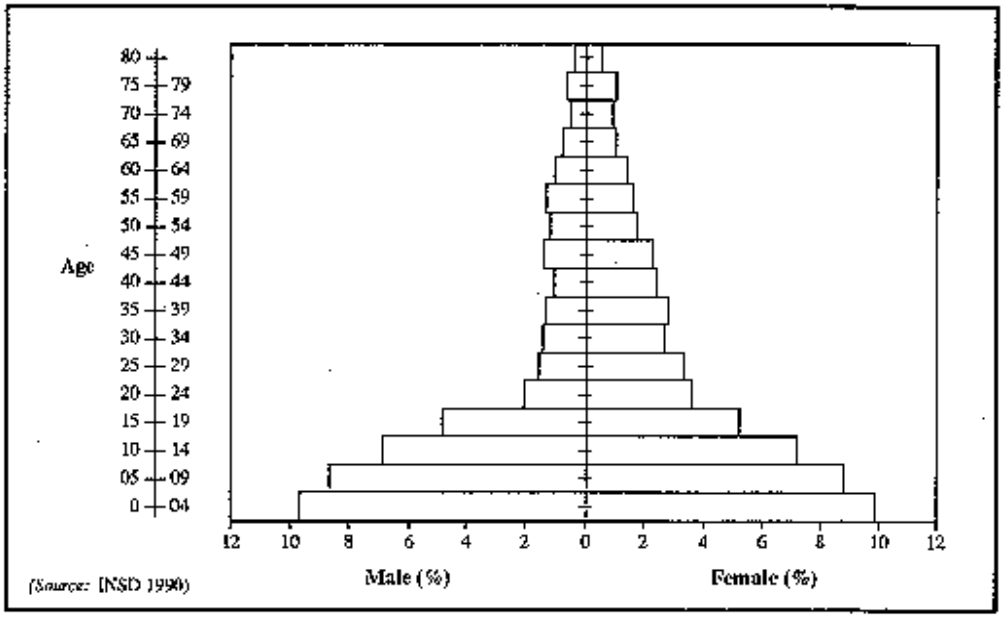


Table 3.3 Population distribution in the villages studied

Village	Aged < 15		Adults of active age 15-64		Aged > 64		Percentage of active population (aged 15-64) who are women
	Boys	*Girls*	*Men*	*Women*	*Men*	*Women*	
Baniou	168	171	99	184	14	15	65
Ouonon	217	174	129	186	13	13	59
Toessé	154	167	106	177	20	23	63
Douré	125	120	76	137	13	17	64
Yargo	124	128	78	135	14	12	63
Gonsin	158	169	109	156	18	10	59

Source: Recensement Général de la population 1985

the situation gets bad. The Ivory Coast has more to offer - there you can work in commercial agriculture.

Oral testimony indicates that seasonal movements, common thirty years ago, have been replaced by longer migrations, first to Ghana and the Ivory Coast, and now only to the latter. As well as this, whole families are leaving permanently (these findings correspond with trends predicated by the World Bank. See Russell *et al.* (1990).). As meeting basic needs becomes harder in Passoré, the requirements for a cash income become greater, and food deficits become more frequent, people are leaving indefinitely. Many families are moving to the more fertile regions of the south and south west of the country. They are unlikely to return. The provinces most favoured are Houet, Sissili, Kossi, Comoé, Monhoun and Kénédougou where there is greater rainfall and more fertile soils. The eradication of trypanosomiasis (sleeping sickness) and onchocercosis (river blindness) from the more fertile southern zones has opened up these areas for resettlement.

Finding work in the dry season is difficult

Photo: Alex Mavro

Ivory Coast was found to be the main destination for migrants leaving the villages: 74 per cent of the migrants' wives interviewed had husbands living and working there (Table 3.4). Most of those (62 per cent) working in the Ivory Coast are self-employed. These men have their own land and are producing cocoa and/or coffee. As would be expected, these migrants are well-established in their host community and a quarter (25 per cent) have a second wife living with them. A smaller proportion of migrants (38 per cent) in the Ivory Coast are employees. The majority of these men are working as paid labourers on plantations.

It was found that male migrants are absent for increasingly long periods of time. The average length of migration is seven years. Some women complained that they haven't seen their husbands at all for over nine years although most men come back for a short stay every two years. As shown in Table 3.5, of all migrants' wives interviewed, 70 per cent had husbands who were long-term migrants (had been away for more than five years). Only 14 per cent were married

Table 3.4: Location of migrants, %

Ivory Coast	74
Bobo Dioulasso	10
Ouagadougou	10
Ouahigouya	2
Gabon	2
Other	2

to medium-term migrants (3-5 years away), 12 per cent to short-term migrants (1-2 years away) and 4 per cent were married to men on seasonal migration (who come back to the village to work for at least part of the year).

Economic conditions are hard in the Ivory Coast and despite the long periods that migrants are away, remittances were found to be low and infrequent. Only 56 per cent of the migrants' wives in the sample said that their husbands send money back to the compound and none of the migrants' wives said that their husbands just send food and/or presents. Of the migrants who send money, 36 per cent also

send some form of clothing. Only one migrant in the sample also sends food back to his family. There are a number of factors which are said to deter migrants from frequently remitting money:

- there is a traditional expectation that a migrant will send money/goods to everyone in the compound - not just to his immediate spouse(s);
- it is often difficult and expensive to send money; and
- it is more prestigious for men to save up and bring back a large sum when they return to their village.

All money and goods are sent back to the migrant's father or elder brother rather than to the migrant's wife (or wives). It is the father who distributes the money among the family. Migrants from the same compound normally pool their remittances and send back money once a year. Compound heads can receive in the region of 30,000-50,000 FCFA (600-1000 FF @ pre-1994 rates) per annum from absent men. This money is divided amongst compound members who said they spend the bulk of it on food.

Table 3.5 Types of migration (%)

Seasonal migration	4
Short term (1 - 2 yrs)	12
Medium term (3 - 5 yrs)	14
Long term (>5 yrs)	70

The pattern of remittances sent to migrants' wives is remarkably similar. None of the migrants' wives interviewed in our random sample receive money regularly and a high proportion (44 per cent) receive no money at all. Of the 56 per cent who receive some money, only a third of these receive clothing as well. Remittances 'in kind' most often take the form of clothes (wrappers). These are sent during feasts (Christmas/Ramadan). If a wife is lucky, she may receive a pair of plastic shoes. No other goods were said to be remitted by absent partners. The average amount of money a woman is given is only 800 FCFA a month (approximately 16FF @ pre-1994 rate). This money is typically spent on buying cloth and additional food for the family. Zida Gomwendé (a returnee migrant and the father of two small children) explained: 'it is a very difficult time for us all.

Photo: SOS Sahel

There are very few lucrative dry season activities for men

We have problems paying for our keep, when we are away, let alone sending money back to others and our families'. Investment in agricultural production is said to be the last thing on people's minds. Another returnee migrant pointed out: 'most of what we make is invested in our social problems ... we have to spend it on the immediate needs of the family'. It remains to be seen what the consequences of the recent devaluation of the FCFA will have for the opportunities open to migrants from this region. However, it is likely that the devaluation will benefit exports such as coffee and cocoa (which are mainly priced in dollars or other hard currencies) and should help migrants working in these sectors.

Focus on the Mossi household

As discussed above, the basic focus of natural resource improvement activities in Passoré, is the fields. Knowledge of the control over and access to different plots of land by men and women is central to an understanding of how migration affects these activities. What follows is an overview of organisation within the compound (*Zaka*) and the division of labour in the fields.

Land and Labour

Mossi families live in extended family groups or 'compounds'. Each compound is headed by the oldest male resident and is made up of patrilineally related men, their wives and children. Each adult man, his spouse(s) and offspring normally make up one or more 'households' within the compound. It was found that there are typically three households in each compound in the sample. This contrasts dramatically with the Burkinabè average (or 1.8 households and 11.4 individuals (INSD 1990)) which indicates the relative strength of the extended family unit in the province studied. On average, each compound is made up of twenty people (the average compound in the sample was found to be made up of: 5 adult women, 3 adult men, 5 male dependents, and 7 female dependents).

Food preparation is shared by women in the compound

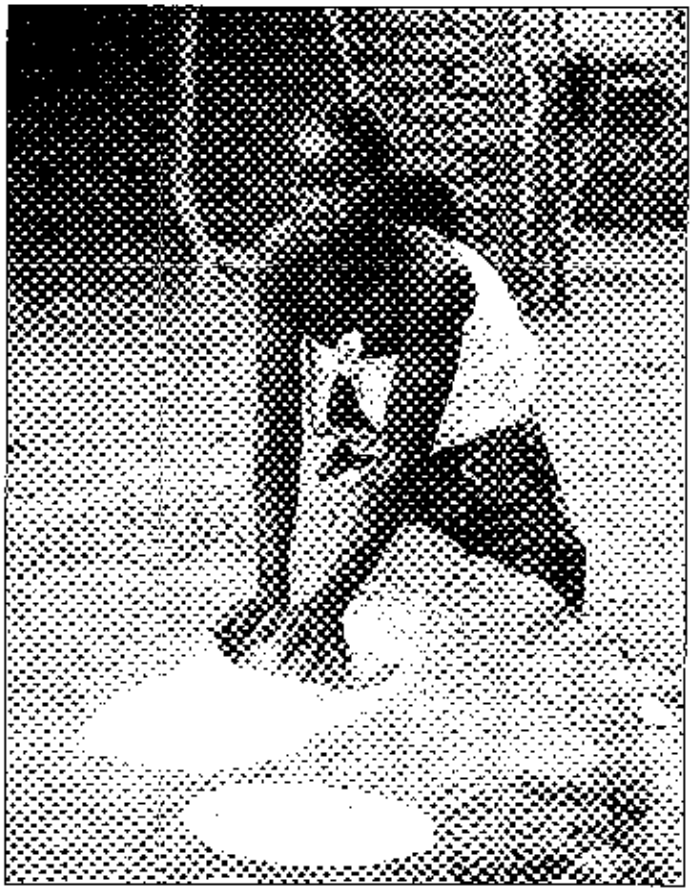


Photo: SOS Sahel

Polygamy is common and men can have up to four or more wives but the average was found to be two. Women in polygamous households have separate responsibilities. Each wife is required to take care of her children as well as to meet certain household obligations.

A compound's access to land depends on when its clan (*boodoo*) arrived in the village and the relationship the clan has with the chieftaincy. The *chef de terre* or earth priest (*Tengsoba*) has responsibility for allocating land to lineages while the compound head divides some of the land among the adult men. The compound's communal fields (*puugo*) are farmed by all family members, whereas individual fields (*beologa*), are farmed by their 'owners'. Men gain usufructuary rights to land through clearance or may hold rights of residence (Simon Batterbury, personal communication) to land around the compound. Women are given access to it by their husbands. Land is not 'owned' in the sense that it can be bought, sold or rented. Under the terms of the 1984 Agriculture and Land Reform Act, the state is the sole proprietor of land. Individual users have the status of tenants. Compounds have access to the land of their fore-fathers: if they require more they borrow it; if they have too much they lend it or leave it fallow. The plots of land can be divided into two categories: those near the village - *champs de cases* - or village plots (VPs); and *champs de brousse* or bush plots (BPs) located approximately 2-5 kilometres away.

Each compound normally farms one communal village plot (VP) and two or more communal bush plots (BPs). The size and number depends on land and labour available to the compound (Land is also frequently borrowed in this region. A study by McMillian (1986)

shows that as much as 56 per cent of land is 'borrowed' in one Mossi village). The compound plots normally total about five hectares but can be as much as ten hectares. Land near the village is highly prized and VPs are typically intensively cultivated. (This is the land that is normally the first to be treated with manure, compost and actively improved). Under the direction of the compound head, VPs are traditionally given over to the production of staple foods, which provide grain for the main communal meal of the day throughout the year. Compound units usually share one communal meal a day. The staple cereal (sorghum, millet, maize) is normally taken from the communal granary which contains the produce from the family fields. Typically, this shared meal is the mid-day meal during the wet season and the evening meal during the dry season. The task of preparing the communal meals is rotated amongst the women in each compound. The grain for the second meal is normally taken from the household granary which contains the product of the husband's farm.

The location, size and quality of land is dependent on differences in gender, age and seniority in a family. The size of a man's fields depends on the compound's access to land and the amount of available labour (i.e. the number of wives and children he has). As with communal plots, each man tries to locate his fields in areas with different topological aspects and soils in order to minimise the risk of crop failure. He will thus try to gain access to: low lying areas (*bas fonds*) where the soil will still be moist even if rainfall is low; a well-drained plot of sandy soil; and perhaps a plot on clayey soil. On this land, men grow staples which are used for household consumption, to meet their social obligations and for sale. Men tend to trade more produce than women (see Table 3.6 below).

As 'strangers' in their husband's compound (and often village), Mossi women have no formal rights but gain access to land through their husbands. The size and productivity of women's personal plots depends on: the goodwill of their husbands; their status (age, wife number etc); land availability in the compound and the amount of time they can find to cultivate. A debate surrounds the fertility levels of women's plots (see Compaoré 1993). The research in Passoré indicated that while women's plots are not necessarily located on marginal land, they are normally located on tired soil. In the Mossi villages visited, women normally have access to two or three plots. These will include a very small vegetable patch near the village and one or two larger plots further away in the bush. The total area of women's land varies from about half to one and a half hectares. Migrants' wives and older widows were found to have access to slightly more land than other women. Both these latter groups have access to the field(s) previously farmed by their husbands. Lack of labour and time to farm, however, means that often only a portion of the land is farmed by the women. The rest of the land is normally reincorporated into the compound fields or, in some circumstances, is left fallow.

As most agricultural tasks are carried out by hand, competing demands for labour are a constraint in this region. Work on family farms is prioritised. Competition for labour is especially fierce during periods of peak labour-demand (such as at weeding and harvesting times). After work on the family fields has been completed, household members are theoretically free to work on their own fields. However, women have to give priority to their husband's land. It is only after working sufficient time on these fields, as well as fulfilling their domestic obligations, that they are able to work on their personal plots. In practice this work is confined to the early mornings (before they are called to work on the collective fields) and late in the evening (after they have been given leave by the men and before they continue their domestic tasks).

An elaborate web of intra-compound reciprocity exists in the villages surveyed. Men often help women by clearing their plots. In return, men receive women's assistance with a myriad of activities on their personal plots including sowing, weeding and harvesting. While men can call on household labour to help them on their personal plots, women cannot so easily do so. Women can, however, receive the support of their children, co-wives, and in some circumstances, female neighbours and/or work groups (*sosoaga*). Child labour is an important component of the productive capacity of compounds in the study. As with adult labour, children's contributions are gender-specific. From an early age, young girls take on domestic tasks within the household. By the time they reach adolescence, girls are able to prepare meals, collect firewood and water and

cultivate the fields. Indeed they can fulfil the complement of their mother's work. In comparison, young male children lead a relatively leisurely childhood. In general Burkinabè boys have a duty to herd livestock, to help their mothers in their fields and collect firewood (McSweeney 1979, Rohatynsky 1988, McSweeney & Freedman 1982).

Where animal traction is available in the compound, men sometimes help women to plough their plots. However only a minority of wealthier farmers in the villages surveyed used a plough to prepare land. Indeed Sawadogo & Larivière (1993) found that only 39 per cent of households in Passoré have ploughs, 29 per cent have carts and 1 per cent have seeding machines. While donkeys and carts are frequently used for harvesting in the six villages where this study was carried out, most agricultural work is carried out with a *daba* or hoe. If ploughs are used to help women, they are mainly used on their groundnut plots because planting takes place after the main work on millet and sorghum has finished.

Women's Work and Household Food Security

Although their access to land and agricultural inputs is limited, Mossi women's contribution to household food security is vital. They are famed for working hard and long hours in the fields, and successive studies on the Mossi plateau have shown that women are often working harder in their fields than men[3]. Not only do women work long hours but the products from women's individual plots are widely recognised as being an important source of family nutrients (FAO 1986, Safilios 1985, Bryson & Saito 1992, Bonou 1988, Rookhuizen 1986, Monimart 1989). Women's personal plots are devoted to the production of vegetables (sorrel, peppers, aubergines, tomatoes, okra, cow peas etc) which are used to make a 'sauce' to accompany the staple diet of *tô*. As well as this, women sometimes grow cereals on their land. The amount of cereals depends on the size and fertility of the land they have access to and the time they can find to cultivate it. Migrants' wives and widows have slightly more 'free' time (because they don't have to work on their husbands' plots) and normally grow maize, millet and sorghum to feed their families. Women have control over the food they personally produce. It is their personal insurance against their children going hungry and is particularly important in the light of evidence that:

> *the higher rates of chronically food-insecure women and children are partially due to the difficulties women and children have in securing sufficient food from their husbands.* (Bryson & Saito 1992, p.14; data supporting this statement are from World Bank 1990a)

The produce from a woman's field therefore supplements the food given to her either by the compound head (if it is her turn to make the communal daily meal) or by her husband (to make the second meal of the day). Women whose husbands are absent on migration have to rely on the produce from their own fields to feed their children for the second meal of the day. In addition, it was found that in Passoré, it is common for the head of the compound to close the family granary for three to four weeks before the onset of the yearly rains. This is done in order to preserve food for the rainy season when everyone is working hard in the fields. During the period when the granary is closed, each household has to meet its own food requirements. If a woman's husband is present, he will of course support her during this time from his own granary. If he is absent, however, she has to fend for herself. Very few migrants' wives (30 per cent) rely on help from their natal parents. This is often because parents live too far away (an average of 12 km) but also because it would be considered shameful. If a single woman is finding it hard to feed her children, she will ask for help from the compound head: 75 per cent of migrants' wives said that, in times of need, they turn to the

Very little food produced by women is sold directly on the market

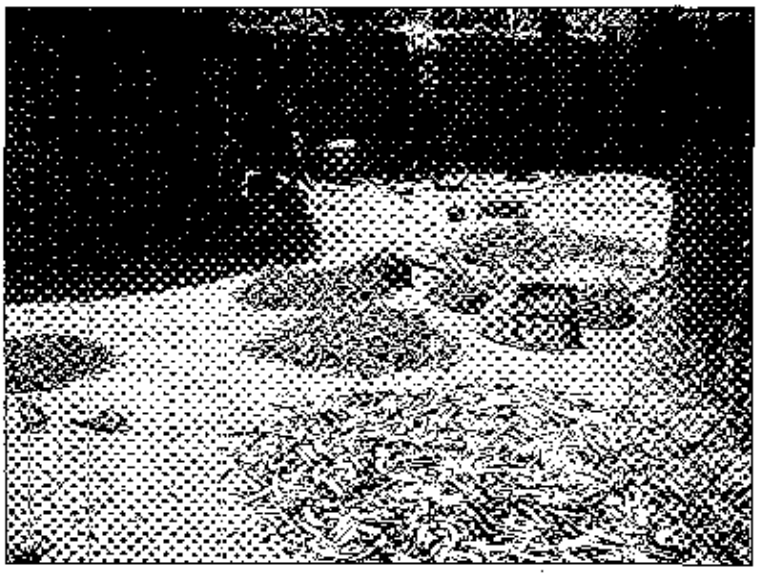


Photo: SOS Sahel

compound head for food; 70 per cent said they would ask him first for money. Despite support from the compound head, it was clear that migrants' wives are clearly in a more vulnerable position than other women. They do not have their husbands' grain to draw upon in times of need. As one woman from Toessé explained:

> *When our millet runs out we ask the compound head for some. If his granary is empty we have to resort to asking our parents or looking for wild berries and fruits in the bush.. What normally happens is we just eat less.*

Very little food produced by women is sold directly on the market. A study of marketing activities, by Sawadogo & Larivière (1993), in Passoré has shown that, between November 1992 and January 1993, women made an average of 403 FCFA (approximately 8 FF @ pre-1994 rate) from selling cereals and 557 FCFA (approximately 11 FF @ pre-1994 rate) from selling vegetables. Equally, women's limited role in livestock rearing is emphasised by the lack of income generated through the sales of animals (Sawadogo & Larivière 1993). These findings were borne out by our research. While larger animals are generally owned by men, some women own smaller ruminants (mainly goats) and poultry, which they sell in times of hardship. The research found that very few women in the six villages studied are involved in selling their labour. Of the 13 in the sample who work for neighbouring farmers: 11 were paid in food alone and 2 were paid with money and food. None of the women were simply paid in cash.

Indeed, women's capacity to generate an alternative cash income is underdeveloped in Passoré: 32 per cent of the women in the sample had no dry season income-generating activity to speak of. However, some women sell processed foods (millet, cowpeas, *jujube* cakes) in local markets within walking distance (4-8 km). Others had alternative ways of generating a little extra cash: spinning cotton, looking for gold and making *soumbala*, potash, and *dolo* were frequently cited. Potash is made by burning millet stalks and filtering water through the ramining ash. It is used to flavour sauces. Making *dolo* (millet beer) is the most lucrative activity in the villages visited. Women can make between 1000 and 1500 FCFA (20-30FF) for each batch. If they have both the means and the market, some women make four batches of *dolo* a month. However, making *dolo* takes up to three days, during which time the mixture is boiled for twelve hours. To avoid market saturation, women in each village take it in turns to produce beer. In comparison, women who make cakes may earn only about 200 FCFA (4FF) per batch. Difficult access to markets and lack of free time to collect wood and water (especially for brewing and food processing) were given as reasons why women do not try to do more. The average amount of money that all women in the survey gained from these activities was 2100 FCFA (approximately 42FF) a month. All women who have an income said that they spend the majority of their earnings on buying extra relish to improve the family's food. The provision of food is the main concern on women's minds. A woman's comment at a group meeting in Yargo says a lot: 'If we have no other means to survive, we eat leaves. There are many of us who go to sleep hungry.'

Male out-migration and women's natural resource management

How does male out-migration affect natural resource management? A number of research scenarios have been presented in the Eastern and Southern African literature. A recurring theme (see Figure 1.1 page 5) is that migrants' wives receive diminishing returns from their land (due to their inability to invest in labour-intensive natural resource improvement activities) and hence seek alternative income- generating activities (by entering into the cash economy or selling their labour). This, in turn, decreases the amount of time women can spend on improving/cultivating their own land and leads to a further loss of productivity. In addition, increasing pressure is placed on natural resources as women seek to supplement their living by selling wood products (eg firewood and charcoal) or by processing food which uses extra biomass (brewing, selling cooked food, etc). See for example Smale (1980), Palmer (1985), Leach & Mearns (1988), Wisner (1987). It should be noted that much of the evidence supporting such scenarios comes from Eastern and Southern Africa.

Soil and water conservation measures or stone bunds in Passoré

Photo: SOS Sahel

As discussed below, a number of social, cultural and practical factors in Passoré were found to interfere with the theoretical cause and effect linkages explained above. While the research supporting the inter-linkages comes from 'high potential' areas of Eastern and Southern Africa, the situation in resource-poor areas such as Passoré was found to be different. Let us first explore land management issues.

Natural Resource Improvement Activities on Different Plots of Land

Over the last thirty years, a wide range of natural resource improvement activities have developed in Passoré. Short-term NRI activities include: applying manure, household waste and compost to fields; green mulching; planting grass lines; applying fertiliser and digging *guendo* (as explained below). Longer-term initiatives are: live-hedging; agroforestry; soil conservation and water harvesting; and laying the land fallow to regain its full nutrient capacity. Table 3.6 summarises women's and men's involvement in NRI activities on different plots of land.

Factors which enable (or constrain) women and men investing in NRI activities on different plots of land are specific to each activity. The following overview summarises the research findings from village plots (VPs) and bush plots (BPs).

Building stone/earth bunds and placing log barriers on the land

Villagers in the area are encouraged by national, international and NGO organisations[6] to be involved in communal stone bunding projects which are largely carried out on family plots nearest the village. Men, women and children take part in these communal activities which are facilitated by the provision of lorries (to transport the stones), picks, shovels, wheelbarrows and gloves. Food for work schemes on the days of communal labour also acts as an incentive for participation. Village

committees chose the land to be treated and the work normally begins in the chief's *quartier*, expanding each year into other sectors of the village. Some women's vegetable plots have been treated with stone bunds, during communal stone bunding activity on the *champs de cases*, but on the whole this land is reserved for family fields and is given over to the production of staples for communal compound consumption.

As studies have repeatedly shown, women and children play an important role in the provision of labour for collecting and carrying stones to make these stone structures (for example, see Yabré 1992, Monimart 1989, Huyskes 1992). Though it is normally the men who are first consulted about these initiatives (in terms of signing agreements and choosing sites) and then trained (in determining contour lines and the technical aspects of construction), women often represent the majority of the manual labour force. Indeed, this work is carried out during the dry season when men are frequently travelling and/or trading. As a result, men often send their wives to represent the compound in the communal village work groups.

While stone bunding activities are now relatively common on land closest to the villages, they have not yet spread to personal plots in the bush. Some of the larger compounds have been able to mobilise enough labour to carry out work on some of their bush plots, but this is rare. Without the help of lorries and the incentive of food-for-work schemes, such labour-intensive activity on bush plots is less attractive. Women who are unable to command the help of compound labour, have, to date, also been unable to build stone bunds on their BPs. Instead women occasionally use temporary measures such as earth mounds or log barriers to stop soil erosion and encourage infiltration.

The absence of migrants from households was not said to influence whether or not women are able to build stone bunds on their land. Although all women are obliged to work on communal, village stone bunding projects; none are, as yet, involved in building stone bunds on their own land. The overall reduction of male labour does, however, mean that women and children are playing a more important role in the provision of labour for communal conservation work. This is seen as a priority by men and women in the communities visited. One woman from Gonsen explained: 'We have worked hard to make diguettes [stone bunds] on men's land but this also helps us because it increases the amount of millet we have in the family granary.'

Table 3.6 Comparison between the NRI activities carried out by women and men on different plots of land

Natural resource improvement activities carried out in the six villages surveyed	Carried out by women on their personal plots	Carried out by women & men on family plots	Carried out by men and women on men's personal plots
Building stone bunds	-	+	-
Making earth mounds	+	-	-
Placing log barriers	+	-	-
Planting *Andropogon gayanus*	+	+	+
Applying fertiliser/pesticides	-	-	-
Adding animal manure	-	+	+/-
Adding waste material	+	+	-
Adding compost	-	+	+/-
Mulching with:			
Loudetia	+	+	-
Karité leaves	+	+	-
millet stalks	+	+	+/-
Planting hedges & trees	-	+	+/-
Digging *guendo*	-	+	+
Practicing fallow	+/-	+	+

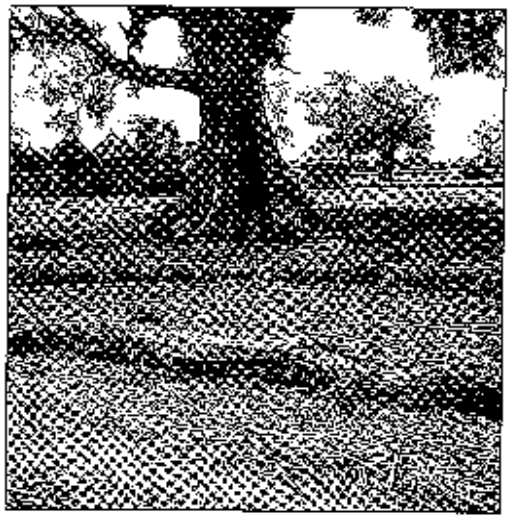


Photo: SOS Sahel

Logs are also used to stem the flow of water

Planting *Andropogon gayanus*

Planting perennial grasses, such as *Andropogon gayanus*, at the edges of farm plots is a popular way to reduce topsoil erosion in

Photo: SOS Sahel

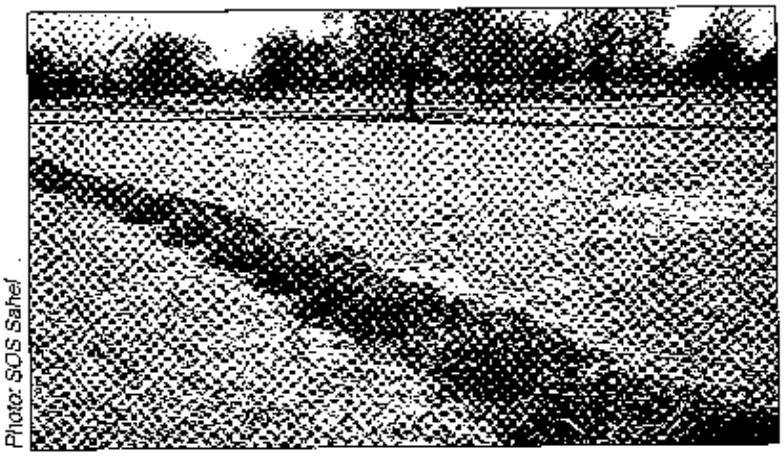


Photo: SOS Sahel

(Top): Women play an important role in conservation work

(Bottom): Planting Andropogon at the edge of farm plots is a popular way of reducing soil erosion

this region of the Mossi plateau. The majority of women in the survey transplant *Andropogon* to their VPs and BPs as well as to those fields managed by the men, because:

- the grass acts as a relatively labour-saving way of controlling rainwater erosion;
- *Andropogon* marks the boundaries of different plots;
- this grass has the double utility of being a thatching grass for roofs as well as being used to make mats and doors for people's homes (*Andropogon* does not self-seed, therefore it does not spread).

Women and men also plant *Andropogon* directly behind stone bunds on family VPs so that the grass lines can take over the function of stone bunds as these silt up. Men also plant *Andropogon* on their personal BPs.

Applying fertiliser/pesticides to the fields

Due to lack of money, no woman in the sample survey had applied chemical fertiliser or pesticides to her VP or BP. Women's income-generating activities in Passoré were found to yield little and certainly not adequate amounts to permit expenditure on farm inputs. Indeed, due to structural adjustment policies and the removal of subsidies, few men in the area are able to afford fertiliser or pesticides for use on their communal land and/or their own plots.

Applying animal manure, waste material and compost to fields

The majority of women questioned said that they put household waste or sweepings (collected from around their compounds) on their VPs, but they lack insufficient amounts to apply this to their BPs. They said that transporting this waste to the bush plots would be difficult without the use of donkeys and carts to which they generally do not have access. Women said that they have rights over household waste which they do not have over manure and compost which is managed by men. They said that they are unable to use manure to improve the fertility of their own land, because priority is given to the communal land and there is not enough to treat all the land farmed by compound members. In the village of Yargo, women talked of 'stealing' small amounts of manure from their husbands to put on their own crops. The men in Douré complained that women also do this. A woman from Baniou explained:

> *It's only the men who can use compost and animal manure to improve the land because they have animals to collect the manure and to transport the compost from the pits. Women are not allowed to use the manure from the animals - this is the property of the men.*

Where there is manure and/or compost available therefore, it is normally spread over family VPs. The quantities of manure and compost are, however, pitifully low. The absence of large herds in the villages and the movement away from the village of the Peulh pastoralists means that it is difficult for farmers to procure manure. Indeed, theoretically the soils in this area require an optimum application of 10 tons of manure/ha to raise productivity from about 400 to 500-600 kg/ha (Brockhuyse & Allen 1988). However, research shows that one beef cow can only produce about 3.2 tons of manure a year when kept tethered at night[5]. Hence one compound, farming an average of five hectares of land, requires about 50 tons of manure (produced by a herd of 15 cattle) to improve its land. Even an insufficient application of 2-3 tons/ha (requiring the manure from about three cattle) is difficult, given that few Mossi, in the villages visited, own cattle and those who do put them in the charge of

the Peulh herders who tend to pasture them away from the village.

Compost is equally insufficient. The local IFAD project works in three of the research villages and trains 'contact farmers' to dig compost pits. However, filling the pits with organic remains and livestock manure is not always easy. As explained above, manure is in short supply and sorghum and millet stalks are required for other purposes (see below) and women want to retain household waste/sweepings for their own plots rather than put them in the pits. Male farmers are encouraged to spread 'Burkina Phosphate' on their pits to facilitate decomposition. Although this was freely available during the first year of construction, it is now only intermittently on sale in the local markets. Despite these drawbacks, composting pits are proving popular as they provide an alternative source of organic matter to improve the land. For a number of reasons, women do not usually receive extension visits or advice on composting (see below).

Mulching with *Loudetia* grass, *Karité* and millet stalks

Instead of adding manure or compost to the land, women have become more involved in mulching activities to increase the fertility of their land. Mulching increases water infiltration, reduces erosion, controls weeds, improves soil structures and reduces the temperature of the soil (Matlon 1987).

Women use mulching techniques on both their village and their bush plots. *Loudetia* grass, *Karité* (*Butyrospemum parkii*) leaves and millet stalks are widely used in the villages surveyed because of their relative abundance and women's access to them. The mulching of millet stalks is not as common as it could be because: they are also used for animal feed; they are now used as a source of fuel for cooking, and they require a lot of decomposition - some farmers simply burn the crop residue *in situ* to save labour. Millet stalks are also used to make potash by older women. If they have time, women and men carry out similar mulching activities on family VPs and BPs which have not been treated with manure or compost.

Planting live hedges and trees

Women do not generally plant trees or hedges on land. As land 'users' rather than 'owners', their involvement in these activities has traditionally been limited. Longer-term investments, such as planting trees, are made by men who are the custodians of the land. Indeed such investments signify traditional rights over the land and proprietors generally do not favour 'users' of land planting trees.

Most women in the survey said they have never considered planting trees, live hedges or agroforestry as ways of increasing their own agricultural production. This is an activity which is being encouraged by local projects, but extension agents normally approach men rather than women. Women see their role as supporting the men in these initiatives.

Due to project support in this area, men are planting trees and beginning to protect naturally regenerated saplings. Agroforestry, however, is not traditional in this area and the low density of soil-improving trees (eg *Acacia albida* and *Balanites aegyptiaca*) on cultivated land is notable compared with neighbouring regions. Agroforestry activities and planting trees along stone bunds are, however, found in the villages where the local IFAD and other projects are active. The Canadian-backed Couvert Végétal project (implemented under the auspices of the Ministry of Forestry and Tourism) has been responsible for tree nurseries and village woodlot programmes in the region. But these activities are largely confined to family VPs and they are still not being carried out on personal BPs.

Digging *guendo*

Guendo are shallow planting pockets. They are similar to the *Zay*, common in Yatenga, but are smaller and therefore require less labour. Handfuls of manure/compost are placed in the pockets. Only women who are able to obtain manure said that they use this technique on their land. *Guendos* are commonly used on family plots and men (who can take advantage of adequate family labour) tend to use this technique on their personal VPs and BPs.

Practising fallow

In the past farmers farmed land for 5-7 years and then fallowed the land for up to twenty years to allow it to restore its fertility. The increasing pressure on land has largely put an end to this practice in Passoré. The research showed that village plots (whether men's, women's or communal) are rarely left fallow. There is a good deal of variation between villages but on the whole the research found that men's and family-farmed bush plots tend to be

left for 3-5 years. Though the bush plots farmed by women are often marginal, insecurity of tenure was often said to impede women from fallowing their land. The women in the survey expressed their hesitance to leave their bush plots fallow because: a) they would have to ask for alternative land from their husbands or the head of the compound; and b) they would run the risk of losing the land (because fallow land is essentially looked upon as land that can be borrowed). In summary:

- The research indicates that women's main activities on their personal plots are mulching, planting *Andropogon* and the use of temporary structures such as improvised earth bunds and log barriers.
- Other NRI activities carried out by women (stone bunding, planting wind-breaks/trees, composting, adding manure etc) are largely confined to family plots in the vicinity of the village.
- Men are actively involved in NRI activities on both family and their own plots. Men take initial management decisions and are the first actors to be approached by intervening organisations.

Male Out-Migration and Women's NRI

As detailed above, migration is a common phenomenon in this region. An average of two adult males (both married and unmarried) were found to be absent from each compound in the survey. Due to the nature of the extended family system, the absence of a spouse does not, however, leave a woman as *de facto* head of compound. Instead she becomes head of the household. This, in itself, has very different implications in the West African, compared to an East, or Southern, African context. A migrant's wife in Burkina Faso is generally left under the charge of her father-in-law (the head of the compound). She continues to farm in more or less the same way as the other women in the compound and has the same duties and obligations. All women try to carry out most of the NRI activities detailed above. Equally, all women (whether wives of migrants or wives of resident men) face three major constraints to increasing their involvement in NRI initiatives on their plots of land: lack of input, insecure tenure rights and lack of time/labour, as detailed below.

Lack of inputs

All women in the villages visited have limited access to agricultural inputs (eg manure, animal traction). Although it is often suggested in the development literature that migrants' wives receive remittances which could be invested in agriculture, this was not found to be the case in Passoré. Remittances are low and infrequent and are sent to the compound head. This money is generally used to augment the family food supply and pay for necessities such as school and hospital fees/medicines etc. Except on rare occasions where migrants have made a lot of money, remittances are generally not invested in agricultural equipment, animals or to employ labour.

Insecure tenure rights

Women's tenurial rights are inherently insecure. Although migrants' wives tend to have access to slightly more land than other women (it was found that 40 per cent of migrants' wives were able to cultivate at least some of the land left by their absent husbands) all long-term NRI activities on women's plots of land are constrained because: 'land owners' tend to discourage 'land users' from making long-term investments in improving the fertility of the land.

Lack of time/labour

Research findings differ from the scenario set out in Figure 1.1, which suggest that migrants' wives seek alternative ways of generating an income, thus impeding labour-intensive NRI activities. There are few income-generating activities open to women in Passoré and the financial benefits of these are generally low. As a result, rather than seeking off-farm income, migrants' wives said that they concentrate more on agricultural production because they have no husband to support them throughout the '*soudure*'(hungry period). Women said that they must produce enough to feed their families without the support of their husbands (this is especially problematic during the time that the compound head closes the family granary before the onset of the rains). Furthermore, migrants' wives do not tend to sell their labour. Though labour is frequently exchanged in this area, the sale (or employment) of labour is uncommon and it is only the very poorest who sell labour and the very richest compounds which might (infrequently) hire it. Indeed, the sale of women's labour is more likely to be related to the socio-economic status of the compound rather than presence or absence of a husband. Lack of time, however, is a problem because, due to migration, all women are spending more and more time farming and

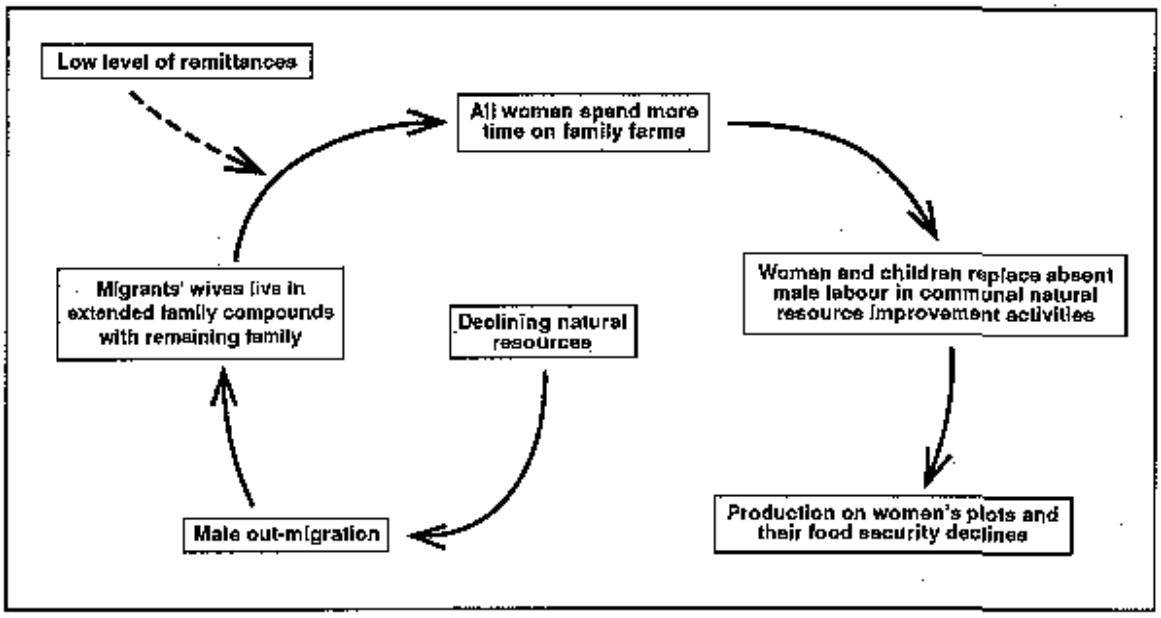
improving communal plots of land. As a result they have less time to cultivate and carry out NRI activities on their own plots of land. As the spokeswoman for the women's group in Toessé explained: 'We must first do all these things on compound fields, then on our husbands fields and, because of this, there is no time to do it on own fields.'

Aggregate labour shortages *are* therefore a constraint and, contrary to findings in other areas of Africa, remittances in Passoré are not used to employ extra labour. As mentioned, few compounds in the sample hire labour. Of those that do, no correlation was found between the number of absent migrants (or the size of remittances) and the hiring of labour (that is, people who are paid in money for their work). Quite the reverse: statistical analysis indicated that compounds hiring labour are significantly more likely to have more workers (and fewer migrants) than those that don't. As remittances are not used to employ extra labour, the 'labour gap' (created by the absent men) is filled by the reallocation of labour at compound level. *Women (who average 62 per cent of the active* labour force in the six villages) disproportionately bear the extra burden. The labour of women and children has therefore become more important to production on family farms and for carrying out NRI activities. As production and fertility on these fields are prioritised, women have less time to spend on their own plots. They do not resent this, however, as they acknowledge that the produce of family fields is their primary source of food.

The 'labour problem' is also felt by men and reflected in the lack of NRI activities they have carried out on their personal BPs. Even though men are able to command labour within the compound unit (and frequently benefit from communal labour groups) there is very little evidence of private individuals building stone bunds on their own bush plots in Passoré. Indeed, in the villages visited during this study, no men claimed to have treated their bush plots with anti-erosive measures[6]. All NRI activities are labour-intensive and clearly, the men who remain in the villages also prioritise production on family fields. . . .

In summary, labour shortage is a problem for all the villages visited. Male out-migration increases the workload of men, women and children, as they try and make up for absent male labour on family fields. Natural resource improvement activities are still carried out because all community members appreciate the beneficial effect these have on crop production. Priority, however, is given to family fields at the expense of women's and men's personal plots. All women, whether wives of migrants *or residents, disproportionately suffer the* cumulative effects of male out-migration. One woman from Douré said: 'It is not a question of interest but a question of obligation. Our main interest is our fields but we have to give priority to other fields...it is our duty'. This attitude is understandable given that the proportion of food given to women by the compound head is dependent on the number of mouths she has to feed, not on the quantity of the harvest (Huyskes 1992, Yabré 1992). Figure 3.2 illustrates this cycle of increasing pressure on women.

Figure 3.2
Male Out-Migration Increases the Burden on Women



The wider effects of male out-migration

While in theory, male out-migration on the scale known in Passoré may be thought to dramatically reduce pressure on natural resources, this was not found to be the case. The research findings indicate that although male out-migration reduces the number of cultivators in the villages studied, it does not significantly reduce the area of land cultivated. A large proportion of men who leave are still unmarried and without land in the village. Furthermore a high proportion of the migrants' wives in the sample said that their husband had no farm of his own before he left. Only 2 per cent of the migrants' wives interviewed, said that all the land previously farmed by their husband now lies fallow (Table 3.7). Most of the land left by married migrants is redivided by the compound head; the migrant's wife (or wives) normally have access to a small portion and the rest of the land is amalgamated into the family farms. People said that only land which is severely denuded is left fallow.

The permanent movement of whole families to the south and southwest of Burkina Faso also reduces overall demographic pressure on natural resources (as there is reduced demand for new land, fuelwood, building materials etc) without significantly increasing the areas of land lying fallow. Older members of the family always stay behind and, if they are unable to farm the extra land themselves, they lend it out to relatives. There is rarely a shortage of people to farm land which is not too severely degraded. As one man explained during a group discussion in Ouonon: 'As many people have left as have stayed. If everyone stayed in the village the situation would be impossible. Even the worst land would be cultivated.'

An intensive study, by Sankara (1993), of land use in one of the six villages studied (Douré) supports this statement: analysis of aerial photographs showed that between 1955 and 1988 the area of land under cultivation expanded by 7 per cent each year: 15 per cent (83 ha) of Douré's territory was farmed in 1955 and 39 per cent (211 ha) in 1988. Over the same period, the area of land left to fallow fell by 68 per cent: 40 per cent (535 ha) of land was under fallow in 1955 and only 27 per cent (146 ha) in 1988. Conversely, denuded, abandoned land rose from 8 hectares to 130 hectares over this period (Sankara 1993, p.29).

Male out-migration does not, therefore, seem to solve the problem of over-utilisation by a reduction in demand. Land which is left by migrants is often tired. That which is fertile, is farmed by other members of the community. Indeed men try not to leave their compounds without ensuring that there is enough labour to continue farming the same land area and adequate labour to feed the family. The research found that the dependency ratio of the household, where a migrant had left, was equal to that of households where the man was still present. This is because, households with a man present tend to have more dependents than households where the man has left on migration. As the Table 3.8 indicates, migrants' wives often have an older child to help them farm the land.

While migration does not seem to have a significant positive effect on resource use in this region, nor does it have a significant negative effect. Remittances from migrants are not regularly invested in livestock which might lead to over-grazing; nor are they generally invested in agricultural technology which increases the area under cultivation. There is no further exploitation of common-lands, nor increased expansion into marginal areas as a result of migration.

Table 3.7 Different uses of the land left by migrants in the villages surveyed by percentage of migrants' wives interviewed

The migrants had no fields before they left	36
Compound members are communally farming all the land left by the migrants	20
The migrants' wives are farming some of the land and the rest is left fallow	30
The migrants' wives farm all of the land	4
The migrants' wives farm some of the land, compound members communally farm another area and the rest is left fallow	6
All the land is farmed by relatives	2
All the land remains fallow	2

The problem of resource use is not solved, but rather moved. Mossi farmers migrating to the south and southwest of Burkina Faso are widely known as destroyers, rather than conservers, of their new environments. In their haste to lay claim to land, by clearing and cultivating, the Mossi migrants are said to have abandoned many of the traditional land-management practices they used on the Mossi plateau. They clear and cut trees and make little provision for natural regeneration. This has given cause for concern in provinces such as Sissili where the population has more than doubled (from 120,000) between 1975 and 1985 as a result of migration (Bassolet *et al.* 1990, p.82)

One of the most pervasive effects that male out-migration has on Passoré is perhaps the way it helps maintain the *status quo*. Although in the past, migration was profitable, it is now little more than a survival strategy. The dramatic fall in the terms of trade received for coffee and cocoa at the end of the 1980s had resounding effects on net profits and wages in the Ivory Coast, for example. Migrants' wages were said to have halved overnight). Migration now provides only enough income to maintain household food security and provide a little extra for use in times of crisis. At the same time, the absence of migrants both diminishes the necessity to significantly alter NRM practices at village level, and reduces the number of innovators who are likely to instigate new practices. As food security has declined, for both pastoral and agricultural communities, the solution has been to leave. However, migration does not solve the underlying problem of resource management. Those left behind carry out NRI activities to the best of their ability but community-level initiatives, to alter individual and village actions significantly, are not changed.

Table 3.8 Dependency ratio of households (within compounds) in the survey

Household structure	Average number of:				Dependency ratio (workers per dependents)[7]
	Male workers	*Female workers*	*Male dependents*	*Female dependents*	
Where the husband is away on migration	0.4	1.3	1.7	1.7	0.7
Where the husband is resident	1.2	1.8	2.7	2.8	0.7

Local project intervention

The IFAD-funded CES/AGF (*Conservation des Eaux et des Sols et Agroforesterie*) project has been operating in the area for five years. The project is active in four provinces of the Central Plateau of Burkina Faso: Bam, Sanmatenga, Yatenga and Passoré. Its main aim is to protect and improve agriculture through long-term initiatives to maintain and enhance soil fertility. To this end it works with rural farmers, building stone bunds, making compost pits, setting up nurseries and planting trees (in fields, village woodlots and along stone bunds). The project is also currently in the process of starting a credit programme which will work through the Government bank - the CNCA (*Caisse National de Crédit Agricole*) as well as through a number of NGOs.

The CES/AGF project works through government institutions and extension networks. The agroforestry programme is therefore channelled through SPET (*Service Provincial de l'Environnement et Tourisme*) agents and the stone bund and compost programme is channelled through the SPA (*Service Provincial d'Agriculture*) extensionists in each Province. Passoré is made up of nine departments, which are together covered by 26 SPA and 12 SPET agents. Four of the SPA and three of the SPET extensionists are women. Each agent works in eight target villages.

Over the years the project has made significant progress in working with villagers to encourage natural resource improvement activities. By the end of 1992 the project had helped farmers to treat over 7000 hectares of land with stone bunds across the four provinces. It had also: trained and helped 3500 farmers to build their own compost pits; set up 95 nurseries; produced over 90,000 tree seedlings and encouraged over 2500 farmers to be involved in promoting the natural regeneration of trees on their land. Limited progress has been made with the live hedging and windbreak programmes but this has been mainly because planting trees and *Andropogon* along stone bunds has been more popular with the farmers[8].

While the project has been successful in working with male farmers, it has not managed to involve women farmers in its NRI programme. Although women are heavily involved in building stone bunds as 'volunteer' community labour, they are not involved in the consultation, training and decision- making that precedes this work. Men sit on the village committees, sign the agreements and decide where to build the stone bunds. Women provide the labour to transport heavy stones but are not trained and empowered in the process - in 1992/93, 94 per cent of the farmers trained in the technical aspects of bund building were men. The compost programme likewise reflects a bias towards men - only 2 per cent of the farmers trained to make compost pits in 1992/93 were women.

Agroforestry interventions face the same difficulty. Each of the SPET agents work with 15 contact male farmers. Women's involvement is limited to participating in training to make improved stoves and, in a few villages, to planting women's woodlots. As one provincial head explained: 'The intention of working with women has not really been put into action...we simply tell the agents to do everything they can to try and work with women.'

The further inclusion of women in NRM

If the struggle against desertification is well directed, it could be an exceptional opportunity for women in the Sahel to achieve genuine social, economic and political advancement. Upheaval is inherent in desertification, but the currently negative, destructive dynamics of the process could bring about radical changes in the social and economic sphere. Advantage could be taken of these changes to construct a new society where women would have more responsibility - provided that action is taken before the environment is irrevocably destroyed and abandonned. This is the hope of all women involved in the fight against desertification. For the future of this region, this hope can not, nor must not be betrayed.
(Monimart 1989, p.12)

As this study has highlighted, there are a number of important reasons why women should be further included in NRI initiatives. Firstly, women want to be involved, although women in Passoré are not yet actively involved in the decision and management processes which underpin NRI activities and wider environmental management decisions. In common with women in many other parts of Africa, women in Passoré are directly affected by environmental decline. They have to walk further to find wood, water and wild fruits. They also are the first to eat less when food is in short supply. Their conscientious attempts to improve the fertility of their own plots of land (as described above) is proof of their commitment and drive. As one female SPET agent suggested: 'women are more motivated because they are the worst affected by the changing environment.'

A second reason is, of course, the magnitude of the female population. Women in the villages visited make up an average of 62 per cent of the active work force, and if male out-migration continues at its current rate, the proportion of women in these villages will increase. Further involving this group could dramatically improve NRI initiatives. Current estimates indicate that approximately 12,000 hectares of land in Burkina Faso are treated with stone bunds each year. This includes NGOs as well as government and international initiatives. At this rate of bund construction, it will take a further 100 years to treat half the present cultivated land in Burkina Faso. The rate will have to be stepped up ten times to check the process of degradation (Warren & Khogali 1992) [9].

Thirdly, women's production is extremely important for household food security. As explained above, the food produced by women on their small plots is a vital source of nutrients for the whole family and especially for migrants' wives and their children. However women's NRI activities on their own land are limited. In addition, where communal land-improvement activities have covered all land near the villages, only a minority of women benefit. According to one study carried out in the neighbouring Province of Bam, only a quarter of women had user rights to land treated with stone bunds (Vlaar & Brasser 1990). In Passoré, as elsewhere, women's larger bush plots remain untouched. As one woman from Toessé explained, 'where there are stone bunds on the land it is mainly land managed by men.. women have some land, but mainly it is the men'. A man from Douré reiterated this:

> *Very few women have benefitted [from stone bunds] because these are on the 'champs de case' and very few women have their fields here.. Women are as active as men. Everything that the men do the women do as well. It's only if they are ill that they don't come to work.*

Finally, the scenario of what might happen if women are not further involved in land management initiatives should be examined. A number of preliminary studies and reports suggest that women's support for soil and water conservation activities on the Mossi plateau will wane. This would make sense: although women invest considerable time and effort in NRI activities on communal land, the amount of food the compound head gives them is related to the number of mouths they are cooking for, not to the size of the harvest. They do not proportionately benefit from increased

yields. It is the compound head who decides what to do with any surplus harvest. Women have the incentive, therefore, to carry out NRI activities to a point where production meets consumption needs. After this point is reached their labour will have negative utility value.

This point has not yet been reached in Passoré. Women are still keen to carry out NRI's on communal land because the food helps the family. But clearly, this situation can not last. If women are not further involved in natural resource improvement decisions and initiatives on their own as well as on men's land, and if they are not trained and empowered in the process, the 'chance' that Monimart speaks of will be lost. Communities will inevitably suffer.

How Can Women be Involved?

There are, however, a number of issues which need to be addressed if women are to be more successfully included in NRI initiatives. Three of the most pervasive are women's insecure tenure rights, their lack of confidence in their own initiatives and their shortage of time. Empirical evidence shows that - given the commitment, time and resources - these problems are not unsurmountable.

Tenure

As explained above, women's insecure tenurial rights can impede long-term NRI initiatives on their own plots of land. This problem can be tackled in the following two ways:

1. Evidence from the neighbouring PATECORE project (a GTZ-funded soil and water conservation project located in Bam on the Mossi Plateau) indicates that with thorough training, support and encouragement, extension agents can work with women to build stone bunds on their own land without interfering in tenure rights. Most women, whose husbands own the land they farm, would be able to build stone bunds on those plots[10]. Women can work together in existing village groups (*groupements feminin*) and, through such activities, gain the confidence and knowledge to undertake their own initiatives to conserve the environment. Education, awareness-raising and sensitivity to gender issues are crucial if men are to be convinced of the importance of supporting women's initiatives without feeling threatened. This is a long, slow, but essential process.

2. Even if long-term efforts are not made to encourage women's NRI activities on their own land, they should be more fully included in NRI on family land. Though women do not control the product from family plots, they are motivated to be involved in land-improvement activities on this land because they (along with the rest of the compound) benefit from improved harvests. Haoua Ouedraogo, from Gonsen, illustrates the perspective shared by most women: 'We have worked hard to make stone bunds on men's land but this also helps us because it increases the amount of millet we have in the family granary.' At present, women are only providing labour to support stone-bunding on family land. Agents are generally not training women in the techniques of stone bunding, involving them in the decision-making which precedes this work, nor encouraging women to participate fully in agroforestry or agricultural intensification programmes.

Training

A key issue to the inclusion of women is training. The messages to invest in and encourage NRI activities are channelled through government extension agents who are generally men, who are over-worked and have no training in gender-awareness. They often feel that working with women is too hard, too difficult or irrelevant. The few female agents there are tend to be even more over-worked than their male counterparts, and they neither have the inclination to work with women. One provincial head explained:

> *If we go slowly we can work with women but we need to put more emphasis on raising awareness of the problems...most agents don't work with women and it is left up to them to decide.*

Working with women would inevitably demand more time and more resources. Agents would need to be retrained and the numbers of female agents dramatically increased. Rural women lack education, support and confidence in their own ability. Working with women's knowledge, building up their confidence and coping sensitively with gender politics in Mossi villages would take time and extra resources. NGO support for government extension serv-

ices and cross-regional training collaboration could help relieve some of this extra burden.

Time

As Figure 3.3 shows, migration from Mossi villages has increased women's workloads. Time is increasingly a problem. There is a striking absence of simple technology in Passoré villages. Arduous household chores are carried out early in the morning or after sundown so that women have time to work in the fields. Women said they regularly spent two hours a day grinding millet. Clearly, women cannot take on much more. The introduction of appropriate labour-saving technologies would have to accompany attempts to include women further in NRI initiatives. Appropriate technologies are, though, not a solution in themselves. Villagers have to manage, repair and maintain these in a sustainable way.

There is clearly a need for a change in approach. Women can, and want to, act to overcome the environment-related problems they face. In each of the villages visited, women as well as men, expressed their concern about the declining productivity of the land. Women, as well as men, want to preserve their communities and maintain agricultural output. At the moment women are not fully participating in decision-making about the management of village environments. Yet, it is imperative that projects work with women as well as men. Involving women at all stages of project activity will require more time, more resources and more female staff.

Conclusions and recommendations

The research indicates that male migration is occurring on a large scale in Passoré. This movement is part of a food security strategy practised for decades but which has flourished in recent years because of climatic change. The migration does affect natural resource management of Mossi communities but not in the ways expected.

- Remittances are not used either by migrants' wives or by compound heads to employ labour to fill the 'labour gap'. Indeed, as a result of migration, women and children have become more of an integral part of the agricultural workforce.

- Migrants' wives are not more likely to seek off-farm income-generating activities than other women. In this part of the Sahel, all women's income-generating activities are constrained by lack of time, lack of water and lack of access to markets.

- As a result of both male out-migration and a growing concern about land fertility, women play an active role in NRI initiatives on family land. However, all women (both migrants' and residents' wives) face a number of constraints to carrying out these activities on their own plots. This could have serious long-term implications for food security because the food produced on women's land is a key element of family food security. As women devote more time to production and improvement of family land, they have less time for their own cultivation. Competition for labour, at times of peak agricultural activity, and women's inability to carry out more NRI initiatives on their own plots are affecting their yields. As yet, women are not trained and supported in carrying out NRI activities on their own land.

- Food security decisions are made at compound level so, while a migrant's decision to leave increases support for the whole compound, the migrant's wife (or wives) and children are temporarily rendered more food-insecure. Women and children's food security remains dependent on their relationship with men, especially the compound head.

- Male out-migration does not necessarily lead to a significant freeing-up of land in the area. The younger, unmarried men who leave have not generally farmed their own land beforehand and the research found that a high proportion (36 per cent) of married migrants were not farming independently either. Men tend to leave only if there is enough labour to continue farming more-or-less the same land area. Hence, labour shortages do not always lead to a contraction in the area farmed but rather to the inability of all groups to farm all land as intensively as is needed.

- Male out-migration has not precipitated conflict over resources between agriculturalists and pastoralists in this part of the Sahel. Remittances are not generally spent on livestock and the absence of men, if anything, may relieve, rather than exacerbate, tensions over access to pasture and other natural resources.

- As male out-migration increases, women in Passoré are becoming an even larger proportion of the active workforce in villages.

One clear result of migration is, however, a degree of inertia in villages. The stronger, fitter men move away leaving older men and the women behind. These people carry on implementing NRI activities with the help of local project intervention. However, the situation is not currently improving. Given this situation, the following recommendations can be made.

The inclusion of women in NRI initiatives

Projects should put rhetoric into practice by promoting the full inclusion of women as well as men in NRI activities. Women must be trained in soil and water conservation, composting and agroforestry techniques. Women's groups (with or without men's groups) should be trained and encouraged to build stone bunds on women's own plots as well as on family land. Though women's plots are often small,

and can be perceived as marginal, this land is vital to the food security needs of the family. Hence, projects attempting to tackle food insecurity should support women's NRI initiatives on their own plots as well. Training and encouraging women in all aspects of NRI activities is indispensable since their involvement in all aspects of village resource management is crucial to present and future family food security. It is not a question of separating genders, or of female emancipation, but one of working with whole communities to maintain and enhance soil fertility.

Training government staff

If projects continue to work through local government extension agents, these should be retrained in gender awareness and sensitivity. Committed agents, who are trained in gender awareness, are a prerequisite of the full inclusion of women in NRI. Attempts should be made to increase the numbers of female staff working at the provincial, project and the field level.

A comprehensive approach to natural resource management

As well as working with villagers to carry out piecemeal NRI activities, projects should acknowledge the need to promote a more integrated approach to resource management in villages. Natural resource management initiatives have not evolved to take account of the increasing pressures put upon them. The conflicts over natural resources amongst the sedentary and the pastoral communities are evidence of the need for a longer-term perspective. The *Gestion de Terroir* approach is finding favour amongst local projects, but often inflexible funding systems, and the paucity of trained staff, prevent substantive action being taken.

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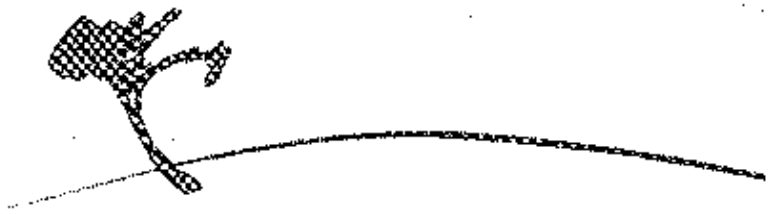

Case Study

The Dogon, Cercle de Bankass Mali

Orlanda Ruthven and
Mahamadou Koné

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Summary

This chapter looks at the livelihoods of Dogon farmers and traders and how migration has been affecting their rural strategies. Migration is placed in a historical context, as indicative of the wider impoverishment of the region, as well as a factor perpetuating this impoverishment. This occurs when migration leads to a shortage of agricultural labour, and also as it engenders a less committed attitude in younger men towards the land. Thirdly, migration, in some cases, exacerbates the insecurity of already poor and vulnerable women. However, the research has found no evidence that migration is at the root of the increase in pressure on natural resources which is currently being experienced in the area, and the advantages and the potential offered by migration are emphasised.

It is concluded that development agencies working in this area should not try to discourage migration, but to work with it: to facilitate, with respect to its advantages, and to inform with respect to its dangers and problems. Finally, it is suggested that migration offers development projects a challenge, which they should try to meet, firstly, by addressing the situation that 'rural' populations are investing much of their time in urban areas, and secondly, by finding effective ways to work with the vulnerable groups in rural villages whose lives are made even more insecure by the out-migration of their relatives.

Introduction

The populations of the Republic of Mali have a heritage of mobility and movement. As well as having been a centre for commercial activity during the period of trans-Saharan trade, the region of modern Mali has traditionally supplied its southern and northern neighbours with slaves or labour migrants. For the majority of ethnic groups of which Mali is composed, this tradition of mobility and commerce is combined with subsistence activities to ensure food supply. This is agriculture, in the case of the Dogon people, in the southeastern part of the country near the border with Burkina Faso. For their neighbours the Peulh, this has traditionally been pastoralism.

These communities have evolved their livelihoods in response, on the one hand, to opportunities which take them outside their villages, and on the other, to the requirements of their subsistence activities, which (in the case of farming) are rooted firmly in the village. The relationship between these migrations and the management of village-based resources however, has changed through the colonial period, since independence, and continues to do so, as women and men adjust to new constraints and opportunities. This research looks at the current state of this relationship, and addresses the following questions:

- Has the relative significance of agriculture compared with migration changed for Dogon farmers in Bankass, and if so, how?
- Are concerns with commercial or labour opportunities leading to a neglect of agriculture and resource management, or are the returns from migration helping to sustain agriculture as far as possible?
- Are the beneficiaries of migration also the ones who suffer its negative effects?
- For the vast majority of women, who remain based in the village, is the quality of their lives enhanced or diminished by this male movement?
- To what extent are migrants an asset to their families, and to what extent a burden?
- Can the current situation of this dual rural-urban livelihood exist forever, or are we witnessing an irreversible transition from an economy of subsisting producers to one of cash-earning consumers?

The Agro-Ecological Context

The research was carried out in part of the zone of Dogon population, in the Cercle de Bankass. This zone comprises the Bandiagara Plateau, the length of the Bandiagara Escarpment and the Seno-Gondo Plain below it (see Map 4.1). Most of this area shares a sahelian climate with unpredictable rainfall, varying from as little as 225 mm in a drought year to over 700 mm in good one; the average is 478 mm. Because of the escarpment, some areas along the length of the cliff have a wetter micro-climate, and rainfall here is significantly higher, averaging 551 mm per annum (Table 4.1 below). For the vast majority of Dogon farmers who have no access to irrigation and stored surface water, agriculture is possible only during the rainy season, limited to four months of the year, from late May to late September.

The average population density of the

Map 4.1
Cercle de Bankass, Mali.

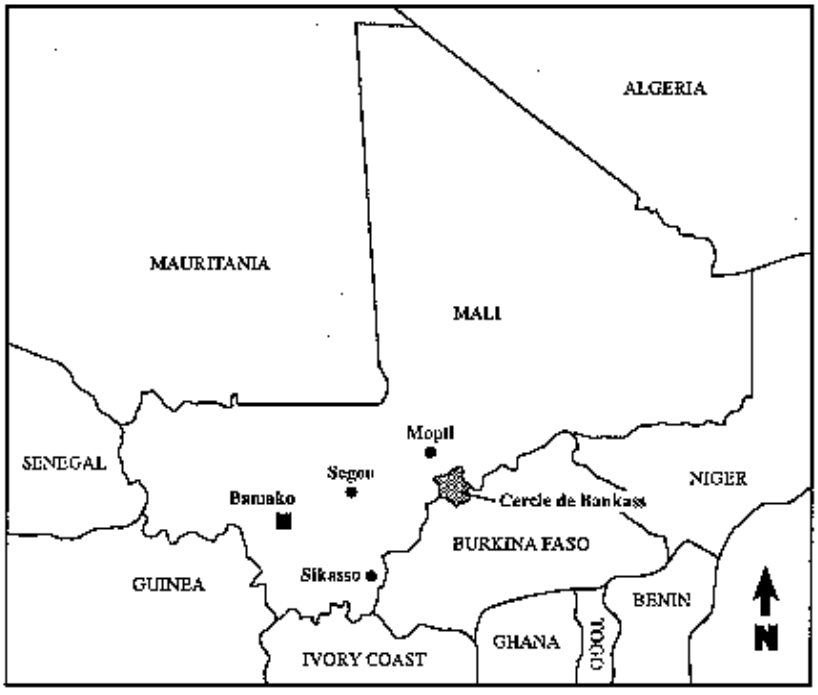


Table 4.1 Comparison of the annual rainfall levels of the arrondissements of Diallassagou and Segué in the Cercle de Bankass, 1980-91

	1981		1984		1987		1991		Average over 1981-91	
	mm	days	mm	days	mm	days	mm	days	mm	days
DIALL.	515	36	323	22	480	33	719	44	478	33
SEGUE	493	41	356	29	694	30	729	28	551	33

region is 25 persons per km². However, in the parts of the region where the research was carried out, this is considerably higher at 37 persons per km². In general, farmers in the area do not experience a shortage of land; rather, the two major constraints are a shortage of labour to work the land, aggravated by out-migration, and the poor quality of available soil. Soil fertility has declined as a result of a trend (recorded over the last 40-50 years) of low rainfall, the decrease of vegetative cover and resulting erosion from wind and rain.

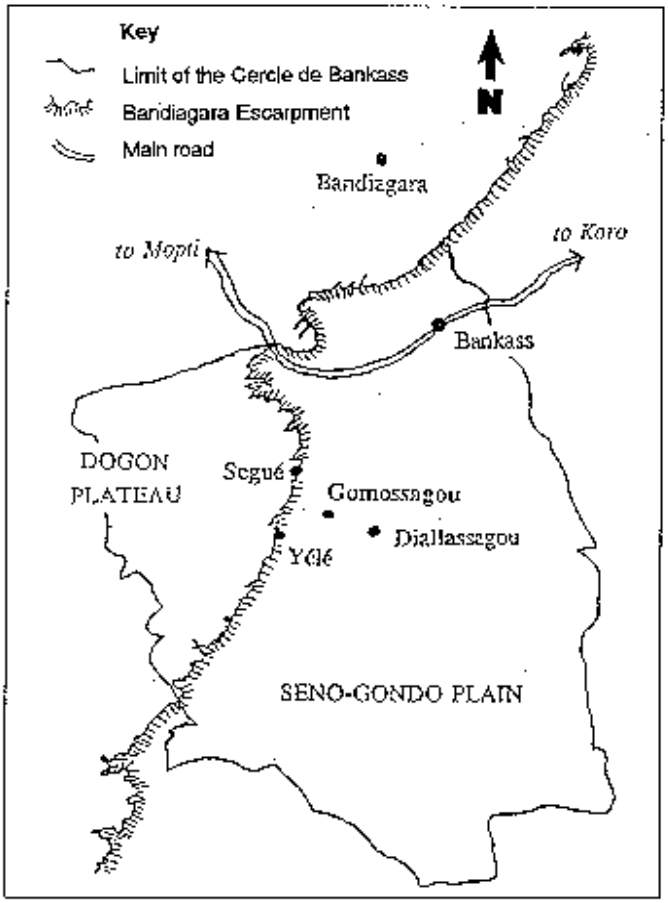
Roughly 20 per cent of the land is cultivated a year, predominantly by Dogon farmers, and roughly 85 per cent of this is given over to millet or sorghum. Since rainfall levels have declined, the sandy soils of the Seno plain have been relatively more productive, and average production of millet per hectare now stands at 600 kg. Other secondary crops grown, which include peanuts and *voandzou* (*Voandzea subterranea*), yield an average of 300 kg per hectare on the sandy plains. On the soils within the micro-climate of the cliff however, millet production is not so high, at 550 kg per hectare, although the yield of secondary crops is typically significantly higher at 400 kg per hectare (SOS Sahel 1992a).

Land which is not cultivated in the rainy season is given over to livestock, herded by Peulh pastoralists and Dogon farmers. The Cercle de Bankass, while it exports millet and sorghum, as well as livestock, must import the majority of vegetables and fruits, dry commodities such as sugar, salt, rice and dried fish, as well as almost all manufactured goods, from the regional centres of Mopti or Sikasso.

The Project Context

SOS Sahel's Environmental Protection Project (PPEB) in Bankass was established in 1991. Before practical interventions were begun, the project staff carried out a detailed research programme, to identify collaborating villages (of which there are eight at present), to acquire data on the knowledge and livelihoods of the Dogon farmers and to clarify their development priorities. To date, a number of programmes have been mobilised. Villages have received wells, to which they have contributed by supplying labour. Women in some villages (including Gomossagou) are taking up offers to buy improved and fuel-saving woodstoves, which have the potential to lighten their workload. In 1993, on-farm experimentation was begun, to test new varieties of forage crops and different techniques in the mixed cropping of millet and cow-peas (*niébé*). The villages studied in this research are also covered by a programme to test ways to improve the regeneration of *Acacia albida* in the fields.

Other programmes underway include literacy in the local Dogon dialects, credit for



Map 4.2 Cercle de Bankass and the villages of Yélé and Gomossagou

women's commerce and agricultural equipment, primary health education, and support for a local radio station. Furthermore, the Project is pursuing research programmes which work towards the creation of a plan for the participatory management of the Baye Forest in the south of Bankass, and the revitalisation and responsibilisation of the *Allanodiou*, village institutions which traditionally monitored social morality and resource use in the pre-independence period.

The Villages Studied

The research was carried out in two villages (Map 4.2), both covered by the Project, in the expectation that the results of the research could help to inform the Project's future interventions. The character of the two villages is very different. The village of Yélé (arrondissement of Segué) lies 50 km from Bankass at the foot of the escarpment, and as such, is within a micro-climate described above. Although rich in resources, its inhabitants are relatively poor in terms of assets and access to cash. The village of Gomossagou (arrondissement of Diallasagou) lies 16 km from Yélé in the Seno Plain, and although natural resources surrounding the village are depleted, its inhabitants are relatively wealthy.

The Dogon Plateau

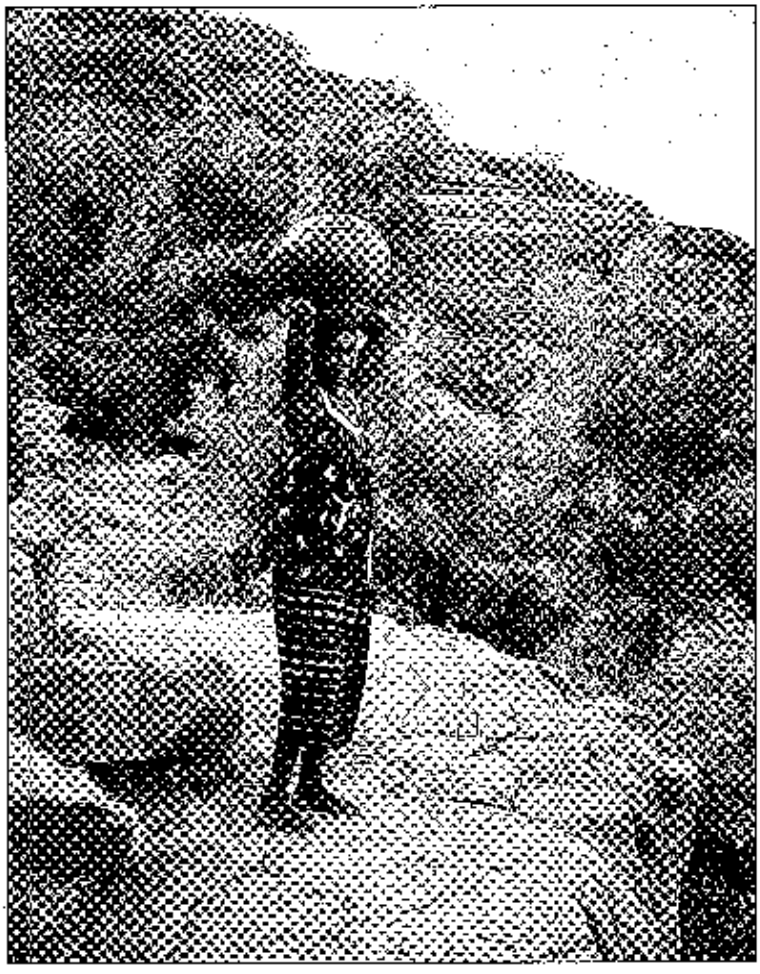


Photo: SOS Sahel

The most notable difference between the two villages is that Gomossagou is a caste village, where the majority of residents are *Kosodjo*, a sub-caste of *griots* or artisans whose occupation is the dying of cloth with indigo. They are also devout Muslims, which is both a mark of their detachment from their Dogon past, and of their integration into a wider, more cosmopolitan society. *Kosodjos* are known today as much as astute and smooth-talking traders, as they are for their craft-work. By taking advantage of entrepreneurial opportunities and sustaining a firm grip on local and more distant markets, but without neglecting agriculture, *Kosodjos* have acquired a wealth and worldliness which marks them clearly apart from their 'pure' Dogon neighbours.

Yélé is a typical *noble* (non-caste, landed) Dogon village. The tradition of agriculture here is much stronger than of commerce, and whereas women have historically engaged in trade in the surrounding region, the task of men is to devote themselves to the land, reproducing their families from its produce. Although Yélé is not resource-poor when compared to neighbouring villages, most villagers struggle with a shortage of cash and few people seem able to accumulate capital. It is this situation which is increasingly driving people to migrate.

The different character of these two villages is reflected in the receptions we were given, as researchers closely associated with the Project. In Yélé, we were welcomed by various men of influence who were courteous but not over-interested in what we were doing, and were happy for us to get on with our work. Although some informants were withdrawn at first, most were happy to talk. After a week of interviews, we had made and discussed in depth with a wide range of individuals. People accepted that, in material terms, we didn't have much to offer: in talking to us, they were doing us a favour.

In Gomossagou, people were immediately keener to tell us things and more interested in what we might be doing there. We were gracefully received by the *chef* who passed us over to his sons and nephews, and after a week or so, we realised that we were being firmly mo-

nopolised by one branch of this dominant family, thus jeopardising our chances to make contact with anyone else. Our 'hosts' insisted quietly that we talk with, employ and ask advice only of certain people, usually their closest relatives.

Research Methods

The fieldwork was done in both villages simultaneously over the research period. In total, about three weeks were spent in each of the two villages, and almost four weeks in Bankass, where the SOS Sahel Project is based.

General survey

In both villages, a survey was carried out to collect figures on numbers of migrants, migrant types, family size, wealth and assets, and 'active' as well as total population figures. This was to supplement the overwhelmingly non-quantifiable data around which the research was centred, and to facilitate access to the relationships between different variables such as migration, wealth and family size. The data were acquired through a combination of two sources:

1. The government population and assets census recorded in May 1993, provided figures for the total population, total population per family, and number of families and households for each village. For Gomossagou, a figure for the total population was lacking, and so this was acquired from an SOS Sahel project document. The census also recorded the assets, in the form of large livestock, small livestock, carts and ploughs, for each family, although it is well recognised that such data, being collected primarily for taxation purposes, are unreliable. Other population figures which appear in this report have been taken from the national censuses of 1976 and 1987, or, in the case of more recent figures, from the SOS Sahel PPBB documents.

2. All other figures used were acquired through group discussions with regular resource persons and representatives from different *quartiers* of the villages, according to definitions and criteria either decided with this group, or in common with the other country case studies. For ease of access, these definitions are repeated below:

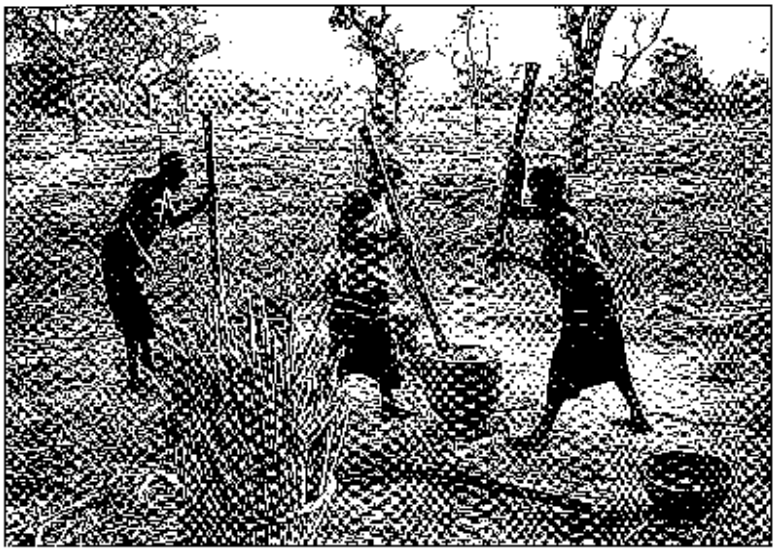


Photo: SOS Sahel

Women pounding millet in Mali

Migrants: those who are currently on migration or have returned to the village at the beginning of this cultivation season. Family experience of migration is judged by the incidence of current migrants in each family, but also the incidence of seasonal ex-migrants from 1991-92 period.

Seasonal migrants: those who went on migration during the dry season and returned to the village for at least some of the farming season.

Short-term migrants: those who were or have been absent from the village for one to three farming seasons.

Medium/long-term migrants: those who were or have been absent from the village for longer than three farming seasons.

Definitive migrants: those who have left the village for good and no longer have a household or household field to farm in the village.

Adult: married or once married.

Young person: not yet married.

Wealth status of families: this was decided by checking the government register of assets against the judgements of the resource persons and representatives present during discussion. The criteria by which families were judged were suggested by these participants, as well as by the researchers. Criteria included: the size of the family, its capacity for agricultural production and capital in grain, its producer : consumer ratio, its success or failure in migra-

tory activities, and its possession of other assets, namely, mopeds, bicycles and sewing machines.

Interviews

In Yélé, 23 individuals were interviewed, 11 of whom were women and among them, 5 migrants' wives. In Gomossagou, 24 individuals were interviewed, including 8 women, 6 of whom were migrants' wives.

Non-structured interviews took up the first ten days or two weeks fieldwork in each village. The individuals were chosen on the advice of resource persons, according to certain criteria specified by the researchers, for example: their status as migrants or ex-migrants; as people who had experienced the consequences of migration; their level of wealth; and their relative success or failure in migratory activities.

Group work

The second half of the fieldwork in the villages concentrated more on group discussions, Rapid Rural Appraisal (RRA) and feedback activities. The composition of groups ranged from 3-4 elderly women, to 20 adult women or men, to large *assemblées générales*. The purposes of meetings held were equally diverse, ranging from broad discussions about resource-use and management, to focused and analytical sessions, to the showing of a play about migration, which was put on by a team of villagers from Yélé.

Comments on Methods

As the research progressed, experience was gained of which topics were better discussed in which kind of setting. For example, it became clear that although people were quite happy to discuss details of ownership and access to resources in groups, they did not like to discuss details about migration so openly. Migration is clearly not public knowledge in the same way as knowledge of agriculture or village resources. Different research methods then, are appropriate for different kinds of topics; groups, where social hierarchies come firmly in to play, are not the best arenas for discussion of sensitive topics like migration.

In what follows, case studies of individuals have been used to illustrate the personal nature of phenomena like 'migration' or 'commerce': people are combining different strategies which together constitute their livelihoods. Though many people appear to be pursuing similar strategies, they are rarely pursuing them in the same combination or in quite the same way. It is these small differences which often explain why one family becomes rich and the next, destitute. It is attention to individual experience or biography which reveals to us the complexity of difference or division within a community, and makes us aware that 'development' can rarely help a whole community at once.

Dogon livelihoods in transition

Village Settlement: Land and Population

Pre-colonial insecurity

The Dogon settled around the fifteenth century along the Bandiagara Escarpment, a niche which, with its overhanging cliff and strategic view over the Seno Plain, afforded the security they needed. Until the French pacified the region in the early twentieth century, the Dogon were threatened at different times by dominant neighbouring groups: in the late eighteenth century, by the slave-hungry Peulh empire of Mecina; in the nineteenth century by the Toucouleur *jihad* invading from Senegal; and in the late nineteenth century, until the arrival of the French, by Mossi raiders from the Central Plateau in modern Burkina Faso.

The Dogon developed a social organisation and a system of production which maximised security against the continual threats of slave-raiding, looting, conversion and colonisation. Villages were built on the slopes of the escarpment, and frequently hidden under the overhanging cliff, and the land farmed was kept as close to the village as possible. The Dogon evolved highly-tuned ways to regenerate and sustain the limited natural resources on which they depended (see below). The land for farming was 'owned' by the founding lineages of the village, and was managed collectively by the village elders (the lineage headmen), who, in the farming season, directed and oversaw the cultivation of this land by able-bodied villagers organised in age sets. Because of the constant threat of raiders roaming the countryside however, families would always farm in groups to protect themselves. The further away from the village, the larger these worker-groups would be. The population of lineages remained fairly stable through the latter part of the pre-colonial period. Van Beek (1993) has suggested this stability may have been partly due to the Peulh slave-raiders, who would capture young men, and barter them in exchange for young Dogon girls, the most fertile members of the population.

Post-colonial expansion

During the first years of the twentieth century, the French occupied the region, defeated its dominant groups and outlawed slavery. These changes removed the constraints around which the Dogon's social structure and resource management had evolved. Dogon communities spread out on to the plains and new villages were rapidly established. The Dogon applied the same principle of reproducing a lineage structure, but this time, to an unrestricted space and with the participation of an unrestricted population. The village of Gomossagou, established around 1900 by four brothers with their families, is a case in point. Large areas of land were claimed by its founders, but because these areas filled up quickly, lineages, or extended families, expanded the village land further and further in order to secure an inheritance for their descendants. Today in the village, there are landless families, the descendants of those founders who failed to secure them adequate land. The colonisation of land, as it has always done, mirrors the reproduction of lineages, and as these lineages expand, so must the land cultivated. Bouju (1984) has explained that such a lineage system is: 'essentially expansionist, since every rise in the male population of a lineage implies the colonisation of new land, always further and further from the village.'

The two villages studied offer a striking contrast in terms of population growth and the corresponding exploitation of land. Gomossagou had reached a total population of 765 by 1977. In 1987 this had increased to 1020 (by 33 per cent), and in the local census conducted in May 1993, the population was estimated at 2000, and so had almost doubled in six years. The land cultivated by the village has not only swallowed up permanent pasture areas, bordering the land of neighbouring villages on each side, but newer villages have also established themselves within this claimed area. Because of population pressure then, the village has been losing land to other villages, as well as claiming new land. Despite this, Gomossagou claims the second largest land area in the Bankass region.

By contrast, the modern village of Yélé occupies almost the same site as it did before the pacification of the region. With a population of 1100 which has increased by only 76 people (7 per cent) since 1977, it still occupies a similar total land area (which includes an area of permanent pasture). The location of this land however, has moved gradually from the plateau to the plain below, in response to the growth of Peulh communities and their herds on the neighbouring plateau.

Management of Woody Resources

Trees, bushes and vegetative cover have a myriad of roles for the Dogon and are well-respected and monitored. Fertilising trees like the *Acacia albida*, *Prosopis africana* and *Balanites aegyptiaca* are valued for their role in protecting crops from wind and enriching the soil. Trees are also valued by farmers for *their shade during the cultivation season. For* these reasons, they are protected once they start to grow in the fields and (as we were told by some farmers in Yélé), sometimes even transplanted in the *lara* fields close to the village. This is done during the rainy season by marking their location and forming a small trench around them to improve the absorption of water. Certain trees which are less valued as soil enrichers are planted in the village, in particular the Neem *(Azadirachta indica)*.

In addition to the benefit of trees in fields, the leaves and branches of trees and bushes are essential fodder for livestock, for example, *Acacia albida* and *Vitellaria paradoxa*. The wood of other trees (like the *Annona senegalensis*) is used primarily as fuelwood with which women must supply their households, both for daily cooking and for many of their income-earning activities. Trees which produce fruit and leaves during the wet season (for example, *Tamarindus indica*, *Lannea acida* and *Adansonia digitata*), are also valued by women who gather these and make sauces, juices and snacks from them (see below). Trees which provide good green wood are valued by artisans to make their tools. Amongst older people in particular, most trees are valued for medicinal properties. Finally, certain trees are essential for the construction of houses, the task of the young men during the dry season.

Given the multiple uses of trees and the many social groups who benefit from them in different ways, it is perhaps unsurprising that these interests sometimes conflict. The *Bwana* tree (botanical name untraced), for example, is protected by leather workers of Gomossagou because it yields a useful glue. Farmers object, *since once these trees are big, nothing will* grow under them, and their fruits are also a nest for worms.

Although trees are usually the usufruct property of the farmer on whose land they stand, as part of the bush, they are treated with a respect which is sustained and enforced by collective village institutions. It is clear that these institutions have declined and lost influence since the great expansion which began in the early colonial period, but especially during the last 20-30 years. At the same time, the combined droughts of the early 1970s and mid 1980s have dramatically reduced the tree cover in the area, particularly out on the plain.

The village *ton* traditionally monitored the exploitation of wood and tree harvests. It consisted of a council of elders who prescribed rules and punishments to offenders, and of a youth brigade which enforced these rules and caught offenders, reporting back to the council. One elderly man in Yélé noted that the demise of the *ton* began when the village descended from the cliff-side:

> *Before, all the village was high up; it climbed up the cliff. If you were breaking the rules, you could be seen from the top of the village: where you left the village and where you came back, was all known: you could be seen. Now the village is dispersed, and it's easy to slip out and around without being seen.*

Acacia albida are protected by Dogon farmers

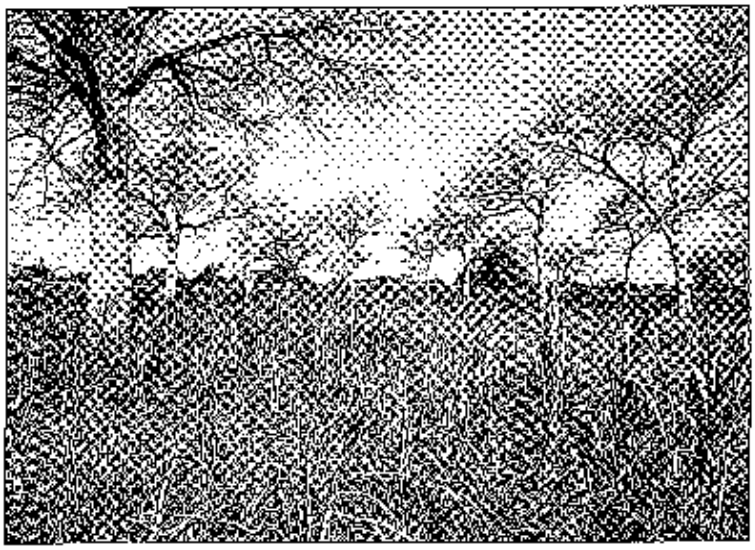


Photo: SOS Sahel

As families moved on to new plains-land, this was managed autonomously rather than under a collective gerontocracy. As the authority of individual families increased, they became less dependent on cooperation with others. Rather than needing to respect a collective institution, extended families centred on fulfilling their own needs and protecting their own resources. The same man goes on:

> *If I approach you today and say that you must pay 2000 FCFA because you broke a rule, you can say that you won't give it! Do you think I'll go and demand the next person for the same thing? Maybe that person will be of the same family as you... The reason for this lack of respect for rules and fines is a lack of harmony amongst people in the village. If I'm your friend or relative, I will struggle for your cause, against the authority of the Ton; in this way, the Ton loses respect*

Although the decline of such institutions may have had its roots in the early colonial period, this was intensified during the repressive regimes which followed independence. Control and responsibility over common property resources was transferred by force from such institutions to the government. Agents of the *Service des Eaux et Forêts*, responsible for enforcing new laws restricting the consumption of woody resources, were usually poorly trained and badly paid, thus apt to enforce many of the rules incorrectly, and to abuse their power. A recent proposal from USAID asserts:

> *As rural populations were prevented from benefitting from the forests, the woody resources of the plains and the trees in their fields, they no longer had any incentive to plant and protect trees. This led eventually to a relationship of fear and antagonism between the forestry agents and the rural people.*
> (USAID 1993, p.9)

The negative effects of this regime on local natural resource management cannot be overestimated. Today in Mali, development programmes are working to take advantage of the decentralisation of authority and responsibility which has occured in the wake of the demise of the last republic. This entails an attempt to revitalise and re-empower traditional 'policing' institutions such as the *ton* and *allonodion*. Although many of the individuals who exercised power as initiates into these organisations are still alive, they are no longer legitimate in the eyes of their communities. A man of middle-age from Yélé explained: 'The rules and customs which used to regulate the tree harvest are still known but they are no longer practised: they are not respected.'

Despite the testimony of local people to the decline of institutions of resource management, Yélé remains rich in woody resources compared to its neighbours. Middle-aged women and men say that they have to walk further today to find fuelwood and construction timber than in their youth; however, given the village's fairly stable population, the pressure on its resources is coming much more from outside - from surrounding villages on the plains (like Gomossagou) where woody resources are in increasingly short supply.

Gomossagou is already very dependent on wood imported from outside its land. Few women here can collect fuelwood locally, and either buy it from local sellers if they can afford to (some of whom come from Yélé), or use millet stalks as fuel instead. Men from the village do not look for construction timber, but always buy it in the local market. Both women and men have witnessed a dramatic reduction of tree and vegetative cover, even over a period of 15-20 years, and this would seem to mirror the rapid expansion of the village. An elderly midwife compares the current situation with how it was in her youth:

> *Finding and supplying wood for the household was much easier when I was young. Before, within a radius of 0.5 km, you could find wood. Now, you can walk 1 km and you still won't find any.*

The blacksmith of the village confirms this:

> *The shortage of wood today gets continually worse... To have wood we must first have trees, but these big trees are disappearing... There is still enough wood, but I know that my father had more available to him than we do, and that my grandfather had even more than that. So I know that for my son and grandsons, the situation will get more difficult, until one day, we will meet a crisis point, and will have no choice but to find a solution.*

During resource-mapping sessions in Gomossagou, large areas of bush were pointed out which the villagers consider to be degraded. The degraded areas closer to the village are said to have become so as a result of the over-exploitation of tree cover. The more distant areas to the northeast and northwest of the village have been degraded by the drought of 1973, during which most of the trees died. Farmers say that the soil in these areas is now barely cultivable: it has become hard and compacted, red and infertile. When the rains come, they run off the soil, causing gulley erosion.

Conclusion

As with other common property resources, the use of wood and vegetative matter has traditionally been the concern of community institutions with the power to restrict and facilitate exploitation. Dependent as they are on the respect of the community for their legitimacy, these organisations have been vulnerable to the social changes of this century, and in turn, resource-management practice has been affected. While Yélé has retained considerable continuity with its pre-colonial past, and villagers here trace vividly the social transformations which have occurred, this is not the case in Gomossagou. Although it is here that people experience a more acute shortage of wood, the founders of this village, in quitting the escarpment and taking on a *Kosodjo* identity, have made a clean break with their Dogon and animist past, and organisations which used to monitor the use of resources are not so easily remembered. Gomossagou has now become a market for woody resources from elsewhere, and its residents concentrate on sustaining a cash flow which can finance these costs.

Agriculture

The importance of agriculture

Agriculture is all-important to Dogon farmers, not simply economically, but in religious and social terms. Through the agricultural cycle, the Dogon have traditionally conceived their own identity and place in a wider cosmology. Through the relationship of their lineages with the land, they tie themselves to it and to their ancestors and descendants. It is through the lineage model that the social organisation of the family, and of production and consumption, is generated.

By appreciating the social and religious character of Dogon agriculture, we can understand why women and men have very different relationships with the land. Land is the basis of patrilineality. Women, through marriage, are destined to be detached from the lineage into which they are born. In their husband's family, they have a prerogative to farm the land, but they never identify with, and derive their power from it in the same way as the men. While being more mobile, married women are also less secure: whereas the well-being of a man depends on the fulfillment of his obligations towards his lineage and land, that of a woman depends on the fulfillment of her obligations towards her husband and his family.

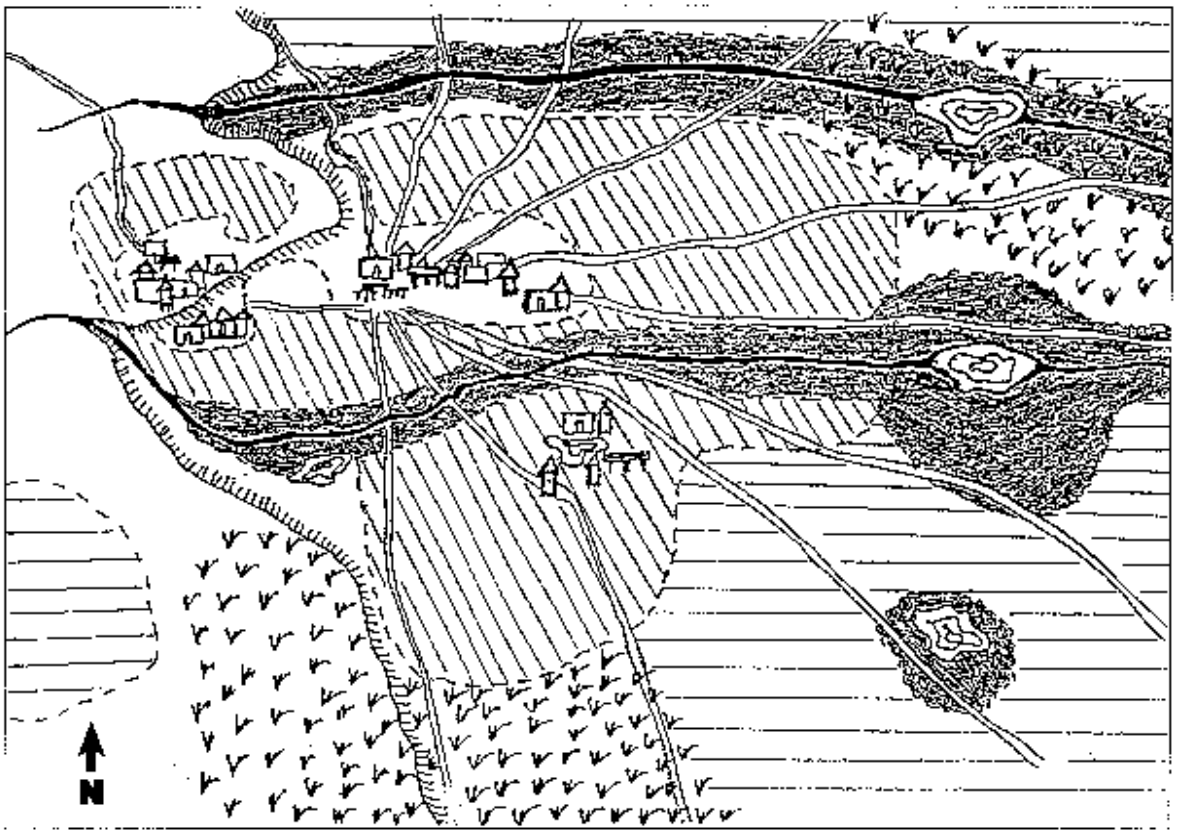
Linked to this is the non-commercial character of Dogon agriculture. Rather than investing in their agriculture to enable the accumulation of profit, the Dogon have historically done this in other ways (see below). The cultivation and distribution of grain is too socially valuable to be given over to personal gain and profit, and it is through the practice of working the land and distributing the yield that family cohesion and social structure are maintained. When grain is sold, it tends to be sold in small quantities to provide cash for immediate needs.

Field types

The Dogon cultivate three types of field:

1. The *lara* immediately surround the village, and are cultivated every year, either with a combined crop of millet and cow-peas, with millet alone, or, on the terraced fields climbing the cliff, with sorghum. They receive most of a farmer's available supply of manure and have a high density of fertilising trees growing in them, particularly *Acacia albida*.

2. The *baracum* which encircle the *lara*, are cultivated with millet and cow-peas for two to four years, depending on the soil's fertility, and are left fallow for three years directly before or after this cultivated period. For one year in every five to seven, they are planted with *fonio*, a grain crop, usually associated with *dah* (*Hibiscus sabdariffa*). Small plots are reserved in these fields for the cultivation of *voandzou*, or groundpeas, by the women. Most farmers are not able to apply stored manure to much of these fields, but after the harvest and throughout the dry season (provided there is adequate pasture



Map 4.3 The Fields and Resources surrounding the Village of Yélé

or fodder in the region), they receive manure from livestock which roam on them.

3. *Bonbo* fields are found only in villages at the foot of the escarpment and are the routes of the streams that flow down the rocks onto the plain during the rainy season. Because of this, they remain more moist and fertile than other areas. They are not fertilised with manure and are planted with peanuts by women.

Field management

A complex division of responsibility and tasks surrounds the management and cultivation of these different field types. Map 4.3 below shows the layout of fields surrounding a Dogon village at the foot of the Escarpment, in this instance, the village of Yélé. The map is derived from the results of group mapping sessions carried out with men and women in the village of Yélé. The map is derived from the results of group mapping sessions carried out with men and women in the village of Yélé.

Family fields (*foroba*)

Lara fields are the fields of the village lineages and were cleared by its founders. They are managed as family fields, and are the responsibility of the family head (who is always male). Much of the *baracum* is also usually family land. During the rainy season, the family head can call on all the able-bodied labour among his sons, brothers and their children, to cultivate these fields. Married women may work in these fields, but are not under the same obligation as men and unmarried women.

Individual fields (*djouforo*)

Baracum land also contains individual fields, which are allocated by the family head to each adult male, and are the responsibility of each male householder. He can call on the labour of his unmarried children, perhaps an unmarried brother or sister living in his household, and to a limited extent, of his wife or wives. One day a week (usually Friday in predominantly Muslim villages) is reserved for the cultivation of these fields through the rainy season.

Women's plots

Finally, women are allocated their own individual plots to farm, in the *bonbo* and in the *baracum* land of their husband's family. The labour on which they can draw is limited to other women who are prepared to help them informally, and their own children, who are already in demand from family and household heads. The prerogative of women to farm their own plots is well-respected among the Dogon, and a husband is said to allow his wife three to four days a week for this.

The agricultural calender

Almost all the agricultural work in Yélé is done with the *daba* (hoe) or by hand. Only four from a total of 94 families had ploughs, and in most of these cases, the ploughs were not used for weeding, but for preparing the land to be sown. In Gomossagou, the vast majority of farmers were using the single-bladed plough, and more often, this was for weeding work rather than preparing the land for sowing. Of 39 large families in Gomossagou, 31 had at least one plough, and more often two or three. The work of women and men, on the whole, divides clearly by crop, with women doing all the work required on their peanut and *voandzou* plots. Only exceptions to this general rule will be pointed out in the following outline.

Preparing the fields

Unless a field has been left fallow for several years, the Dogon do little to prepare their fields before sowing. As a farmer from Yélé said during a group discussion: 'the most important thing here is to get the sowing done, so that we can take advantage of the first rains'. Fields may be cleared and the organic mounds from last year repaired. For *fonio* and *dah*, sown after fallow periods, the surface of the soil may be broken up, and earth ridges are sometimes made around the fields to slow down the run-off of water and to aid absorption.

The most significant preparation applies only to villages with fields on the slopes of the escarpment. This land must be terraced to be cultivable and, each year, these terraces are repaired before the land is sown. As part of the *lara*, these terraced fields are primarily the responsibility of men, and are planted every year with millet and/or sorghum.

Sowing

Fonio is always the first crop to be sown and harvested, and is sown broadcast, sometimes even before the rains have begun. For millet and sorghum, seeds are sown at the arrival of the first rains at the summit of the mounds made the previous year from weeded matter. In the case of grain planted in the *lara*, a small handful of manure is dropped into the hole before the seed. Spacing depends on what the fertility of the soil can support. The secondary crops of peanuts, *voandzou*, haricots and *dah* have a shorter cycle and are planted later at the end of June or early July. Peanut and *voandzou* seeds are sown by women in small pockets to aid water-infiltration. Though women may apply household waste to their plots as fertiliser, they are unlikely to receive manure. *Dah* is sown in the same way sometimes in association with *fonio* and always by the men. Finally, cow-peas are sown during the first weeding of millet: new mounds, in which are gathered the weeds that have grown with the rains, are formed by farmers, who make small dips at their summits and plant the cow-pea seeds, which they then cover with a handful of earth. These will be the mounds on which next year's millet is sown.

Weeding and field maintenance over the growing period

Millet (with associated cow-peas) and sorghum demand two weedings, the first more intensive than the second. When these are done with the *daba*, new mounds are made. Mounds from the previous year allow for sowing with very little other preparation of the soil, and so farmers can complete their sowing as soon as the first rain has come. Secondly, they concentrate vegetative matter from weeds, in the same year for cow-peas intercropped with millet, and the subsequent year, when millet itself is sown on the mounds. Finally, the mounds prevent young plants from being drowned in rain, or covered with sand.

The weeding of grain crops is overwhelmingly a male activity, although women frequently become a crucial source of supplementary labour. Rather than being under any formal obligation however, married women will often stay on in the fields with the men and unmarried women of the family when they have taken out the midday meal.

Organic mounds are the most significant farming technique of the Dogon, and a recent FAO/FENU study (1993) has estimated that between 80 and 90 per cent of agricultural work time, excluding the harvest, is taken up in maintaining the soil in this way. Clearly, it is an immense strain on labour, but the peasants of Yélé insist, in common with the vast majority of Dogon farmers, that they will not replace it with the plough. The farmers of Gomossagou who have ploughs with which to weed the soil, often reserve these for the weaker or less committed members of the family, who are less effective 'mound-builders'. These men drive the ploughs with donkeys or oxen between the lines of millet, uprooting the weeds. Despite the predominance of ploughs in the village, many farmers believe that it is better to weed with the *daba* if time and strength allows. Other secondary crops, including *dah*, peanuts and *voandzou*, also require two weedings, though these are usually less strenuous. In Yélé, women use the *daba* on their peanut and *voandzou* plots, and the men weed the *dah* by hand or with the hoe.

Partly because of the infrequent use of the plough for weeding, Dogon farmers experience labour bottlenecks in late July to early August, and then late August to early September, the two weeding periods. The effects of migration on this tight work-schedule are significant (see below).

Harvesting

Fonio is the first crop to be harvested. This must be carried out while the grain is still moist from the rain, before it falls off the stalks. As well as harvesting their own crops, women will help with the grain harvest, which is the last to be done, by gathering the cut heads of millet and sorghum into heaps, and transporting them to the village. In the case of millet, the heads may be dried on the terraces in the villages before being stored away in granaries. Rather than threshing and winnowing after harvest, Dogon women will be handed heads of millet each day which they must thresh and winnow, and then grind, before cooking. In the case of sorghum, the crop from the more distant fields may be threshed before being brought to the village.

Other soil and water conservation activities

Other maintenance activities are outlined in the sections on woody resources and livestock. Through the rainy season, millet stalks are sometimes used to aid water infiltration, to slow run-off and reflect the strong sunlight away from the young crops (Kassogué *et al*, 1990). Particularly in Yélé, some farmers arrange stone lines along the edge of their fields, though, as these do not always follow the contours of the slope, they are boundary-markers, as much as measures to control erosion. The same can be said of the grass *Andropogon gayanus* which is left on the borders of farmers' fields, but is not replanted.

Conclusion

For Dogon sedentary farmers, agriculture remains their overwhelming source of food (it is only rarely that people buy staples to consume as such). Despite the availability of technologies such as the single-bladed plough, offering the potential to relieve the labour bottlenecks occurring during the weeding periods, and to produce a surplus for sale, most farmers stick to their labour-intensive but highly regenerative traditional methods. This may partly be explained by the crucial role played by agricultural practice in the mainte-

Photo: SOS Sahel

Food processing in Mali

nance of a complex family structure. It is outside the farming season, and outside agriculture, that individuals and households can invest in activities which offer a chance to accumulate wealth, and a release from the tight obligations of the extended family.

Livestock and Pastoralism

The importance of livestock

In the Dogon economy, livestock is the essential complement to agriculture. Whereas agriculture supplies food and sustains a social structure of shared obligation and responsibility, livestock is wealth, individual accumulation, a safeguard against social and environmental contingencies and a source of independence from the obligations of the land. Despite the depletion of herds which occured during the droughts of the early-1970s and mid-1980s, livestock remains the most common form of investment and asset. However, one notable change which has occured over this period, is that holdings of small ruminants (sheep and goats) have increased as farmers have been more able to reconstitute their herds with small, rather than large, livestock (ie, cattle). Cattle herds have also increased over this period, although only marginally.

Despite requiring larger investments and being more vulnerable to drought, cattle are still valued highly by Dogon farmers. Like all livestock, cattle act as family assets to finance ceremonial costs, tax payments, legal costs and as an insurance in times of crisis. But more so than other stock, they are a prestigious form of personal wealth, and for this reason, are shrouded in discretion (and so it is notoriously difficult to get reliable data on cattle numbers in the area). In crisis times (which are frequent), family assets will be used up on essentials, such as bought grain, and when these are finished, individuals are expected to liquidate their personal wealth for the sake of their family. It is at this point that secrecy regarding personal assets is crucial, if an individual wishes to ensure he has something left when the crisis has passed.

The management of large stock is usually the affair of men. Women may own female donkeys and are also frequently responsible for small stock when they are in the compound at night. In Yélé, Christian men rear pigs throughout the cooler part of the year, and they sell the meat over the farming period. It is quite common for women to own cattle and/or small ruminants, though only in relatively small quantities, which reflects their small investment capacity. Whether or not a woman owns livestock, however, their management will nearly always be in the hands of her husband. Although a Dogon man will say that women owners have full rights over what happens to their stock, the situation is frequently ambiguous, and a woman's decision-making power is obviously limited by her absence from day-to-day management.

The Dogon-Peulh relationship

The Dogon have evolved a symbiosis with the Peulh, their pastoralist neighbours, which is crucial for the mutual benefit of both groups. This relationship changes with the season, and is most crucial in the rainy season when crops are growing. During this period, Peulh herders take the Dogon herds a safe distance from the farmed land into fallow or pasture areas. In the case of Yélé, there is a permanent pasture area running up the side of the cliff, which is always left fallow for this purpose. In Gomossagou, as well as in Yélé, an area of farm land is allotted to be used as pasture every three to four years, after which it is farmed again by families and another area is chosen. Not all the stock of Gomossagou can stay in the village region, and villagers say that because of the shortage of wet-season pasture, they are obliged to take their stock further and further away.

After the harvest period, the Peulh herd the livestock back into the village land and direct them onto the *baraoun* fields of Dogon farmers who benefit from their manure. When the dry season sets in, the herds are left to wander to find food. The Peulh are paid through the farming season in millet by Dogon farmers, who may also cultivate or designate a field for them. The milk produced from the herd is shared between the two groups.

Dry season tasks

Although herds of cattle are not given fodder through the dry season, and are left to wander in the bush to find what food they can, they come back to the village at night to be watered from the wells. The work entailed in this watering is considerable, and constitutes the most significant dry-season task for Dogon men. Other livestock, namely horses, donkeys and sometimes oxen for traction, are fed with fod-

der collected by their owners. Most fodder is collected during the harvest period, and includes millet stalks, the dried tops of haricots and peanut plants, various kinds of wild grasses and the leaves of *Acacia albida*. Some farmers may cultivate haricots, or even millet (sown broadcast), as fodder for these stock.

The increase of pressure on resources

As shown in the table, the increase in small-stock numbers in the area has been very dramatic over the last two decades. At the same time, more and more Peulh are now cultivating millet as an insurance against the vulnerability of their herds. The drier weather since the end of the 1960s has led both farming and pastoral communities to spread their risks in this way, and their respective livelihoods, which were formerly complementary, have now become homogenised, and thus compete with one another. The result is that the pressure on fragile resources is rising and seems set to continue to do so. Although the Dogon have always kept livestock, the role this plays for them is undoubtedly changing. For many poorer people, small stock have become indispensable for daily subsistence.

Female Off-Farm Activities

The role of off-farm activities

As sedentary farmers, most Dogon women prioritise their agricultural production over trading and artisanal activities. This is not, of course, true for the *Kosodjo* women of Gomossagou who are full-time traders and artisans. But even for women in Yélé, small, petty-trading activities play a crucial role in the maintenance and subsistence of the household (male and female). As Randall has pointed out, in respect of neighbouring Douentza:

> *The domestic and small income-earning activities of women, and their capacity to manage small household budgets, must be recognised as essential for a family's security. While it is common enough to find a household without a man, there are no households without women.*
> (Randall 1989, p.29)

The changing market

The activities of these women have been influenced by the opportunities and constraints which open and close as a result of changes in the wider economy. As imports have entered the regional markets, and local, small-scale production has declined, women and men have been continually adjusting to a market in which they hold an increasingly weak position, but on which they increasingly depend. This process was well articulated by women, and the following examples show how some women have managed to meet this challenge more successfully than others.

A group of old women in Yélé explained how they used to trade primary products. They would sell those produced locally (leaves, fruits and farmed produce such as peanuts) to regional markets like Diallassagou, sometimes two days' walk away, and buy up imported produce like sugar, dried fish, salt and soap, to resell in local village markets. The women were essential as transporters of goods between regional towns and isolated villages.

With the development of roads suitable for carts and motor vehicles, these women can no longer compete with the marketeers (more often men) from wealthier towns and villages, who have transport facilities and the capital to monopolise large shares of the market. The trading the women now do is nearly always limited to the village itself, as they lack the capital and security to reach further and larger markets.

Women in Gomossagou have similarly witnessed the decline of their local trades, but have perhaps been more successful than those in Yélé at finding alternative footholds. Although the market for their production of dyed *pagnes* (rectangular pieces of material which women wrap around them to wear as skirts) has decreased as imported factory-produced clothes become locally available, women have adjusted to this by expanding into other local markets. These include sugar, salt and dried fish: the very products over which the women of Yélé have been simultaneously losing their grip. Women in Gomossagou are well aware that they have attained a supremacy above other Dogon women of the region. One of them, Moneisa Gana, declared:

> *Women from neighbouring villages see Gomossagou women as brave, rich, adventurous, courageous traders. In comparison, other women are poor. Women here agree with this impression. We are more experienced, successful and worldly*

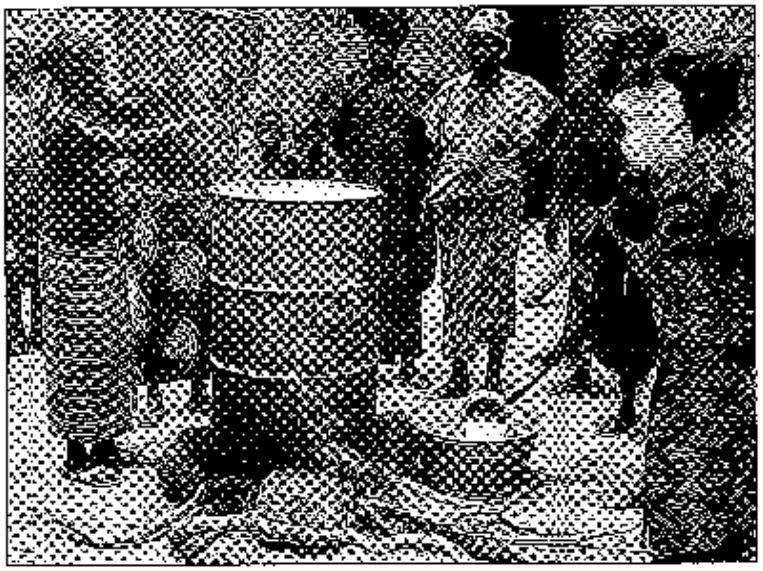


Photo: SOS Sahel

Making dolo in Bankass

than other women; more skilled and intelligent... in all respects.

Activities and the use of natural resources

The off-farm activities of women range from sale of 100 FCFA's worth of peanuts on a market day, to the production of *pagnes* for the biggest markets in the region at 2500 FCFA an item. All of these entail the consumption or transformation of natural resources, but the particular type of activity depends on the micro social and physical environment of the village, as well as the time of year. In Gomossagou, *Kosodjo* women weave, dye and sell *pagnes*. They also buy and sell a huge range of products which they do not produce - dried fish, salt, peanuts, chillies, spices, vegetables, rice, wheat flour, and leaves for sauces. Finally, a minority of women process primary products thus adding value to them, for example, making oil from peanuts.

In Yélé, women sell their secondary crops of peanuts and groundpeas, and many of their other activities involve processing these into different forms: as well as oil, women produce snacks, of peanuts mixed with millet, and of roasted and salted groundpeas. They collect tree leaves and fruits, and sell them neat or as juices, dried spice balls or snacks; they make fried *galettes* or *beignets* from wheat and millet flour sold as snacks; most profitably of all, Dogon women process millet into beer, known as *dolo*.

Almost all the activities of Gomossagou women require the buying of primary products on the market (for example, chemical dye, cotton and peanuts, together with other products bought in for sale, and quite frequently, fuelwood). In Yélé, very few of the women's activities require this investment (only those using wheat flour, sugar and sometimes millet bought on the market for beer production). All other resources used are 'freely' available, time and strength permitting.

There are certain prerequisites to success and confidence in commerce: firstly, a foothold in the community of women traders. In this, *Kosodjo* women in Gomossagou are particularly advantaged as they frequently marry endogamously, and so are able to continue the activities they have inherited from their mothers into adult life. For other Dogon women who marry into a strange village, a way in to the market and the trading community may not be so easy.

Secondly, commerce of any significant scale, requires advance investments and the facility of credit. Women of poor families cannot find the security to take such risks, and their activities will be limited by this. Yama Togo of Yélé describes how she differentiates herself from 'those women who can do commerce and take credit':

> *Women who take credit do commerce for their own, personal little needs. They're not doing it in order to buy millet for their stomachs as I must; their millet is already secure and waiting for them. They can save any profit they make and guarantee any debts. I must live off what I get so can't put any aside. How could I guarantee that I could have a profit with which to repay a debt?*

Finally, a woman must have the time and the ready cash to get to the more distant and larger markets where clients and good prices are guaranteed. The most successful women traders in Gomossagou, for example, visit six markets a week, including Yélé, Tori, Diallassagou and Bankass. For all these journeys, they must pay transport fees of 100 to 500 FCFA there and back. For most women, the time and cash is not available. Kadia Adou from Gomossagou, is one such woman:

> *I have small children, so cannot reach the further markets, or at least not regularly... If I had more time, didn't have the respon-*

sibility of the children and so much domestic work to do, I would do more commerce. My co-wife is in the same situation.

Not all women whose situations are secure enough to allow them to become involved in profitable commerce, will do so. Many women say they feel no need for more money, or that they are lazy. Those who do become especially involved are either secure and sophisticated, ready to take investment risks, or, more frequently, they are women who are undersupplied by their husbands and so obliged to find a way to ensure a small, constant cash supply with which to buy primary essentials to eat (grain and condiments).

Reproducing the Family: The Organisation of Production and Consumption

The organisational groupings by which women and men produce, consume and reproduce, are not static or fixed: which particular grouping is relevant at a particular time will depend on the season and the activity in question.

The lineage or family (male) granary

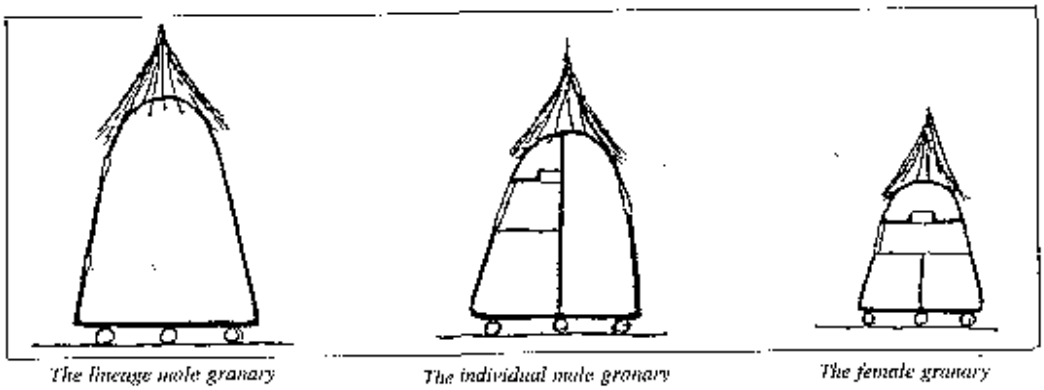
All the able-bodied members of the extended family spend most time during the rainy season farming family fields. The produce of these fields is stored in the lineage granaries which are supervised by the family head. Through the farming season, and during occasions such as ceremonies, all the extended family will eat from this granary. This grouping will usually comprise three generations: a male head, his brothers or sons and their wives and children. This family is not necessarily a residential unit, so it would be misleading to interchange it with the term 'compound'. Midday and evening meals are prepared by each wife of the family in turn (who will receive help from other wives).

The individual (male) granary

For the rest of the year, each adult (married) male of the extended family must supply his own food from the produce of the individual fields he has cultivated with his children during the rainy season. Most men live in residential units with their wife or wives and children, and through the dry season, his wife will prepare the food taken daily from this granary with the help of her children. If she is a co-wife, she will take turns to prepare. The diet over the dry season is usually lighter than during the period of intense farming work, and the evening meal is more likely to be a millet gruel (known in French as *bouillie*).

The female granary

The third type of granary is the woman's. It is smaller than both the male granaries, and is used to store the produce from a woman's plots (mostly peanuts), which she will sell as she needs through the year. In addition to their own secondary crops, Dogon women are sometimes paid in millet for the work they contribute to family fields, and sometimes also for the winnowing work they do for their natal parents or neighbours after the harvest. Some women will thus store millet from these two sources in their granaries. Finally, a woman's personal wealth, such as jewellery and cloth, are also stored here. For the majority of women, the goods stored in their granaries are not to be used on essential foodstuffs (ie, grain to eat and condiments like salt, chilli and dried fish) as these are supplied by their husbands. Rather, these goods may be processed and sold (as described in the last section) to provide a small income with which women can finance domestic needs for themselves and their children (for example, cloth, soap, kitchen equipment and occasional treats). In poorer households, where the husband has failed to supply



The lineage male granary *The individual male granary* *The female granary*

Figure 4.1
Male & Female Granaries

food through the dry season, a woman is frequently obliged to sell these goods to pay for daily food, and/or to cook the millet she has earned to feed her family. If the husband is present, it is shameful for him to oblige his wife to do this. If he is absent (on migration) however, he will not have to endure the shame.

For the Dogon, the social units of production and consumption are not maintained through residence, so much as through a structure of relationships between family members which determines the distribution of, and access to, food. The organisation of consumption directly mirrors the organisation of the land. This is shown in the way Dogon women are paid for their contribution to the family harvest. Because they are not members of the lineage, they remain guests on the land. This means that their control over produce will always remain much more limited than that of lineage members, and also that they lack rights of 'ownership' to the land, even while they are farming it. On the other hand, neither do they share the same responsibility as men to farm and maintain the family fields. When they do, it is as a favour, for which they are often rewarded.

There is evidence, from the villages studied and from the literature on other central Malian communities (see for example Sundburg & d'Agostino 1990 and Toulmin 1986), that this extended family system has been breaking up, and people are farming in smaller units. How and why this might be occurring is a subject for further research and cannot be dealt with in this study. However, such fragmentation could well be a consequence of poverty: as extended families have shown the limits of their capacity to maintain the welfare of their members through recent periods of crisis, men and women have attempted to acquire greater control over their own wealth and security. Whereas dividing up the family land is one way to do this, out-migration in search of waged work is another (Bouju 1984, Sundburg & d'Agostino 1990, Van Beek 1993).

Conclusion

This section has attempted to outline the essentials of Dogon livelihoods and the social organisation of resource management, production and consumption. In taking a historical perspective, an attempt has been made to address the changes now faced by Dogon people and to show how they have been adjusting to the emergence of new constraints and opportunities, and the demise of others. They have proved their endurance in the face of circumstances which only seem to be getting tougher: rainfall which has proved less reliable since the late 1960's, combined with two severe drought periods; the resulting decline in agricultural production, coupled with the growing dearth of income-generating opportunities in the region; the rising costs of living and the decline of purchasing power, combined with the multiplication of needs for cash. The Dogon have coped by spreading their risks over a wider area and repertoire of livelihoods, in order to minimise their vulnerability. This has always been their tendency, and one which, to use Van Beek's words: 'does not make them rich, but has the great advantage of keeping them alive, as it has done throughout the past centuries' (1993, pp. 53-4). One of the most recent ways in which the Dogon have applied this principle is through labour migration, explored in the next section.

Migration today

Using the definition of 'migrant' given in the introduction to this chapter it was established that in 1993, before the farming season, the village of Yélé had 91 migrants from a total population of 1100, or 8 per cent of the total. Almost half (46 per cent) of these were seasonal and almost a third (32 per cent), short-term. The remainder were medium-/long-term (22 per cent). Over half were adults (56 per cent) and the remainder unmarried youths. Of all migrants from Yélé, 15 per cent were women. In Gomossagou, we identified a total of 114 migrants, from a village population of roughly 2000, or 5 per cent of the total. Of these, 25 per cent were seasonal migrants; 42 per cent were short-term migrants, and the remaining third (33 per cent), medium-/long-term. There were 15 per cent female migrants from Gomossagou. The figures obtained from Gomossagou for male and female migrants are surprisingly low. In the case of the men, this may be because those who are away from the village through the dry season are not considered migrants as such, as this is quite a normal and traditional activity for men in the village. In the case of the women, this may have been because many female migrants are away with their husbands and so were not mentioned in their own right, or that others may be married to men from outside the village, and are therefore no longer considered full residents.

Destinations

Today, the most popular destination for migrants is Abidjan. Twenty years ago, Accra or other parts of Ghana were more popular, and there is evidence to show that as Abidjan is saturated and conditions decline, the cities of Southern Mali like Bamako and Sikasso will be the next hosts for migrants from this region. Amadou Gana from Gomossagou explains why:

Migration of young people to Abidjan produces only suffering. If it was me who could decide, I would have none of these people go: it's no longer worth it... People must try to gain cash through commercial activities within Mali. If you've gone all the way to Abidjan and you gain nothing, you have big problems coming home: you'll have to take credit. At least if you've only gone as far as Sikasso, you can walk back! It doesn't make sense to go so far from home anymore.

Migrants from these villages are well aware of the harshness of conditions in Abidjan, and older migrants try to discourage the younger ones from going. Souleyman Garango from Gomossagou said:

When I see youngsters in Diallassagou [catching the weekly bus south to Burkina], *I pity them. They are so determined to get out, but they have little idea of how tough it is out there and how to look after themselves. People cheat foreigners: the Government imposes heavy taxes at every corner... Even on their way back home, the police will harass them, take the money that they've saved and earned, knowing how naive and helpless they are... The police say that this is 'Ivoirian money'.*

Ideals and Objectives

In both villages, people have a clear sense of the 'ideal migration', of how, as a strategy, it should, and had once, worked. This is not the same ideal in both villages however. For young men in Gomossagou, the most commendable way to 'migrate' is to be a successful trader, travelling periodically to southern Mali or into the Ivory Coast to sell produce from the Dogon region (notably

Table 4.2 Total migrants surveyed by age and gender in the two villages

Village	Adult male *(% of total)*	Young male *(% of total)*	Female *(% of total)*	Total migrants *(% of total population)*
Yélé	51 (56%)	40 (44 %)	14 (15%)	91 (13-14%)
Gomossagou	69 (61%)	45 (39%)	17 (15%)	144 (10%)

livestock) and to buy up finished imported products such as Chinese tea, sugar, onions, cigarettes, to sell back home.

Conditions for commerce have undoubtedly grown more difficult:

- since 1968, Malian currency has been tied to the French franc and Malians can no longer profit from the higher wages and prices in the coastal countries; transport prices have rocketed, and now effectively swallow up the little profit which can still be made across the borders;
- purchasing power has declined and the opportunities to accumulate capital have grown more scarce;
- though there is money around, it is increasingly worthless, and the needs of people and the costs of living have multiplied, leading to an ever-increasing need for cash.

In this environment, the new generation of migrants from Gomossagou find themselves in the same position as the other, less worldly Dogon: scratching around for temporary and insecure, unskilled labour work.

The prospect of manual labour is perhaps something to which men from Yélé look with more enthusiasm. Strong and effective physical effort is of the highest value, and as these *noble* farmers traditionally applied this effort to the land in upholding the ideal of the 'brave cultivator', so they reapply it to the work they do in commercial and industrial centres. For people in Yélé, the need for cash is as real as anywhere, but the key to fulfilling this need is through more physical effort. What the old men in Yélé ask for is that a source of waged physical labour for the young men be guaranteed. This is the way to uphold the ideal of the strong and hard-working Dogon.

Although all migrants are informed by such ideals, what they actually expect to achieve through their trips is more tangible and immediate. Universally, people say that they go to acquire cash, which they can't get through agriculture nor through off-farm activities in the region. Some young men from Gomossagou explained:

Agriculture: people cultivating, has always been the tradition. But that's only to eat during the year. You can't say that you can ensure a revenue from the sale of the surplus: it's by no means everyone who can do this.

Beyond this general need for cash, individuals' priorities will depend on their age, their family's security, their gender and position in the family, as well as on what is expected of them.

Migrant Types

Young (unmarried) men

The objectives of young, male migrants tend to be less clear and specific than those of older men. They are more likely to spend what they earn while on migration, and to spend on imported consumer goods which they can bring back to the village. For young people, proving they can cope in a harsh and strange environment, learning cosmopolitan languages such as Bambara and French, and knowing about the ways of the city is as important an acquisition as money or the material goods they bring home. Being under the authority of their older male relatives, young men have little control over this wealth. They hand it to the family head who decides how it will be consumed. At the same time, they have less of a responsibility to contribute significantly to a family's income. If they come back empty-handed, this is, to a degree, acceptable, indeed increasingly expected. However, the possibility of failure is a growing threat, less to a family's security than to the self-esteem and self-respect of these young men in their villages. Souleyman Garango, a leather-worker from Gomossagou, explains:

If you waste money and find no work out there, you are humiliated. You are diminished in the eyes of your peers and society, and obliged to seek help from your family, even for the transport fare home.

Particularly among women, there is an attitude of tolerance towards the often unproductive trips of young men. During a discussion in Gomossagou, a group of married women (the mothers and sisters of these men) agreed that there was one kind of migration which was acceptable: 'those who go once and learn the rubbish of the town, and that the village is where they should be'. The problem, they said, is that some of these young men do well out there, and enjoy the city life too much, and this is a bad thing. The concern of families

and villagers over these men is not so much that their trips will yield nothing but that they will 'get lost' and will not return to farm in the wet season for their families. In short, families risk losing control over their most capable producers.

Adult (married) men

Adult men who migrate face much heavier responsibilities for their families. Broadly speaking, there are two types of adult male migrant: those who willingly take on these responsibilities and manage migration as a family strategy; and those who avoid or reject them, stay away from the village and provide no support to their families. The first type is the more common.

Adult migrants are often one of a number of brothers who take turns to migrate on behalf of the family, and decide together which of them should go when. This is usually a function of age, the younger brothers taking over from the older ones, but also depends on how well they do. It is rare for family heads to go as they have responsibilities at home to manage the farm and the family's welfare.

These migrants have often built up secure contacts and a workbase in their host regions. The work they do is also more varied than the insecure manual labour of the younger men. Jean-Baptiste Fongoro of Yélé, for example, is able to return every two to three years to Abidjan to pick up the same job in the port. Bamoye Karembé from Gomossagou is a *marabout*. For the last eight years, he has been practising his trade in Abidjan 'solving people's problems for an agreed price'. In this region of Mali, he can't charge anything close to what he can in Abidjan:

> *In Abidjan, I might get 50,000 FCFA for something I'd get 1000 FCFA for here... Out there, if people really want something, they've prepared to pay for it. By now, I have built up a reliable clientele; I inform them when I'm coming and they set up other clients for me.*

Moussa Gana is the head of his family in Gomossagou and leaves the migrating to his younger brothers. Two of them go to Abidjan seasonally, to join up with another two who live there permanently with their wives and younger children. They have lived there for 15 years, and for the last six years, have had their own business, cleaning urban toilets with industrial tankers. They now have three tankers (each of which cost three million FCFA), as well as two personal vehicles, and employ six people. With jobs to do every day, their takings are between 25,000 and 50,000 FCFA per day. Though most of this is used for the maintenance of their families, the brothers are able to send a sum home regularly for their family in the village. This is invested in livestock, which can be periodically sold when capital is needed. Moussa Gana says that through the support of his brothers in Abidjan, he and the others are able to stay in the village in comfort:

> *We don't like migration, but how can you make 50,000 FCFA a day here? Maybe you don't need all this to live, but you'd at least need to find a secure way of earning something every week. Those families with no migrants get by with agriculture and a little commerce, and are content with a little: a scanty life.*

So, compared to the young men, married migrants with families have a much clearer idea of what they will do while away, and organise their trips according to more specific needs: for example, when they predict a cash shortage for food, when money is needed for taxes, or to finance particular agricultural equipment.

Families with such migrants manage successfully to sustain migration as a family strategy, to retain the labour of their members even when they are so far away. Though they do not like the idea of their children following in their footsteps, the migrants are pragmatic, admitting that it may well be necessary, to ensure the well-being of families at home. In some cases, they are even preparing their children to go.

The second type of adult or married migrant is described by a group of women in Gomossagou:

> *Old and useless men who taste the city life and never come home properly to the village again. All that they earn, they spend there, and bring nothing back. They have no commitment to their family and village.*

Assa Bombo's husband left Yélé five years ago for Bamako, announcing that he was go-

ing to sell some cattle. She has heard that for the last three years he has been in Abidjan. He has sent her nothing over this period and refuses to come home, despite the efforts of his relatives. He built up capital from local trade before he left, and evidently wanted to try his hand at something more profitable.

Eré Konjo Guindo, an elderly head of family from Yélé, has a younger brother who was away with his wife on migration for seven years: she came back to the village in despair in January 1993, reporting that her husband had no work there and had accumulated huge debts, leaving her no choice but to leave him. His older brother told us:

Before he left the village he was a strong cultivator. He has changed since he's been away: he collected many sums of money from friends and associates and took it to a charlatan who said he could double it. But he lost it all... I've never been to the Ivory Coast, but I would never have thought him capable of doing what he did. In the village, people speak badly of him: the young people say that he's eaten their money.

These examples show that a minority of adult men get involved in migration only at the price of neglecting their families. Because of the shame this incurs in the village however, this behaviour is not common.

Women

We recorded 14 women who were migrants from Yélé last year. Ten of these were young and unmarried. Six of them were seasonal, having returned home to farm. This compares with only one recorded seasonal migrant the previous year (1991-92). Clearly, the migration of unmarried women is very new to Yélé, and has only been known for the last two or three years. The figures obtained suggest that this movement is rapidly escalating, and the fears of the older women interviewed confirmed this.

The figures obtained from Gomossagou suggest that the situation there is quite similar: we recorded 17 migrant women for last year, 11 of whom were young and unmarried, and as in Yélé there had been an increase in seasonal migrants from 0 (1991-92) to 4 (1992-93). However, women have been migrating for at least 10-15 years in this village, and from what people said, we would expect to count many more female migrants than here recorded (see above).

In both villages however, the young women are leaving for the same reasons. The most common of these is a need for cash with which to equip themselves for marriage. The need to generate income is not new for women, and like the men, women have begun to migrate as the possibility of earning capital through local trade has grown slimmer. Further to this, in migrating, young girls are also responding to the poverty of their parents, and their own changing needs.

Most women who migrate are young and unmarried, preparing for marriage. A major concern of mothers has always been to save up for the marriages of their daughters, but recently they have found this more and more difficult. While girls develop more and more expensive tastes, for goods such as imported clothes, kitchenware and shoes, mothers are less and less able to afford such investments. Mme Arama of Yélé describes what a mother was expected to provide for her daughter's marriage. The list includes a silver bracelet, a pearl necklace, several *pagnes* and several tops. Mothers begin preparing for this when the daughter is as young as 2-3 years old. An elderly midwife from Gomossagou comments: 'They want things that they never had when they were young, that their mothers and fathers never had. They're obsessed with having material things and wealth.'

Unmarried girls are obliged to contribute more and more to their own *trousseaux*. For this reason, they go as far as Abidjan with their brothers and lovers, and find work as maid-servants or waitresses, to set themselves up for marriage. Moneisa Gana explained how this used to work for girls from Gomossagou:

Before, it was useful and accepted that an unmarried girl should go, between the ages of 17 and 20. She would go for a maximum of 5 years. Then her uncle or father would go to fetch her, collect her savings and buy with her what she needed for marriage, then bring her home. It was not difficult to find good work: 3-4 years ago, this was at its peak, when perhaps 50 girls in a year were away.

In both villages however, the migration of

young girls has become very unpopular, particularly among the men. In Gomossagou, two years ago, the elders tried to put a stop to it altogether by warning any girl who left on migration that she would not be allowed back into the village. The villagers have seen too much evidence that these trips are no longer productive for young women, and only bring trouble. Moncisa explains: "These days, girls get waylaid; they don't do what they set out to; they get involved in prostitution, disease, pregnancy and make no money."

Moussa Gana gives a male point of view:

I think it's bad for girls and women to go. When girls come back, they no longer fit in with the village life. They behave badly and misunderstand things. They get married but continue to behave in the way of the life they aspire to.

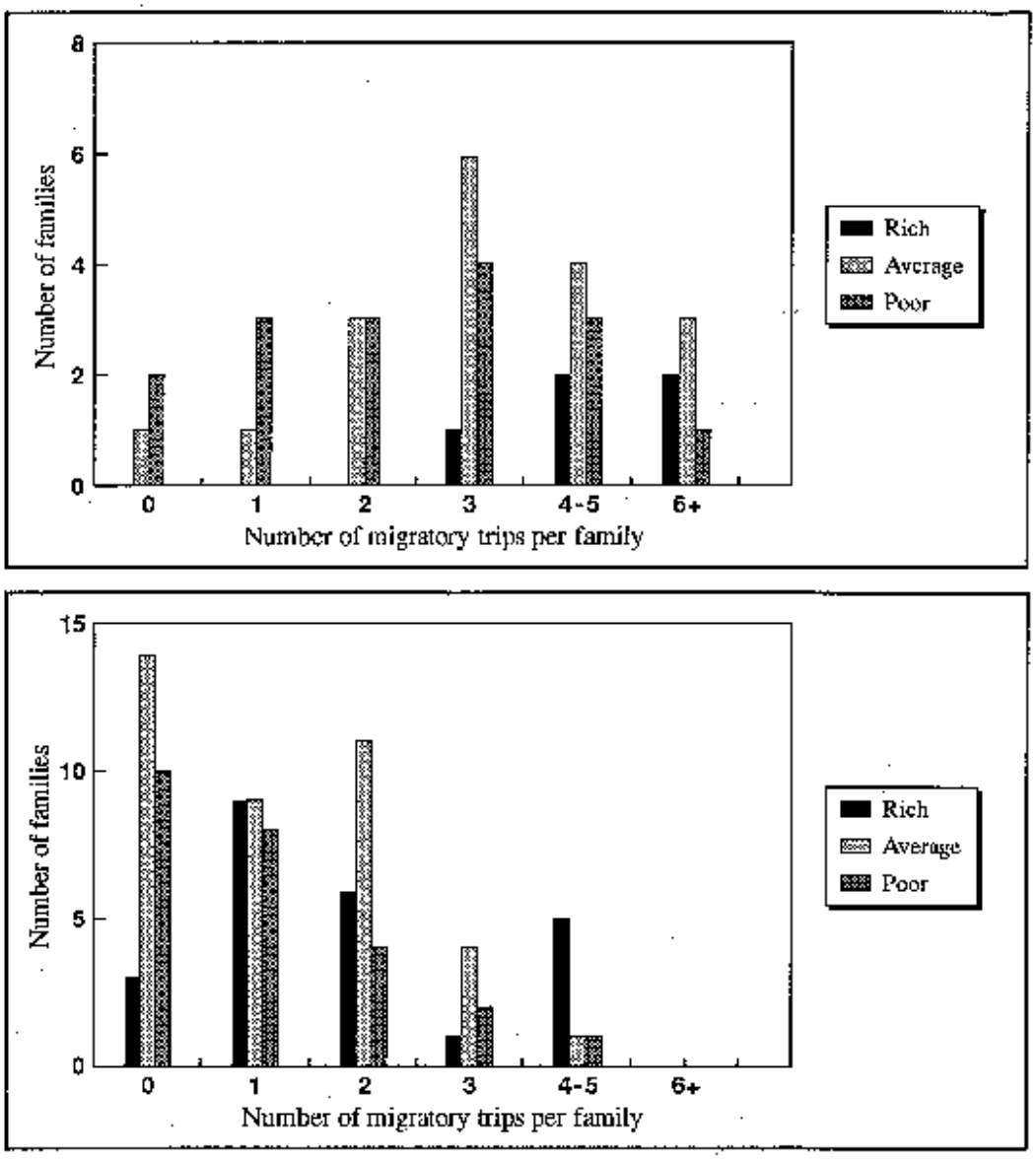


Figure 4.2 Correlation between the number of migratory trips and *wealth status, by family*
(a) The village of Yélé *(top)*
(b) The village of Gomossagou *(bottom)*

To conclude, in Yélé, the migration of young girls is still quite unusual, but mothers appreciate that if there is no way they can finance their daughters' marriages, they must let them go. Mothers recognise that girls are being left no choice but to leave the village, as the demands on their labour and the shortage of cash at home make it impossible for them to accumulate any capital to invest in their marriages.

Migration and Wealth

Migration, particularly among adult men, is approached as a family strategy: a means through which individuals can obtain the capital to enable investments for the family. The investments made from such capital are most likely to be in livestock and/or agricultural equipment. For young men, as well as adults, it is a way by which to accumulate personal wealth, as has traditionally been the case for dry season activities. Furthermore, goods from migration have an important prestige value, making them at least as important as the cash income obtained from the trips. But migration offers no secure guarantee of success, and it is unlikely that it can be fully explained by the wealth it yields. Figure 4.2 shows the correlation between migration and the wealth status of families in the two villages. Principally, wealth and migration are not necessarily closely related, and although migration may lead to, and be facilitated by, wealth very often this is not the case.

Conclusion

This section has shown the diversity of migratory strategies pursued by villagers in this region, and also the diversity of outcomes. The results of the general survey carried out at the beginning of the research period confirm the extent to which migration is practised by families of very different sizes and wealth status. The fortunes and security of families are equally made and broken through migration. Although it is rare to find a wealthy family with no migrants, it cannot be assumed that a family with migrants will not be poor.

The explanation for migration cannot simply be found in the wealth it brings, nor in the need to make subsistence feasable. Migration is a social as well as economic phenomenon and is tied up with social changes in the needs of men and women, in family organisation, and in the environment and economies of the village. Through migrating, people try to fulfill these new needs, as they develop others, to improve their status among their peers in the village, and to create a source of wealth independent of the obligations of family in the village.

Although we can begin to anticipate some of the problems and conflicts which arise as consequences of migration, it would be wrong to consider it a strategy of failure in this region. For many people, it works not because it makes them rich, but because it makes life in the village more feasible, by offering a potential source of wealth which will enable investments of capital, by taking pressure off rural-based strategies of farming and livestock-rearing which have recently proved so vulnerable, and by presenting a structured way in which young people can go to learn outside the village before returning to it as adults.

However, if we wish to judge migration as a strategy, this cannot be done without considering the experiences of those who stay at home.

Consequences of migration for natural resource management in the village

Agriculture

The shortage of male, agricultural labour

Farmers remark that because of the absence of able-bodied family members away on migration, they are able to cultivate less surface area and suffer a consequent fall in production:

> *Everyone in the village has felt the consequences of labour shortages caused by migration, and this means a decline or a lack in the food available to families. This shortage of labour is very real: people stay away often for 3-4 years without returning to cultivate. I myself contributed to this shortage in staying away, but when I realised how much this was holding back production, I stopped, and began returning every year to cultivate.*
> (Amadou Gana, a trader from Gomossogou)

The direct shortage of male labour is undoubtedly the most widespread problem caused by male migration, and was brought up or recognised by virtually all the men interviewed. Table 4.3 presents the number of long-term and seasonal migrants per family in the villages, giving an idea of what shortages people may be facing.

For some farmers, the problem is caused by the non-seasonal migrants (ie, those who do not return for one or more cultivation season). In Gomossagou, over 75 per cent of the migrants were of this type, and in Yélé, 53 per cent. Omar Koné in Gomossagou, for example, has three healthy sons, all of whom spend most of their time in Abidjan. When the rains arrive, only one of them feels obliged to come home and cultivate with his father, and between the two of them, they can barely produce enough to feed the wives and children left in the village by the sons. However, other farmers have male relatives who are seasonal migrants, and even so, cause a labour shortage for their families:

> *These days, in a family, 2-3 members might leave before the second weeding, and leave only one person to cope with the harvest. I've never seen a migrant worry or give money to ensure that there will be enough labour for the harvest.*
> (Ayassin Togo, an elderly farmer from Yélé)

Indeed, every Monday in the two villages, even from as early as the beginning of August, young migrants were leaving the villages for Diallassagou where they could catch a bus to Burkina and on to Abidjan. Many of them had only returned home three weeks earlier.

The brief stays of these young men suggest that the less direct cause of the labour short-

Table 4.3 Incidence of seasonal and longer-term migrants in families, 1991-92

	Gomossagou	Yélé
Total migrants	114	91
Medium-/long-term migrants (%)	75	53
Seasonal migrants (%)	25	47
Families with migrants (%)	92	66
Families with one migrant (%)	10	27
Families with 2-3 migrantsn (%)	46	31
Families with 4+ migrants (%)	36	9
Families with only medium-/long-term migrants (%)	28	19

age is not simply that able bodies are absent when there is work to be done, but that the young are no longer prepared to commit themselves to agricultural work. This, at least, is what their fathers say. An old man in Gomossagou said,

> *Young people say they're obliged to go on migration by circumstance. But this isn't true; they go because they refuse to do the activities and live the way that people used to without thinking or complaint. We used to transport manure on our heads before the existence of carts!*

Ayassin Togo's son returns to Yélé at least once a year, but never in the farming season to cultivate. Since 1991, he has not cultivated. Instead: 'he comes back to get money, and to make [religious] sacrifices in order that he may go back in good health!' Amadou Gana of Gomossagou sums up the problem:

> *Before, people gave themselves to agriculture more than they do today; they worked harder and a greater surface area was covered... The spirit of giving oneself to the land has declined.*

With its high incidence of medium- or long-term migrants and a female population which does not farm, Gomossagou might be expected to experience this shortage more acutely than other Dogon villages. Researchers were told, for example, that peanuts have ceased to be cultivated in the village because of the shortage of labour. However, as outlined above, most farmers in the village have access to a plough, which considerably eases the labour shortage which arises during weeding. They are also much more likely to be able to afford to hire labour to supplement the labour of family members. Farmers in Gomossagou were probably responding to the fall in peanut prices: with the new prices, it ceased to be worth using up scarce labour on peanut cultivation when millet had become more profitable. In Yélé and most other Dogon villages, peanuts are cultivated only be women, so a male labour shortage would be unlikely to affect production of this particular crop.

To conclude, three points can be made:

1. Both villages suffer a widespread shortage of male labour as a result of migration, and the impact that this has had on production should be seriously considered. Although (as examined in the next section) some farmers - particularly in Gomossagou - have the capacity to replace this labour, other individuals are being left insecure and vulnerable as a result.

2. Because the Dogon carry out very little agricultural work in the dry season (for example, soil conservation and preparation techniques), the effects of male absence during this period are not serious, as to a large extent, seasonal migration (if it really is seasonal) can fit with the traditional dry season social life of the Dogon. The shortage then, derives from longer-term migrants, and from seasonal migrants cutting the farming season short.

3. The labour shortage discussed here is of male labour among men. This is because it is men who are most concerned about and affected by the absence of other men. As is shown below, the burden on married women is sometimes increased because of the absence of men, but only indirectly. Their workload is much more directly affected by the departures of unmarried women on migration.

The replacement of agricultural labour

Although all families with male migrants will suffer a lack of male labour to some extent, they have very different capacities to fill this 'labour gap' through other means. Absent male labour can be replaced in three ways: through labour-saving equipment such as the plough; through the hiring of waged labourers in the area; and through the members of the family and household who remain behind.

Labour-saving equipment

A priority for most migrants is to finance agricultural equipment through their trips. In Gomossagou, this means, above all, a single-blade plough. The village contains roughly 95 ploughs for an active male population of about 500, or almost one plough to every five users. Migrants often acquire ploughs for their families to make up for the labour they lose, and sometimes to lessen their obligation to return in the farming season. Allaye Tapeli, for example, an ex-trader from Gomossagou, has a brother who refuses to come home and help on the farm. Although he sends no money, he has sent a plough to ease the shortage of labour caused by his absence. For other fami-

lies, the cash flow afforded by migrants enables the family head to finance the purchase of ploughs, and of chemical fertiliser as a supplement to the manure of livestock herds.

In Yélé, the equipment financed by migration is more likely to be in the form of carts and traction animals to pull them (usually donkeys, occasionally horses). Ploughs and chemical fertiliser are rare in this village. While there are only six ploughs - three of which belong to one family - there are a total of 63 carts in the village, and with an active male population of 356, this means one cart for every 5-6 users. In Gomossagou, the ratio is not quite so favourable: with a total of 77 carts, there is roughly one cart for every 6-7 users. Carts, like ploughs, are crucial in saving labour time. At the beginning of the agricultural season, they are used to transport manure to the fields and to transport drinking water in barrels to new land to be exploited. During the harvest period, they have become crucial for transporting both harvested grain, and the residues used as fuel and animal fodder, back to the village. Furthermore, carts are extremely useful throughout the dry season to carry water during the construction and repair of houses, to aid access to local markets for trading activities, and frequently, villagers use the cart itself as a source of income-generation, by hiring it out.

During the early years of Malian independence, villagers were able to acquire carts at government-subsidised prices as a part of national development programmes. This is no longer possible, and at a cost of 60-80,000 FCFA (about £170 before the devaluation in January 1994), the cost may now be prohibitive. There is much evidence that, having become reliant on carts, villagers must now pay for them at their full price through their migratory trips.

Hired labour

In Gomossagou, five out of fifteen farmers we spoke to said they employed wage labour regularly or periodically. Young men from outside the village frequently pass through during the rainy season looking for employment. Some have just a *daba* while others are equipped with ploughs and traction animals and charge 500 FCFA per day. All the farmers employing such labour are currently, or had once been, involved in successful commerce and migration. In Yélé however, the story is more one of selling labour. Ennè and Apier Fongoro, the two elderly brothers of a family which, though wealthy, has had little experience of migration, said that some of their younger members sell their labour when food is short, to other families in their own or neighbouring villages who have more land to work. So, although a substantial proportion of farmers in Gomossagou can afford access to waged labour (among the interviewees, about 33 per cent), this is not the case in Yélé and is unlikely to be so for other Dogon villages of the area.

Those who stay in the village

In families where cash is not available to employ wage labour nor to use ploughs in combination with chemical fertiliser (as is the case for almost all the families in Yélé), there is evidence that the family members who are available have to work especially hard over the farming season to make up for the absence of the migrants. The issue here is: which family members take on this burden?

Migrants' wives and other adult women

It is not usual for married women to take on an extra burden of agricultural labour in the absence of their husbands or other close male relatives. As outlined above, this is for two main reasons. In the case of Yélé, as in other Dogon villages, women have a prerogative to farm their own fields. Secondly, given the extended family structure in which people live, women, in many ways, marry families rather than individual men, and will only rarely be left in a situation where there are no men at all to carry out male tasks. These points are illustrated by women in Yélé. Yassagou Sossigué's response is quite typical:

> *As regards my children, preparing food, or working in the fields, I have no extra work because my husband is away. All the work he usually does is taken on by his brothers and his father... Even the health of my children is taken care of.*

Assa Bombo in Yélé, although abandoned by her husband, is well integrated into his family, which consists of his mother, three brothers and all their wives and children. She receives nothing from her husband, but his family supplies her with all the food she needs, including condiments. With the money she earns through the sale of her peanuts and *voandzou*, she can therefore buy cotton and

clothes for herself and her children.

There are however, exceptional cases, of which we found two. Yama Togo (of Yélé) and Antanandou Karembé (of Gomossagou) are both migrants' wives and have been effectively deserted by their husbands. Furthermore, their husbands have no family (apart from members also on migration) into which they can be integrated. This means that they must find a way to subsist without the structure of support on which most women depend. The absence of their husbands is likely to make their burden of work and responsibility for subsistence even greater than it would be for women in a comparable situation but with resident husbands. They are obliged to be responsible, not only for condiments and other domestic costs, but for grain to eat every day. Yama in Yélé cultivates what millet she can, with the help of her small children on the fields of her husband's (non-existent) family. Although she doesn't prioritise this work over her peanut cultivation, her commercial activities are restricted during the rainy season because she lacks time for these, preoccupied as she is with the cultivation of millet as well as peanuts. Antanandou in Gomossagou does not cultivate, and must do what petty trading she can to subsist. Unlike Yama's, her husband has brothers who come to cultivate every year and donate her a part of the harvest.

However, in neither case did this added responsibility increase the control the women had over grain, nor did it make them *de facto* heads of family: an adult man, even if absent from the village and/or no blood relative of the husband, could always be found to play the role of family/lineage head, for example, to distribute grain from the lineage granaries to the women; to endorse and supervise the circumcision of their sons.

Harvesting is a time of peak labour demand

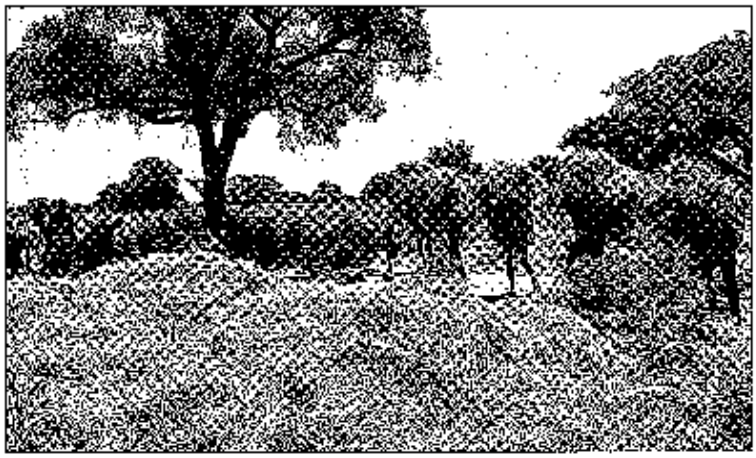


Photo: Alex Mavro

In summary, adult women from families with male migrants will not necessarily work harder than women in families where most men are always at home. Women become vulnerable when they have no extended family to support them. Like all poor women, these migrants' wives will have to work harder to ensure subsistence for themselves and their children. But they do not take on male tasks in any significant way: in Yélé, they are obliged to farm more millet, but will continue to value highly their peanut plots and petty trading activities. In Gomossagou, in spite of food insecurity, women will not start farming in place of their husbands, but find 'female' ways to cope with daily subsistence (eg, the petty commerce of tree leaves and fruits).

Unmarried girls

Because of the structure of access to labour, a labour-gap resulting from male migrants is much more likely to be filled by unmarried but grown-up children. In the case of unmarried sons, this is unsurprising, since, as heirs to the lineage or family fields, they make these their priority. Girls however, share this obligation of labour to the extended family until they are married, even though they have competing demands on their time. One of these is to help their mothers with domestic and agricultural work on their plots.

If there is a shortage of male labour in the family fields, the labour of unmarried women and men, as well as children, will be called on to make up for this. Adult women, while not being required to labour directly for the family fields, risk losing the labour of their daughters in their own fields, and in this way, could experience a labour shortage, indirectly caused by their husband's absence. One consequence of the shortage of young, female labour, is that it can disable women from taking advantage of the tree-fruit harvest, or *cueillette* which occurs around the same time as the cultivation of secondary crops. A woman alone would be unable to manage both of these and would choose between them.

There is evidence that this family pressure on unmarried girls is encouraging them too to depart on migration, in an effort to earn and save money for their own needs. As will be seen below, this leads directly to a labour shortage for adult women.

Conclusion

The majority of families (75 per cent) in the villages surveyed have at least one migrant and over a third of families have three or more. It can be assumed that all of these families experience a resulting lack of labour to some degree. In its mildest form, this can mean one less able body to help with the harvest, while in its most extreme, women and men can be under extreme pressure through the farming season, to fulfill domestic and family obligations and to profit from the abundance of greenery and fruits flourishing in the rain, all without jeopardising effective timing in their own farming activities. On the other hand, only just over a third (35 per cent) of these 'migrant' families show evidence of being able to replace this labour, either with a plough or by hiring waged labourers. The other families (the majority from Yélé) must fill the 'labour gap' through the work of other family members, or suffer a fall in production.

Dry Season Activities: Livestock and Trading

The decline in men's local dry season activities

Engaging in dry season occupations as a supplement to subsistence agriculture is nothing new. Such activities for men, as well as for women, have been based in regional trade. Year-round artisanal activities are also performed by caste groups: *griots*, leather-workers and blacksmiths. The advent of more distant migration on a larger scale has led to a decline in such male trading and artisanal activities, to the point where, in many cases, they seem likely to die out altogether.

Ayassin Togo from Yélé taught his son the skills of basket- and mat-making, but now watches him go to Abidjan year after year, showing no commitment to life in the village. Ayassin has developed and adapted his craft so that it still provides him with all the cash he needs. He sells his products at the market each week, and also has people coming to his house to buy.

'The problem isn't a lack of possibilities; it's that young people don't want to do this kind of work. I can get by fine with this craft, so why can't young people do the same?

Photo: SOS Sahel

Women weeding in Dankass

Caste groups of artisans are also finding their trades increasingly difficult to sustain in the village. With cheap produce imported into the region, they struggle to remain competitive. Many have succeeded in finding a place to practise their trade whilst on migration, and others have seen their sons leave for Abidjan with no inclination to take up their caste craft. Others still find themselves unable to service their craft for lack of resources: 'I've seen blacksmiths who are now full-time jewellers, because they could no longer find the primary materials they needed to keep going', said the blacksmith from Gomossagou.

Not all these activities are income-generating. The responsibility of house-building and repair, for example, is also a dry season obligation of young men. For one old leather-worker in Gomossagou, the neglect of village buildings is one of the most serious consequences of the loss of young labour:

'In the dry season, there's noone to build houses anymore, yet the young still expect their houses to be ready for them here when they return.'

Similarly, the watering of livestock is the responsibility of young men through the dry season. The keeping of livestock puts pressure on scarce water resources as well as on vegetation; the lack of young, male labour through the dry season is likely to be a constraint on the number of stock which families can maintain.

All these examples show that as they migrate, men, both young and adult, are likely to use fewer local natural resources to earn their

livelihoods. Of course many of these resources, such as leather and iron, are bought on the market anyway. Others however, are, in some areas at least, in increasingly short supply. Sorghum stalks, for example, as well as being used for building and mat-making, are valuable as fertilising material for fields. In Gomossagou, they are also crucial to the women as fuel for their stoves. It is very rare to see even old men using sorghum stalks for mat- or/ basket-making. Here, they are much more likely to make rope from nylon sacks. This could be linked to women's reliance on sorghum stalks as fuel. Green wood is essential to blacksmiths, carpenters and those responsible for construction, and yet, even in Yélé, it is becoming a scarce resource.

The reduction in these activities began with the regional decline in purchasing power and *the rising cost of living*, an on-going process with its roots in the early colonial period. But the more recent climatic changes, in leading to greater pressure on scarce resources, have exacerbated this reduction. The migration of men is a response to this, and as it continues to be a preferable strategy to staying in the villages through the dry season, the consumption of the resources used in male, off-farm activities may be levelling out or even decreasing. The next section discusses in what ways women's off-farm activities, and the resource-consumption they incur, are affected by male migration. This section has shown that this can not be examined without looking first at the changes in local resource-consumption through the off-farm activities of men.

The absence of any significant effect on female dry season and off-farm activities

The important role of the seasonal, craft and trading activities of women, as well as the different significance they have for each of the two villages studied, has been outlined above. It remains only to show that there is little evidence that these activities, and so the resources they consume, are affected by male migration.

In Yélé, only the women whose husbands brought near to nothing from migration, suggested that their income-generating activities were influenced by their husband's absence. They said that they were obliged to work harder at all their usual activities, to ensure the subsistence of their families. For most women however, the production and sale of secondary crops is their priority, as this is more reliable than petty trading and does not entail the same investments of capital. There was nothing to suggest that, because of their husbands' neglect, they were prioritising off-farm activities over on-farm ones, nor that they were experimenting in new trading or craft activities in their husbands' absence. Starting up a new livelihood strategy is a risk which less secure women can rarely afford to take.

In Gomossagou however, a group of relatively affluent women suggested that male migration was indeed at the root of their own trading activities:

> *We've had to get tough, and have learned to be self-reliant as traders. We trade all sorts of things in different markets. We have no choice but to improvise as we can, as men have proved too unreliable.*

For some women, commercial activities include prostitution. One of the group asserted:

> *Some women are obliged to have sexual relations with other men to get the money they need, if not to fulfill their desires: men take advantage of these women because they lack the physical presence of their husbands.*

The women may well be justified in declaring their menfolk unreliable, but there was no evidence to suggest that the wives of migrants were consistently less secure than other women. Many of them clearly do well from their husbands' trips, and several men said that their wives encourage them to go. It is possible that the wives of migrants, in being much less able to rely on their husbands than other women, are more likely to ensure a steady income for themselves through trade to cope with this uncertainty. It is also possible that women whose husbands are away are less constrained to stay in the village and also have fewer domestic responsibilities. This too would be an incentive to increase their trading activities.

However, as in Yélé, the women in Gomossagou who become less secure and more pressurised as a result of the long absences of their husbands, are likely to respond by working harder at all their usual activities, which, because they are *Kasodjos*, are all off-farm. Though it may well be these women who labour most intensively to secure an income, it is unlikely to be these who are the most suc-

cessful traders. Success in trade depends on three factors, none of which is dependent on male migration: security and assets in the husband's family to enable and secure investments, the knowledge of a product and a way in to the market, and the time and ready cash to access more distant and better-priced markets.

Food and Domestic Needs

Household food security

One of the criteria used during wealth-ranking exercises, was the level of food- or grain-security of each family, that is, how much grain they were able to produce and store in granaries. Food security is not just about capacity to produce food, but also capacity to hold on to it, so that a family is not obliged to sell when grain prices are low, or to buy it when prices are high during the *soudure* or season of hunger. Of the families surveyed, almost 30 per cent in Yélé were classified as poor, and 41 per cent in Gomossagou. Although it was not checked for every family, this suggests that most of these families experience a food deficit quite regularly. Almost 70 per cent of these 'poor' families have one or more migrants.

The purchase of food

When migrants are successful, it is likely that some of the cash brought home will be spent on supplementary food at times of shortage in the year. However, three things should be noted:

1. The pattern of food deficit is not (yet) widespread in the region. Yélé, like other Dogon villages in the area, was able to sell a considerable surplus of grain in the past, and is still adjusting to the decline in this source of security. Most people however, can still expect to grow what they need to feed themselves.

2. Perhaps just because it is not a regular pattern, food deficits are usually managed in a more *ad hoc* and temporary way than migration would allow. It is common, for example, for men to labour for larger and wealthier families in return for grain; similarly, women sometimes winnow after the harvest, receiving some of the produce in return.

3. When people spoke of buying food with money acquired from migration, they referred most of the time to imported food which is not grown in the region and has a prestige value. Three villagers (one female) said they were able to buy rice with remittance money and did this as often as they could afford to.

Easing pressure on food supply

The other way by which migrants may improve the food security of their families is simply by easing the pressure on food supply. If a young man is unlikely to make any money when he stays at home through the dry season, it is better that he leaves, so that at least he will not be consuming the family's resources. Yassagou Sossigué declares: 'My husband is obliged to go, because if he stayed at home, he'd spend more money and be useless.'

However, for the families whose migrants yield nothing, food security is as likely to be undermined as improved. Many young migrants, even if they are 'seasonal', come home for a very short period to farm, during which time they consume intensely scarce food resources, and have nothing to show for their long months away. Ayassin Togo from Yélé explains: 'Migrants benefit from our agricultural revenue, but we don't see anything of theirs... They have become a burden on the family and on the food supply.' Omar Koné from Gomossagou is in a similar situation with his two migrant sons:

> *Even if they have made some money, I've never seen any of it. Despite this, they are in my charge: if it wasn't for me making rope to pay for meat and milk for the whole family, noone else would. Whether they're here or not, it's me who forks out. I have their sons and wives in my charge as well: I feed them too.*

The potential vulnerability of migrants' wives

As outlined above, women and children, in theory, subsist through the dry season on the produce from the husband's individual fields. If the husband is away through the farming season and has thus not farmed, his brothers or other male relatives may do this for him, thus supplying his wife (or wives) and children with grain for the dry season. If there is insufficient labour to do this, or no male relatives at all, a migrant's wife may cultivate some millet herself, as well as her secondary crops. If her own millet supply is inadequate, she may

get help from her husband's relatives and/or from her natal parents. She may be obliged to transform most of her peanut and *voandzou* supply into grain to eat. Such circumstances leave women exposed to insecurity, with no assets or back-up supply if contingencies were to arise. In the words of Antanandou from Gomossagou, they become: 'dependent on small gifts from generous people'.

Conclusion

By being away through the dry season and easing pressure on the household's food supply, migrants can sometimes help the food-security of their families. Even though people talk anxiously about the recent decline in agricultural production which gets worse as migrants leave, few migrant families are spending remittances on food. The evidence to suggest that migrants are contributing positively to the food security of their families is very weak. More likely scenarios are that their trips home when food is scarce during the farming season, increase pressure on food supply; and their absence for some or all of the farming season can leave their wives threatened with food insecurity.

Other domestic and personal needs of women

What expectations do women have of the migrations made by their male relatives, and how far are these fulfilled?

It is clear that to most women, the goods in kind which they receive from their migrant husbands are more important or relevant than the cash they might bring. Women who wear gold ear- and nose-rings, and full, crisp tunics which can't be found nearer than Mopti, claimed confidently that they had received not one single penny from their husbands. Clearly, men bring back other things for their wives. Women receive, and expect to receive, clothes, kitchen equipment and perhaps jewellery, as well as 'pocket money'. For a woman married into a poor family, cash may be more important, to ease her task of feeding and looking after the family; money may be needed for condiments, clothes and medicine for the family, and perhaps some to save for the marriage of daughters.

There were very diverse responses from migrants' wives as to how far these needs and wants were fulfilled. The following three examples are all representative of women living at different levels of security:

1. Yassagou Sossigué of a relatively affluent family in Yélé, is happy with what her husband brings back for her. Last time he was home, he brought cutlery, kitchenware, clothes and beauty materials, as well as some cash. With this money, she is not obliged to buy essential foods (ie, grain or condiments) but can spend it on 'extras' or treats, and on her own commercial activities, for example, buying millet with which to make *dolo* beer.

2. Kadia Adou of Gomossagou is married to a cart-maker/mechanic, based in Bobo

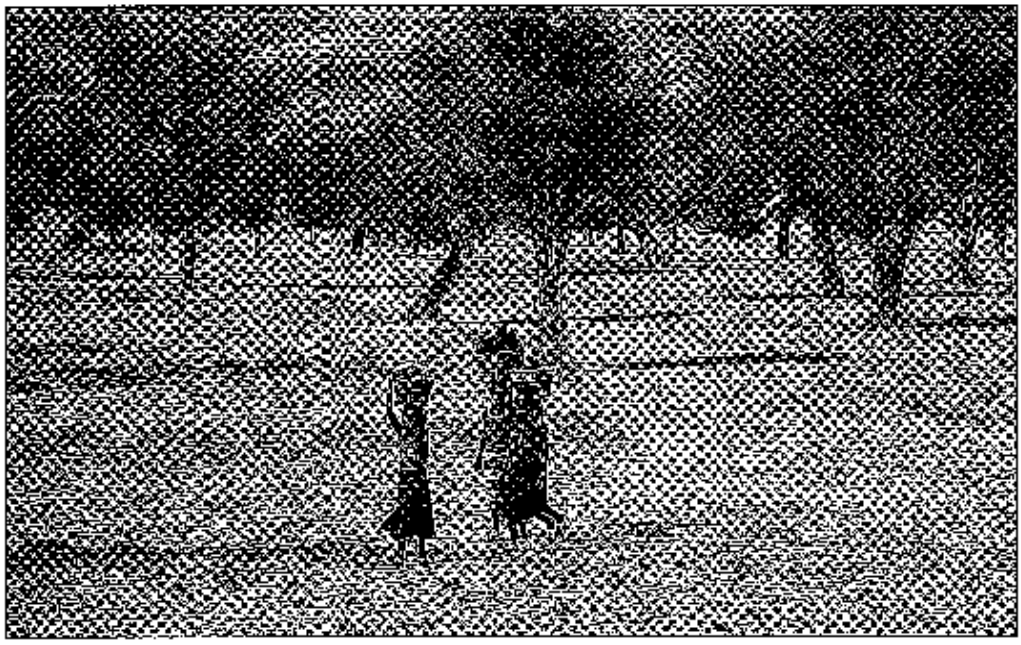


Photo: John Reader

Young girls help their mothers by going to the market

Dioullosso in Burkina Faso. Having spent several months out there with him, she knows that he finds work but never enough to make a profit. The last time he visited was three months ago: 'He sent nothing and brought nothing back with him, not even a pair of shoes.'

3. Antanandou Karembé of Gomossagou, has been married 14 years, and since the birth of her first child, her husband has been migrating, sometimes for three or four years at a time. He is now on his seventh trip to Abidjan, and the last three visits he paid home, he brought nothing at all with him. Before that, he had returned with a few things for the house, but the cash he had she saw nothing of, as he invested it in a small business which collapsed.

In conclusion, it is more common for women to receive goods in kind than cash (or at least this is the form of wealth which they are willing to discuss). Women integrated into secure extended families can look forward to the prestige goods which their husband may bring, which makes his absence worthwhile. For others, where the extended family doesn't offer such security, subsistence from day to day is their preoccupation. They become accustomed to their husbands coming back with nothing, or not coming back at all.

The Effects of Female Out-Migration on Women

When researchers tried to discuss the problems of male migration with a group of elderly women in Yélé, the women quickly changed the subject to what was for them the much more serious problem of female migration. One of these women, Yama Sossigué, declares:

We're not interested in what these girls might learn there: they ought to stay at home to help us with our work: preparing food, spinning cotton, collecting wood and water... all these tasks they learn to do when they're young, and they should concentrate on these. We don't even understand what they're talking about when they come back and start chatting on in Bambara.

Clearly, unmarried daughters are a crucial source of labour to adult women in their agriculture as well as their domestic tasks. Several women said during discussions, that they could never cultivate all the land available to them, and that during the rainy season, the availability of daughters enabled them to take advantage of the *cueillette*, in addition to their crops.

But women understand that girls have good reason to go. Assa Bombo, a mother of two migrant daughters from Yélé, explains:

The problem is that the girls go because for all the work they do here, they get no money; if there were opportunities in the village itself for them to earn some money, then they wouldn't go.

Young women are being pushed to go on migration because they are committed to prepare for their marriages, and, like their mothers, find that they cannot accumulate the capital they need in the locality. In leaving, they may achieve what they set out to, but only at the cost of depriving their mothers of their much-needed domestic and agricultural labour.

Conclusions and recommendations

There is no comparison in the standard and quality of life, between the village and Abidjan. If both bore fruit, then it wouldn't be worth going. If migration bore no fruit, then it wouldn't be worth going either. But if migration bears fruit which can further improve and be invested in the life in the village, then it is worth doing.
(Moussa Gana, an ex-migrant from Gomossagou).

The only possible solution is to devote oneself to the land, to limit one's ambitions, and then the land will yield well. Young people say that they don't want to cultivate and they want to do commerce. But young people can talk like this because they don't have experience: they don't know how difficult it is. There are commercants in this village who were very rich, and today, they have not even 5 FCFA to their name. The land is actually a much more secure livelihood than commerce. Even if it yields well, we must remember that commerce is secondary because it is risky.
(Amadou Gana, a successful livestock trader from Gomossagou).

These two quotations highlight the paradox faced by villagers in Dogon country. Aware of how their region has become poorer and marginalised, they know they must go outside it in order to sustain life within it. But they are aware also how opportunities in commercial and industrial centres are more difficult to find and to endure, as conditions deteriorate. Furthermore, migrants know that they risk burdening their families with the stress of uncertainty and insecurity during their absence, as well as humiliation if they return empty-handed. These three aspects of their situation are being continually weighed against each other, as each family or family member finds their own way of coping.

What follows is a summary of the conclusions reached through the research in this region of Mali, and an attempt to draw out the implications that such conclusions may have for development interventions in the area.

- Migration is more an effect than a cause of impoverishment;
- People migrate for social as well as economic reasons;
- Rural people have extended their off-farm strategies into urban areas;
- Migration exacerbates the shortage of labour;
- There is no evidence that migration is leading to increased pressure on natural resources;
- Women are not necessarily disadvantaged by the migration of their husbands;
- Migration has the potential to support community development initiatives.

Migration is more an effect than a cause of impoverishment

Although this research began with the task of pinpointing the detrimental consequences of migration, the research process has revealed how much migration is indicative of a broader process of environmental and economic impoverishment experienced in this region. The causes of this depressing trend are overwhelmingly beyond the control of the rural population.

A crucial recognition by development projects must be that people are migrating for very good reasons. This is backed up, not only by the fact that many migrants do quite well from their trips, but also by the the local strategy of 'spreading risks' over a variety of livelihoods and areas, as an insurance against the failure of any one of these. A number of projects have responded to migration by encouraging communities to invest more in their agriculture. However, clearly, the Dogon are as aware and concerned as developers, that the fertility of their soil is declining, that rainfall is less reliable and that woody resources are depleted, and they are equally aware of the negative effect this has on their agricultural production. But their response is to invest less in agriculture, rather than more, in order to diversify their strategies into a wider range of activities. Most migrant-farmers are not giving up on agriculture, but cannot afford to take the risk entailed in expending too much time and strength on one strategy, which, despite

all efforts, may fail anyway.

People migrate for social as well as economic reasons

The research has shown that it is difficult to explain migration purely in terms of the economic wealth and security it yields. Migration has taken on a role as a kind of initiation period for young men, and in villages such as Yélé, seems likely to take on the same significance for young women. Much of the 'remittances' which result from trips to Abidjan are more important for their prestige than their use value. The high value attached to the habits and skills learned whilst away (for example, Bambara language, mechanics, cooking imported foods and wearing shoes and smarter clothes), should not be underestimated.

Because of the social character of migration then, it would be dangerous for development projects to invest too much in initiatives which aimed to encourage people to stay in their village. A number of villagers told us that even if they could make all the money they need nearer home, they would still go back to Abidjan.

However, the possibility of creating income-earning opportunities in rural areas should not be ruled out. To be successful, they would have to be flexible, and formulated with a lot of careful research and analysis carried out *with* local people. One clear necessity is for flexible and longer-term credit programmes, which could cater for the very diverse requirements of rural people with different levels of capital and investment capacity.

Rural people have extended their off-farm strategies into urban areas

The principle of needing to combine activities of income-generation and exchange with subsistence production is nothing new, and the report has emphasised the continuity between the trading activities of the Dogon and their contemporary migrations. Today, people go further, into very different urban environments, and they are less involved in exchange than in waged labour. However, the rule is the same, and was repeated to us several times: people can't get by on agriculture alone, and must have a means to buy what they don't produce. As some young men from Gomossagou phrased it:

If you only cultivate and have no source of revenue outside this, how can you be sure to buy clothes when you need them? One day, you risk going to the fields completely naked, and this - well, that's the limit.

Migration is not, any more than other off-farm activities, an alternative to agriculture, but rather a complement to it.

Given that rural people are investing much of their time, money and hopes in urban areas, 'rural development projects' should try to follow them, at least far enough to be of use: migration must be accepted as a crucial part of many people's lives, like agriculture or livestock. Perhaps the most useful role which could be played by development agents is as 'information brokers'. By ensuring that they are well informed of possible new opportunities for migrants and of any developments in host countries which may affect this strategy, development agents could potentially offer a valuable service. Local radio would be the ideal medium for the communication of such information. Video and discussion groups are other possible ways.

Such media would also be valuable to generate discussion and debate on migration. Because it is personal and sometimes causes conflict, migration is not easily discussed or reflected on publicly. Yet it is a major preoccupation of many people. During the research, villagers were enthused by the potential of such media as a means to exchange and analyse the consequences of migration experienced in different villages accross the region, and to communicate these problems to the migrants away, as well as to young people - the potential migrants.

Migration exacerbates the shortage of labour

This is perhaps the most significant way in which migration perpetuates impoverishment. The shortage of labour for the Dogon is nothing new, and part of an ecological outlook which has always conceived of the bush as infinite and people as scarce. However, migration has given this a new significance, as families have 'lost' their members, for years, sometimes for ever, as a result of their trips away.

A response of projects to this problem would depend very much on the financial capacity of the village. Most residents in Gomossagou for

example, are not short of cash, and the majority of residents (as some show already) would be capable of paying for the use of labour-saving technology, such as carts and ploughs (as well as hired labour). This equipment could be provided on credit and paid back gradually through the money raised by users.

In Yélé, such an initiative could not work because, for most people, the cash to finance such equipment is not available. One way to address the labour shortage here, would be to encourage seasonal migrants to come home more promptly and to stay longer, thus being available to work through most of the rainy season. The migrants may well be concerned to get back to work for fear of losing insecure jobs. With better coordination and organisation however, it may be possible to secure these jobs while ensuring that families don't suffer too much through the absence of their sons.

There is no evidence that migration is leading to increased pressure on natural resources

Evidence from elsewhere has shown that migration is seen to increase pressure on the resource base, either by encouraging people to prioritise short-term survival strategies over longer-term investments, or by resulting in the increased involvement in off-farm income-earning activities by women, which increase consumption of scarce resources. Neither of these was found to be the case among the Dogon.

The consequences of migration have been shown to work both ways with respect to natural resources around the village. Just as the remittances from migration facilitate investment in cattle, so cattle maintenance is made more difficult through the dry season by the migration of young men. Just as migration may force some migrants' wives to work harder at their off-farm trading activities, so it leads to the decrease in such activities by the migrating men of the area. This evidence further weakens the argument that developers should attempt to stop migration.

Women are not necessarily disadvantaged by the migration of their husbands

As members of an extended family and not simply a conjugal unit, women are usually directly dependent for their welfare on the security and disposition of their husband's relatives. In cases where this family is poor or non-existent, both husband and wife are made vulnerable. If the husband is absent on top of this, the insecurity of the wife (or wives) and children he leaves behind is exacerbated. In short, it is not the migration of a husband *per se* which makes a woman insecure, but his migration is likely to add to her insecurity if she is already vulnerable.

It is possible then, to conceive of a category of women who are exceptionally insecure: although some of these will be migrants' wives, others may not. These women, because of their poverty and gender, while being the most vulnerable, are the least likely to approach development agents in a request for help. For this reason, if projects wish to be of help to vulnerable women, it is crucial that they make themselves accessible. This entails sensitive attention to details, for example, fitting in with the timetables of women, ensuring that news of meetings and programmes is widely communicated and considering carefully the most appropriate meeting places. Perhaps more importantly, it entails careful choice of resource persons and care not to bar the access of certain women by giving too much control to others.

Women in the two villages studied have only limited control over predominantly 'male' resources. Rather than targeting this structure of access and ownership directly, however, projects must work with this situation, and strengthen the strategies that women do have which are independent of men, and play a crucial role in their security, particularly in the light of male out-migration.

For the women in Gomossagou, this would mean careful support for their trading activities. Women here said they were held back from further involvement in trading by their burden of domestic work. Because of the unusually high cash supply in this village, it would be possible to provide the women with labour-saving technologies on credit.

In Yélé, women clearly prioritise their agriculture. With one group, we discussed the possibility of setting up a cooperative of women farmers, which could acquire the strength and security to take agricultural equipment, such as carts and ploughs, on loan. To repay the loans, each woman would pay a small fee for the use of the equipment; however, it could

also be hired out to farmers outside the group at a slightly higher, but still competitive price. The cooperative could also offer women the potential to organise their labour so that each could benefit more regularly from the help of others.

Migration has the potential to enable community development initiatives

Gomossagou has a migrants' association which has proved its capacity to finance large infrastructural investments from which the whole village has benefitted. Seven years ago, the migrants presented the village with money totalling 145,000 FCFA which financed the building and maintenance of the mosque. Since then, villagers have been liaising with a Christian NGO which has agreed to finance the building of another well if the villagers contribute financially. The migrants have a fund of 50,000 FCFA in Abidjan, and told us that they are waiting until the end of the rainy season, before beginning work. Projects should offer support to such rural-urban linkages, and explore with the village its capacity to pool its resources to fund investments which would be to the benefit of all. In this village at least, cash supply is not the problem, so much as the need to enlist this supply for village development.

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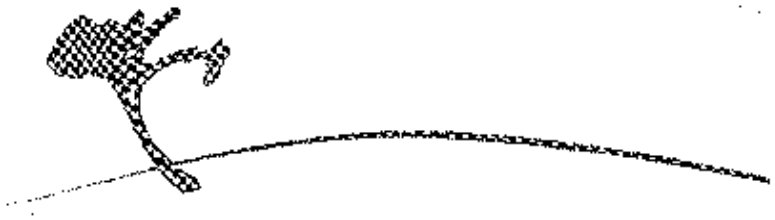

Case Study

El Ain, Sudan

Mary Myers with
Rosalind David, Sarra Akrat
and Amani Awad Hamid

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Summary

This study analyses how male out-migration is affecting the El Ain area of Kordofan. The effects on women and on the environment are particularly stressed. It is argued that male out-migration is one factor, among many, that is leading to the destabilisation of the ecological balance in the area. Migration has served to undermine traditional methods of natural resource management and has diverted communities away from investing in their immediate environment. Longer-term migration is on the increase, and is putting great pressure on women's workloads. At present the rewards from migration only fractionally outweigh the short-term disadvantages. The interaction of migration, drought, land tenure problems and political developments is leading to an increasingly unsustainable situation for the people of the El Ain area.

Introduction

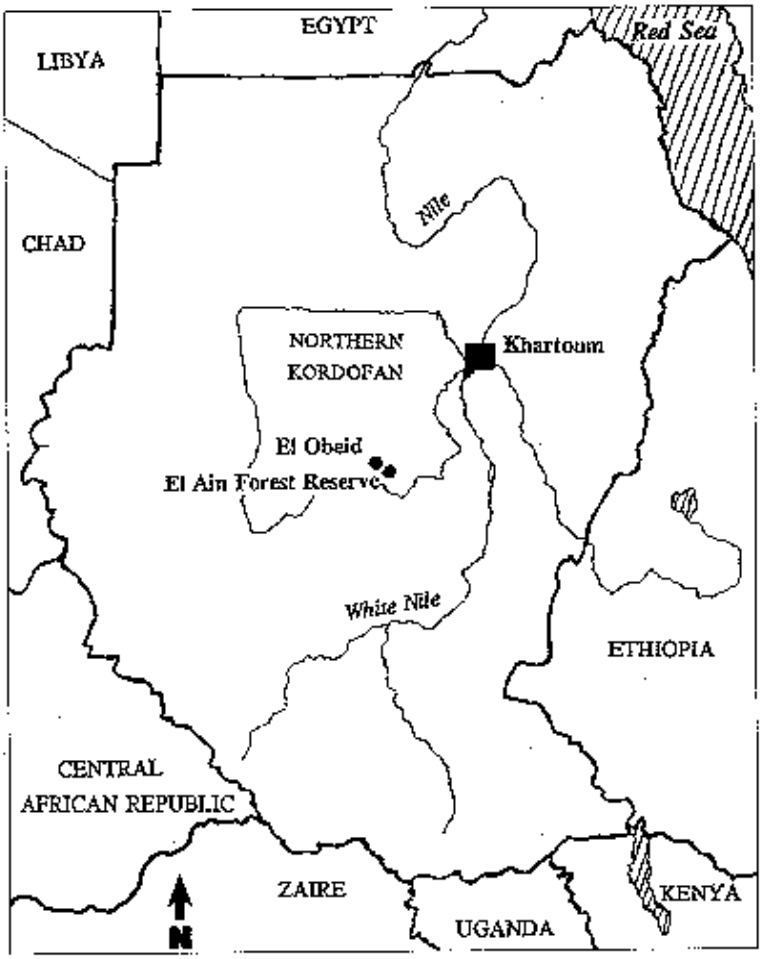
He left the village that evening
He went to the East
He left behind the mountains of the West
Bring me some 'Sherba' to drink
To give me strength to follow his footsteps
(Women's song from Kordofan)

This chapter brings together the findings of two periods of research undertaken in the El Ain Forest area, near El Obeid, Kordofan, Sudan (Map 5.1) during July and August 1992, and in May 1993. The first phase took place in the rainy season and was mainly quantitative. The second phase took place in the dry season and took a qualitative and more detailed look at a smaller number of villages. Because migration in this area is mainly seasonal, it was important to be present during the rains when most men return to their villages for the agricultural season. By contrast with the rains, which is the busiest season, the dry season period found people more at leisure to meet and discuss issues in depth.

In common with the three other sites in this study, El Ain was chosen according to the following criteria:

- an area of settled, rainfed agriculture;
- suffering from a high degree of environmental degradation;
- where a development project is working with local people for environmental improvement (in this case SOS Sahel/Government of Sudan's Natural Forest Management Project);
- where women play an important role in agricultural production;
- an area already known to be affected to some degree by male out-migration.

Map 5.1
The El Ain Forest Reserve, Northern Kordofan, Sudan



Project Context

Since 1989 SOS Sahel International UK, in partnership with the Forest National Corporation of the Government of Sudan and the local population, has been working in 23 villages in the area to find ways to manage El Ain Forest and its environs on a sustainable and participatory basis. This project is the Natural Forest Management Project (NFMP). The present study covers 11 villages on the edge of El Ain Forest: 7 covered by the NFMP and 4 non-project villages further away from the reserve, within a radius of about 25 km (Map 5.2). The research was carried out during the third and fourth years of the project's first phase. Part of the rationale for choosing this site was the potential for the research results to enhance the ongoing work of the NFMP project. From the point of view of researchers, it must be stressed that our study was greatly enhanced by the information gained from NFMP project staff.

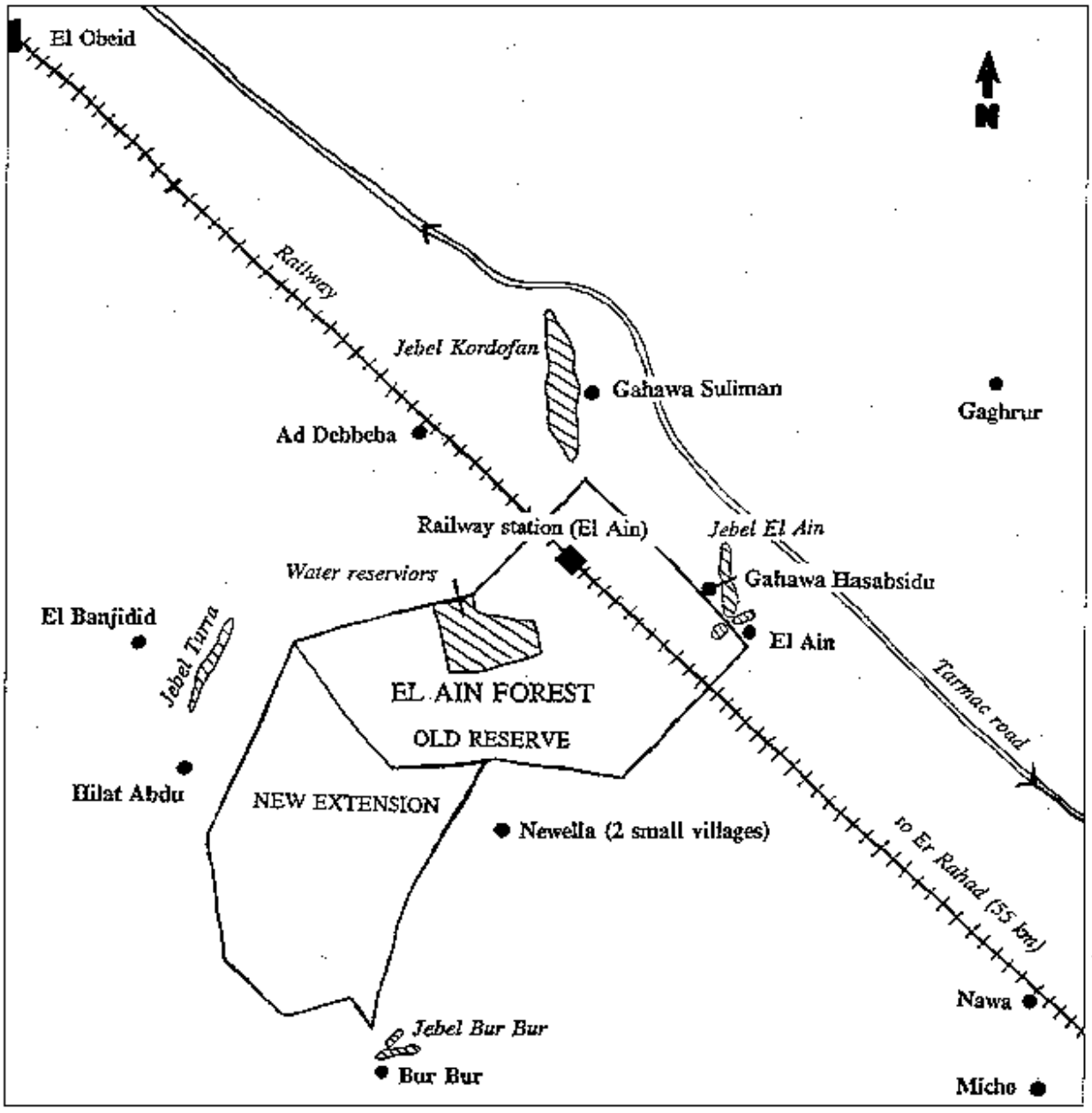
Methodology

The first phase of fieldwork (July-August 1992) consisted of interviews and group discussions in 11 villages over a six-week period

(see Table 5.1 for names of villages). The villages were selected in order to represent a wide range in terms of size, ethnic composition, proximity to the forest reserve, and access to resources and infrastructure. A sample frame was made in all 11 villages, listing all resident migrants' wives. This yielded 152 names, divided roughly equally between project and non-project villages. From this, a random sample of 50 women were interviewed on the basis of a questionnaire which lasted between 15 and 30 minutes. General discussions were then held in each village with separate groups of men and women, based loosely around a set of questions on migration, agriculture, livestock, income generation and natural resource management. A further 20 randomly chosen women with husbands permanently resident were also interviewed to provide a control. Much valuable information was also gathered from SOS Sahel project staff and documents. Although a statistical analysis of the questionnaires was produced, it has served only as a 'back-up' to this report which relies primarily on first-hand accounts.

The second phase (May 1993) consisted of participatory research in three of the villages surveyed in the first phase. These were Newella Abaker, Micho and Burbur. These were chosen to reflect as much of the diversity of the El Ain area as possible, whilst enabling the researchers to have in-depth discussions. A range of rapid rural appraisal techniques was used, including mobility/resource mapping, impact diagrams, ranking of activities/benefits/

Map 5.2
The El Ain Forest Reserve and the surrounding villages where the research was carried out



consequences, Venn diagrams, flow diagrams to indicate long-term consequences, oral history techniques, sketches and informal group or individual interviews.

Constraints

Apart from the usual problems of shortage of time and transport difficulties, the research encountered two main constraints. Firstly, the tight time-scale meant that the initial sample-frame was gathered quickly, so that in some villages, if the *sheikh* was absent, the lists of migrants' wives we were given were less reliable than if taken from *sheikhs'* official records. This was the case in five of the eleven villages (Ad Debbeba, Gahawa Suliman, El Ain, Burbur and Hilat Abdu), where the information was acquired from a relative of the sheikh or another village notable.

Secondly, because our research was carried out under the auspices of the NFMP, we were automatically associated with the project. Though the project has an excellent rapport with villagers, people are nevertheless aware that the project is encouraging the enforcement of forest rules. Thus we suspected that some interviewees were not completely open about their use of forest resources, since their income-generating activities such as firewood selling and charcoal-making are carried out illegally. (For a summary of forest rules, see Appendix).

Introduction to the El Ain area

Country Context

Sudan is the largest country in Africa, with 26 million people divided roughly into 132 ethnic groups. If anything typifies the country, it is its diversity and extreme contrasts. Against this backdrop, a constant theme is provided by the large-scale movement, both internally and internationally, of Sudanese people; whether in search of jobs or new pastures for animals. More recently, population movements of an unprecedented scale have been triggered by famine and civil war.

Rural poverty is prompting ever-increasing rates of migration in search of wage-labour. Contrary to what one might expect, the majority of migrants in North Sudan (80%) (Abd'allah *et al.* 1991) do not flock to cities, but to other rural areas. The work is to be found on huge mechanised farming schemes, such as the cotton fields of Gezira (the largest such scheme in Africa). Since the 1970s, in North Sudan, there has been a rapid expansion of the mechanised farming sector, dependent on manual labour, and making greater profits than the peasant sector. The area under mechanised cultivation is now estimated to exceed the area devoted to 'traditional' agriculture in North Sudan (Maxwell 1989). Therefore poorer farming families have been marginalised and can survive only by combining farming with wage-labour (Duffield 1990). While this rural-rural pattern accounts for the majority of internal migration, rural-urban migration is also on the increase. According to the ILO, the population of greater Khartoum increased by an average of 6.6 per cent per annum between the mid-1950s and the mid-1970s, largely as a result of rural immigration from the provinces of North Sudan (quoted in Duffield 1990).

The causes and, indeed, the effects of rural poverty can be traced, in part, to the degradation of the natural environment. In terms of natural resources, over the last two to three decades the national trend has been towards serious environmental damage and threat to the potentials for future sustainable livelihoods. Sudan has progressively become more food-insecure since colonial times: in 1985 the consumption of cereals overtook production, rendering Sudan a food deficit country (Duffield, 1990). Although 80 per cent of the population are engaged in crop production and animal husbandry, between 1965 and 1986 the contribution of agriculture to GDP dropped by 19 per cent (DANIDA 1989); and in the period 1988-90 food production per capita was only 71 per cent of 1979-81 levels (UNDP 1993).

Agro-ecological Environment

Both environmental decline and increased migration, as evidenced by national statistics, are strikingly demonstrated at the local level by the El Ain area. El Ain Forest lies about 26 km to the southeast of Kordofan's regional capital, El Obeid. Subsistence, rainfed agriculture based on the production of sorghum and millet, is the main means of livelihood for the settled population of the area, with livestock production practised to a varying degree in all villages. Nomadic people cross the area on a seasonal basis, and there are also scattered communities of settled nomads throughout the forest's buffer zone.

This area of Western Sudan was traditionally considered to be highly productive. Until the 1960s, Kordofan was not only self-sufficient in staple food crops, edible oils, meat and milk, but also produced surpluses of gum arabic, cotton, groundnuts, sesame and livestock. However, in recent years, the region has faced a dramatic decline in overall agricultural productivity at a time of increasing national demand. Over the past twenty or thirty years, productivity has fallen by as much as 50 per cent. This decline is due to a combination of factors, including increased human and livestock populations, the expansion of mechanised agriculture on the poorer soils, environmental degradation, drought recurrence, and, more recently, insecurity, due to the war in the South.

Rainfall decline and mal-distribution is perhaps the single most important factor in these changes - it is certainly perceived to be so by the local population of El Ain. According to

Photo: SOS Sahel

Communities rely heavily on the forest for fuel, building materials and browse

1964 figures, El Ain should fall between the 400 mm and 500 mm isohyets, but the mean rainfall for 1982-86 was only 260 mm. It is likely that over the last twenty to thirty years the average annual rainfall has decreased by about 30 per cent (SOS Sahel & FNC 1989).

The area is characterised predominantly by *gardud* soils (clayey luvisols) on which sorghum is cultivated. *Gardud* soils have a low rate of water infiltration and they are hard and heavy to work. *Goz* soils (sandy) occur in pockets and are used for cultivating millet and sesame. Although they are less fertile than *gardud*, *goz* soils are easier to cultivate, and are therefore in greater demand.

In geological terms El Ain falls within the Basement Complex of rocks which do not hold much water, and in some villages there is a complete absence of groundwater. Therefore irrigated agriculture, is on the whole, impossible; the population relies on rain-fed agriculture, and villages are commonly clustered by *khors*, or seasonal watercourses, of which the two main ones feeding the forest reserve are Khor El Nil and Khor Baggara.

The vegetation of the area is classed as Sahelian acacia wooded grassland and deciduous bushland. *Kitr* (*Acacia mellifera*) is the dominant tree species within the Forest Reserve, occurring densely in some areas, but very sparsely in those areas nearest to population centres. The total area of El Ain Forest is about 19,000 ha. No permanent villages are allowed within the forest reserve, with the exception of the water department village of Wad El Bacha, which is also the site of the NFMP field office. Settlements are situated in the forest buffer zone and the local population relies heavily on the vegetation of the forest and environs for fuel, building-materials, wild food, browse and medicines.

The *Acacia mellifera* forest is currently under considerable stress, from both human and natural causes. According to the NFMP, research shows annual mortality rates of between 20 per cent and 30 per cent. This is probably due to the fact that trees in the area have been severely weakened by years of drought. Soil-erosion is on the increase. People are beginning to notice serious gullying in some fields. Rainwater run-off rates are about 98 per cent on clay soils (Shanks *et al.* 1992), and the continuing loss of trees and ground-cover due to drought and human pressure exacerbates this erosion.

In summary, the area in and around El Ain Forest is a marginal agricultural area, suffering serious deforestation and desertification. The scanty and erratic rainfall since the 1980s, as well as periodic attacks of uncontrolled pests such as locusts and rats, have yielded inadequate harvests and have seriously affected cash crops. The particularly severe drought of 1984/85 drastically depleted livestock populations for herders and settled farmers alike. Thus a living from the land is becoming progressively more precarious, and circumstances are forcing the population to look elsewhere for sources of income. Migration in search of wage-labour is the obvious option, and is becoming ever more widespread.

Social Environment

In 1903, the province of Kordofan was inhabited by just under half a million people. Now there are six times that number. The 1983 census put the figure at just over 3 million, of which 1.8 million are in North Kordofan and 1.4 million in South Kordofan. The majority (63 per cent) of people in Kordofan are farmers although a high proportion (24 per cent) are nomadic pastoralists. The rest (13 per cent) of the population live in El Obeid or in other urban centres.

The population of the area immediately surrounding El Ain Forest Reserve amounts to a total of about 11,000, scattered quite sparsely in relatively small villages at a den-

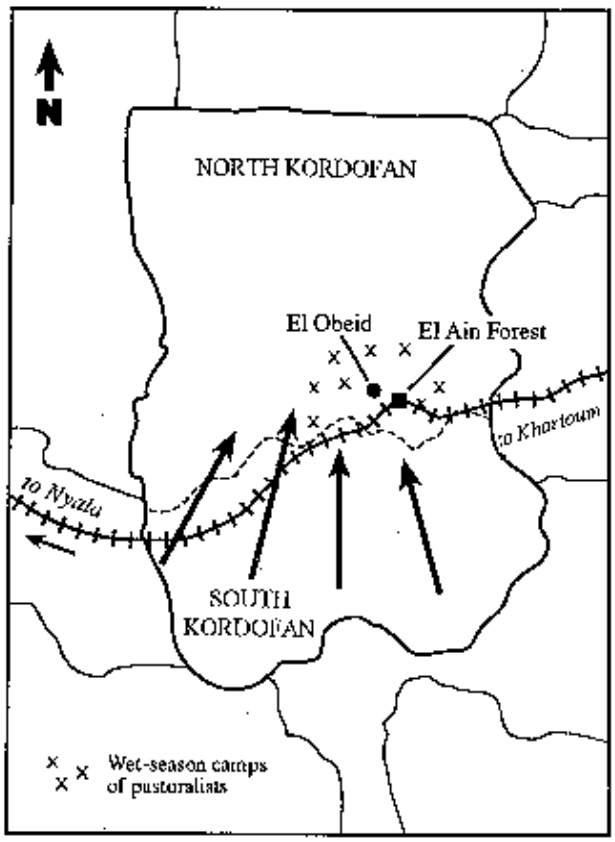
sity estimated at 12 people per km². Village size varies between about 10 households in the smallest villages (eg, Gahawa Suleiman, Ad Debbeba) to about 110-150 households in the larger ones (eg, Burbur and Nawa). The largest village in our sample was El Banjidid, which could be classed as a small town, with about 715 households. Average household size is estimated by the NFMP at between 7 and 8 members.

Most households in a village are linked through family ties. More often than not women marry inside the village and inside their own extended family - the ideal is to marry a first-cousin. Any land a woman has inherited from her parents is added to her husband's family holding.

Table 5.1: Research villages and principal ethnic groups

Village	Ethnic Group
Gahawa Suliman	Jawama & Dajo
Gahawa Hasabsidu	Jelaba Hawara
El Ain	Jelaba Hawara
Gaghrur	Jawama
Nawa	Dajo
Micho	Jawama
Newella (x2)	Hausa & Bergo
Bur Bur	Fallata
Hilat Abdu	Hausa
El Banjidid	Bederiya & others
Ad Debbeba	Jawama

The villages around El Ain Forest fall under the jurisdiction of two rural councils, Khor Taggat to the West, in the district of El Obeid, and Sheikan to the East, in the district of Er Rahad. In common with the rest of Kordofan, the ethnic composition of the area is very mixed. Villages are often made up of three or four ethnic groups. Traditionally seen as the homeland of the Bederiya and Hawazma, the area has been recently settled by a large range of Muslim Arab-speaking tribes from North and West Sudan, including the Dajo, Jelaba-Hawara, Jawama, Bergo and Meseria. In addition, there are high numbers of permanently



Map 5.3 Northbound movement of nomadic herds to the wet season camps in the El Ain area

settled Fellata and Hausa people originally from West Africa. Some former nomads, including Hawaweer and Kababish (camel-owning people), have settled in small numbers since their herds were decimated in the 1984/85 drought. Table 5.1 shows the predominant ethnic groups in each of the villages studied.

The area is also witness to the seasonal passage of several other nomadic tribes, which can be roughly divided between Baggara (cattle-owning) and Abbala (camel-owning), but which are comprised of several different ethnic groups. These nomads generally move to El Ain from the south in the rainy season, attracted by the relatively good grazing in and around the forest, and in order to avoid the mud and tse-tse fly in the South (Map 5.3).

Food production, livelihood patterns and gender roles

The agricultural picture in Western Sudan is one of family-based production. Rural women play a major role in almost every aspect of agriculture, both food and cash crops, as well as in animal rearing (Vogt & El Dai 1990, Hamid 1991). Food production depends on a partnership between women and men, between households and an interdependence between young and old. Although Western Sudanese rural society is strongly Islamic, the segregation of women characteristic of other parts of Sudan (eg, the North and East) is not found in Kordofan. Only a few agricultural activities are clearly divided by gender; in the following description of livelihood patterns of the El Ain area, men and women's roles are signalled only where they differ significantly from one another.

Land Tenure and Management

Land tenure and management in El Ain must be seen in the wider context of policy changes at the national level. Sudan experienced a profoundly unsettled period in terms of rural administration from 1969 to the present, during which time the system of rural administration changed twice. In 1969 President Nimeiri abolished the colonial system of Native Administration set in place by the British in 1898. Nimeiri's 'modernising' Local Government Act of 1971 was designed to remove the traditional hierarchy which managed the land and to replace it with leadership by elected local and provincial councils. In 1989 the present Government of Sudan reinstated the traditional roles of *nazir* and *umda*, and thereby largely restored the traditional rural hierarchy to its pre-Nimeiri status. In the interim, a state of confusion over responsibility for land, and its management, caused considerable damage. As El Din Awad Shegaf writes:

> *[the abolition of native administration] resulted in decline of security and led to poor land use and poor regulation of the natural resources...government law and order was no longer properly functioning. This led to disorder...uncontrolled activities opened the way for haphazard grazing, cutting of trees and fires...[which] enhanced the desertification process*
> (El Din Awad Shegaf 1989, p.111)

Now all land is administered through the authority of the regional Amir (formally Nazir), the district Umda, and finally down to the village sheikh. Ultimately all land belongs to the Government of Sudan. However, despite the restoration of traditional hierarchies, which, in theory should enhance communal and local-level management of the land, it is still possible for influential people in military or business circles to obtain rights to exploit farmland or woodland through the issue of government licences.

The consensus among people in the El Ain area is that these administrative changes have caused profound disruption and damage to the natural environment. Abuses, such as *sheikhs* selling communal village land to rich outsiders, continue to date. Furthermore, the ethnic diversity of the area and the increasingly tense relations between farmers and herders (see below) serve to cloud the land management issue. Local-level land disputes are common, and the question of who manages and benefits from common resources, particularly the all-important El Ain Forest Reserve, is still not conclusively resolved.

Nevertheless, a basic system of land tenure and management still pertains. From villag-

Planting seedlings

Photo: SOS Sahel

ers' point of view, their land, known as *dar* - meaning 'home' (Shanks *et al.* 1992), belongs to the *sheikh*, and fields are assigned by him to families on the basis of need. Fields are then passed down through families through patrilineal descent, according to Islamic law. Surplus uncultivated village land is common grazing land (known as *kerib*) and/or wooded area known as *sheikhs'* forest. Under Islamic law women are entitled to inherit land, though a daughter receives only half that of a son, and a widow receives a quarter of her husband's estate. Women are also entitled to rent land in their own name. In practice, though, very few women own land; as a rule, they cultivate the family land which belongs to either their husbands, fathers or fathers-in-law.

The land is managed according to traditional patterns - women said: 'we follow and learn from our mothers'. Women and men are generally positive about the quality of the soils, particularly the *gardud* (clay), which they refer to as *teen* meaning mud. However, as mentioned above, *goz* (sandy) fields, though less fertile, are much easier to work, and are more highly valued. Declining yields are blamed on not low fertility but the scarce and erratic rains; erosion and run-off is not (yet) generally seen as a problem.

The interaction of migration, drought, land tenure problems and political developments is leading to labour shortages, insecurity of land tenure, and lack of conservation measures.

Agriculture

Agricultural yields are relatively low and declining. This is explained by local people as largely due to the recurrence of drought (see below), but other causes include labour shortages, insecurity of land tenure, and lack of conservation measures.

The staple crops are sorghum (dura) millet (*dukhun*) and okra (*weka* or *bamia*); the most important cash crops are *karkade* (*Hibiscus sp.*) and sesame (*sim-sim*). Watermelon (*batikh*), pigeon peas (*loubya*) and a cucurbit called *tibish* are also widely grown, mainly for household consumption. When listing crop priorities, women invariably listed okra as most important after sorghum and millet, whereas men prioritised cash crops, thus reflecting the gender division of responsibility for household subsistence (women) and production for market (men). Groundnuts and gum arabic have virtually disappeared from the area since the droughts of the 1980s.

The agricultural calendar

Clearing and sowing

This is begun in May or June, just before the start of the rains. Clearing the land, including cutting trees, is done mainly by men except in the case of women-headed households. Sowing is done by men, women and children. If a second sowing is needed, it is done mainly by women and children. Okra is the first crop planted, since it matures early and most families depend on it throughout the rainy season.

Weeding

There are two main weeding periods, the first and most difficult is called *hush mur* (meaning bitter weeding), during July and August. The second is *jincap*. Both men and women participate equally in each. The most common period for people to sell their labour is during *hush mur*, and labour shortages are most commonly felt around this time. Women are normally paid less than men for a day's weeding, as it is argued that they cover less ground in the same time. Average wages in 1992 for weeding per *dalwa* (morning's work) was 50LS for women, 70LS for men.

Harvesting

Apart from okra which matures within forty days, and is harvested throughout the late rains, crops are harvested between September and January, though in bad years the harvest lasts little beyond September. Men tend to cut the crops, while threshing and winnowing is the task of women. The bulk of the cash crops are sold directly after the harvest.

Sacking, storage and marketing

Again, sacking and storage are done equally by men and women. Post-harvest marketing, however, is mainly, but not exclusively, done by men. When men are absent during the dry season, women will readily market other surplus, or dried wild produce. There is rarely enough surplus sorghum and millet to be sold - indeed, these staples are increasingly being bought from outside the area.

Communal work parties, or *nafeers* were a common feature of farming life, but seem to

be on the decline. They are used for clearing land, and other large jobs. These are normally organised by the owner of the field who invites other villagers to work on his land in exchange for a meal. Work-parties are sometimes single-sex groups, sometimes mixed. Women heads-of-household can invite *nafeers* on the land they farm if they can afford to provide the work-party with the necessary food and drink. It was found that, unfortunately, this is not often possible.

Family plots

According to our sample, the average size of a cultivated holding in the area is between 5 and 9 *mukhamma*s (1 *mukhamma* = 1.8 hectares). Usually a family will have fields in several different locations around the village. Families thus 'spread the risk' according to water sources and soils. Due to labour constraints most families do not cultivate the full extent of the land they own, but open fields up within the holding on a fallow rotation.

Land availability is not generally perceived to be a problem in the area, and there is very little expansion in terms of clearing new land for agriculture. Men and women work together on the family plots, with tasks divided along gender lines according to the season.

Jubraka plots

In addition to the family holdings described above, most women in the El Ain area work on their own small plot of land, called a *jubraka*. These *jibarik* (pl) are sometimes in the main fields or near seasonal water courses (*khors*), or sometimes within the precincts of the village, either within or near the household compound. The average size of a *jubraka* is less than half a *mukhamma*. They are almost always to be found on *gardud* (clay) soils.

Jibarik can be defined as household gardens, owned by the male head of household, but cultivated exclusively by women and their children, for mainly subsistence crops. Okra is the main *jubraka* crop; *tibtish* and *karkade* are also cultivated and, if seeds are available, other vegetables such as tomatoes and aubergines. If there is a surplus (a rare occurrence, according to our sample) a woman can sell her *jubraka* produce and use the money earned for herself on clothes, shoes, etc, though normally women will prioritise children and household goods over their own personal needs.

Livestock

Before the 1984/85 drought, this area was rich in animal wealth, (as documented by the SOS Sahel NFMP), but successive bad years have led to a progressive drop in animal numbers. It is now rare to find households with more than four goats, and large herds of cows or sheep are limited to the richer farmers or traders. Nevertheless, all settled families keep a mix of livestock - cattle, sheep and goats - which still form an essential part of their risk-spreading, land-use strategy. Most animals are kept for meat, milk and/or skins, and as an investment to be sold in times of need. Using animals for draft is very rare. Carts and ploughs are almost unheard of in this area, though donkeys (and sometimes camels) are used for transport. Both women and men ride donkeys but it is extremely rare for a woman to own one.

The division of labour in relation to livestock is as follows: men and boys herd camels and cows, and are largely responsible for donkeys; women are responsible for chickens, goats and sometimes sheep, which mainly stay around the villages, and are herded by their younger sons. However, the animals are almost always owned by their husbands. One or two exceptional cases were found where women owned significant herds of sheep or several goats, but on the whole a woman would be lucky to own even one or two goats in her own name.

There are a few villages in the area with herds of small-stock (goats and sheep) numbering in their thousands. In some villages in our sample, notably Burbur and Gahawa Hasabsidu, which have larger herds of cattle, good grazing used to be found close enough to the village for cattle to remain *in situ*. Now, seasonal migration with herds is necessary and cattle are taken south to areas around Kazgeil (40 km away) or beyond, at the end of the rains.

Settled nomads are a significant presence. Their settlements (called *farigs*) are dotted about the El Ain area and represent several distinct nomadic groups, for example, Hawaweer, Kababish, Baggara. These were the groups most severely affected by the drought, and since then have resorted to settled agriculture, while at the same time trying to rebuild their herds. Again, nomadic women are responsible mainly for goats, while men

herd cows, sheep and camels.

Use of Fuel and Woody Resources

The inhabitants of the villages around El Ain Forest depend heavily on the forest for **fuel**, wild-foods, medicine (Table 5.2), and building materials, as well as for grazing of livestock. However, they must observe the rules governing the forest's use (for example, no one is allowed to cut green wood for fuel, or to make charcoal for sale - see Appendix). These rules are designed to ensure that the Forest Reserve is conserved. Uniformed Forest Guards, employed by the Forest Department, patrol the forest and can fine or arrest anyone exploiting the forest illegally or travelling through the forest with illegal animals.

Despite these rules, the forest has declined over the last twenty years. This is largely due to the commercial exploitation of the trees by firewood merchants and charcoal-makers from outside the area. It is also due to a lack of proper management of the Reserve itself by the government authorities, the local population and nomads. The forest rules are not enforced efficiently (there is only a handful of Forest Guards who patrol on foot). Drought, of course, has exacerbated the situation.

On the whole, the population living in the forest's buffer zone is keenly aware of deforestation in the area and seems to know and accept the rules of the forest. Charcoal is made mainly for home consumption only. Most women use only dead wood as fuel. The NFMP project has interested most villages in an integrated conservation and management programme. Both men and women have begun to be involved with tree-planting and soil and water conservation. Women in particular have taken up using improved stoves to conserve firewood and charcoal. However, a degree of illegal activity continues to take place. For example, some people still make charcoal for sale, despite the fact that all non-domestic charcoal-making is illegal. Donkeys continue to be used to transport dead wood out of the Reserve, despite the fact that only head-loads are permitted. Income from illegal exploitation of the Forest Reserve is, therefore, a significant means by which some of the population earns a living.

Table 5.2 Selected Local Plants and their Uses

Name	Resource	Product	Use	Locally Consumed/ LC/Sold
Heglig (Balanites aegyptica)	Tree	Leaves	Medicine for hepatitis	
		Fruit	Seeds made into oil once digested by goats	
		Bark	Soup ingredient	
		Wood	The best charcoal	
Kitre (Acacia mellifera)	Tree	Leaves	Fed to goats	LC
		Bark	Made into string	LC/sold
		Wood	Used for construction	LC
Khoudra (Chorcorus spp.)	Bushy plant	Leaves	Sauce ingredient eaten with *tō*	LC
		Stem	Recently, used to make rope, as Baobab is becoming rare	LC
Sidir (Zizphus spina christi)	Tree	Leaves	Used to wash goat & camel corpses	LC
		Fruit	Cakes; soft drinks	LC/sold
Subagh (Termilania brownii)	Tree	Wood	Smoke bath for women	LC/sold
Kusan (Boscia senegalensis)	Tree	Seeds/ pods	When dried, used to make porridge	LC as famine food
Umjhbitti	Grass	Seeds	Eaten as rice	LC as famine food
Neem (Azadirachta indica)	Tree	Leaves	Protect harvest against termites	LC
Ardieb (Tamarindus indica)	Tree	Leaves	Salad	LC/sold
		Fruit	Soft drink; medicine for malaria ingredient for Ramadan dish	LC/sold
		Wood	Makes oil presses (as termites don't eat the wood)	Sold

Water

The source of most village drinking water is from hand-pumps or *hafirs* (reservoirs), all of which are maintained mainly by men, though women are represented on most village water committees. Women collect the house-

hold water by the head-load if the source is near the village, though donkeys may be used if the source is more than about 2 km away.

The NFMP has conducted a major programme of micro-catchments to harvest water for tree-planting purposes on communal land. There has been some uptake of the technique by a handful of farmers on their own land, again built by both men and women. It is worth noting that during construction of communal micro-catchments (mainly as food-for-work schemes), project staff noticed that women took significantly more care over their construction than men.

The Effects of Drought

The droughts of the 1970s and 1980s, especially that of 1984/85 had a profound and lasting effect on agricultural yields in the area. The figures for Kordofan, as a whole, show an overall decline in yields since the 1960s.

Oral testimony from the El Ain area confirms the general trend of decline:

In the past we used to have everything. Now things are mixed up. We have hardly any millet, sorghum or livestock. After the drought we had to do everything differently. The men go to the cities to get small jobs.
(Haga Fatima Bet El Surag, Micho village)

Within recent memory the revenue from cash crops, such as sesame, was significant enough for there to be camel-powered oil presses in some of the villages around El Ain Forest, but declining yields have rendered them uneconomic. The damage done by drought to the gum arabic tree (*Acacia senegal*) - another important cash crop in the area - is reflected in the figures from El Obeid (Table 5.4), although excessive cutting and other management practices also contribute to this decline.

Table 5.3 Yields of major crops in Kordofan Province 1961-85

Tons per feddan	1960/61	1967/68	1972/73	1984/85
Sorghum	0.377	0.120	0.136	0.104
Millet	0.545	0.180	0.088	0.037
Groundnuts	0.400	0.248	0.090	0.071
Sesame	0.348	0.093	0.090	0.047

Source: El Sammani 1985, p. 64

Table 5.4 Sale of gum arabic in El Obeid, 1940-79

Years (tons)	Sale of Gum Arabic
1940 - 1944	109,396
1945 - 1949	225,653
1950 - 1954	372,083
1955 - 1959	407,808
1960 - 1964	382,095
1965 - 1969	285,049
1970 - 1974	110,105
1975 - 1979	90,271

Source: WASARP (Western Sudan Agricultural Research Project), GOS, 1985, p.13

As well as agricultural decline and the depletion of livestock, the natural resource base, particularly woody resources, has received a shock from which, it seems, it will be unable to recover. Oral accounts testify to the disappearing tree-cover:

Now that I am getting old I can't remember all the fruits we used to collect. There were so many... We'd never buy things. We'd just go to the forests and to our farms...I am very sad for our village. They cut trees for building and to make charcoal. The drought also caused trees to die. Now the khor doesn't have trees like it did in the past... no one is interested in what I say.

As already noted, the main tree species in the El Ain Forest Reserve, *Acacia mellifera*, is showing high mortality rates due to severe weakening by years of low rainfall. Drought exacerbates a situation in which human management of the natural resource base is already weak and confused.

Natural Resource Management

Despite increasing desertification and deforestation caused by drought and human activity, natural resource management (NRM) and natural resource improvement (NRI) measures are relatively limited. It is mainly in relation to the Forest Reserve around which they live that local people are aware of the need for conservation and sustainable management; with the encouragement of the NFMP project, they are beginning to carry out reafforestation measures.

The general absence of NRI activities in relation to agriculture can be explained mainly by the relatively low people : land ratio, which means that there is always new land onto which families can move. Most families already have larger holdings than they have labour available to cultivate, which ensures, either by omission or by design, that most land is sufficiently fallowed. Thus, there seems to be no need for anti-erosion measures, or for improving the soil with, for example, mulch or compost. Nevertheless, the natural resource base (land, water, fauna, flora and woody resources) in general is becoming degraded, and there is evidence that the few NRI measures which are being implemented are not sufficient to stem degradation, in the face both of environmental change and socio-political forces.

On-plot NRI measures

The NRI measures currently employed are mainly related to maintaining yields in family fields and on *jubraka* plots. Various types of crop-rotation and intercropping are practised. Most commonly, sesame is rotated yearly with sorghum or millet, depending on the soil type. Intercropping involves planting karkade alongside sesame, watermelon with pigeon peas, or watermelon with sesame. These are the most prevalent practices, although several different combinations were found. Rotation fallow is the main technique used to improve soil quality in the area. The intervals between fallows vary according to size of holding, labour availability and quality of the soil. Generally, *goz* soil will be fallowed after five or six years of cropping. On *gardud* soil some women said that fields yield well for up to 20 years.

Animals are often encouraged onto the fields after the harvest for manuring, but since herds have diminished due to drought, the effects are not significant. In the past, reciprocal arrangements between pastoralists and farmers ensured a certain amount of manuring, but this has diminished with worsening relations between the two groups (see below). Improving the fertility of the soil in this way is not seen as essential, and very few people expressed the need for physically transporting manure to the fields, or for artificial fertilisers.

As far as women are concerned, the experience of the NFM project shows that they are keen to try new techniques to invest in the long-term fertility of the land, especially when food or cash is offered for the work done. For example, many have now gained experience in raising seedlings and digging micro-catchments for tree-planting. Although the vast majority of women do not own the land they farm, they see the fields as 'family land', from which they benefit as individuals. When asked to choose between *jubraka* (garden) plots and family land as a priority for potential long-term improvement, women ranked them equally highly. They said that any training would be welcome, relating to either crop production or vegetables.

Photo: SOS Sahel

People are aware of the need to plant more trees

Some degree of agro-forestry has traditionally been practised in the area, by allowing the natural regeneration of tree species, particularly *Acacia senegal*, in the fallowed fields. Their nitrogen-fixing capacity and beneficial leaf matter help rejuvenate soil fertility. Again, drought is the main cause of the disappearance of this custom; young trees have been eaten by animals and more mature trees have died through lack of rain. Fields in this area are not generally bordered with hedges or trees, but some women use dry hedging (thorny branches) to protect their *jibarik* from animals. This is the source of some contention because some women are said to cut live wood to build their fences. The NFM project is encouraging the planting of live hedges where appropriate, to encourage agro-forestry, and to reduce wind erosion, and the smothering of crops by sand.

For the sake of comparison between and this and the other reports which make up this study, Table 5.5 shows the types of NRI activities carried out on family plots and on *jibarik*.

Conservation of common property resources

As well as the individual on-plot measures

Table 5.5 Comparison of NRI activities carried out on women's jibarik and on family plots

On-Plot Natural Resource Improvement Activities	Carried out by women on their jubraka plots	Carried out on family plots
Rotation fallow	Not practised	Common
Rotation/mixed cropping	Common	Common
Adding manure	Fairly common	Fairly common
Using agro-forestry techniques	Not practised	Occasionally
Mulching	Not practised	Not practised
Composting/adding fertilizer	Not practised	Not practised
Live hedging	Not practised	Not practised
Dry hedging	Fairly common	Not practised

described above, some NRM activities have traditionally been carried out at village level to conserve common property resources. To an even greater extent than the individual on-plot initiatives, these communal measures are in decline. They revolve around the village *sheikh*, whose duties should include the preservation and protection of the surrounding natural environment, especially forest resources. As El Din Awad Shegaf writes, these customary duties are reinforced by law:

> *The Forest Ordinance of 1932... shows that the Sheikh is an agent bound to protect forests from danger or damage (Sudan Laws, 1932). Moreover, the ordinance illustrates that any forest officer, policeman, Nazir, Umda or Sheikh may, without warrant, arrest any person reasonably suspected of having been concerned in a forest offence. Contribution of the Sheikh to the forest conservation involved maintenance of water course, soil and grazing.*
> (El Din Awad Shegaf 1989, p.108)

In the El Ain area, behavioural rules are said to have once applied to the following:

- the use of wet/dry season pasture;
- the opening and closing of different wells;
- the harvesting of berries and fruits in the correct seasons;
- the appropriate use of trees, especially near the water courses;
- the control of fires in forest areas;
- the maintenance of fire-lines.

Communal work groups (*nafeers*) were used to cut and maintain fire-lines, and they played an important role in protecting village resources from wandering animals, pest attacks, and illegal wood-cutters. All these jobs were the task of men. However, the enforcement of these rules is in decline. As Eltayeb Haroun, the *Nazir* of Er Rahad, said: 'these traditional ways made people treat the environment gently and have respect for the forests.' A significant cause of this decline can be found in the ambiguous ownership and management relations engendered by the administrative changes of the 1970s (see above), and the ethnic heterogeneity of the El Ain area. Other reasons include the absence of adult men in the villages due to increasing rates of out-migration.

Relations between farmers and herders

In recent years, traditional goodwill has broken down between settled agriculturalists and pastoralists. In the past, the system is said to have been well defined, with the nomads' herds eating crop residues in farmers' fields, while the farmers benefitted from the animals' manure. The herders followed pre-determined nomadic routes (*maraheel*), and if the animals strayed and ate a farmer's crop, fines would be levied.

One of the problems now is that *maraheel* are shifting (Map 5.4). Various factors have induced the change of routes: increased field sizes; the extension of El Ain Forest Reserve; modified use of village communal land; and the war in the South, which has meant that pastoral groups have not had access to the pastures of the Nuba Mountains since the mid-1980s. The decline in tree-cover and good grazing land has caused competition over dwindling resources. The fact that animals are banned from grazing in the Forest Reserve is a major source of tension. Farmers are worried by herders allegedly cutting live wood to corral their calves, trampling their crops, and making the land infertile with camel urine, which is said to contain harmful quantities of salt. Herders complain that farmers have restricted their access to pasture and water sources and have planted trees in micro-catchments (part of the NFM project programme) on land which was formerly used for grazing.

Thus a previously beneficial system has become a vicious pattern of accusation and counter-accusation, a pattern which is repeating itself across the whole of the Sahel. The difficulties caused by the tension between farmers and herders is yet another factor contributing to the decline in rural livelihoods.

Non-Agricultural Activities

Non-agricultural income-generating activities in the El Ain area are considered to be of minor importance compared with agriculture and livestock-raising. Women are variously involved in all of the following activities:

Trading

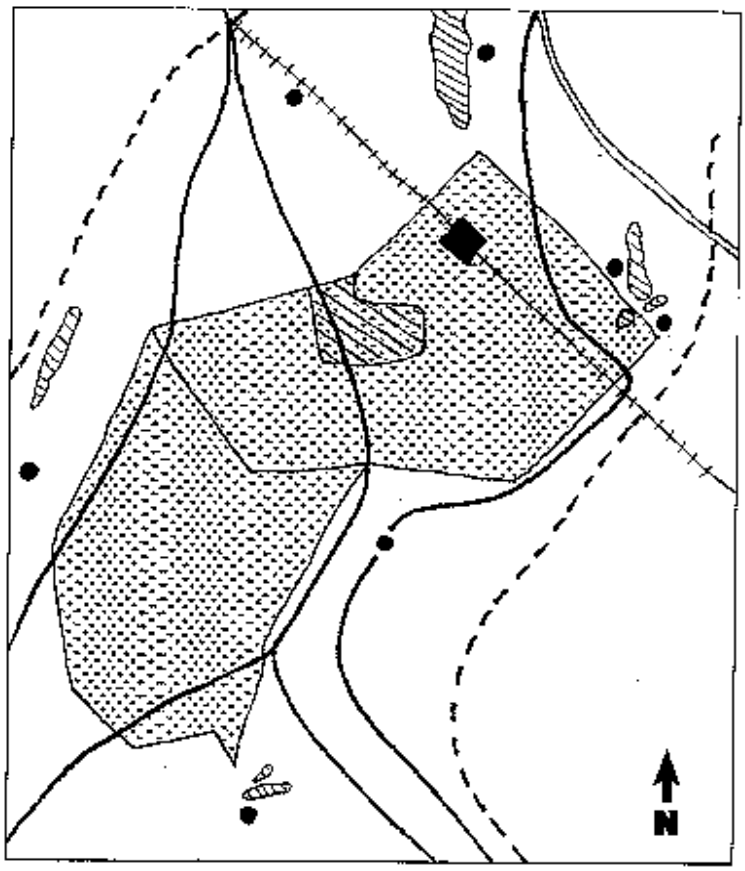
The main goods for market are agricultural surplus, particularly sesame, sorghum and millet, and livestock. In the past groundnuts and gum arabic had much greater significance, but are now rarely grown in the vicinity of El Ain. Men still take the largest share of responsibility in trading activities. However, as a result of recent hardship, trading is in decline and is undertaken only by a minority of richer farmers.

Petty trading

The sale of home-made produce or the buying and selling of small quantities of agricultural surplus remains a significant activity, particularly in larger villages with regular markets. It is largely women's responsibility. In our sample, petty trading was most common in El Banjidid. Women buy vegetables and fruit from the horticultural plots nearby and sell them in town. Several women make tea and sell peanuts and watermelon seeds on market days. In villages with primary schools (5 out of our sample of 11) some women sell homemade sweets and peanuts to schoolchildren during term time. In most villages women sell any surplus they have from their own *jubraka* plots (okra is sometimes dried for dry-season sale). A significant source of income for cattle-owning families is the sale of milk and milk products. Women make *semn*, a type of butter-oil, and *rubh*, a type of yoghurt, for sale during the rainy season. Cheese is also made in small *farigs* in the bush, and is mainly a male activity. Fresh cow's milk is sold by the jerry-can in the local towns if transport is available. Women will sometimes sell their surplus goat's milk within the villages.

Handicrafts

The production of mainly mats, fans, and rope made from either local or bought materials is a women's activity, and, as noted by Vogt and El Daï (1990), one for which women in Kordofan are justly famous. Unfortunately it suffers from market saturation and increasingly scarce and expensive raw materials.



Map 5.4
Altered routes of pastoralists through the El Ain region

Tailoring

Tailoring is a source of income for small numbers of women, mainly in the larger villages, for example, in El Banjidid, where a women's centre enables women to hire sewing machines.

Firewood and charcoal sale

This is practised by men and women, though recently to a lesser extent in villages in close proximity to the Forest Reserve due to the enforcement of the Forest Rules (see below and the Appendix for Rules of El Ain Forest).

Sale of wild herbs, leaves and fruit

This is mainly done by women. *Khoudra* (*Chorcorus spp.*) and *rijla* (*Portulaca oleracea*) are widely gathered during the rains. *Khoudra* is sold dried, *rijla* fresh. *Tabaldi* (*Adansonia digitata*) leaves and fruit, *senna maka* pods (*Cassia senna*) and *guddeim* (*Grewia tenax*) fruit are also sold.

In summary, non-agricultural activities, particularly during the dry season, are not secure enough or sufficient to support the need for cash. Nonetheless, the majority of household necessities require cash, as does the payment of taxes. Recent bad years have increasingly meant that staple crops must also be bought. Male out-migration is the main response to this cash need.

Household Roles

To conclude the present section it is appropriate to describe household roles, and the gender division of labour within the household.

Women are exclusively responsible for child-care, food preparation, cooking and cleaning of the house and compound. As we have seen above, this work is done in addition to their work in the fields, and their care of small stock. Most women therefore rely heavily on their daughters, particularly for child-care. Fuel and water collection is also mainly a women's task, though men participate, particularly if the water source is far from the homestead.

It is men's task to build houses, though women will often carry out repairs. In situations where women have no husband or close male relatives present, *nafeers* will sometimes be organised for house-building.

A woman's working day amounts to 16 or 17 hours work, and is undoubtedly longer than that of a man in an otherwise comparable position (for example, her husband). In addition to this extremely heavy workload, the burden of childbearing approximately every two years cannot be underestimated.

Migration

Nowadays men have to go out of the village to get money for their families. There is no livestock, no gum arabic and there is not enough millet and sorghum to last the summer months. The village men go to Khartoum, El Obeid, Er Rahad and to Libya.
(Fatima Bet El Surag from Micho village)

General Trends

Kordofan once flourished on the trans-Saharan trade routes. As a result, all tribes in this area (whether sedentary or nomadic) have a long history of movement. The ethnic diversity of the area illustrates the transient nature of many of its communities. Whole villages have migrated here from Chad, Nigeria, Niger, Burkina Faso and neighbouring regions of Sudan; some as recently as one generation ago. A number of village populations, including one featuring in the present study (Hilat Abdu) were originally on their way to Mecca, but have for the time being settled in the El Ain area to farm. In-migration is offset by the movement of mainly men away from the El Ain area. This movement has primarily been caused by the onset of drought, and is largely seasonal.

Before detailing the patterns of current migration, it must be mentioned that the seasonal movement of men from the El Ain villages out to other parts of the Sudan has a history which dates from before the beginning of the drought years of the 1970s. Men have traditionally moved South with cattle and camels on a regular basis during the dry season. Better grazing is found in Southern Kordofan and towards the Nuba Mountains. Unfortunately, in recent years the war in this area has limited the options of herders from El Ain. Another major flow of labour out-migration began in the 1940s to the irrigated cotton-growing scheme of Gezira. Then in the 1960s and 1970s, big schemes began, such as Habila, Blue-Nile, White-Nile and Er Rahad Agricultural Corporations. These schemes established a pattern of sending trucks to villages in Kordofan to transport both men and women workers, particularly for the harvest. Many villagers in the El Ain area took advantage of these schemes. Thus, labour movement is not a new phenomenon in this area, although over the last two decades it has increased due to drought.

Since the NFMP began operations in the area in 1989, the population of the project villages has reportedly dropped by about three thousand people overall. From village records it is not possible to tell whether this means that whole families have moved away, or predominantly single and married men, but it was clear from discussions that male out-migration is on the increase. Most people date this increase to have begun after the droughts of the mid-1970s and particularly that of 1984/85, when the whole region saw very severe upheavals, particularly in relation to the loss of livestock, and the beginning of a series of poor harvests.

From our sample frame it was not possible to obtain accurate figures, but it seems that seasonal rather than longer-term migration is the dominant pattern. Our impression, however, is that longer-term migration (anything from 1 to 21 years) is on the increase, and may well account for a large part of the drop in population mentioned above.

Seasonal migration takes place mainly during the dry season, when there is virtually no agricultural work. Lengths of seasonal migration vary year by year, depending on the rains. In bad years men can begin leaving around October, and return around June of the following year. In better years, when harvesting and marketing take longer, seasonal migrants may not leave until around January, and will, again, return for the rains in June in time to clear and plant the family fields.

Table 5.6 shows the percentage of migrant households (where the male head is either a seasonal or longer-term migrant) in each of the villages covered by our survey. In some villages as many as 75 per cent of households are headed by a migrant. None of the villages surveyed were unaffected by male out-migration.

Table 5.6 also shows the relative numbers

of seasonal versus longer-term migrants. The figures show more seasonal than longer-term migrants by only a narrow margin. However, this does not agree with the general impression we gained from villagers and project staff, which was that seasonal migrants far outnumber longer-term migrants. We conclude that our sample is slightly skewed, and that our informants overlooked several married seasonal migrants from their village. We assume this is because:

- seasonal migration is seen simply as 'a way of life' - so natural as to be unremarkable; (b) seasonal migration in many cases does not happen every year;
- many men find only casual work in town, and numbers of migrants from any one village fluctuate from year to year;
- when asking about seasonal migrants, we framed the question in terms of 'husbands who leave during the dry-season' - this may have meant that respondents excluded names of those who perhaps return weekly to the village, but who would nevertheless have been defined as migrants, according to our criteria.

Because our study focused on married men and their wives, we did not survey young men. There are certainly many seasonal migrants among the younger, unmarried men of the community. This would also account for the general feeling we gained during discussions that seasonal migration was the dominant pattern.

Remittances

From our sample the average monthly remittance sent by migrants to their wives, taking seasonal and longer-term migrants together, was about 700 LS per month (£1 Sterling equivalent to 200 LS Sudanese Pounds in 1994). At the lowest extreme, we found some women were receiving only 50 LS per month (Prices in Sudan are high relative to average incomes, eg, a cup of tea in the market costs 5 LS, half a kilo of tomatoes costs 40 LS). We found that the vast majority of migrants sent something, even though some amounts were extremely small. As noted below, out of 50 migrants' wives we found only 4 who had been totally abandoned by their husbands and were not receiving any monetary or in-kind assistance.

On remittance levels, broadly speaking, in the upper category were villages like Micho, Nawa, Burbur, El Banjidid, Gahawa Hasabsidu and El Ain - all either large villages with high livestock numbers or with many longer-term migrants, some of whom are salaried professionals, or who have found regular employment in the Gulf. In the lower category, we counted particularly Ad Debbeba, Gahawa Suliman, and Newella 2, small villages where seasonal migration predominated.

Migrants' wives normally receive remittances directly from their husbands. This is commonly in the form of cash through friends or relatives visiting the village, and is therefore fairly irregular. Many migrant's wives, especially younger women, are looked after by their in-laws during their husband's absence. They will often receive a separate, smaller sum for their personal needs; their in-laws will receive the bulk of the migrant's remittance.

Because remittances are relatively low, migration does not seem to be making a significant contribution to agricultural or livestock investment in the El Ain communities. Rather than for agricultural implements, fertilisers or livestock, remittances are used to buy food and other immediate necessities. We would argue that remittances in the El Ain area are, therefore, used primarily to fill a 'cash gap' felt at village level. This 'cash gap' has been created by the decline in agricultural yields, particularly of cash crops, which, in turn, has led to an increasingly monetised rural economy, since people need money to pay for food to supplement what they grow. As noted above, households are far from self-sufficient. Most households require cash for the following necessi-

Table 5.6 Incidence of migration by married men per village surveyed, and the ratio of seasonal to long-term married migrants

Village	Total households	Households headed by a migrant	Seasonal migrant heads (% of total)	Long-term migrant heads (% of total)
Gaghrur	21	12 (57%)	6 (50%)	6 (50%)
Micho	80	20 (25%)	17 (85%)	3 (15%)
Nawa	150	32 (21%)	17 (53%)	15 (47%)
Gahawa Hasabsidu	33	10 (30%)	5 (50%)	5 (50%)
El Banjidid	715	433 (62%)	- -	- -
Newella 2	31	7 (22%)	4 (57%)	3 (43%)
Ad Debbeba	12	9 (75%)	6 (66%)	3 (33%)
Gahawa Sulman	10	7 (70%)	5 (71%)	2 (29%)
El Ain	17	8 (47%)	0	8 100%)
Burbur	107	36 (33%)	27 (75%)	9 (25%)
Hilat Abdu	67	6 (9%)	5 (83%)	1 (17%)

Note: These figures for migrants include only married male migrants, so young, unmarried men are not shown here

ties: clothing, shoes, furniture, utensils, salt, soap, spices, charcoal, oil, meat, vegetables, flour-milling, medicines, and, in bad years to buy staple grains (sorghum and millet).

In discussion, we found that remittances in cash were, in some cases, less important to migrants' wives than were goods such as food and clothes. These goods were normally brought back by the migrant at the end of his period away. This method seemed to be especially favoured by seasonal migrants. We did not attempt to quantify these benefits in order to make a precise comparison with monetary remittances; it would have been almost impossible to do so. Furthermore, some of the goods with which a migrant may return, such as perfume or 'luxury' foods such as spaghetti, have more prestige than monetary value.

Types of Work

Seasonal

The main types of work found by seasonal migrants include brick-making and construction work and other unskilled casual labour in Khartoum and El Obeid. Others join the harvest on various mechanised agricultural schemes, such as in Gezira and Habila (cotton and sorghum). A few interviewees had husbands who migrated during the rainy season to cultivate on *goz* (sandy) land they owned to the North, about a day's journey away.

Longer-term

There is a wide range of occupations for longer-term migrants, though a high proportion of women did not know what their husband's jobs were. From our sample, the most common occupations were armed service, animal herding, and trading. More unusual occupations included an itinerant radio-mender and a travelling *imam* (Islamic holy man). The three destinations cited for migration outside Sudan were Iraq, Libya and Saudi Arabia, where many work without papers.

We found that wives and families of longer-term migrants were among the most wealthy (based on observation of housing, clothing and other possessions during interviews with migrants' wives). The heads of these households were either traders/professionals in the Gulf or Libya (eg, one man was a trader in fertilisers and agricultural goods, another was a clerk in a law court), or had permanent jobs in Khartoum (for example, policeman). Almost as well-off were families of traders working permanently in El Obeid, who tended also to have large herds of cattle. At the other end of the scale were wives of seasonal migrants whose husbands go in search of temporary day-labouring jobs on building sites, or in small brick-making concerns in urban areas. The majority of interviewees fell into the lower social strata.

With the intensification of the civil war, the government of Sudan is increasing incentives for soldiers to join up. When men join the army they are normally contracted to work for six years, and then can renew on a four-year basis, but for those on active duty in the South, *pay is double, and one year served in the South* counts as two. For many poor villagers, the financial advantages seem to outweigh the high risk of getting killed. Apart from 'contract' soldiers, military service for 18-30- year-old men is officially compulsory, and, although enforcement has been patchy in the rural areas, the general trend is towards increased strictness.

Given this general picture, we were surprised by the relatively low numbers of soldier's wives in our sample. This is probably because we surveyed only married migrants, and most soldiers are as yet unmarried. Nevertheless, the war does not look likely to end in the near future, and women are aware that their husbands may be called up at very short notice. The area, close to a military camp and a tarmac road, is a logical conscription ground.

Effects of migration

The effects of migration differ significantly depending on whether it is seasonal or longer-term. In general though, the feeling, especially among women, is that neither is to be encouraged: male outmigration is seen as a necessary evil, a fairly recent strategy adopted in the face of low rainfall, rising prices and environmental degradation. A local proverb sums up the prevailing attitude: Wattani wala mali Battni (It is better to stay at home, even with an empty stomach, than to go away).

Nevertheless, as noted above, most men leave the villages as soon as the harvest is over. This section examines: firstly, the effects of migration on women left behind; secondly, the social effects on village life, and thirdly, the effect on agriculture and natural resources.

Effects on Women's Workloads and Roles

Seasonal migrants' wives

The wives of seasonal migrants (38 per cent of our sample) assume complete responsibility for the household once their husbands leave, managing the household budget, children's welfare, small stock, crop storage, fuel and water needs and marketing. Interestingly, rather than complaining about workloads, which evidently do get heavier, women talk of difficulty in disciplining children during their husbands' absence. For example, one woman said after her husband left she was powerless to stop her son running away to join the army.

Others complained of the irregularity of remittances, and in some villages women said that life was particularly hard around the month of March when men have been gone for a month or two, but before remittances start to be sent. Families are heavily dependent on the remittances of seasonal migrants which, as noted above, are sent in the majority of cases, even if they are sometimes very meagre. The goods (clothing, shoes, food, etc) with which migrants invariably return are perhaps as important as the money remitted.

In cases where men leave in search of pasture for their animals, they are not able to send remittances, but tend to sell one or two animals before they leave, and give their wives enough money to manage the household budget until their return at the start of the next rains.

On the whole, women said that men returned in good time to begin clearing the land for cultivation (around June), although some said that they have to start this on their own. As noted, there are few or no improvements carried out on the land during the dry season, therefore women carry out no extra activities in the fields during their husband's absence.

Longer-term migrants' wives

For wives of longer-term migrants, the picture is somewhat different. This group can be divided roughly into three: women heads of households; those who are absorbed into their in-laws' or their own families, and abandoned women. In our sample, the numbers in the first two of these categories were roughly equal, with a small minority of abandoned women.

Migrants' wives as heads of household

Out of our sample of 50 migrant's wives we found 11 (about 20 per cent) who we could define as heads of households. They were living alone with their children and/or other dependents (elderly relatives) and had assumed the main responsibility for their family during their husband's absence, whilst also receiving remittances from him. For these women life is normally more difficult than for those absorbed into an extended family. However, a husband will normally decide to migrate over the longer term only if he can ensure the welfare of his wife and children in his absence. Therefore we found that these women heads of household often had their own means (land or livestock) or had a trade (for example, tailoring or handicrafts).

Several women said they receive financial or in-kind support from other family members in the village when they request it. In some cases, notably in Micho village, women heads of household cited credit from local shop-keepers as an important source of support, particu-

larly during the 'hungry months' before the harvest. Some women, if they were not living with their family, had male 'guardians' appointed by their husbands. For example, the husband of a woman in Micho village had appointed his brother as guardian, allowing him use of his lorry for trading, and expecting him to provide his wife with sorghum. (It should be noted that this man's economic level was well above the average in the area. Someone with a resource such as a lorry would be regarded as particularly well-off).

Average monthly remittances from longer-term migrants are higher than from seasonal workers. As noted above, remittances are crucial for providing household essentials (like salt, soap, onions, oil). Interestingly, no women said that they used their husbands' remittances for hiring labour, even when labour was available within the village, which was, in fact, rare. Of the 11 women in the sample who could be classed as heads of household, only 2 had ever hired labour on the family farm. We conclude that remittances are therefore not used to fill a labour-gap left by migrating males. Instead, remittances fill a 'cash gap' produced when men leave and can no longer engage in cultivating cash crops such as sesame, or marketing surplus crops such as millet or sorghum.

Migrants' wives absorbed by the family

The wives of longer-term migrants were found to have been absorbed into either their own parents' household or that of their in-laws (again, about 20 per cent of the sample). In these cases, a migrant's wife will cultivate the family land or her in-laws' land alongside her relatives/in-laws, both male and female. The whole family works and eats together, normally under the direction of the senior male resident. Remittances from absent husbands will normally be sent both to the household-head and to the wife, with the household-head normally receiving the major part. In these cases the sending of regular remittances does not seem as crucial to the household as it does in cases when women are left to cope alone (either seasonally or long-term), and the male migrant will normally tend to save up the money earned, and/or return with gifts in-kind for his wife and family.

Abandoned women

In our sample of 50 migrants' wives we found 4 abandoned women (8 per cent). They do not receive anything from their husbands and depend variously on sons or brothers working abroad, or their own income-generating activities. Some said that they knew their husbands had taken second wives elsewhere, and one or two said they wanted a divorce. It was clear that in most cases their plight was recognised by the community, and there was evidence of goodwill and practical help from neighbours and relatives.

Slowly changing roles

In villages with a high proportions of women in the above three categories (particularly El Ain, Burbur and Gaghrur), women felt that they had taken over men's roles, for instance in cutting and clearing in the fields, and marketing. In Burbur the women talked of their husbands returning from Libya having forgotten how to farm: 'while we have hard hands, darker skins and are always tired from working in the fields.'

Another effect of migration felt by women is the not inconsiderable burden of entertaining when their husbands return, particularly from abroad. Women in Burbur joked, saying: 'all the money our husbands come back with is used up by the parties we must have for the relatives when they return!'.

The reliance of migrants' wives on their children is becoming greater than ever, and it was noted that children, particularly girls, are missing out on educational opportunities because they are required to help shoulder their mothers' extra work burdens in the farm and household.

Although women are increasingly assuming more household and farm responsibilities, the extent to which women are taking over men's roles should not be exaggerated. Women's role in decision-making remains limited. The decision to migrate is almost invariably taken by the husband. We encountered one village with a particularly high proportion of longer-term male migrants (El Ain village), where women claimed to be making decisions on important social issues such as children's circumcision and marriage, but on the whole, social decisions are postponed until men's return. In public life women are not replacing the *sheikhs* and their older male relatives in village matters. Staff of the NFMP feel that, although women are consulted, men always have the final say in matters relating to the village and to the project. They believe that in

future, if male migration increases, the project may well be dealing with progressively smaller groups of older men at village level. Nevertheless, they are sure that women's decision-making roles will increase only very slowly.

Social and Economic Effects at Village Level

Migration is not seen as benefitting the community as a whole. Indeed it is viewed by many as contributing to the disintegration of village life, which, in turn, has a negative impact on natural resource management.

In most of our discussions, migration was seen to benefit only the migrant's immediate, and sometimes extended family. As the *sheikh* of El Banjidid said: 'A man is lucky if he brings back enough to feed his children, let alone to help his neighbours'. In only three cases did we find evidence that migration was concretely benefitting the community as a whole. These were in Micho and Nawa where associations have been set up among migrants in Khartoum, and in Burbur where migrants living abroad have been appealed to for funds in order to equip the village school. The case of Burbur does not represent a significant contribution to village development, since only nine individuals have so far been appealed to, and very little money has been sent. However, the work of the Micho and Nawa migrants' associations has been significant in equipping the village schools and repairing clinics.

Migration is generally felt to reduce village cohesion. The absence of men during the dry season was said by many to have contributed to the following problems:

- Villagers' ability to protect their resources from outsider utilisation has been undermined. On a small scale this could mean protection from neighbours coming to cut or collect natural resources. More menacing, however, is the threat of merchants (and the army) who send lorries into the area to collect large quantities of wood. The absence of men reduces the *sheikh*'s support, and hence his ability to protect resources which are traditionally under his management.

- Interaction between villages has declined. Negotiations, feasts, funerals and general meetings between villages normally take place in the dry season when people are not so busy. The absence of men during this period was said to have reduced community interaction and management agreements between villagers in the region. Although women take on some of the men's roles such as meeting and greeting strangers, they are not involved in negotiations at village level. The *sheikh* of Micho complained that: 'it is now harder than ever to look after village land'.

- Relations between villagers and pastoralists has deteriorated. Traditional reciprocal arrangements between these two groups have been severely eroded. This might be solved with formal agreements negotiated between the two groups, but the absence of adult men for much of the year makes this more difficult.

In open discussion with villagers, both men and women particularly stressed the negative effects of migration on child-rearing. Added to this, people mentioned the disadvantages of fewer men present to protect the house, to discuss and run village matters, and to take part in communal work parties (*nafeers*). Other consequences mentioned included fewer schools or clinics being built due to men's absence, and the increased chance of inter-ethnic conflict.

Figure 5.1 illustrates the perceived effects of male out-migration on the village of Burbur. It was drawn by a group of men from this village. No relative weights were given to the effects cited, although the men stressed that the social effects of migration (especially on child-rearing) caused them deep concern.

A further effect of migration has been to increase the integration of villages into the monetary economy. Although the people of this area are no strangers to money - the figures relating to sale of gum arabic (Table 5.4) show that they have long been marketing cash crops - migration has perhaps intensified this orientation. There is some evidence that the influence of money is contributing to the breakdown of traditional communal values. For example, village *sheikhs* find it progressively harder to organise *nafeers* (communal work-parties) because men no longer want to work for no pay. It is also reported that some village leaders, tempted by financial gain, have been

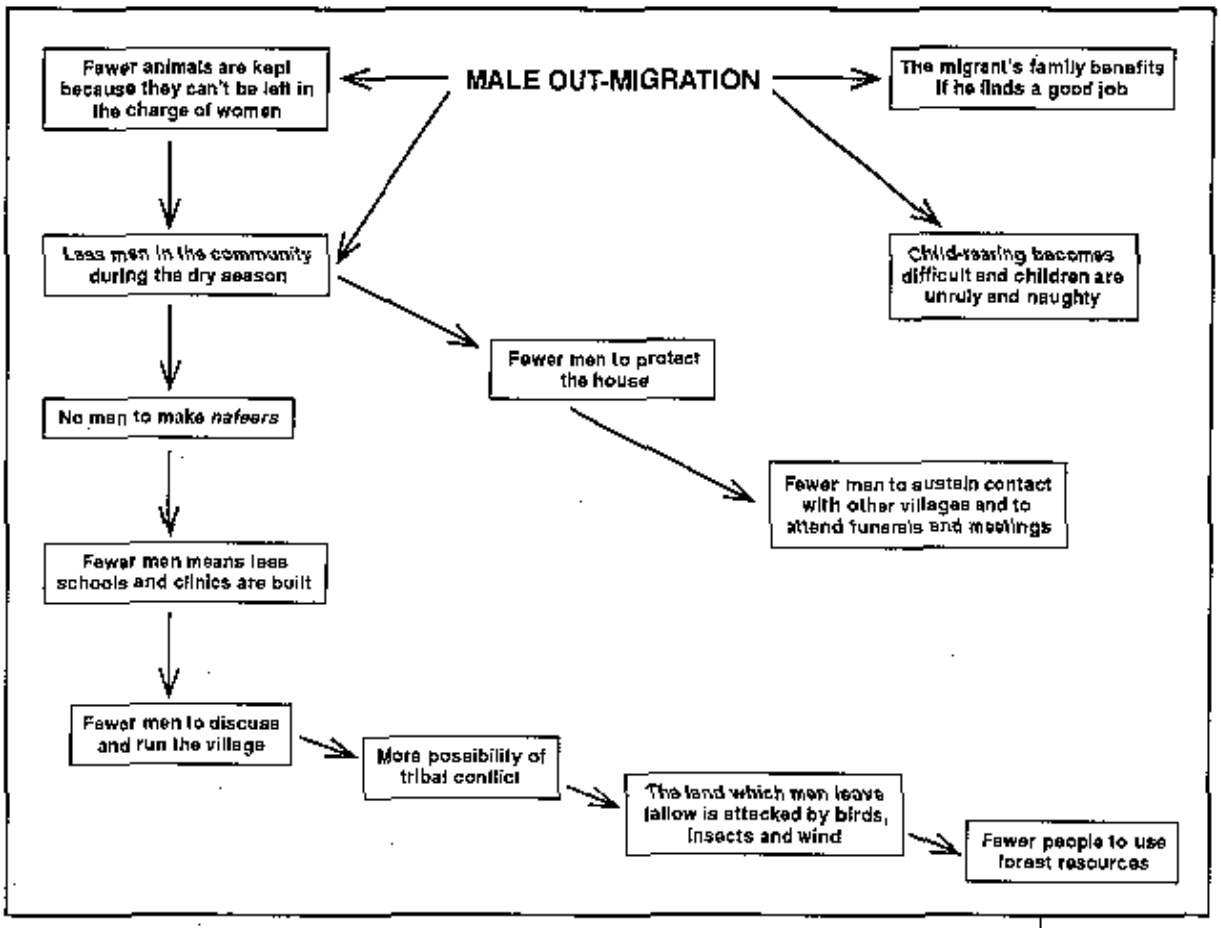


Figure 5.1 Consequences of Migration as Perceived by a Group of Men in Burbur village

illegally selling village land to developers from outside the area. Abdin Abdalla, (an NFM project worker who has lived for over twenty years in El Ain), says: 'The introduction of money into the economy destroyed the cooperation between people.'

This lack of cooperation is an important factor in the changes currently taking place in agricultural practices and natural resource management. In effect, if the trend continues, it may entail serious neglect and environmental degradation.

Current Effects on Agricultural Patterns and Natural Resources

A first glance at agricultural practices suggests that migration is having little impact on farming patterns and natural resource management at present. However, long-term patterns are discernible which suggest that migration may already be having a profound and potentially negative effect on natural resources and agriculture-based livelihoods.

Seasonal migration does not upset agricultural patterns

Because most migration is seasonal and men return for the rainy season, agricultural patterns in the area as a whole have, so far, changed little as a result of migration. Since fields are only tended during the rainy season, and no soil-improving measures and very little gardening are carried out during the dry season, seasonal migration seems to have little effect on the land-use or quality.

Seasonal migration relieves pressure on natural resources to a small degree

There is some evidence to suggest that migration is relieving pressure on the local forest resources. With the lack of alternative dry season job opportunities, men have resorted illegally to collecting and selling firewood and making charcoal in the Forest Reserve. Some informants cited the recent strict enforcement of forest rules as a reason for men migrating away to look for employment elsewhere. In their absence some migrants' wives take over their husband's former activities. However, natural resource exploitation by these women was found to be taking place on a smaller scale because they lacked time and resources (eg,

donkeys for transporting wood) to devote themselves to their husbands' former activity. Therefore, it can be said that migration is relieving pressure on natural resources, as less exploitation by villagers is taking place overall.

The few women who become head of households assume greater farm management roles

If they have become heads of their households (this was found to be the case in only about 20 per cent of cases), wives of longer-term migrants will manage the family land and livestock themselves, though many receive advice and support in farming management from male relatives resident in the village, such as their fathers, sons or nephews. By 'management' is meant, for example, that they will make decisions regarding selection and rotation of crops, and, if the husband's absence is prolonged, will decide on which fields to leave fallow and which to put under cultivation.

Most wives of longer-term migrants report a labour shortage. However, it is difficult to determine whether or not this is due to their husbands' absence, since most households report labour shortages. Whether they belong to migrants or non-migrants, most households report owning more land than they are able to farm. In terms of the effects on the land of longer-term migration, one could speculate about the positive effects of fallowing land that would otherwise be exploited if the migrant were present. But again, since most families, whether migrant or non-migrant, practise two- or three year fallows, it is difficult to confirm such speculation.

Working in nurseries

Photo: SOS Sahel

Remittances are not sufficient to invest in agricultural improvements or wage-labour

Remittances were found, on the whole, to be relatively low, and were mainly used to buy food and other basic necessities. There was no evidence that remittances were ever invested in agricultural improvements, such as pesticides, or machinery. There was also no evidence to support the idea that families left behind might attempt to solve their labour shortage by using the remittances to employ wage-labour on the farm. The few wealthy families interviewed, who had members on longer-term migration abroad, tended to have more livestock. This points to livestock being a priority over the land, in terms of 'safe' investment of remittances.

Future Trends

If male out-migration increases, the potential effects may include the following.

More longer-term male out-migration entailing increased environmental degradation

Many of the social effects of migration mentioned above such as absence of men for communal work have, in turn, the potential for exacerbating environmental problems in the long term. The lack of men to clear grass-lines, as they once did, to reduce the risk of bush fires is one example; another is insufficient numbers of villagers to protect the Forest Reserve from exploitation by outside users. Furthermore, alternative opportunities for supporting the family have perhaps replaced the need to invest in the natural resource base at home. In the long term, environmental degradation is likely to provoke more migration away from the increasingly unproductive family land.

Women left behind lacking the time to invest in NRI activities and their workloads increasing overall

Women are, on the whole, keen to try new techniques to invest in the long-term fertility of the land, especially when food or cash is offered for the work done. However, the main problem from women's point of view is lack of time, and, as emphasised above, the need for long-term investment in the land is not seen as a priority. These two factors are the major obstacles to women's involvement in long-term investment in the natural resource base, and

will be further exacerbated if male out-migration increases.

There is also evidence that the work-burden falling on wives and families of longer-term migrants is heavier than that falling on wives of seasonal migrants, unless they are absorbed into their in-laws' household. Children and adolescents, especially girls, are already being kept away from school in these circumstances, since their labour is needed to replace that of absent men.

Because male migration is mainly of seasonal nature, it is not at present having a marked effect on agriculture and natural resource management in the area. However, if longer-term out-migration increases, this will have serious consequences for the health of both the land and of women left behind. The extra workloads that out-migration entails for women, coupled with the increasing environmental degradation (such as erosion and deforestation) of the area, will mean that both the land and women will suffer. Women and children will have to work harder on the land to replace absent men, and will be too busy to engage in conservation activities.

Conclusions and recommendations

The research in El Ain has shown that male out-migration is one factor among many that is leading to the destabilisation of the ecological balance in the area. Migration is both a reaction to a deteriorating rural environment and economy, and a cause of this deterioration. Therefore, and because of the consequent, inevitable impoverishment of households in this area, and the growing need for cash, rates of out-migration are bound to increase in the near future. If longer-term migration increases - and there are indications that it will - this will put added pressure on women and families left behind, mainly in terms of workload. There is also the strong possibility that family groups might opt to move away altogether.

Meanwhile, for the moment, the seasonal pattern of migration which characterises the area is clearly a rational livelihood strategy. For the time being, its advantages seem, fractionally, to outweigh its disadvantages. Seen from the household level, it is a 'necessary evil', which enables survival from year to year. Seen from the overall perspective of natural resource management, the phenomenon of migration alone is not, yet, having significantly negative effects on agriculture and environmental sustainability. Other human activities, such as land disputes, confusion of management responsibilities and exploitation by outsiders, are having more serious effects on agriculture and the environment.

In the light of this research it is possible to suggest some possible strategies for those concerned with and working in the El Ain area, including the NFMP project.

1. It is clear that households need cash, and men, especially, need employment in the dry season, and would stay at home if work was available nearby. It is recommended that support should be given to the creation of local-level rural employment for men and women that is non-exploitative of the local natural resources. It is perhaps worth considering paying people to plant trees and carry out other environmental improvement initiatives, at least in the short term, until local people can start managing and profiting from local forest resources themselves.

2. It is important to find ways of easing women's workloads through appropriate labour-saving technologies such as improved stoves, and through better water-provision nearer the home. Better health-care facilities would help women cope with the triple burden of child-bearing, domestic tasks and farm-work.

3. Because of their heavy involvement in agriculture, and because they do take part in farm decisions, it is important that women be included in training and agricultural extension programmes (indeed, the NFMP is planning to implement a *jubraka* programme specifically for women, involving the promotion of live-hedging, composting, manuring and agroforestry). Women's involvement will become more crucial if male out-migration increases.

4. Support for institutions and networks which already support migrants is needed, in order to help make migration a more successful and secure strategy. Possibilities include help with transport, information on wage-levels and workers' rights, and advice on the best migration options.

5. Migrants' own networks should be supported to encourage investment back in their home communities. Longer-term migrants often have their own informal associations which have the potential for raising money to be invested in infrastructural developments. These funds could benefit from greater institutional and technical support.

NOTE

Headloads of fire-wood are sold for about 10 or 15 LS each. Charcoal prices vary between 40 and 50 LS per sack within the El Ain area. The current price for a sack of charcoal in Khartoum is about 800 LS (August 1992 prices). This reflects the scarcity of trees around the capital, but also gives some indication of the degree of 'mark-up' on such goods between the rural areas and urban markets.

Appendix
Summary of Rules for the El Ain Forest Reserve

1. The Forest Department will only grant privileges to the people who are living around the reserve. These people are responsible for the protection and proper utilisation of the Reserve. Otherwise, any privileges received may be revoked.

2. Dead wood may be collected from both the New Extension and Old Forest Reserve, for personal use at home only. This can only be taken out by people and not by animals.

3. Green wood for building purposes can only be cut after a permit has been obtained from the Forest Department Office at Wad El Bacha for both the Old Forest Reserve and New Extension in areas specified by the Forest Department.

4. Collection of grass and dead leaves is possible from both the Old Reserve and New Extension. It can be transported by legal animals which are allowed in the Reserve.

5. Water collection is possible for domestic use in the Old Reserve from El Ain Station. However, water for illegal animals needs to be carried out of the Reserve. Donkeys can be used to collect water.

6. Fruit collection is possible in the Old and New Reserves but permission first needs to be sought from the Forest Department Office at Wad El Bacha.

7. Goats and camels are not allowed to enter any part of the Forest Reserve except if permission has been sought from the Forest Department for travel through the Reserve or if a camel is being used for transporting a person.

8. Cows, sheep and donkeys may use parts of the New Extension agreed with the Forest Department. However, they may not enter the Old Reserve until further notice.

9. Travel through the Forest Reserve is allowed on the major roads only. If illegal livestock are to be transported then a permit needs to be obtained from the Forest Department Office at Wad El Bacha before animals enter the reserve.

10. No agricutural activity can take place in any part of the reserve.

11. No *furiqs* can stay within the Reserve. When the Baggara people arrive then this problem will be discussed with them.

12. All animals are prohibited from the fenced-off *hafir* areas within the Old Reserve.

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SOS Sahel is an association of African and European voluntary agencies founded in 1976 in Dakar. SOS Sahel (UK) is a registered charity, no. 296311.

SOS Sahel (UK) works with rural people across the Sahelian zone of sub-Saharan Africa supporting community actions and initiatives that focus on the management and conservation of natural resources and on increasing small-scale food production.

Parallel with project work is an applied research programme, which has explored three main areas: improving community participation in project planning and evaluation; links between rural and urban communities, and the environmental consequences of migration.

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