of home gardens, where organic matter and fertilizers are concentrated. Erosion has been intensified by the land clearing activities of the 1970s and 1980s and by the confusion over land tenure rights, particularly in the valleys.

Traditional chieftaincies and control of the land

The province has been occupied by the Mooaga (Mossi) ethnic group since the 1500s. All of the traditional chieftaincies fall under the command of the Moogo-Naaba, the Mossi chief, who lives in Ouagadougou. The Bissa had once controlled the central and southern part of the province, but they were either driven away or assimilated into the Mooaga group. Other indigenous groups once occupied villages in the north, east, and center of the province, but Nakombé, members of an aristocratic group related to the Moogo-Naaba, now lead all of these villages.

A group's rights of primacy to the geographically defined family territory on which it is settled are symbolized by the master of the land, the *tengsoba* (land possessor). The authority of the tengsoba operates on three levels: religious, economic, and legal.

- *Religious.* The tengsoba leads rituals linked to the land at the time of clearing, planting, and harvesting. He also purifies the land.
- *Economic.* He allocates vacant land to those who request it and determines when planting, harvesting, and marketing of grain should begin.
- *Legal.* He is the guarantor of the permanent collective and individual user rights that he grants and the guardian of village lands. And he serves as arbiter of any dispute involving land rights.

In Ganzourgou Province, the masters of the land belong almost exclusively to the Yoyoose ethnic group (an indigenous Mossi group) of the Sawadogo.

Farming rights and land tenure

Among the Mossi, ownership of land always falls to its first occupants. Occupying land is tantamount to establishing political authority. Farming rights are based on membership in a particular kinship group or lineage. Each community is composed of several families, generally belonging to the same lineage.

The families of a community appropriate and cultivate each piece of land, and each community has property rights to the land that it cultivates. Every member of a lineage holds an inalienable right to cultivate the lineage's property. Land passes from father to oldest son by inheritance.

Foreigners, migrants, dependents, and conquerors who have obtained property from the masters of the land, whether through a request or by force, will gain de facto property rights after their families have cultivated the plots over several generations. Such property rights do not apply to the land itself, however, but to the soil—the "skin" or the "crust" of the earth.

Most land disputes stem from the unequal distribution of land rights and the instability of these rights over time. The number of disputes and conflicts is growing as a result of the inability of the production and land tenure systems to cope with the increasing scarcity of available land for cultivation and the increasing density of the rural population. The growing scarcity of free land makes it impossible, for example, for heads of families (or masters of the land) to allocate plots to young people and women.

Ganzourgou Province comprises two distinct regions: the plateaus of the northeast, which cover about two-thirds of the province, and the valleys (White Volta or Nakambé River) of the southwest, which cover the remaining third. The AVV targeted these valleys, which had long remained largely unpopulated due to the presence of simuliids, for settlement and development beginning in the 1970s.

Between 1974 and 1989 the AVV, *Unité de Planification* N°1 (Planning Unit No. 1, UP1), and the Mankarga project (funded by the European Union, then known as the European Community) improved close to 15,000 hectares of land in the White Volta area (Ganzourgou Province) for farming and stock raising. On that land they settled about 2,500 families, most from out-migration areas in Ganzourgou Province and from neighboring provinces, but also some local families that had lived in the area for a long time (Mankarga Development Unit 1990). Considerable infrastructure and equipment accompanied the settlement activities, including schools, 130 wells, primary health care centers, warehouses for storing inputs, more than 300 kilometers of unpaved roads, and housing for the staff assigned to provide extension services to the newly arrived settlers.

Results of the population settlement policy in Ganzourgou Province

The settlement program has had two simultaneous objectives, voluntary agricultural development and land use planning. Because the main objective of the program is to seek an appropriate balance between the spatial distribution of the population and full development of the agricultural potential in the provinces, these two components of the operation are inseparable.

The settlement program has evolved through four main phases: a true takeoff in 1974, a phase of major accomplishment from 1976 to 1980, an almost total halt in 1982, and then a resumption by UP1 in 1988 and by *Projet de développement rural du Ganzourgou* (Ganzourgou Rural Development Project, PDRG) in 1991.

Although assessing the overall results of the program to settle migrants in Ganzourgou Province is a delicate and difficult task, this paper nevertheless attempts a criti-

cal assessment of eight issues of fundamental importance to the program's objectives and ultimate goal:

- The status of the land in the onchocerciasis-controlled areas before the settlement activities
- The status of farms after the settlement activities
- The agronomic impact of settlement on production
- The socioeconomic impact of the settlements
- The social structure of the area
- The impact of settlement on the ecological balance
- Land management and land tenure problems
- Operating costs.

Status of land in the valley region before settlement and development

The areas where the new settlements were created were neither uninhabited nor depopulated before the new migrants arrived, but were occupied by farmers and pastoralists. In particular, a group of long-established Bissa and Mossi villages in the area, most notably Niaogo, Béguédo, Gouingo, and Garango, had a high population density, about 100 people per square kilometer. As a whole, however, the land was underpopulated compared with the densely populated Mossi Plateau.

Before the settlement program organized by the AVV, the land in the valleys was being used by several different groups:

- Indigenous farmers under the authority of the Mossi and Bissa village chiefs
- Peuhl pastoralists who had a long-standing presence in the area and whose numbers were increasing because of a severe drought in the northern part of the country and the reduced pastureland in the central plateau (due to overpopulation and its effects)
- Woodcutters, who cut and sold wood during the dry season and farmed during the rainy season, particularly near Ouagadougou, Linoghin, and Rapadama
- Groups of Bozo (Malian) fishermen along the Volta rivers.

Failure to take stock of prior land use led inevitably to land tenure conflicts between the host population (which had considered itself the owner of the land since its arrival in the area) and the settlers introduced by the AVV.

Status of farms after settlement

The development of the target areas has had a dynamic agricultural and economic impact. But it has also been observed that only a minority of the farms are capable of mastering the technical and economic factors required to achieve surplus production, though the AVV granted the same amount of land to each working adult. The great majority of the farms have a limited labor force at their disposal and have tremendous difficulty replicating the recommended production system.

Agronomic impact of settlement on production

After about twenty years of operation, the program has obtained results that can be considered positive. Most important has been the significant progress in cotton production through 1984-85. During those years, the AVV focused its efforts on intensive and directive extension work aimed at stimulating cotton and cereal production.

During the first ten years, impressive yields were obtained for food crops (800 to 900 kilograms per hectare) and cotton (800 to 1,000 kilograms per hectare). But the limited range of cereals planted, the modest inclusion of pulses in the cropping pattern, and the excessive deforestation at the time of settlement and afterward have already given rise to doubts about the social, technical, and economic replicability of these farming systems (Baris, Bonnal, and Pescay 1983).

In recent years, as world prices for cotton have declined, fertilizer prices have risen, terms of trade have deteriorated, and credit has become increasingly scarce, farmers have abandoned cotton production. In the AVV areas of Ganzourgou Province, cotton production fell from about 3,200 tons in 1981 to about 1,800 tons in 1993. Possibly also contributing to the decline in cotton production is its labor intensiveness: cotton requires four times as much labor per hectare as sorghum (1,500 hours per hectare compared with 400 hours per hectare).

Today, smallholders are concerned primarily with cereal production and stock raising. Due in part to the newly developed areas, Ganzourgou has become a regular exporter of cereals (12,000 tons annually) and meat.

Socioeconomic impact

The program has provided socioeconomic benefits on several levels: access to considerable cash income (cotton), the possibility of attaining self-sufficiency in food, and access to community facilities. The settlement program led to the establishment of at least six types of community facility:

- A network of roads
- Wells
- Buildings occupied by extension staff
- Warehouses
- Schools
- Clinics and health posts.

Despite flaws in some structures and some staff shortages (of government-provided nurses, for example), the inhabitants of the valley region have living standards significantly better than the average in other rural areas of the province and in the country as a whole.

The condition and management of schools and clinics in the program area are relatively satisfactory. The gov-

ernment does not maintain the roads, however, because they are considered "rural roads"; the only maintenance has been provided by projects (UP1 and PDRG).

The most serious problem concerns the maintenance and replacement of pumps used to draw potable water from wells. More than half of the wells have been out of order for a long time, and the resources available to the village maintenance funds have steadily dwindled. By contrast, in the plateau region each village with a well has a maintenance and replacement fund that functions quite well.

The program has achieved more positive results with the self-managed markets for selling cotton and the management of the related village funds. These funds are financed by payments from *Société des fibres et des textiles* (SOFITEX) in exchange for the farmers' work in marketing, weighing, and loading the cotton.

Other evaluations and field observations report that farmers who have earned cash income have invested it primarily in their home villages, in schooling for their children, in urban real estate, in village shops and businesses, and in livestock (McMillan, Nana, and Sawadogo 1990; and PDRG–EMP Mogtédo 1991). They have reinvested little in conserving and maintaining the productive qualities of the soil. Investments in secondary and tertiary sectors provide a better guarantee of increased income.

Social structure

Many farmer organizations have been set up in the program area with the help of the AVV or UP1. Some of these organizations function well and are properly managed. But most have an organizational structure, management methods, and leadership policies that tend to limit their effectiveness and diminish their ability to serve the interests of the community. Turnover on the decisionmaking bodies of these organizations is slow and sometimes blocked. And the AVV migrants are overrepresented in these organizations compared with the host population and spontaneous migrants.

More successful have been village organizations that manage a system of cotton rebates in connection with village credit funds for agricultural inputs. Some of these organizations, such as the one in Ouayalgui, have been so effective that they have taken over the role of the *Caisse nationale de crédit agricole* (National Agricultural Credit Fund, CNCA).

Some farmers in the developed zones continue to behave in a way that suggests the mentality of a perpetual aid recipient. No doubt the intensity of the extension activities has led some to expect projects and extension workers to provide everything. Thus, the "emancipation" of the farmers is a more complex and difficult task in the areas settled by the AVV than in traditional areas.

Impact on ecological balance

Methods for conserving resources in the program area are much less developed than in the plateau region, where land use follows more traditional patterns. In fact, the farming system prevailing in the program area can be likened to a mining operation. In addition, the cutting and gathering of wood and the collecting of construction materials (sand, gravel, laterite) are highly developed and generally not supervised by the farmers organizations.

Through their effects on farmers' incomes, the development of production systems, the increase in population pressure, and the deterioration of the terms of trade all have led to disturbances in the ecological balance. Deforestation, erosion, and loss of soil fertility have reached disturbing proportions. The AVV evaluation mission sounded the alarm on these problems as early as 1983 (Baris, Bonnal, and Pescay 1983).

Several factors have led to the deterioration of resources:

- The settlers' practice of intensive clearing on their arrival, so that they could utilize linear planting and animal traction
- "Interstitial" clearing by spontaneous migrants
- Bush fires, still used in the valley region
- Wood cutting, which developed rapidly after the arrival of the settlers because of the new roads
- The considerable increase in livestock as, in addition to Peuhl pastoralists, sedentary farmers turned to stock raising
- Insecurity of land tenure for the farmers settled by the AVV.

Diachronic analysis in the areas targeted for new settlements shows clearly that the loss of plant cover has accelerated over the past twenty years and that the ecological imbalance, due primarily to excessive clearing, has reached alarming proportions. This phenomenon is much less pronounced in the rest of the province, where land management is governed by traditional rules.

Land management and land tenure problems

Starting in 1984, UP1 moved beyond the newly developed valleys and targeted the entire province for settlement, drawing on the lessons of the first phase. In addition, it sought to help farmers better establish themselves in their area of origin. UP1 continued to settle the valleys in accord with the original AVV plan; spontaneous migration also continued. An initial assessment of the program in 1983 showed that the rate of planned settlement was lower than expected and that spontaneous migrations exceeded those organized by the AVV (Baris, Bonnal, and Pescay 1983; and Murphy 1980).

In an effort to resolve latent, and sometimes open,

conflicts, UP1 intervened in three areas, Rapadama, Bomboré, and Mogtédo, to bring together the AVV and spontaneous settler communities. It proposed to settle the non-AVV families in the "free" space between the AVV lands (Ilboudo 1992; and Konombo 1990).

The approach that UP1 developed to resolve the conflicts led to the establishment of a land registration system in which each farm was attached to a specific plot, the plots granted to the migrants were plowed, and additional facilities (wells) were established.

Once the improvements had been made, specifications for land management were drawn up, and the farmers organizations were charged with enforcing them. This approach, according to its supporters, would eventually lead to joint ownership rights, providing participants with a degree of land security. Yet, even though the files were deposited at the territorial administration in 1988, when the AVV settled the migrants, no individual or joint ownership rights have been granted.

Presently, about 4,000 families inhabit the valley areas, of which 2,500 were settled in the 1970s; the rest are local families or families of spontaneous migrants.

Operating costs

The settlement activities have proved costly (McMillan, Nana, and Sawadogo 1990; and Mankarga project evaluation, 1990). The total cost through 1990, including capital costs, operating costs, and technical assistance for settling 2,500 families, came to approximately FF 89 million. The settlement cost per family was FF 36,000 (CFAF 3,600,000 at the new rate[1] Mankarga project evaluation, 1990; Dumont 1984).

To examine the economics of settlement, let us take as an example a 10-hectare farm over one growing season. Assume that the farmer decides to plant 5 hectares, 2 in cotton and 3 in cereals, while leaving the remaining land fallow (the present system). A simple economic calculation allows us to determine the total value of the harvest:

3 hectares in cereals:
3 ha x 800 kg/ha x CFAF 50/kg = CFAF 120,000

2 hectares in cotton:
2 ha x 900 kg/ha x CFAF 130/kg = CFAF 234,000

The total value of a family's typical annual harvest on 5 hectares is thus CFAF 354,000, about 10 percent of the total cost of settling one family.

The cost of the settlement activities (between CFAF 300,000 and CFAF 400,000 per hectare at the new rate), the uncertainty about security of tenure, and the government's difficulty in replicating the activities led to recommendations as early as 1992 to study alternative ways to provide security of tenure to farmers in the developed areas.

Prospects and policy for settlement and development

The settlement activities in the onchocerciasis-controlled areas, like other efforts to support rural development, are based on a general local development approach in which the primary focus is on economic development and sustainable resource management. A quick analysis of the activities shows that they would have achieved better results if they had placed greater emphasis on self-management by the communities involved.

Indeed, in ensuring that a development program is sustainable and replicable, the manner in which beneficiaries are involved and assume "ownership" of the activity is at least as important as the physical results obtained in the field. To achieve true ownership, initiatives should not be imposed from the outside, but should instead be selected by the beneficiary population. In this way, rural civil society can eventually become a full partner with the government and with government agencies and actively participate in formulating rural development policy.

The French assistance program, in full awareness of these truths, supports national policies of local development and professionalization whose basic goal is to make the populations that inhabit and utilize rural spaces more directly responsible for the land and related agricultural and socioeconomic resources, as well as for the measures required to organize more sustainable management of available space and economic and social amenities.

In conjunction with this approach, and in order to ensure its success, it is necessary to move from a situation of waiting and dependency to one in which local society assumes the powers of initiative, decisionmaking, and management. This new situation of "ownership" could be organized around the following elements:

- Negotiation processes designed to create the necessary links between the local level and the regional and national levels
- Support for policies of inclusion of all elements of local civil society (including the host population, newly arrived groups, pastoralists, farmers, and artisans)
- A legal and fiscal framework that provides local communities with rights, opportunities, and the means to discharge their responsibilities concerning management of land, natural resources, and public infrastructure and property
- A support and advice mechanism designed to facilitate (rather than impose) farmers' initiatives for planning, supervising, and managing local development activities in such a way that true control and

[1] *New rate: US$1 = FF 6 = CFAF 600; FF 1 = CFAF 100.*

Box 1 Conditions in the two regions of Ganzourgou Province

Land tenure and management

Valley region

- Recent settlement of the land by indigenous or newly arrived migrants
- No real land tenure rights; claims maintained on land by nearby villages and traditional chiefs
- Increasing numbers of new arrivals due to family ties, despite relatively impoverished soil
- Land management committees operating at a minimal level, if at all
- No existing entity for collective land management

Prospects

- Large-scale migration
- The creation of new modes of social organization

Plateau region

- Long-standing land tenure by the Mooaga (Mossi) group, ancient village lands, important customary land tenure rights
- Highly structured social organization, organized housing, land use planning
- No cash crops but surplus food crops easily sold in markets
- High population density
- Heavy out-migration
- Traditional practices for managing land and maintaining soil fertility

Prospects

- Increasingly frequent individual appropriation of land
- An evolving relationship with Peuhl pastoralists

Current conflicts

Valley region

- Between migrants settled by the AVV, the host population, and spontaneous migrants
- Between men and women and between older and younger sons and daughters over rights to individual plots
- Between pastoralists and farmers
- Between AVV migrants and the host population of the plateaus with claims to land in the valleys

Plateau region

- Between Peuhl pastoralists and farmers due to increasing scarcity of pasture and fallow land
- Between men and women and between older and younger sons and daughters over rights to individual plots
- Over access to and use of bottomlands

Economic and social infrastructure

Valley region

- Much more developed; needs met with respect to schooling, health care, and water for human consumption
- More intensive extension services in the past
- Infrastructure provided by the AVV; little or no local participation in managing the infrastructure
- Major efforts to train and organize farmers
- High rate of use of equipment powered by animal traction

Plateau region

- Water lacking in some villages
- Little or no extension activity in the past
- Little existing infrastructure
- Village management of existing infrastructure
- Little or no use of equipment powered by animal traction

accountability are vested in the local population
- A clear distinction between technical advice and implementation functions and the financing function
- Appropriate systems of financing–for example, local funds managed by the local population and professional, sustainable credit systems adapted to rural needs
- Clear contracts between local participants and their public and private sector partners to promote an institutional and economic framework that provides greater security
- An economic framework that provides greater security, including price policies, support for subsectors, and support for establishing, strengthening, and recognizing trade organizations, particularly agricultural organizations but also artisan and commercial organizations
- Systems of training and information based on requests from, and the needs of, grass roots participants.

In this new approach, the government must clearly reposition itself by effectively withdrawing from the sectors in which local communities and trade organizations are capable of assuming a major role and by transferring to them the corresponding powers and resources. At the same time, the government must redefine the resources and mechanisms required to achieve a balanced policy of land use planning and provide necessary support to subsectors in order to initiate and expand a significant process of accrual and investment. Also necessary are organizing and strengthening economic exchange and complementary activities between the agricultural and urban sectors, to avoid potentially harmful competition.

The PDRG has instituted a local development policy that involves supporting village initiatives and assisting project developers in assuming control of their investments. The most significant outcome of this policy is the increasing responsibility and accountability of rural populations: project developers and their representatives have demonstrated the ability of rural populations to make decisions about funding, to assess projects, to move toward local control, and to manage financial resources allocated for their projects. This approach, which encourages rural populations to organize for the purpose of justifying projects and managing budgets, in accordance with rules easily verifiable by civil society, paves the way to implementing local community budgets. The process includes training participants to meet the specific needs of community development efforts.

Notes

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Strategic Guidelines for Sustainable Resettlement of Onchocerciasis-Freed Areas

Ministry of Agriculture and Animal Resources, Guinea

This paper reports the conclusions of a field study conducted by a mission to propose strategic guidelines for resettling onchocerciasis-freed areas in Guinea[1]. This field study, in which researchers interviewed people on the plains of Boussoulé, Bagbé, Kirikoko, and Diaragbéla, made clear that the success of the Onchocerciasis Control Programme, which came to Guinea in 1986, is fostering a massive flow of population back to the onchocerciasis-freed areas.

This report examines selected settlement areas, describing and assessing their enormous potential for development and, based on this review, sets out guidelines for a strategy to attain sustainable resettlement in these areas by tapping that potential.

Resettlement areas

The principal area of resettlement in Guinea lies in the upper basin of the Niger and along its main tributaries: the Bafing, the Bakoye, the Dion, the Mafia, the Mandan, the Milo, the Niantan, the Sankaran, and the Tinkisso. The Niger River basins cover all of Upper Guinea, the prefectures of Dabola, Dinguiraye, Faranah, Kankan, Kouroussa, Mandlana, and Siguiri, and the preforest regions of Beyla and Kissidougou. This resettlement area was earlier classified as hyperendemic. Its extremely high rate of blindness, ranging from 2 percent to 10 percent, induced a massive exodus to areas with more healthful living conditions.

Large spontaneous settlements occur on the plains—notably on the plain Boussoulé on the Milo, where the ruins of the Wamy and Boussoulé villages still stand. Settlements also occur on the Fifa plains on the Tinkisso and on the Diaragbéla plains (12 kilometers from the center of Kouroussa). Indeed, all river basins contain settlements (table 1). New villages, *soo koura*, have also appeared all over Upper Guinea.

[1] *During a seven-day visit to the onchocerciasis-freed areas in Guinea, the mission collaborated with all of the services involved in resettling these areas, particularly with the Onchocerciasis Control Programme. Thanks are extended to Mr. Kassé, Mr. Kaba, and to all of the OCP department heads who assisted the mission by providing information and were especially helpful during visits in the field. The mission also wishes to thank the regional agricultural inspector of Upper Guinea, the Director of Brigade Technique du Génie Rural (BTGR) of Kankan, all of the Kankan rural development services, and the Opération de Développement Rural Intégré de Kouroussa (ODRIK) programme for their readiness to help.*

The context for resettlement

Settlements occur spontaneously and in a disorganized fashion in the onchocerciasis-freed areas. There has been a large influx of people leaving their own lands, new emigrants seeking more fertile soil, and pastoralists searching for pasture (table 2). These migrants are following traditional patterns of population movement. But they are also being joined by a new type of migrants, people fleeing the wars in Liberia and Sierra Leone.

Customary land tenure practices

Once onchocerciasis has been eradicated, new migrants' first criterion in choosing settlement areas are agricultural potential and easy access to fertile land. In the formerly hyperendemic area, now free of onchocerciasis, access to land is once again regulated by custom. Thus, those returning to villages they had abandoned can reclaim their rights without difficulty, and new migrant farmers and pastoralists can easily obtain loans of land by making the traditional offering of ten kola nuts (though they are prohibited from planting trees and making substantial improvements). The main points of contention relate to control of water sources and the damage caused by stray animals (such disputes are settled by the communities).

Systems of production

In Guinea's traditional farming system, rainfed crops are cultivated on the plateaus and irrigated crops on the plains. Rice cultivation is the main agricultural activity. Farmers rely on traditional and extensive systems of production that integrate animal husbandry (wide use of animal traction), emphasizing ownership of animals rather than true livestock production.

Problems linked to resettlement

Spontaneous settlements face particular problems. Some arise because of the conditions of anarchy that prevail. For example, in Guinea's onchocerciasis-freed areas the development of mining as an important income-generating activity is causing environmental damage and tension between agropastoralists and miners. Water shortages on the plains are causing a shift in farming toward hill areas, which is leading to the destruction of forests.

Other practices are also leading to environmental destruction. The practice of uncontrolled bush fires devastates areas intended for settlement and destroys the ground cover and forests that regenerated while the villages lay abandoned. Similarly, hunters' practice of conducting hunts by setting forests on fire poses a grave threat to the regenerated forests.

The isolation of settlement sites also gives rise to problems. They often lie at a great distance from markets and lack drinking water, schools, and health care facilities, which increases their vulnerability.

Table 1 Population by basin, February–March 1993

Basin	Number of villages	Population
Tinkisso	101	14,812
Koulouto-Koliba	90	11,342
Bakoye	31	6,234
Bafing	175	18,862
Milo-Niandan	196	38,502
Sankaran	169	25,487
Niger-Mafou	115	22,271
Total	877	137,510

Source: Onchocerciasis Control Programme, Guinea.

Table 2 Population by village, selected years, 1988–94

Basin and village	1988	1989	1990	1993	1994
Milo					
Mansarena Banankoro	581	■	■	814	■
Dalagnan	189	■	■	255	■
Morigbedou	317	■	■	361	■
Niandan					
Kouran Nafadji	■	354	■	989	■
Totala	■	284	■	989	■
Bagbé	■	643	■	1,000	■
Konya-Laya	■	238	■	325	■
Niger-Mafou					
Nora	■	■	101	■	203
Laya Sando	■	■	630	■	1,050
Wassaya	■	■	408	■	702
Diaragbéla	■	■	173	■	593
Saman	■	■	401	■	721
Tinkisso					
Bendougou	■	■	212	■	267
Lower Souarela	■	■	338	■	448
Kinero	■	■	477	■	601
Sampolia	■	■	406	■	430
Sankaran					
Mafinto	■	■	291	■	428
Kossa	■	■	116	■	298

■ *Not available.*

Source: Onchocerciasis Control Programme, Guinea.

Production potential and assets of resettlement areas

Guinea's onchocerciasis-freed areas have the potential to become the country's most important producer of many crops, including rice, cotton, tobacco, groundnuts, and maize. The dense network of rivers in the Niger's upper basin offers exceptional irrigated farming potential on alluvial plains, whose area varies between 60 and 5,000 hectares. The potential for irrigated farming is estimated at 73,000 hectares, 40 percent of Guinea's entire potential.

The region's main assets for agricultural production are these:

- Plateaus and terraces suitable for many rainfed crops, such as millet, sorghum, cotton, and groundnuts.
- Vast alluvial plains and valleys whose upper segments are suited to rainfed crops, lower segments to submerged rice farming, and nonfloodable and irrigable segments to high-yield irrigated rice farming. These plains can be developed to reduce the risk of flooding and, in the best cases, introduce irrigation systems with total water flow control.
- Local conditions favorable to such high-yield crops as fruit trees, tobacco, and cotton.
- Good conditions for animal husbandry.
- A dynamic population (almost 350,000) with expertise in animal traction and irrigated farming.
- A vast fisheries potential in the rivers and in ponds that can be harnessed for aquaculture and widespread expertise in fishing techniques.

Guidelines for a sustainable resettlement strategy

The settlement pattern in the onchocerciasis-freed areas is of broadly dispersed islands of population. The areas' population density remains low (eleven per square kilometer). Although the region is unstable compared with other regions in Guinea, it has the potential to become a hub for national and subregional development. Resettlement policy must aim to reduce this instability.

Justification

There must be a planned policy for resettlement in the framework of a regional development strategy for Upper Guinea. Unlike the other OCP countries, where such options have proved to be economically unfeasible, Upper Guinea has a high potential for development. It could help meet the Guinean government's goal of food self-sufficiency. And its transformation into a hub of economic development would help attain regional equilibrium and integrate the domestic economy.

Resettlement in the framework of a regional development strategy would have several advantages:

- It would help achieve a balanced food supply in Guinea through the surplus production that this region could supply to other regions.
- It would alleviate the pressure on Guinea's forest resources, particularly around the Ziama forest (classified as a biosphere reserve), which is one of only two large forests surviving in Guinea. The area around the Ziama forest is coming under increasing threat as its inhabitants, people who fled the onchocerciasis-affected areas, turn to their benefit the slogan "la terre appartient à celui qui la valorise" (the land belongs to those who use it). These people might return to their homes if the potential for irrigated agriculture there is developed.
- It would facilitate efforts to improve management of West Africa's principal bodies of water, whose upper segments are fed by this region.
- It would help address the effects of the CFA franc devaluation in this region, which is vulnerable because it is closely integrated with the subregional economy (Bamako-Abidjan axis).

The strategy's main drawback is the high cost of its implementation. Cost should not prevent support for development, however; constraints must be taken into consideration, but cannot dictate policy.

The strategy also implies a number of prerequisites–among them developing basic guidelines to ensure cohesive, integrated settlements.

Land development and community resource management

To be viable, the strategy to resettle the onchocerciasis-freed areas in a framework of regional development requires the political will not only to establish institutions at the highest levels for land use planning, coordination, and preparation, but to strengthen grass-roots institutions. Land use planning and development are government tasks, but resource management is the task of the local farming and pastoral communities (with recourse to assistance from government agencies when needed). And it is possible (and will eventually be necessary) to involve local communities in the planning and implementation of land development activities.

To enable communities to undertake these responsibilities, the government will need to supply certain services, which, in turn, requires that it train professionals in land use planning and development.

Definition of a land tenure system

A rural development policy aimed at sustaining settlement in the onchocerciasis-freed areas must take into account customary land tenure and resource management practices. Moving to a capital-intensive production system generates management problems that customary practices have proved incapable of resolving, however. So the poli-

cy should set in motion a process to progressively adapt customary practices to modern production systems, with the participation of local communities. Key to the success of such a development policy is delegating responsibility to traditional communities.

The land tenure system for the onchocerciasis-freed areas must:

- Guarantee the land rights of migrants, pastoralists, and host populations, to enable farmers to invest more
- Aid communities in adapting their traditional resource management structures to modern systems of production
- Promote community management of farm, forest, and pastoral lands and of the environment.

Also important is the need to harmonize the various legal codes regulating resource management.

Strategy

In implementing a policy of resettlement in the framework of a regional development strategy, it would be prudent to proceed in stages; by testing the strategy in pilot sites. The field study identified five possible pilot sites, each with different characteristics.

- *Fifa.* The largest settlements have occurred on the once prosperous plains of Fifa, which were abandoned in 1965. The resettlement has been closely linked to the development of lucrative gold mining. This activity constitutes a real threat to the environment, through depletion of the soil and deforestation. Moreover, there is a nascent conflict between agropastoralists and the mining community that threatens to intensify if a rational resource management system is not put into place.
- *Diaragbéla-Bankan.* The Diaragbéla plains, situated 12 kilometers from the town of Kouroussa on the Milo, have been severely affected by onchocerciasis. The massive exodus of population has left some villages abandoned, including the village of Facia. Migrants are now returning to these plains to settle on the periphery of Kouroussa. This peri-urban site offers an opportunity for integrating the urban and rural economies and developing complementary activities.
- *Kogbedou.* The construction of a hydroelectric dam planned for this year, on the Milo at the site of the abandoned village of Kogbédou, will generate a strong migratory pull to this area. This situation requires guidelines for settlement.
- *The Bagbé-Bafélé axis.* The plains of Bagbé, Kirikôrô, 65 kilometers from the towns of Kankan and Bafélé, are experiencing heavy settlement along the rebuilt Kankan-Faranah trail. This settlement activity is threatening one of the region's few forest reserves, and failure to develop the plains' potential is causing a progressive shift of production from the valleys to the hill areas.
- *Sino.* Sino is situated at Béryl, where forest and savanna meet. Although onchocerciasis has been eradicated in the area, people continue to leave, fleeing the cattle diseases that can decimate livestock herds.

General measures. The pilot phase of the project should undertake several general measures in all of these sites. First, it should delegate responsibility to village organizations responsible for managing a discrete area of land (farms, pastures, fishing areas, forests, and mining areas). Various traditional rural organizations already are assuming certain responsibilities (zoning and parceling agropastoral land).

Second, the project should provide for secure land tenure rights, both for the host populations, which will then be able to lend and transfer their land without hesitation, and for the migrants, who face greater investment risk. Successful resettlement depends on guaranteed land rights.

Third, the project should help increase income in the settlement sites, so that they act as magnets for further settlement. To raise income, the project should introduce intensive production systems and diversified activities.

Specific measures. The project should also implement specific measures in each pilot site, in the context of a village development scheme based on an in-depth study of the development opportunities in each site. The top priorities of these schemes should be:

- Progressive intensification of production
- Increased soil productivity on the hills
- Broad use of draft animals
- Conservation of forests
- Dissemination of production techniques
- Integration of mining into the rural economy
- Containment of stray livestock and dissemination of herding methods
- Improved animal nutrition (cotton seed, forage plants)
- Rational control of bush fires
- Development of urban-rural links
- Development of river fishing
- Development of conservation techniques and planting of fruit trees around villages
- Development of irrigation schemes
- Construction of roads to improve access to settlements and markets
- Development of commodity crops (cotton, tobacco)
- Development of schools and health care facilities.

Although the government must plan these measures, the village organizations and nongovernmental organizations (both national and foreign) should help implement them.

Sustainable Settlement and Development of the Onchocerciasis Control Area in Sierra Leone

Lt. Col. Abdul Sesay, Secretary of State
Department of Agriculture and Fisheries, Sierra Leone

Endemic in Sierra Leone, onchocerciasis constitutes a serious public health problem and an obstacle to socioeconomic development. Most affected are the rural communities in the country's eight main river basins. In much of this area, the disease is hyperendemic and the rate of vision impairment relatively high. According to the Onchocerciasis Control Programme's mapping of the disease, about 80 percent of Sierra Leone lies within the onchocerciasis belt of West Africa.

Sierra Leone was incorporated into the OCP in 1986 as one of the western extension countries. But active control–aerial larviciding and ivermectin distribution–began in 1989. After five years, these efforts have reduced transmission of the disease to negligible levels in most vector monitoring sites in the country.

The government has embraced the concept of devolution, which envisions the participating countries taking over residual onchocerciasis control activities within an integrated framework aimed at controlling four other endemic diseases in addition to onchocerciasis.

The current situation in Sierra Leone's onchocerciasis zones

Until 1987, onchocerciasis control operations in Sierra Leone were confined to the savanna region in the north. But following entomological studies commissioned in 1989-90, the operations were extended to the forest areas in the southeast. The rebel incursion, however, has led to the suspension of aerial larviciding in the south and east.

Sierra Leone's situation is unique among the affected countries: even though onchocerciasis is endemic in 80 percent of the country and the rate of onchocercal blindness is high in many of the river basins, there has been no large-scale migration from the affected areas. The strong beliefs and the economic activities of the onchocerciasis-affected communities may explain why no such migration has occurred. Yet the nuisance aspect of the vector poses a serious hindrance to agricultural activities.

Agricultural development policy

The Sierra Leone government attaches great seriousness to eradicating onchocerciasis, not as an isolated health problem, but as one closely linked to the country's agricultural development program. Safeguarding the health of the more than 80 percent of the farming population potentially at risk is vital to ensuring that these people can contribute to the country's development.

The Sierra Leone government's agricultural policy takes an integrated approach embracing crop production, livestock production, inland fisheries, and agroforestry supported by the development of infrastructure (roads, wells, drying floors, markets, and stores) and by credit offered mainly through rural banks. The provision of basic health care facilities in parallel with the onchocerciasis devolution plan is an important component of the integrated development strategy.

Under its new rural development strategy, the government will provide technical extension services to groups of farmers through community farmers associations. This will be followed by the provision of essential agricultural inputs—fertilizers, farming tools, and planting materials from research institutes.

To ensure that agriculture follows an environmentally sustainable path of development, the government's strategy gives special attention to promoting community participation, involving women in development, reducing poverty, and managing the environment, particularly in the onchocerciasis-controlled region.

The government does not want to wait until people begin to migrate from the affected areas before initiating these development activities; rather, it would like to make these areas more productive by promoting sound and appropriate farming systems. Meanwhile, it would like to put forward for donor consideration the following recommendations:

- That an in-depth study be conducted to assess the socioeconomic effects of the biting nuisance of the vector in the affected communities
- That appropriate measures be taken to ensure a quick resumption of the Onchocerciasis Control Programme in Sierra Leone and the extension of the program throughout the country as soon as the war ends, to protect against the risk that migrants from areas affected by the war could carry the disease to areas that had been free of onchocerciasis.

Discussion

The discussions in this session were much broader than the issue of sustainable agriculture. Most comments placed agriculture in the larger context of the development of onchocerciasis-freed areas. The discussions highlighted credit as central for agricultural growth and underscored the need for increased participation by farmers in the research and extension system. Near the end of the session, several of the African delegates remarked on the silence of the donor community in the discussions and this prompted a discussion of the role of the donor agencies.

Comments

"In all our countries we have already started a restructuring of the whole system for agriculture. We should listen to the beneficiaries to learn their needs. The OCP has been backed for many years by an economic program, but this needs to be organized to make it a success. So far, we have not been as successful on the economic front as we have been in controlling the disease. We need to give farmers more leeway and give loans on more favorable terms. Farmers must have enough income to repay the loans. Letting farmers decide what to grow seems to contradict the fact that donors want to know if a program will be economically feasible. Will banks be willing to let farmers do whatever they want with the money they borrow? Farmers are participating in agricultural programs, but the crops they are growing are not very profitable. Inputs are becoming more expensive, especially in the CFA countries after the devaluation. Farmers will not use fertilizers if they are not profitable. Also, look at cattle breeding. Meat is coming in very cheaply from outside markets, making local livestock uncompetitive. This sort of 'cooperation' needs to change."

"We started ten years ago trying to make the best use of our onchocerciasis-freed zones, and we traveled to other countries to study their experiences. Even so, we have had bad experiences with settlement in the poorest areas with no infrastructure. We organized the social sectors to give backing to an agricultural pilot project and this was a success. Crop production, particularly cotton production, increased rapidly. Many people were attracted to the area. However, the project was extremely expensive. We cannot inject such huge sums of money into every district. We must choose areas carefully or reduce the capital investments because the OCP area covers nearly 85 percent of the country (Benin). We will need to diversify production from food crops to cash crops now that the CFA franc has been devalued. We will also need help from the donor community to do all this. So far the recommendations have only been addressed to the African governments, but we should also recommend that the community of donors carry on its support for OCP and for implementing settlement programs, a regional approach be used to resolve problems between herders and farmers, and governments develop awareness programs about OCP."

"The involvement of local populations has been the leitmotif of our discussions. When we discuss local participation, we are emphasizing the role in planning because the role in implementation is a given. The role of the state will continue to be to offer general supervision, inform the concerned populations, and provide training, extension, and support services. The identification of activities, planning, programming, and implementation has to be done with the active participation of the populations even though this is much more time-consuming. We need to include donors and all partners in our work in the onchocerciasis areas. So far the donors have not said much, but we would like to know their views."

"We appreciate the rationale of the recommendation on research and extension, but it should be recast. Research tends to be very expensive, so it must be designed to provide the utmost benefit for the country. The results should be made available and accessible to the farmers. The extension system should not be modified for settlement areas. The CMDT (*Compagnie malienne pour le développement des textiles)* has been very successful in the onchocerciasis-freed zones with the same system used elsewhere. We have launched a new integrated extension system that is proving very effective. Farmers have seen that new technologies increase yields, and this is conducive to introducing credit schemes. We need to integrate livestock into the farming system; not exclude it. The problem is not one between countries but one between modes of rural activities that have to be allowed to coexist."

"Development of onchocerciasis-freed areas should be part and parcel of a national development policy. Encouraging sustainable agricultural production should mean ensuring food production and improving incomes from cash crops. The success of research work and extension depends on making the necessary inputs available and having outlets to sell produce. Countries should have supportive input, marketing, and credit policies. Rural development policy hinges on five things: integrated management of natural resources, food security, organization of rural communities, intensifying and enhancing specific types of production, and organizing rural credit using the savings of farmers. Our national policy is in tune with all the recommendations. We agree that the major financial needs for the implementation of the development program in the onchocerciasis-freed areas will necessarily call for the support of the international community, in addition to the resources given by the countries themselves."

"We do not have to reinvent the wheel. We must capitalize on existing research results and avoid overlapping

activities. I think we have to revitalize institutional bodies. Research is expensive, and it is a state responsibility to support research, but we need support from donors. Applied research revolves around farmers. They do not need theoretical training. Building farmers' capacity is important, not just building state capacity. Agriculture must be given pride of place since we are rural countries."

Comments by representatives of donors and sponsoring agencies

"We have not been involved in the discussion because it was not the proper time. Donors should note the recommendations, but they do not make policies. They have the money, but the countries have the knowledge and expertise. This meeting clearly shows that the problems arising in the onchocerciasis areas have nothing to do with the eradication of onchocerciasis. Local populations are getting poorer, but this is a trickier issue and applies to other areas also. The problem at hand is that land is getting depleted. In the past three years, what was sorely missing was the essential environmental perspective. Nothing has been said about how to avoid degradation. The ecological balance is not to be viewed merely as trees and water and the like, but also as people. Mention has been made of problems between herders and farmers, but if you block migration for transhumant populations, you may block wild animals and threaten biodiversity. We have not been shown the critically important role of gallery forests. Destruction of these would be disastrous. Let us use the onchocerciasis experience and the bank of knowledge the program has built up on the environment."

"I have been very happy to listen to the debate of the ministers at a level of engagement that I have not heard for years. It was so enriching that one did not feel one had anything to add, only to learn. Such an expression of political will is the most important prerequisite for success. This conference is outstanding in its political wealth. International organizations can only support, not take the lead. The shift from health to development is extremely important, and we are ready to be an even more active partner now that rural development is becoming the emphasis. We have learned ways to combine agricultural development with environmental protection: integrated plant nutrition, integrated pest management, lower inputs, and incorporation of indigenous knowledge. We should build on existing capacity."

"This has been a real learning experience. There is a wealth of examples of progress in all these countries: the Niger rural code, the Mali credit program, Senegal's village forests. We need to put more resources into telling the story."

"We have been reluctant to participate here because we felt that in the past we have not listened enough. It is important that you tell us your experiences and needs. We can provide a comparative perspective. We have been delighted with the tenor of the discussion, and it has added greatly to our understanding of the problem. If we had not agreed with what has been said, we would have responded."

SESSION 7

Closing Session

Closing Remarks

Ellen Johnson Sirleaf
United Nations Development Programme

Like the representatives of the other supporting agencies around the table, I did not take the floor in the past two days of discussion because I too wanted to listen, to learn, to be guided by the views and experiences of the representatives of participating countries. The discussion has been rich in substance and diversity, and we have benefited indeed. We learned that, led by people's initiatives, settlement is accelerating on land that the program has freed from onchocerciasis—some of the potentially most productive land in West Africa. We learned that governments should encourage the spontaneous exploitation of this land, and that, by resolving ownership issues appropriately and developing infrastructure and education, they can greatly enhance the benefits from this exploitation. And with the help primarily of our female participants, we reviewed the still unsatisfactory role of women in important aspects of civil society in Africa and the need for more concerted efforts nationally and internationally to free women from the constraints that prevent their full contribution to development, just as this effective partnership freed the onchocerciasis-affected lands for development.

The discussions generated a lively debate on policy issues relating to sustainable settlement and development. We learned that the policies affecting the onchocerciasis-freed land and the people who settle on that land—policies relating to the role of government vis-à-vis local communities, to land tenure and land use, to agricultural production and productivity, to the environment, and to health and education—cannot be handled independent of other national policy. Instead, these policies must form part of a coherent national development strategy involving all the relevant ministries, the local government authorities, and the people themselves. We further learned that although these policies must be country-specific to reflect differences in resources and traditions, they must also take into account the regional dimensions that are important for West Africa as it moves toward regional cooperation and integration.

The question now is where we go from here. As stated at the outset, the sponsoring agencies view this meeting not as an end in itself, but as a first step toward a dialogue on the issues at the country level. The guiding principles that this meeting adopted are a major contribution to that dialogue. These principles are consistent with those of the UNDP and other sponsoring agencies and with sustainable human development policy and programming. As their name suggests, the guiding principles are for each government to take into account in a way consistent with its development strategies. The principles have a broad range of application in existing planning mechanisms—national environmental action plans, sectoral planning for agricultural and forestry development, multisectoral action programs for rural development, and poverty reduction programs.

The donor community has stayed the course in the program for the past twenty years to eradicate a disease, though always with the development dividend as the ultimate goal. The sponsoring agencies expect that the donor community is now prepared to shift the dialogue to the country level and to support national sustainable development programs, including settlement.

As the dialogue shifts to the country level and as governments take the lead in establishing sustainable development priorities as part of their national planning process, the aid coordination process is likely to change. But within this context, aid coordinating mechanisms do

exist. The World Bank-led consultative group meetings bring together countries and their development partners to discuss the macroeconomic policies that broaden the framework for development. Similarly, the UNDP, in partnership with governments, conducts the roundtable process, which provides forums for governments, development partners, bilateral and multilateral institutions, and, more and more, the private sector and nongovernmental organizations to review the macroeconomic and sector policies underpinning development.

Both these mechanisms provide the opportunity to mobilize resources in support of appropriate policies. For example, participants in the roundtable assembled financing for programs for human development and poverty reduction in Sierra Leone, agricultural and human resource development in Burkina Faso, poverty reduction and agricultural diversification in the Gambia, macroeconomic reform and decentralization in Mali, human development in Guinea, political and economic decentralization in Niger, and capacity building in Ghana.

These arrangements need not be the only follow-up mechanisms. Several delegations have expressed interest in some type of intercountry coordinating mechanism to continue the collaboration that has proved so effective in the OCP. This approach has validity, particularly for exchanging information and monitoring settlement and cross-border migration.

There is perhaps no need to establish new institutions for coordination among countries; however, mechanisms could be established or strengthened within existing institutions. Several regional and subregional institutions would lend themselves to this approach.

The Permanent Inter-State Committee for Drought Control in the Sahel (CILSS), which, with the support of the Club du Sahel, has produced an excellent study on the long-term demographics and their effect on development in West Africa, could provide a structure for sharing information. Other regional and subregional institutions could establish coordinating or oversight niches within their structures. And, of course, the OCP structure, with its unprecedented assets, could be put to work in ways consistent with the ideas that their excellencies President Diouf and President Compaore expressed during the opening session. The OCP could coordinate the gathering of data and the sharing of information to support a review of the progress in settlement.

The UNDP stands ready to assist in supporting small working groups that will examine possible coordinating mechanisms and structures and to ensure that the value contributed by the OCP is maintained for the good of development in the region.

Closing Remarks

Katherine Marshall
Africa Region, World Bank

It is my privilege to attempt a brief summary of what appear to be our central conclusions at this important meeting and to outline the actions that we have agreed to take with respect to onchocerciasis control and socioeconomic development of the onchocerciasis-freed areas. We all stand deeply impressed at the remarkable achievements of the Onchocerciasis Control Programme as we mark its twentieth anniversary. Onchocerciasis transmission has been almost totally interrupted in this vast eleven-country area of West Africa—an area, nearly three times the size of France, that was once the most heavily affected by onchocerciasis, with 15 percent of its population infected.

The program's accomplishments offer us real hope for the future generations of the subregion. Already more than 10 million children born since the inception of the program face no risk of contracting the disease. All of us were touched by the art displayed outside our meeting room by Burkinabé school children. It signifies an awareness of their liberation from the tragic blind adulthood faced by many of their ancestors and symbolizes our commitment to helping build a better future for them.

Eliminating the source of the disease is now almost solely a matter of time and resources. It is vital to continue control operations for six more years, to ensure that the adult worm reservoir dies out throughout the human population in this part of West Africa. This final push calls for sustained support and determination.

Some keys to the OCP's success and their portent for the subregion's development

We reflected here on both the future and the past: what inspired, forged, and drove this program, and what path does it suggest? The vision, courage, and determination of several people played a pivotal role in getting the program off the ground. We have recognized some of them here, along with the inspired mix of science, political and institutional leadership, and bureaucratic energy and courage that the OCP has called forth. The role of sheer persistence and commitment to solving each problem as it arises also bears noting. Some of the people we saluted: Robert McNamara, former President of the World Bank; the late Roger Chaufournier, Vice President, West Africa, for the World Bank in the early 1970s; Dr. René Le Berre, a scientist for many years with ORSTOM; and Marc Bazin, who led the program in its early years. And, of course, many of us have paid special tribute to the OCP's dynamic current leader, Dr. Ebrahim Samba, and to his team.

Special elements of this program have helped ensure its success and offer a model for pursuing effective development in Africa. Of special note is the long-standing partnership in development involving tight collaboration among the eleven countries in the subregion coupled with strong support and close coordination among a community of more than twenty donors. This strong, durable coalition has been the backbone of the OCP. This meeting reaffirmed the importance of maintaining this coalition to complete the OCP, to reap the wider socioeconomic benefits that can and should flow from its achievements, and to address other critical problems in the subregion. We dare not let the success of the OCP lead to complacency. We must instead solidify and build upon that success.

Building capacity—know-how, organization, and honest, efficient management—has been and remains central to the OCP's success and critical for the future. We noted with particular satisfaction the steady evolution of this regional institution from one dominated by expatriates to one staffed and managed by personnel of the highest quality from the region. Not only has the OCP largely eliminated onchocerciasis, it is also helping to create a capacity within the countries of the subregion to ensure that the disease never recurs. Such capacity will also be key to sustainable development of the subregion long into the future.

The aim of development partners is always to build a better future and to conquer poverty. Rarely can we point to such clear success as with the OCP. It has promoted health and productivity for some of the poorest people in the eleven countries, and it has offered them a livelihood by helping remove an important constraint to using land. The OCP's benefits in enhanced labor productivity and increased land availability exceed its costs by a large margin. We calculate that the returns to the investment in the OCP in terms of these two factors alone—human productivity and land—will exceed 20 percent once the OCP has been brought to a conclusion. This program provides clear proof, if any were needed, of the strong causal relation between improved health and overall development.

Opportunities and risks

We noted often that the OCP is set in a period and an area marked by dynamism and change. The rapid repopulation, after the successful control of onchocerciasis, of underutilized or uninhabited river valleys presents both enormous opportunities and important risks. These lands have already contributed to a surge in agricultural production far outstripping population growth in the countries of the subregion over the past fifteen years. But the future development of these lands presents complex challenges, and the stakes are high.

We all need to recognize both how at risk the onchocerciasis-freed areas are and how important they are as some

of the most fertile and productive land in West Africa and the last high-potential frontier in the subregion. Without a clear appreciation of the changes taking place there and the special risks that migration and intensive development present, environmental degradation is a real and quite immediate possibility. What is needed, we all agree, is an effective policy framework to support people in their development efforts, addressing above all agricultural services and research, land tenure systems, input policies, transport planning, and mapping for schools and health centers. The village development approach—*gestion des terroirs*—offers an exemplary model of community-centered work linking services and science, policy and people, conflict resolution and creative planning. The experience in community-based land management in Burkina Faso, Mali, and Niger offers rich examples of a bold new approach to development.

Social conflict, particularly between herders and farmers, was much on our minds this week. The historic tensions in many regions of the world between cattle owners and crop farmers were often discussed, and events in Central Africa added special significance to the issues around land security for settlers, hosts, and herders. These issues clearly need special attention in these transitional ecological zones. Another area deserving note is the protection of national physical and cultural treasures. As development proceeds, both parks and wildlife will come under increasing pressure.

A clear message from this meeting was that women are playing and will continue to play a vital role in developing the region. The discussions centered on three issues. First, land tenure. Under custom and law, women's access to land and security of land tenure are unclear and insufficient; in situations of flux, such as migration, these uncertainties need to be addressed through policy and training. Second, agricultural credit and other services. Programs providing credit and similar support need to recognize women as full participants in the economy. And third, participation. Development programs must draw on the wisdom, and focus on the needs, of both men and women.

We are at a complex watershed in the history of onchocerciasis control and follow-up socioeconomic development. The discussions here touched on a wide range of regional and national issues, because the development agenda for the OCP areas is in fact now the central development agenda for the nations and the region concerned. It is artificial—indeed, potentially distorting—to separate the virtually parallel development agendas. The onchocerciasis-freed areas constitute a large part of national territories, and they are often dispersed across the landscape, dictating a need for national policies and strategies to address the issues that we raised: health, children's welfare, population dynamics, the role of agriculture, and the changes in the livestock economy.

We focused much attention on diseases other than onchocerciasis in the OCP areas, asking how we could apply the OCP's lessons and resources. Malaria, sleeping sickness, guinea worm, and schistosomiasis need urgent attention as part of the settlement process in the onchocerciasis-freed areas. The programs now in preparation or underway to devolve responsibilities to the participating countries and ensure that onchocerciasis never returns also involve activities for surveillance and control of these other endemic parasitic diseases.

There will never be a more opportune time than now to implement the policy framework that we have agreed on here. First, we can now be virtually certain that onchocerciasis will not return as a major health problem in these high-potential river valleys. Second, the recent devaluation of the CFA franc in eight of the eleven OCP countries has significantly enhanced these economies' competitiveness and offers a renewed opportunity to propel development programs forward, above all in agriculture. Local agricultural products are now much more attractive to domestic consumers than imported goods and exports produced in the onchocerciasis-freed areas, such as cotton, have a much stronger competitive advantage on the world market and should see a surge in demand. Third, spontaneous resettlement in the onchocerciasis-freed areas is moving fast, posing the very real danger that it may soon be too late to influence it or to take steps to ensure its social, economic, and environmental sustainability.

Follow-up

A clear and coherent policy framework to support sustainable settlement and development—the central theme of this conference—offers a necessary but not a sufficient base for our future action. Policy, planning, and monitoring need to be complemented by well-designed and vigorously implemented investments in infrastructure and social and economic services.

Implementation of the guiding principles can be achieved in the context of a macroeconomic policy framework conducive to investment and sustainable production systems in the rural sector. That means favorable producer prices, more open markets, and elimination of restraints on trade in the rural sector. Also vital is integrating a policy framework for settlement into national environmental action plans. Indeed, each country and its partners need to see internal migration and settlement as central development and environmental issues. In my department of the World Bank, I raise questions about links to the onchocerciasis program time and time again as development issues and programs are presented: Do they fully take into account the dynamics of settlement and the special needs of newly opened-up areas in trans-

port, school planning, agricultural research, interventions related to women's issues, river basin development, AIDS strategies, and so forth?

The consultative and aid coordination mechanisms working for each nation—the UNDP roundtables and World Bank consultative groups—are important and effective mechanisms to guide and assist this continuing planning and consultation effort. They also provide a forum for reviewing the application of the guiding principles in each country and for mobilizing and consolidating the external support required to implement these policies and to promote investments for sustainable settlement and development of the onchocerciasis-freed areas. The World Bank intends to play an active part in supporting development of the onchocerciasis-freed areas within these forums and through its dialogue with the countries about their national development strategies, starting with a broad vision of prospects and options and extending to the essential details of program and project implementation.

Conclusion

The Onchocerciasis Control Programme has proved that development can be made to work in this subregion of Africa. The active involvement of the entire OCP community in this meeting demonstrates clearly that the coalition that is conquering onchocerciasis remains alive and well and is determined to follow through on the OCP's progress. This coalition has three remaining tasks that relate to onchocerciasis. The first is to complete the OCP and thus eliminate the disease. The second is to build capacity in the participating countries through devolution to ensure that this tragic plague never recurs. The third is to put in place the policy framework that we have agreed on to help ensure sustainable settlement and development of the onchocerciasis-freed areas. We are well on our way to achieving tasks one and two, and we have made a major breakthrough on task three at this meeting. If the participating countries act boldly to establish the agreed upon policy framework, and if the donor community actively supports development of the onchocerciasis-freed areas through participation in aid consortiums and within the context of this policy framework, we will also accomplish task three. The end result will be an acceleration of sustainable growth in the participating countries and a vast improvement in the welfare of the rural poor throughout the subregion.

Closing Remarks

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The emphasis of the Onchocerciasis Control Programme is now shifting from health to development, to focus on such issues as settlement, land tenure, rural development, agricultural production, and natural resource conservation and use. In support of that shift, the participants in this ministerial meeting have adopted guiding principles and recommendations for sustainable settlement and development in the OCP areas. To quote the Minister of Health from the Republic of Benin, what will be the practical consequences of these recommendations?

Following the proposed guiding principles, I have drawn some conclusions from the debate, giving particular attention to principles that touch on the technical and institutional issues of sustainable agricultural and rural development.

First, an evident conclusion is the need to translate each recommendation into action adapted to the realities of each country and each community. These realities are extremely diverse. Yet, there are common kinds of problems and common approaches to their solution.

Second, in addressing the appropriate balance between state and private action in the settlement of onchocerciasis-freed areas, the participants in this meeting expressed a preference for assisted spontaneous settlement. This approach should ensure that the public interest is met in such important matters as environmental protection, the provision of physical infrastructure for effective rural development, and equity of access to resources, markets, and social services.

The concept would also leave sufficient initiative to private individuals, communities, and nongovernmental organizations to foster their assumption of responsibility for natural resource management and organization of the rural economy and to encourage maximum use of customary rights, traditional tenure systems, and traditional ways of dispute settlement. But as has been so convincingly stated, there can be no single blueprint for such a socially complex development path. Inequity and dispute are unavoidable, and therefore governments will have to monitor and fine-tune the situation, though with a minimum of control.

Third, we must not overlook the fact that in some areas so much return migration has occurred that the carrying capacity has been reached. Urgent attention should be given to redressing any resulting damage to the natural resource base.

Fourth, it would be irresponsible to provide new settlers with a piece of land without ensuring continuing and affordable access to a broad range of rural services—not only consumer goods and social services, but also inputs and services supporting production, marketing, storage, and agricultural processing.

Fifth, the debate has shown that before governments adopt new modes of people's participation, such as land management associations, they need to systematically study the traditional land tenure systems and lines of authority, which offer an important way of minimizing conflicts.

Sixth, the decision to support the development of policies that favor production by small farmers gives rise to a need for a definition of small farmers. It may be appropriate to define them not only by the size of their land but also by their access to information on property rights, to appropriate technologies, and to inputs and finance. These are issues that extension messages and public expenditure should focus on.

Seventh, perhaps the most important conclusion has been that any settlement must be seen in the context of overall rural development. Because of natural resource constraints and the way that people's aspirations and preferences will evolve, the rural economy will have to undergo a transformation from semi-subsistence to more market-oriented agriculture to a diversified rural economy with more and more nonagricultural employment and income generation. A lack of diversification and nonagricultural alternatives is bound to lead to resource degradation, impoverishment, and accelerated rural-urban migration, unacceptable consequences after the remarkable success in making the lands accessible through the control of onchocerciasis.

Finally, the farming systems too must undergo a transformation. Traditional land-consuming fallow systems cannot be maintained. Appropriate production systems for achieving sustainable intensification must be found. Such systems will require not only improved resource use but also access to external inputs, particularly fertilizer, and thus will have to be accompanied by a gradual transition from a subsistence to a rural market economy. They will also necessitate investment in land rehabilitation, irrigation systems, rural infrastructure, and the like.

This is not, however, the occasion to enter into details of such a strategy. Moreover, all countries in the region are undertaking both macroeconomic and rural sector restructuring. The FAO is ready to continue its cooperation with member countries, to support efforts to attain maximum benefits from the development potential of the areas freed from onchocerciasis. Promoting development in these areas, most of which have high productive potential, coincides with a proposed new initiative to focus the FAO's efforts even more strongly on food security in low-income, food-deficit countries, many of which are in Africa. The FAO stands ready to support national efforts, but also regional cooperation. Regional activities could be

organized to share the results of research in sustainable agricultural development and to find solutions to problems with a transboundary nature. These activities could include exchange of information, monitoring of regional natural resources, training at selected regional centers of excellence, and transboundary pest and disease control.

Guiding Principles for Sustainable Settlement and Development in the Onchocerciasis Control Programme Area

Preamble

A Ministerial Meeting on Sustainable Settlement and Development of the Onchocerciasis Control Programme (OCP) Area was held at the World Bank office in Paris on April 12-14, 1994, under the chairmanship of Mr. Lambert Konan, Minister of Agriculture and Animal Resources, Republic of Côte d'Ivoire.

The opening of the meeting was attended by President Abdou Diouf of Senegal, President Blaise Compaore of Burkina Faso, and Mr. P.V. Obeng, representing President J. Rawlings of Ghana.

The meeting forcefully underscored the opportunities and risks that rapid resettlement of the areas freed from onchocerciasis provides. It also confirmed the concern and the commitment of the participating countries. High-level delegations of the eleven participating countries discussed individual country experience and research on major aspects of settlement. The very substantive discussion benefited from the diversity of country situations and traditions. But most importantly, the discussion highlighted the large body of common, shared experience.

Thus, the meeting more than accomplished the task it had set for itself–to agree on a set of guiding principles for sustainable settlement. These guiding principles, set forth below, should help ensure that the long-term social and economic gains of settlement can be fully realized and sustained.

Guiding principles

Recommendation 1: Promote the social and economic integration of hosts, settlers, and pastoralists.

Recommendation 2: The governments of the OCP area should put in place a process of consultation and coordination to resolve regional issues, particularly problems associated with the movement of transhumant populations.

Recommendation 3: Encourage "assisted spontaneous settlement" as the most appropriate for the OCP area, given the volume of migration and the financial and managerial capabilities of the governments.

Recommendation 4: Institute, at the national level, a process of coordination regarding all development activities in settlement areas.

Recommendation 5: The responsibility for implementing projects in settlement areas should rest with the line ministries.

Recommendation 6: Support settlement in areas close to already settled areas.

Recommendation 7: Provide social services to settlement areas as part of overall national planning.

Recommendation 8: Take into consideration the environmental and health needs of settlers in planning for sustainable settlement and development.

Recommendation 9: For the most effective management of natural resources, governments should support the formation of community land management associations that involve hosts, settlers, and pastoralists in land use zoning.

Recommendation 10: Develop agricultural policies that support more intensive and diversified production systems and take into account the upstream and downstream linkages.

Recommendation 11: Design and implement agricultural research and extension systems that respond to the changing needs of settlers over time.

Recommendation 12: Promote efficient markets in settlement areas.

Recommendation 13: Put in place land tenure regulations that take into account customary tenure systems, but also ensure secure land tenure and the access of women and youth to land and natural resources.

Recommendation 14: Ensure that women's rights of access to and control over land are not lost in the settlement process.

Recommendation 15: In addition to sustained support for the control of onchocerciasis and other important diseases, the donor community should support the efforts of the governments regarding the sustainable settlement and development of the onchocerciasis-freed areas.

Introduction

1. The Onchocerciasis Control Programme (OCP) has removed a major constraint to the settlement of 25 million hectares of arable land in eleven countries of West Africa[1] thereby providing a unique opportunity for promoting sustainable settlement and increasing agricultural production. At the same time, it has become clear that to maximize benefits from these new lands and to avoid environmental degradation, governments need to establish an appropriate set of policies in support of sustainable settlement.

2. Prior to the start of the OCP in 1974, onchocerciasis was one important reason that large stretches of river valleys in West Africa were sparsely populated or completely deserted. After the program began operations, migration to the sparsely settled areas was slower than anticipated due to other constraints and the attraction of rapid economic growth along the coast. However, as the fear of onchocerciasis diminished and opportunities in the coastal countries decreased, settlement in some OCP areas became rapid.

[1] *Benin, Burkina Faso, Côte d'Ivoire, Ghana, Guinea, Guinea-Bissau, Mali, Niger, Senegal, Sierra Leone, and Togo*

3. One of the statutory bodies of the OCP, the Committee of Sponsoring Agencies (FAO, UNDP, WHO, the World Bank), has actively promoted socioeconomic development of the OCP area in a number of ways, including the execution of two major regional studies. The first of these studies, executed by Hunting Technical Services Ltd. (United Kingdom) and Organisation et environnement (France), examined the natural resource endowments and development potential of the OCP areas. The second study, carried out by the Institute for Development Anthropology (United States), examined land settlement activities and developed policy recommendations to facilitate effective settlement practices.

4. Governments have responded to the increased migration with a variety of measures, and the accumulated experience of settlement, both spontaneous and government-organized, now allows us to draw conclusions about the settlement process and to outline a set of policies likely to promote long-term benefits from settlement. These policies, taken as a group, provide a set of guiding principles for supporting the successful settlement and development of the OCP area.

5. Conditions vary greatly from country to country and even within one country. However, in general, settlement affects two types of populations, hosts and migrants, and two occupations, farmers and pastoralists. These groups are not mutually exclusive, but in this document people are identified as hosts, settlers, or pastoralists. These distinctions, although somewhat artificial, highlight the constraints to sustainable settlement and development.

Successful settlement

6. Successful sustainable settlement will occur only when settlers are able to reestablish social networks and create viable production systems. This depends on the integration of settlers with the host and pastoral populations.

7. Settlers are keenly aware that their long-term success in a region is linked to their ability to be incorporated into a wider economic and social system, including relationships with the hosts who lend or give them land, with herders who have traditional pasture rights, and with migrants who arrive after them. The strong value placed by settlers on peaceful, mutually beneficial integration with the host community is reflected in their continuation of traditional land tenure practices despite national land tenure changes. Settlers are aware that whether or not they have official land title, they will have no satisfactory social or economic life in an area if they have antagonistic relationships with the host populations.

8. One important factor influencing integration is the composition of the settler group. Host populations may feel threatened by the in-migration of large numbers of a different ethnic group. While there are many cases of successful settlement involving host and settler populations from different ethnic groups, ethnic differences increase the potential for tension and need careful attention. Other demographic characteristics of the settler population, such as age and gender also are important and should be monitored.

Recommendation 1: Promote the social and economic integration of hosts, settlers, and pastoralists.

9. Problems between pastoralists and farmers are the cause of serious conflicts in many countries in the region and, at times, the cause of conflicts between countries. Because of drought and increasing population pressure, transhumant populations are having difficulty finding adequate grazing land and cross national boundaries to ensure the survival of their herds. Pastoralists must be guaranteed access to grazing land through agreements at the local level with farmers and agreements at the international level between governments.

Recommendation 2: The governments of the OCP area should put in place a process of consultation and coordination to resolve regional issues, particularly problems associated with the movement of transhumant populations.

The role of the government

10. Broadly speaking, there are three types of settlement in West Africa:

Sponsored settlement. The government or a private agency controls all aspects of the program, from land surveying to selecting and installing settlers to mandating production regimes

Assisted spontaneous settlement. The government provides some services and infrastructure to settlers who have moved on their own.

Spontaneous settlement. Settlers choose the area for settlement, move themselves, and receive little or no government assistance in the settlement process.

11. With a policy of assisted spontaneous settlement, governments, donor agencies, and NGOs play a supporting role in a process that is already occurring, taking advantage of the well-documented initiative of spontaneous settlers and the social networks they build with the host populations. Governments should be aware of the ongoing settlement process and provide the necessary services. By providing services to the settlers, governments may gain leverage in settler decisionmaking, promote increased productivity, and prevent some of the environmental degradation often associated with spontaneous settlement.

12. Assisted spontaneous settlement may avoid some of the problems with land speculation found in government-sponsored settlements, since it relies much more on settler initiative and less on government largess and so is less attractive to land speculators.

Recommendation 3: Encourage "assisted spontaneous

settlement" as the most appropriate for the OCP area, given the volume of migration and the financial and managerial capabilities of the governments.

National Planning

13. Government action at the national level is critical for successful settlement. The process of settlement, including natural resource management, the provision of infrastructure and services, and local economic development, touches on the responsibilities of many different ministries, and the government must be able to coordinate its own activities to be effective. The complexity of the settlement process which involves the creation of new social and economic communities, requires a coordinated set of national policies and administrative structures. Governments should incorporate human health considerations into settlement planning through the selective use of environmental impact assessment in natural resource policies, plans, and projects.

Recommendation 4: Institute, at the national level, a process of coordination regarding all development activities in settlement areas.

Administrative Structures

14. In the OCP region, governments have used a variety of management structures for planning and implementing settlement projects, ranging from special units in line ministries to semi-independent parastatal agencies. Each management structure has strengths and weaknesses, but in the long term placing responsibility in the line ministries appears to be the most effective approach.

15. Parastatal agencies created to supervise all settlement activities in a given area may be more effective initially in mobilizing resources, constructing physical and social infrastructure, and encouraging agricultural production. However, these agencies are expensive, and they have a great deal of difficulty handing over their functions to the line ministries or to local authorities after the settlers are established. They may also be paternalistic and quash settler initiative. Services provided by the parastatal, upon which settlers come to depend, are often beyond the capacity of the line ministries to deliver once they are given responsibility for the settled area.

Recommendation 5: The responsibility for implementing projects in settlement areas should rest with the line ministries.

Infrastructure

16. Government can guide spontaneous settlers through decisions on where to build infrastructure. Roads attract people, so road construction can be used to direct spontaneous settlers to areas that the government wants to develop and away from protected forest and wildlife areas.

17. In general, settlers tend to move to areas close to those already settled. This is often at odds with government policies that stress opening more distant areas. The history of settlement in the OCP area indicates that settlement moves in flows rather than leaps, so governments should plan to support new settlements in areas adjacent to currently settled areas. Such a strategy takes advantage of settler initiative and is less expensive than developing support infrastructure in more distant areas. One exception to this may be when a large infrastructure project is planned for a more remote area, in which case governments may capitalize on infrastructure investment for the project and provide additional services to spontaneous settlers at marginal incremental cost.

Recommendation 6: Support settlement in areas close to already settled areas.

Provision of services

18. In most of the OCP countries, governments are explicitly committed to providing education and health services to the entire population. Provision of services in settlement areas therefore should be seen as part of a national plan to provide necessary services and governments should not regard the provision of services to settlement areas entirely as additional costs due to settlement. Prompt provision of services, particularly health services, can be used as an inducement to host populations to accept new settlers, as encouragement for villages to adopt land management programs, and as a tool to guide settlers to specific areas.

Recommendation 7: Provide social services to settlement areas as part of overall national planning.

19. The success of the Onchocerciasis Control Programme in opening new lands to cultivation should not mask the risks of recrudescence of onchocerciasis and the risks of other new and returning diseases. These risks are due to changes in environmental and demographic conditions.

Recommendation 8: Take into consideration the environmental and health needs of settlers in planning for sustainable settlement and development.

Sustainable natural resource management

20. One critical component of successful settlement in the long term is the sustainable management of natural resources. Traditional systems of resource management were effective in situations of low population density and easy access to new land, but increases in population and the growing scarcity of land mean that continuing use of extensive farming practices will lead to rapid resource degradation and permanent loss of productivity. In addition, increased population is putting pressure on forests, water resources, and wildlife populations. Management

strategies are needed at many levels, from the international to the local.

21. At the community level, locally agreed zoning arrangements may be the most effective method for protecting natural resources. Resources are best protected by local populations allocating land to farming, grazing and forests. Local agreement on zoning is much more likely than national policies to decrease deforestation, because local communities benefit from the remaining woodlands and have a stake in protecting them. Similarly, reserving certain areas for herding through local agreements may prevent encroachment on soils unsuitable for sustained production and maintain space for livestock, which are an important part of overall production systems.

22. One promising tool for addressing local land management issues in settlement areas is the village land management model currently being tested in several OCP countries. The exact organization varies from country to country, but in general this model provides for local decision-making on natural resource use, assisted by technical advice from government ministries. In return for a community's adopting activities such as soil conservation, preservation of forests, and improvement of pastureland, the government provides basic social infrastructure to the community and formalizes traditional land tenure arrangements. If implemented early in the settlement process, the village land management model offers an opportunity to protect the interests of indigenous inhabitants by allowing them some measure of control over migration to their land while giving settlers legal recognition of their claims and giving pastoralists clearly defined grazing areas.

Recommendation 9: For the most effective management of natural resources, governments should support the formation of community land management associations that involve hosts, settlers and pastoralists in land-use zoning.

Rural development

23. Settlement in the OCP river valleys will not be sustainable unless settlers become successful farmers. This requires, among other things, secure land tenure, effective extension and research systems, efficient market networks, functioning rural financial systems, and realistic exchange rate policies.

24. The goal of most settlers is to establish subsistence-level production and, when this is assured, to generate a surplus that can be reinvested in agriculture or in other activities. Often, the fastest way to generate a surplus is through extensive agricultural production techniques that rapidly deplete the soil and make further agricultural production uneconomic for a number of years. National interests, on the other hand, are to see that the migrants establish sustainable production systems. In order to do this, governments must put in place policies that encourage long-term investments in intensive and diversified agricultural production.

25. Diversified production systems are central to the success of settlement in the OCP area. Much of the area experiences wide fluctuations in rainfall, and rigidly predetermined cropping patterns will not allow settlers to adapt. When settlers are convinced that subsistence production is assured, they diversify rapidly into other crops, and, just as important, into other income generating activities. In many settlement areas, the most successful agricultural producers invest in off-farm income generating activities and eventually leave farming altogether. Agricultural extension systems need to understand the role that diversification plays in household income generating strategies and provide advice on a range of crops and cropping systems, rather than promoting one system for every household.

Recommendation 10: Develop agricultural policies that support more intensive and diversified production systems and take into account the upstream and downstream linkages.

26. National agricultural research systems should respond to the needs of newly settled farmers. This requires an understanding of the specific constraints faced by these farmers and of the household production strategies they pursue. This, in turn, requires increased contacts between farmers and researchers. Agricultural extension systems are a key part of improving contact between researchers and farmers, and extension agents must be able to convey information in two equally important directions: from researcher to farmer and from farmer to researcher. Extension agents need to understand that new settlers will attempt to ensure food self-sufficiency before they begin to experiment with new crop varieties, so initially settlers may appear unwilling to accept advice. However, once food self-sufficiency has been assured, settlers often have proved more willing to experiment than host populations.

27. To meet the information demands of settlers, the research and extension systems will have to provide information on a range of crops and crop varieties, allowing settlers to choose those that best fit their needs. Farmer (male and female) participation is critical for identifying crops and constraints and for testing and disseminating research results. Having available a range of information will help the extension systems meet the needs of women farmers, who are important agricultural producers and who often grow a different set of crops than male farmers. Extension systems should be structured so that messages reach both men and women.

Recommendation 11: Design and implement agricultural research and extension systems that respond to the changing needs of settlers over time.

28. Markets and service centers are vital for successful

settlement. Markets are focal points for transactions involving agricultural commodities from the immediate area and from surrounding areas and imported manufactured goods essential for day-to-day life. Market activities allow settlers to diversify income sources, which is particularly important for those with less access to land. The sale of agricultural surplus generates local demand and stimulates the diversification of local and household economies.

29. Governments can promote successful markets in several ways. Most important, in newly settled areas governments can provide the necessary infrastructure to ensure that goods move in and out of markets in a timely manner. This is particularly important for the sale of perishable agricultural commodities and the timely delivery of inputs such as fertilizers. The dissemination of market information is an additional means through which governments can improve marketing systems.

30. Governments can also remove constraints to free marketing of agricultural products by reducing or removing licensing requirements for trading, eliminating restrictions on the circulation of goods within the country, and reducing the role of agricultural parastatals.

Recommendation 12: Promote efficient markets in settlement areas.

Land tenure

31. Land tenure is a dynamic situation influenced by the macroeconomic situation and by the local agricultural production systems and other land use patterns. While much of the area becoming available due to onchocerciasis control is sparsely populated, almost none of it is unclaimed. Attempts by national governments to override existing land tenure systems will almost certainly lead to conflict be-tween host and settler populations. This conflict may be violent or may be manifested in host population boycotts of settler-run markets or exclusion of settlers from established social networks and markets. Inability to tap into these systems may trap settlers in subsistence-level production. Equally important, the insecurity of tenure resulting from conflicting national and local land tenure systems will inhibit long-term investments in productivity, something that is crucial if new settlements are to be sustainable.

32. The land tenure system needs a national code within which land tenure rights are assured. Emphasis should be placed on security of access rather than on a particular type of control (for example, individual versus collective tenure). To achieve this, the land tenure code must take into account customary tenure rights, and local administrative and judicial systems must offer mechanisms for conflict resolution. Secure access to water and other natural resources can be as important as secure access to land. Local systems of tenure provide the necessary starting point for devising a secure system of tenure, but they are not sufficient in themselves. Customary tenure systems often allow access to land when settlers begin to arrive, but they do not give secure tenure in the long term, making it unlikely that settlers will make permanent investments in the land. In addition, conflicts may arise as the volume of settlement increases and land becomes scarce. Governments can play a role in mediating conflicts and establishing clear rules.

Recommendation 13: Put in place land tenure regulations that take into account customary tenure systems, but also ensure secure land tenure and the access of women and youth to land and natural resources.

33. The access of pastoral groups to land must also be protected in the settlement process. There is increasing friction between pastoral and sedentary groups in West Africa, much of it due to the expansion of settled areas. Sedentary host populations may be willing to give settlers access to land that has traditionally been used by transhumant groups, leading to friction between settlers and herders. Pastoral populations with traditional grazing rights must be included as part of any decisionmaking on giving land to settlers.

34. In some areas, the settlement process can be used to improve security of tenure for all groups in the settlement area by formally recognizing traditional land claims. This can be used as an incentive for host populations to accept new settlers.

35. Women's traditional access to land, water, and other natural resources is often lost as tenure systems based on individual ownership are introduced. If individual tenure is being established, women should be given explicit title to land and should not have to count on access to land through other members of their household. If the government establishes eligibility requirements for receiving land, women should be equally eligible.

Recommendation 14: Ensure that women's rights of access to and control over land are not lost in the settlement process.

36. If local land tenure traditions are used as the basis for land tenure decisions, it is less likely, although not impossible, that large-scale speculation will occur. This needs to be monitored because there are anecdotal reports of substantial appropriation of land in the OCP river valleys by wealthy urban elites, and it will undoubtedly become more of a problem as land becomes scarce.

International cooperation

37. The substantial financial needs associated with the development of the onchocerciasis-controlled areas require the strong support of the international community to complement and reinforce the efforts of the participating countries.

Recommendation 15: In addition to sustained support

for the control of onchocerciasis and other important diseases, the donor community should support the efforts of the governments regarding the sustainable settlement and development of the onchocerciasis-freed areas.

Conclusion

38. The 25 million hectares of arable land being made available through the control of onchocerciasis represent a tremendous opportunity to promote sustainable development. Expansion of cultivated land has been the engine of agricultural growth in many of these countries, and the onchocerciasis-freed river valleys have been the location of much of the expansion. Many of these areas have been sparsely populated and have not yet suffered the environmental degradation of the more densely settled areas. However, with the control of onchocerciasis and rapid population growth, these areas will quickly become settled and just as quickly begin to experience the environmental consequences. Successful settlement, the cornerstone of successful development in the OCP areas, requires a comprehensive set of policies fostering agricultural growth, rural development, and the social and economic integration of settler, host, and pastoral populations. African governments and donor agencies must act immediately and decisively to adopt policies that will safeguard the unique opportunity provided by the control of onchocerciasis and ensure the sustainable settlement and development of the newly available lands.

ANNEX 1

Background Papers

Sustainable Settlement and Development of the Onchocerciasis Control Programme Area in Benin

People's Republic of Benin

Discussions on the eventual development of onchocerciasis-freed areas in Benin date to 1977, around the time the Onchocerciasis Control Programme was launched. The ideas explored have centered on two key considerations:

- The history of settlement in the onchocerciasis-freed zone provides no evidence that it once sustained a population that subsequently abandoned it when onchocerciasis began to take its toll.
- The program originally covered 50 percent of the territory of Benin. After it was expanded in 1988 to 85 percent of the country, issues concerning the development of onchocerciasis-freed areas ceased to be "regional" concerns and instead became synonymous with national development issues. (The program area continues to pose specific development problems, however, such as undersettlement, infrastructure needs, and heavy migratory flows.)

This paper explores these two considerations, and takes stock of Benin's efforts to settle and develop areas in which onchocerciasis has been controlled during the first phase of the Onchocerciasis Control Programme.

These areas, particularly zones in the north, are still sparsely settled, despite their agricultural potential. Migrants are bypassing them in favor of more hospitable surroundings. Although onchocerciasis is a definite factor in the weak settlement activity, it is by no means the only one. Isolation and poor economic and social infrastructure are the real constraints.

Government-sponsored efforts to settle agricultural land have been unsuccessful, for reasons having to do with the sociological behavior of the people involved. In search of a more effective approach, a pilot project for integrated development was devised and implemented to see whether an endogenous, participatory development strategy could open the way to sustainable development of onchocerciasis-freed areas.

The results of this experiment, the Péhunco pilot project, have been mixed. On the positive side, it boosted agricultural production in that district, improving the quality of life of the resident population and attracting newcomers. On the negative side, it has thus far failed to draw a steady stream of settlers from outside Péhunco. On balance, it has helped establish permanent communities and offers them far better economic conditions.

Based on its experience with this venture and the factors known to trigger migration in the region, Benin has adopted a more comprehensive, integrated approach to national development that accords special attention to these sensitive areas of the country.

Since the democratic renewal, the government of Benin has been pursuing a three-pronged approach to land use planning, with the goal of helping to establish lasting settlements in the onchocerciasis-freed areas and creating pockets of employment to attract migration:

- Improving communication in all regions (through a program to upgrade road infrastructure)
- Rehabilitating and developing social infrastructure (health care facilities, schools)
- Developing village water supply systems.

An environmental action plan has been drawn up to underpin the country's efforts to achieve sustainable settlement and development, with the onchocerciasis-freed areas as its starting point.

settlement zone comprises the districts of Kérou, Kouandé, and Péhunco in Atacora Province and Banikora, Bembèrèkè, Gogounou, Kalalé, Kandi, Karimama, Malanville, Nikki, Ségbana, and Sinendé in Borgou Province. The zone occupies about 41,615 square kilometers, or 75 percent of the OCP area. Most of its inhabitants are Bariba and Dendi crop farmers and Peuhl stock farmers. The fertile soil in this vast region gives it great potential for farming and pastoral activities, and it could well attract farmers seeking productive land. Immigrants to the area can acquire land at no cost, but must obtain clearance from the local chief.

The western settlement zone is an area of rugged terrain encompassing the rural districts of Boukoumbé, Cobly, Copargo, Matéri, Natitingou, Ouaké, Tanguiéta, and Toucountouna. Its 14,385 square kilometers (25 percent of the OCP area) are home mainly to the Otamari, Berba, and Lokpa peoples.

A comparison of the agricultural potential of these two zones shows unequal natural resource endowment. The east, with its huge expanses of arable land, is underpopulated, while the land in the less fertile western zone is heavily overfarmed and, because of the zone's much more irregular terrain, eroding. The average maize and sorghum yields in the western zone are half those in the east. This unequal natural resource endowment triggers migration from west to east; settlers from southern and central Benin are also streaming into the eastern zone.

Is the Onchocerciasis Control Programme leading to a shift in migratory flows in these areas? To examine the program's impact on these population movements, we look first at patterns in the migratory flows and at factors inducing people to move from one zone to another.

Migration and settlement in the OCP area

Migratory flows are a noticeable phenomenon in the program area, though heavier in some settlement zones than others. They can be classified into three types:

- Movements of rural population within the onchocerciasis-protected area
- Migration of rural population to areas not yet cleared of onchocerciasis (the extended OCP area)
- Emigration to bordering countries (Niger, Nigeria, and Togo).

Rural migration within the OCP area

Migratory flows within the OCP area are triggered when peasants decide of their own accord to look for work as farmhands or to seek land more fertile than the plots they leave behind, but to remain within the OCP area. A twelve-month survey by INSAE revealed that 25 percent of those who had left the villages studied over that period had taken up residence elsewhere in the program area.

But the OCP area does not hold the same appeal for migrants from villages everywhere. The survey found that 46 percent of those who left villages in the eastern settlement zone remained in the program area, but only 20 percent of those migrating from villages in the west did so. That suggests that the motives for these rural migratory flows are not identical in all areas.

Migrants from villages in the east are perhaps motivated by the desire for better communication with the outside world, as they settle in villages on the international route linking Parakou, Malanville, and Niamey. And emigrants from the west may be seeking more fertile land, as suggested by the large numbers moving to points south of the OCP area where onchocerciasis still is not under control.

Rural migration toward non-onchocerciasis-protected areas

Of those who migrated during the survey period, 65 percent settled in areas still not treated under the program—notably the southern part of Atacora and Borgou provinces—in an attempt to find employment or land to farm. These migrants are mostly farmhands and peasants who had come to realize that the land at home is too scarce and the soil too poor, and decided to seek a more productive environment.

According to the INSAE survey, this type of migration is particularly prominent in villages in the western OCP area. A quarter of the emigrants tracked in villages in the eastern zone, but 58 percent of those in all OCP villages, chose the OCP extension area as their destination. There are many reasons for this choice of route, and they go far back in history. Two key reasons are the isolation of the OCP area and the migratory traditions of the people likely to leave their homes.

Isolation of the OCP area. Roads are one of the most powerful draws for settlement. Year-round access to the outside world is a critical need for rural communities. Poor communications are a constraint to the development of trade and to the provision of health care and security.

The original program area is isolated compared with the extension area, which has open to it three major trunk roads of several international routes that can carry traffic all year—N'dali-Parakou-Dassa-Zoumé (292 kilometers), Djougou-Savalou-Dassa-Zoumé (259 kilometers), and Djougou-Parakou (145 kilometers)—and the Dassa-Parakou railroad (232 kilometers). In total, the extension area has about 928 kilometers of all-weather roads.

Because of poor maintenance, half of the roughly 1,035 kilometers of national roads in the original OCP area are impassable in the rainy season. The districts of Cobly, Kalalé, Karimama, Kérou, Matéri, Péhunco, Ségbana, and Sinendé—all of which have good agricultural potential—are very difficult to reach during that season. One casualty of these difficult conditions is the supply of farm inputs,