

8

Importance of Markets and Service/Administrative Centers

Settlement-Related Development and Markets

Some of the clearest evidence we have of the wider regional effects of new lands settlement in the OCP river basins comes from the substantial growth in existing markets and the creation of new markets since 1974. Only 3 of the 20 markets frequented today by settlers in the AVV planned settlements at Mogtedo, Linoghin and Mogtedo-Bombore existed prior to 1974 (Figure 8.1).

New lands settlement in the area has also had a major impact on the growth of several regional

market and administrative centers. In 1960, the town of Mogtedo was listed as having 60 households with 200 people (Table 8.1). Since 1973, the town has been the administrative headquarters for AVV activities in the upper Nakambe, and by 1985 planned and spontaneous settlement to areas surrounding the earlier AVV planned settlements was sufficient to justify the creation of a new administrative department based at Mogtedo. The town itself has grown to about 6,000 inhabitants. The Mogtedo market has grown from 100 stalls, 5 shops and a single grinding mill in 1975 to more

Table 8.1 Settlement and Development in the Town of Mogtedo, 1960-1989

	1960	1968	1975	1980	1985	1989
Households in town						
Indigenous	60	60	—	—	—	—
Immigrant	—	200	—	—	—	—
Inhabitants	200	1,300	3,374	—	4,550	6,050
Stalls in central market	—	—	100	300	600-650	800
Businesses in separate buildings	—	—	5	14	—	75
Mills	—	—	1	—	—	10
Étalagistes (semi-detached stores)	—	—	—	—	—	122
Persons selling in boutiques and market ^a						
market day, rainy season (August 1969)						1,914
market day, dry season ^b						4,000
non-market day ^c						273

— Not available.

a. Persons selling (not attendance) in boutiques, the market, detached businesses, and étalagistes.

b. Estimated "normal" attendance. A restudy of the market in March 1990 failed to confirm this figure. Indeed, the number of people selling actually decreased from August 1989. This was attributed to the large number of Mogtedo merchants selling at new markets created at the gold-mining sites.

c. Non-market day = 273

Source: F. Kabore and J. Guigma, Enquete Marché, August 1990.

BURKINA FASO
 LOCATION AND RELATIVE IMPORTANCE OF EXISTING AND
 ABANDONED MARKETS FREQUENTED BY SETTLERS LIVING IN
 THE AVV SPONSORED SETTLEMENTS AT MOGTEDO,
 MOGTEDO-BOMBORE, AND LINOUGHIN, 1998/89

LOCALISATION ET TYPES DE MARCHES EXISTANTS OU
 ABANDONNES PAR LES COLONS DES PERIMETRES AVV DE
 MOGTEDO, MOGTEDO-BOMBORE ET LINOUGHIN, 1988/89



● MAJOR REGIONAL MARKETS:
 GRANDS MARCHES REGIONAUX:

- 1. MOGTEDO (TOWN)*
- 2. AVV LINOUGHIN V1
- 3. WARDOGO

◻ SUB-REGIONAL MARKETS:
 MARCHES SOUS-REGIONAUX:

- 4. V4 AVV RAPADAMA
- 7. V5 AVV MOGTEDO-BOMBORE
- 9. V6 AVV MANKARAGA
- 11. RAPADAMA TRADITIONAL
- 5. GADEGHIN/V9 RAPADAMA AVV
- 6. GOLD MINE MARKET AT NOBSIN
- 12. YAICA*
- 13. TENLOUKA*
- 8. V4 AVV MANKARAGA

▲ AREA VILLAGE MARKET:
 MARCHÉ DE ZONE (NIVEAU VILLAGES):

- 14. DAMONGO

○ VILLAGE MARKETS:
 MARCHES VILLAGEOIS:

- 15. AVV LINOUGHIN V4-V6
- 16. AVV LINOUGHIN V8
- 17. KOUGRI
- 18. ZANGA
- 19. MISSRI
- 10. GOLD MINE AVV MOGTEDO V3
- 26. MOGTEDO-BOMBORE V2

◌ ABANDONED MARKETS:
 MARCHES ABANDONNES:

- 20. AVV LINOUGHIN V3
- 21. AVV RAPADAMA V1
- 22. AVV RAPADAMA V5
- 23. AVV MOGTEDO V5
- 24. AVV MOGTEDO V3
- 25. AVV MOGTEDO V1

*ESTABLISHED IN PRESENT LOCATION BEFORE 1974
 *MARCHÉ EN PLACE AVANT 1974

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than 800 stalls, 75 shops in separate, permanent buildings, 122 shops in semi-permanent buildings, and 10 mills in 1989. We counted an average of 600 men and 900 women selling in the central market area on the two days we conducted our census during August 1989, a period when it was raining almost daily.

The market created by the AVV sponsored settlers at Linoghin in 1974 is today the most important market center, after Mogtedo, on the paved highway between Ouagadougou and Koupela. The market has grown steadily (Table 8.2) and now numbers some 300 stalls. Market officials indicated that as many as 5,000 people may attend the market during the dry season. In 1990, the market included four businesses in separate, permanent buildings (one large boutique, two bars, and a coffee shop), in addition to open air restaurants and service centers (mechanics, tailors) that are open every day. Food concessions and beer sellers operated late into the evening, every day of the year.

New lands settlement has had a similar far reaching impact on the number, size, and volume of area markets in Solenzo. Recent research by the CRPA du Mouhoun (1990a) counted some 21 markets in the area (Figure 8.2). Twelve of these markets have been created since 1966, when large-scale Mossi immigration to the area started; sixteen of

the 21 markets have been created or moved since the OCP began in 1974.¹

The town of Solenzo has itself developed into a major market center. Our census counted 980 people selling in the central market in August 1989, twenty boutiques, twelve grain mills, two bars, and two gas stations. Nine boutiques, the bars, and the government wholesale store (Faso-yaar) are open even on nonmarket days. Although we do not have precise figures, the majority of store owners appear to be immigrants.

Even the young cultivation hamlet—recently turned village—of Dar-es-Salaam boasts a lively village market that originated in 1985. The village, which serves FulBe and other pastoralists in the immediate area, has several mills (privately owned) and numerous boutiques. Daboura, the other study village located on the main highway, has a larger market that included 536 sellers in late August 1989. On nonmarket days, we counted an average of four boutiques, several people selling cooked food, two mechanics, and two small restaurants in the main market area. Except for the dolo makers, all of the local merchants seem to be immigrants, either FulBe pastoralists or Mossi.

Settlement-Related Development and Markets in the Niangoloko and Kompienga Areas

The much lower rates of immigration to the Kompienga Basin and Niangoloko region since 1974 are reflected in the small number of markets and services outside the prefecture's regional administrative headquarters at Pama (for Kompienga) (Figure 8.3) and Niangoloko town.

The economic role of these two market and administrative centers is also different. Long distance trade at both Pama and Niangoloko is primarily concerned with imported manufactured products. In contrast, the principal force driving the development of the Mogtedo and Linoghin markets has been the rising sales of the area's crop and livestock products and, since 1988, gold.

Niangoloko has long been an important market, transportation, military, and customs center on the paved highway linking Côte d'Ivoire with Burkina. Economic activities at Niangoloko continue to focus more on international trade than on regional agriculture and livestock production.

Prior to construction of the Kompienga dam, the prefecture administrative center at Pama was the most active regional market. Pama, like Niangoloko, was the garrison headquarters for

Table 8.2 Dry Season Attendance and Number of Market Stalls at the Linoghin Market^a, 1975 - 1989

Year	Average number of persons attending			
	Number of stalls	Linoghin AVV farmers	Linoghin spontaneous immigrants	Person/merchants from Ouaga and outside ^a
1975	32	60	18	0
1976-78	40	100	40	20
1979-81	80	120	80	25
1982-84	130	200	100	60
1985-87	200	600	1,300	400
1988-89	300	800	2,500	1,700

a. In contrast to other area markets, the largest Linoghin markets usually occur during August and September because large numbers of seasonal migrants from Ouagadougou are resident then. Settlers' relatives are also numerous at this time.

Source: Guira, F. 1989.

**BURKINA FASO
LOCATION, RELATIVE IMPORTANCE,
AND DATE CREATED AND RELOCATED
OF MARKETS IN THE SOLENZO
SUBSECTOR, 1989**

**LOCALISATION, TYPES DE
MARCHES, ET DATES DE CREATION
ET DE DEPLACEMENT DES
MARCHES DANS LE SOUS-SECTEUR
DE SOLENZO, 1989**

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● MAJOR REGIONAL MARKETS:
GRANDS MARCHES REGIONAUX:

1. SOLENZO (VILLE) 1900-1966
2. BONKUY 1972
3. BENA 1968
4. DIRA 1946-1950
5. BONZA 1985

◻ SUB-REGIONAL MARKETS:
MARCHES SOUS-REGIONAUX:

6. GNASSOUMADOUGOU/
KOUTOU 1975
7. TOKORO 1987
8. BIALE 1987
9. HERDOUGOU 1986
10. SIGUINOQUIN 1981
11. DABOURA 1900-1974
12. DAR-SALAM 1985
13. KIE 1890-1984

▲ AREA VILLAGE MARKETS:
MARCHÉ DE ZONE (NIVEAU VILLAGES):

14. BAYE 1976
15. SANAKUI 1986
16. DINKEMA 1890-1987
17. MOUSSAKONGO 1957

○ VILLAGE MARKETS:
MARCHES VILLAGEOIS:

18. DISSANKUY 1985
19. KOMO 1890-1985
20. LEKORO 1910-1974
21. DIMKORO 1950-1980

◌ VILLAGES WITHOUT MARKETS:
VILLAGES SANS MARCHES:

22. MONTIONKUY
23. YERESSORO
24. BAMA
25. MAWE
26. DESSE
27. MASSO
28. PONI
29. BAN
30. KOUAKOUA
31. BIASSAGA/LANFIERA

- MARSH
MARAIS
- ALL WEATHER IMPROVED UNPAVED HIGHWAY
ROUTE PRINCIPALE NON-GOUDRONNEE DE TOUTE SAISON
- ALL WEATHER UNIMPROVED SECONDARY ROAD
ROUTE SECONDAIRE NON-AMELIOREE DE TOUTE SAISON
- UNIMPROVED SECONDARY ROAD
PISTE SECONDAIRE NON-AMELIOREE
- UNIMPROVED SECONDARY ROAD / PATH
SENTIER NON-AMELIOREE

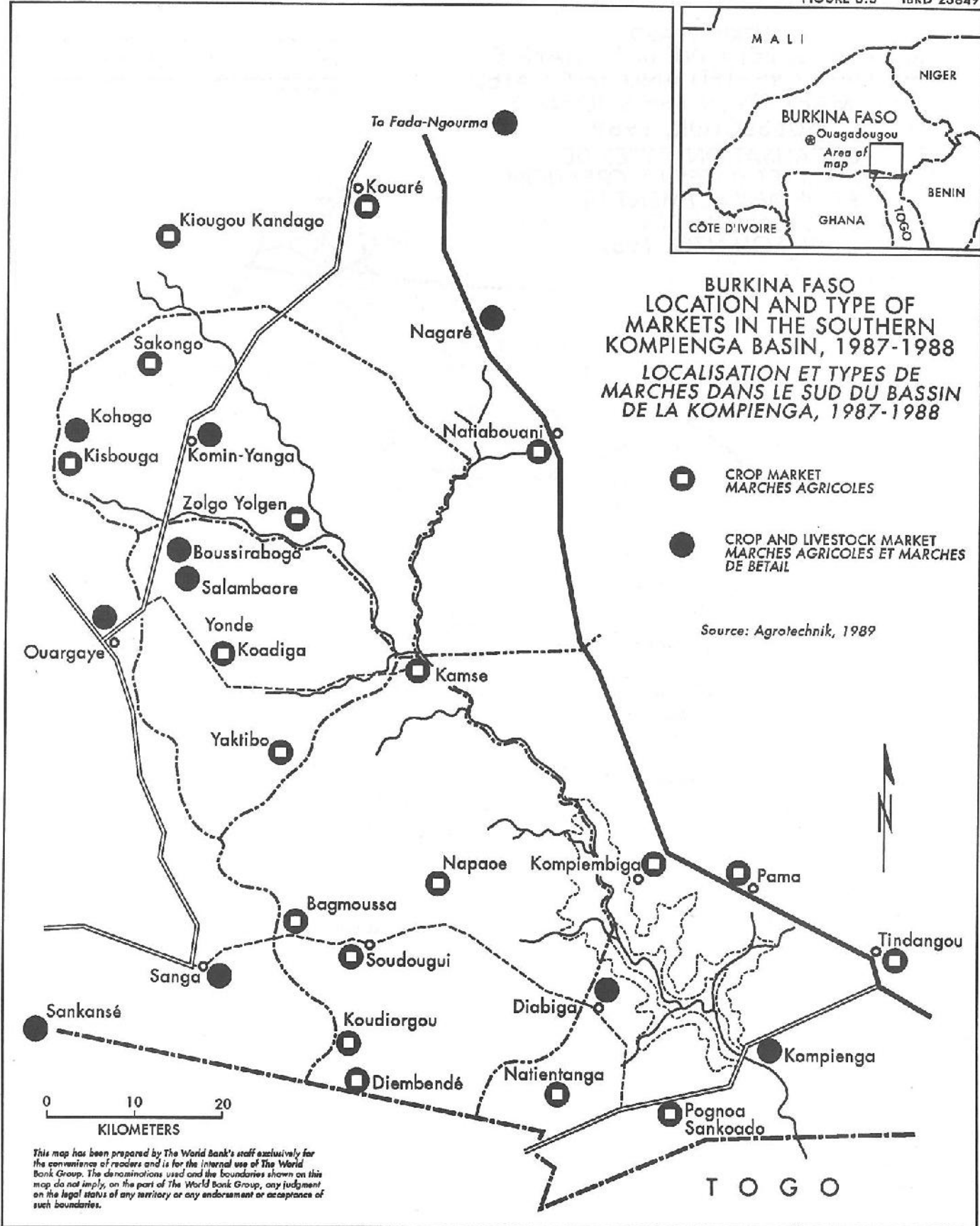




**BURKINA FASO
LOCATION AND TYPE OF
MARKETS IN THE SOUTHERN
KOMPIENGA BASIN, 1987-1988**
*LOCALISATION ET TYPES DE
MARCHES DANS LE SUD DU BASSIN
DE LA KOMPIENGA, 1987-1988*

- ◻ CROP MARKET
MARCHES AGRICOLES
- CROP AND LIVESTOCK MARKET
MARCHES AGRICOLES ET MARCHES
DE BETAIL

Source: Agrotechnik, 1989



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customs and military officials who patrol the Togo and Benin borders. Unlike Niangoloko, however, Pama never developed into a major trade center, in large part because until 1985 transportation between Pama and Fada could take as long as eight hours over poorly maintained dirt roads. The same poor roads and isolation that kept Pama a small garrison outpost protected the area as Burkina's most plentiful and unspoiled game park.

An active market and trade center sprang up almost overnight when dam construction began at Kompienga in 1985. Tradesmen and merchants from all over Burkina were attracted to the site. The workers' demand for imported manufactured goods, food, and drink also stimulated regional trade with Togo, Nigeria, Benin, and Ghana. The agricultural settlers who moved into homes vacated by departing construction workers were attracted primarily by the prospect of developing irrigated farming. They were also drawn by the idea that Kompienga might one day develop into an important regional trade center. Although the number of businesses and the number of people attending the town market has decreased dramatically since the inauguration of the dam, the town still boasts a sizable number of individuals who indicated during the census we conducted in August 1989 that trade or services were their primary or secondary activity. These village entrepreneurs will undoubtedly make a major contribution to the development of international trade of imported products for other areas of Burkina and Niger once the paved road linking Fada, Pama, Kompienga, and the Togo border is completed.

Markets and Settlement Related Development

Active markets both feed and are nourished by successful settlement related development.

Impact on Marketing

An important role of markets is to facilitate the sale of agricultural commodities from the immediate area for consumption both within and outside the area. Livestock and poultry are also traded at these markets.

We counted 375 sacks of grain (45,000 kg) leaving the Linoghin market on 4 August 1989 (Guira, F. 1989). Market officials at Linoghin estimated that during the average rainy season market, 400

sacks of grain would be sold; in the dry season, they cited a higher figure of 800 sacks (96,000 kg) sold per major market day (markets are held every third day). Eight hundred sacks of grain represents the annual cereal needs of 400 persons (using the FAO estimate of food grain needs of 240 kg of cereals [Murphy and Sprey 1980:74]). On the same day we counted the sale of 150 goats and sheep.

Both Linoghin and Mogtedo have emerged as important regional trade centers. In contrast to other markets in the region, market activity is generally highest at Linoghin in August because many seasonal migrants and extended family members are in the area to assist with the early harvest. Officials estimate that during the period when we conducted our study (August 1989), fewer than 20 percent of the persons attending the market might be from the AVV sponsored settlements (Table 8.2).

Mogtedo also boasts a high concentration of freestanding boutiques, mills, and an active market that serve the entire region. The important role of the market in redistributing agricultural products was reflected in our census of wholesale grain and livestock merchants. On a single market day we counted more than 35 people employed as wholesale grain merchants (eight based in Ouagadougou and 27 based in Mogtedo), nine wholesale peanut merchants, 22 wholesale goat and sheep merchants, seven wholesale chicken merchants (with 65 assistants), and seven wholesale cattle merchants (five from the region and two based in Ouagadougou).

The presence of these active regional markets and the opportunities for selling cereals has been a major factor contributing to the AVV settlers' shift toward commercial cereal production.

Impact on Provisioning

The sale of agricultural products at good prices gives farmers money with which to purchase a wider variety of foods and consumer goods. These include industrially manufactured and imported goods like sugar, salt, batteries, matches, soap, coffee, tea, gasoline, kerosene, shoes, scarves, secondhand and new clothing, and bicycle and motorcycle parts. Other items widely bought and sold at the markets are manufactured locally. These include processed or produced condiments or spices, cooked foods and alcoholic beverages, farm tools, pottery, baskets, clothes,

and cloth. Finally, the market centers provide area inhabitants with a variety of services such as tailoring, letter writing, photography, ironing, milling, barbering, and the repair of bicycles, motorcycles, and farm tools. The importance of these services, and of processed foods and condiments, are reflected in the large number of sellers in these categories at local markets. Our expenditure survey showed that a high percentage of men's and women's purchases are for special services, condiments, personal consumption items like tobacco and kola nuts, and "market foods" like doughnuts, rice, beer, and sodas.

Impact on Diversification

The increase in demand by rural people for imported and locally produced products feeds effective demand in the area for a variety of off-farm activities that generate earnings for the men and women who practice them. Their growing demand adds impetus to the diversification of household and regional economies in the OCP river basins.

Opportunities for diversification were greatest in villages located close to major markets. At Linoghin, for example, an average of 52 percent of the recorded income for women settlers was from nonagricultural sources like trade; at Mogtedo, near the gold sites, the figure was 43-54 percent (Table 6.3).

Five percent of the heads of immigrant households cited commerce as their primary reason for immigrating to the Solenzo subsector; the figure was 27 percent and 16 percent for Daboura and Solenzo, which have active markets. Eighteen percent of the immigrants to the Niangoloko subsector cited commerce or special services like butchery, repair services, or wage labor as their primary occupation; another 10 percent listed services or trade as their secondary occupation. Twenty-seven percent of the immigrants to the Niangoloko subsector cited the area's opportunities for trade and employment as the principal feature that attracted them. Eleven percent of the 455 heads of household at KOMPIENGA in August 1989 indicated that trade, fishing, handicrafts (including dolo making and cooking), and services were their primary occupation; another 6 percent of the household heads in the town listed charcoal making and woodcutting as their primary occupation; 20 percent of the heads of household listed services, handicrafts, or trade as their sec-

ondary occupation after agriculture. This latter figure does not count the hundreds of single males and married men, who were not recognized heads of household, who cut trees and made charcoal from the wooded areas the dam was flooding during 1989.

Impact on Social Integration

Effective market integration cannot be measured simply in terms of market size, the percentage of settlers' income spent on purchased goods and services, or the percent of income derived from off-farm employment. Markets also play an important role in promoting social integration. This is especially important in areas of new lands settlement, where large numbers of individuals have no established framework for interacting with one another. The important social and political role of markets was reflected in the extreme care with which villages would choose a market site. In addition, both the creation and displacement of the markets studied were ritually sanctioned by one or several well known area religious and political figures who belonged to the host ethnic—if not the host residential—community.

For the average farmer, the social function of markets is probably even more important than their economic role. Both men and women go to markets to socialize. Pocket money spent on beer, nonalcoholic sweetened beverages, fried doughnuts, breads, yogurt, and gathered fruits is not just a luxury, but a central element of one's social existence. Without markets and the periodic distraction that they afford, rural life is dull. The lack of easy access to markets was underscored more frequently than any other problem by women living at Mogtedo and Mogtedo-Bombore; the next most frequently cited problem was insufficient and unreliable water points. Women settlers who migrated from the AVV sponsored settlements at Mogtedo to KOMPIENGA expressed a high level of satisfaction with their move, despite the more restricted opportunities that they had for private crop production. The chief source of their satisfaction was the active town market.

The largest markets occur when the three day market cycle coincides with religious holidays, allowing the immigrants to combine the social role of markets with the very important social role of religion. Sunday markets are always large, as most Christians are conscientious about not

working on Sunday, regardless of the period in the crop cycle. On these days, Christian migrants and indigenous inhabitants first mingle at the local Catholic and Protestant churches, then adjourn to the market. When market days coincide with Friday, Muslims from throughout the region pray together, then attend the market, an event especially noticeable at Linoghin, with its new mosque located just outside the market.

As settlers' incomes grow, and they increase their levels of investment in areas outside of agriculture, they also expand the range and nature of their social and economic linkages, an occurrence invariably reflected in the scale of outside attendance at local markets. Based on average dry season attendance, we classified the markets attended by the settlers at Mogtedo, Mogtedo-Bombore and Linoghin, and those in the Solenzo region into four categories (Figures 8.1 and 8.2): major regional, subregional, area village, and simple village markets.

It was common knowledge that eight of the 35 wholesale grain merchants who purchased grain at Mogtedo, and two of the seven wholesale livestock merchants, were based in Ouagadougou. Similarly, most of the settler-owned boutiques located around the Linoghin market are rented by merchants from Ouagadougou. Even on a rainy market day in August 1989 we counted about 70 outside merchants (three full busloads) from Puetenga at the Mogtedo market. Market officials at Linoghin estimated that 35 percent of the persons attending the Linoghin market during a "typical" late August market came from outside the area. The tin roof on the Linoghin market mosque was paid for by one of the wealthiest merchants in Burkina—a wise investment on his part in establishing social linkages with a group of farmers and merchants in an area that is obviously going to develop into a major market and administrative center over the next two decades.

Impact on Reinvestment of Income Earned from Commercial Farming and Livestock Production

The most successful settlers in the AVV planned settlements tended to invest in real estate and trade in other areas. A total of 21 male heads of household in just two of the planned settlements at Linoghin have either started or plan construction in Ouagadougou or at Ziniare, the regional capital of their adjacent home area. We estimate that 10 to 15 percent of the Linoghin households

have initiated construction either in Ouagadougou or in a smaller urban center. Those who build in Ouagadougou usually are merchants. Only a few farmers have actually left the Linoghin area to engage in full-time trade; the more typical pattern is for part of the family to leave and the other part to remain and continue to operate the farm.

The lower rates of permanent out-migration from Linoghin appear to be strongly related to the much greater local opportunities that exist there for diversification. Those opportunities exist because of greater proximity to and settler integration with national and local markets.

Possible Negative Impact of Markets on Settlement Related Development

Ease of access to active markets and administrative centers can have negative consequences as well. The factors that encourage the development of dynamic market and administrative centers (ease of access to all-weather highways and concentrations of population) are also factors that encourage deforestation for fuelwood.

The opportunities for diversification created by markets can attract spontaneous immigrants to river basins that would not ordinarily be considered attractive because of their isolation or their lack of opportunities for cash cropping. Thus we found that the highest proportions of agricultural immigrants to the Niangoloko region are in villages with easy access to the Niangoloko market; immigration rates to more isolated villages are still low. Similarly, the highest rates of immigration to the Kompienga Basin are to the town of Kompienga and to the larger villages along the road that also have larger markets. AVV blocs of Linoghin and Rapadama with easy access to the paved highway to Ouagadougou have attracted more spontaneous settlement than distant villages. Because active markets attract greater numbers of spontaneous immigrants, villages near market centers are almost always the first to experience the effects of environmental degradation associated with over cropping.

Factors That Affect Market Dynamics

An effective market and administrative center enables area producers to sell their surpluses in a timely fashion; to obtain the agricultural and manufactured commodities and services they

need, but do not produce; to invest in the development of nonfarm services, manufacturing, or trade; and, ideally, to have access to certain basic social services that are not available in the villages. The effectiveness of markets is influenced by numerous factors.

- *Location on a major highway.* By far the most important feature that facilitated development of a market was whether it was located on a major highway. Two of the largest regional markets at the UP1 were on the major highway to Ouagadougou. The active market at Daboura, near Solenzo, was also located on a road linking the department headquarters for Solenzo with the provincial center at Dedougou. The historic lack of development of a major market center south of Fada, near Burkina's borders with Togo and Benin, can be attributed to lack of a good all-weather highway linking the zones.

- *Location in a frontier zone between different types of settlement.* The AVV villages that developed markets were generally located in the frontier area between sponsored settlements and spontaneous agriculturalist and pastoralist settlements. Project markets that were created in areas more centrally placed vis-à-vis a group of planned settlements (usually right in the middle) were often abandoned (Figure 8.1). A recent study of markets in the Solenzo subsector shows that larger markets tend to be concentrated either along the main highway or in the "frontier" zone between the highway and the new settlement taking place toward the Mouhoun (Figure 8.2). The Agrotechnik research on markets in the Kompienga Basin shows a high concentration of village markets near the main highways with almost no interior or frontier markets (Figure 8.3).

- *Social access to markets.* Location near a market is not sufficient to bring about effective market integration. The settlers must also have what we describe as "social access" to the market. The more distant Linoghin sponsored settlements are located almost as far from the market at Linoghin as are the Mogtedo planned settlements from Mogtedo. The key difference between the two is social access to the market. At Linoghin, settlers were actively involved in both buying and trading. At Mogtedo, settlers were socially and economically excluded from the fullest possible participation in the market because of their hostile relations with the indigenous inhabitants.

The factors that contributed to or detracted from social access were complex. One character-

istic that distinguishes the markets in which we see a high degree of settler integration or social access is that they generally did not exist prior to the start of large-scale immigration. We also found successful integration in areas where pre-existing markets were small, and it was the immigrants, rather than the indigenous inhabitants, who built the major commercial enterprises.

AVV settlers created the market at Linoghin. Although the market has grown to include over 1,000 buyers and sellers on a regular basis, it remains a settler-created and settler-run market. By welcoming indigenous inhabitants and spontaneous agriculturalist and pastoralist immigrants to the market, the settlers gained new friends in the region.

Similarly, increased market activity in the Solenzo region could be traced directly to immigrant Mossi. Many Mossi were active traders and the primary people owning boutiques in the new villages.

Increased market activity in the Kompienga district was also attributable to Mossi migrants. Extension agents emphasized that the Kompiengbiga market did not even exist until Mossi migrants arrived and started it.

In contrast, the active regional market at Mogtedo was not created by immigrants. In 1974, when the planned settlements started, the market was very small, with fewer than 100 open-air straw stalls or *hangars*. Nevertheless, the town of Mogtedo did exist, and there was already a core of town merchants. Since that time both the town and the planned settlements have developed, but on parallel tracks. Immigration to Mogtedo town has largely been from the more populated areas of the Ganzourgou region—a pattern similar to that observed for the spontaneous settlements around the AVV sponsored settlements. Although the majority of settlers living in the sponsored settlements (outside the town) are from the same ethnic group, fewer than 30 percent are from the Ganzourgou region. While the settlers have been welcome to spend their money in the town, efforts to build commercial linkages with the town have been thwarted. That is to say, although they have physical access to the Mogtedo market, they have not had social access.

- *Concentration of civil servants and paid workers, and presence of services at market locations.* The presence of groups of civil servants in villages facilitates market development. Civil servants need food and condiments and create a secure

base of demand. The concentration of AVV training facilities at Mogtedo was definitely a factor in the early development of the market. Civil servant and worker patronage attracts attention to a market and helps it grow. Again, however, although the presence of civil servants can facilitate development, it is insufficient in and of itself to support a large, dynamic market.

Another factor that contributes to the strength of a market is its location near other sorts of services and infrastructure. Location near distribution points for agricultural inputs and near mills was particularly important. These facilities draw buyers and sellers to the market and reinforce its many roles.

- *Date of creation of a market in relation to the settlement cycle.* Farmers in the older AVV settlements suggested that the date of creation of a market in the settlement cycle is extremely important. The AVV villages were created quickly—in a period of two to three years, in most cases. Although the AVV had clearly delineated a market site in the plans for each village, in most cases little interest in creating a market emerged until the third to fifth year of settlement. Settlers complained that they were too busy clearing their fields to worry about creating a market. If they needed something, they would leave the bloc and attend the Mogtedo market or one of the smaller indigenous markets in the area. As a result, the settlers tended to fuel the development of these markets, rather than their own. By the time they were ready to establish their own markets, their small, new markets had to compete with much stronger area markets that they themselves had helped create. By this time, local demand for markets was also reduced because a growing number of males had been able to purchase bicycles and/or motorcycles. With better transportation, male settlers were able to frequent more distant region-

al markets that offered higher prices for their crops and livestock, and lower prices for the consumer products they wanted to buy. This did not improve the situation for most women settlers, however, as they were still, by and large, restricted by lack of transportation to markets in the immediate area.

One of the settlers' recommendations for addressing this issue was that planners reinforce the development of small, settler-created markets from an early date by carefully phasing the development of basic infrastructure and roads. It is this overlay of services, markets, and infrastructure that seems to create strong decentralized market and service centers. Without these inland centers, the basins become undiversified production areas, from which benefits are merely drained off to the paved highway and funneled into the capital. *Ceteris paribus*, phased infrastructure development would be easier to carry out in areas of spontaneous settlement, where settlement takes place more gradually, than in areas of sponsored settlement.

- *Gold Mining.* The discovery of gold usually leads to the development of a market at the mining site. The new market center houses the official gold purchasers as well as places where miners can spend their money on food, water, fuelwood, imported consumer products, and various services. A very large market has developed at Nobsin, the major gold site. We counted more than 40 merchants at the Nobsin market site in August 1989, when mining was supposed to be officially closed to encourage the miners to return to farming. During a later census, in early April 1990, we counted 75 merchants at the four principal sites in the Mogtedo region (Table 8.3). Smaller markets with about 20 to 30 merchants (gold purchasers, water carriers, food vendors, merchants selling

Table 8.3 Number of Miners and Merchants at the Mogtedo Area Gold Sites, April 1990

Site	Miners	Total	Merchants						
			by origin		by activity				
			Ouaga	Mogtedo	Boutiques	Petty trade	Meat	Rice	Water
A	400	42	7	35	3	17	5	7	10
B	160	14	2	12	0	5	1	3	5
C	100	13	1	12	0	4	2	4	3
D	45	6	0	6	0	1	2	1	2
Total	705	75			3	27	10	15	20

Source: Land Settlement Review.

clothes and metal cookware) have sprung up at some of the less important mining sites.

As mentioned earlier, the income earned from mining and selling products at the mining sites has raised the living standards of women and of unmarried and married males attached to (but not heading) family units in the AVV planned settlements at Mogtedo. It is symptomatic of the low level of development of services and off-farm employment in the AVV planned settlements, however, that almost none of the entrepreneurs who have moved in to provide services for the miners are former or current AVV settlers. Instead, the largest merchants at the sites were nearly all from the more distant town of Mogtedo (Table 8.3) rather than from the adjacent planned settlements.

Because of the danger that we might be perceived as government spies, we were unable to explore the issue of gold revenues in great detail. Settlers were reluctant to tell exactly how much they had earned when we interviewed them for the economic survey. We did find that women who reported income from gold earned an average of about 14,000-20,000 CFA, with some women reportedly earning as much as 60,000 CFA in a single season (Table 6.3).

We also conducted more detailed interviews with 15 male gold miners. The miners, who were interviewed by another settler, were guaranteed complete anonymity, including age and place of origin. The recorded income levels over the last year, along with indications of how this income has been spent, show half the miners earning 50,000 CFA or more (Table 8.4). The interviews confirm our observation that most of the settlers' money is going toward consumer goods rather than reinvestment in agriculture or in developing trade or service activities in the region. Thus, we

are not very optimistic that the sudden infusion of off-farm income into the AVV planned settlements at Mogtedo will be reinvested in ways that will improve village income earning opportunities.

We expect that the most lasting effects of mining will be to solidify Mogtedo's role as an important regional trade and administrative center. In late March we again counted the number of people selling at the Mogtedo market in order to see how large the market grew during the dry season. We expected the market to be almost double the size we recorded in August 1989. To our surprise—and to the surprise of the president of the local Revolutionary Committee—the total number of people selling in the market center and surrounding areas had decreased. The principal factor explaining the drop was that farmers and merchants were being attracted to the very active markets at the gold sites. As the largest proportion of merchants and tradesmen at these sites seem to be from Mogtedo, the income earned from these activities will presumably be reinvested in that town. It would be wrong, however, to assume that the dynamic development of Mogtedo is the result of gold mining. Mogtedo had emerged as a major market center long before the first rumors of gold were heard and gold fever became rampant in late 1987 (see Table 8.1).

- *Role of infrastructure.* Contrary to our expectations, infrastructure appeared to be less important than location in the growth of the larger village markets that were away from the main highways. Efforts to create AVV markets along the important secondary roads linking the AVV blocs to the town of Mogtedo never worked (see abandoned markets at Mogtedo V3, Mogtedo V1, and Bombore V3). In contrast, the AVV markets located away from the paved highway that flourished in the short run (V4-5 Mogtedo) or for longer periods (V5 Bombore) were located in the frontier areas mentioned earlier. In these villages, ease of access to the main regional market did not appear to be an absolute necessity. Ease of access, for example, was definitely not a factor in the development of Wardogo, the third largest regional market in the area. For a great part of the rainy season, the only way to reach that market was by crossing the Nakambe tributary by boat. Wardogo was very favorably positioned, however, as a key market in the border area between planned settlements, spontaneous agriculturalist immigrants, and pastoralists. Thus, while permanent year round highway access to a

Table 8.4 Reported Net Income Earned from Gold Mining for 15 Miners

CFA	Males	Females
1-10,000	1	1
10,000-20,000		3
20,000-50,000	2	
50,000-75,000	3	
75,000-100,000	3	
100,000+	2	
Total	11	4

Source: Land Settlement Review.

market is important, it is possible for large markets to develop in more isolated areas—if these areas are important centers of exchange between different land use groups.

- *Level of government involvement in creation of the market.* No direct relationship was observed between government planning for markets and the patterns of markets that developed in the areas surrounding the AVV planned settlements. Indeed, there appeared to be something of an inverse correlation between government planning and markets that survived for more than a few years. The AVV had focused on placing market and service sites centrally with respect to the new infrastructure built for a particular group of self-contained planned settlements. One of the significant lessons of the AVV is that in order to succeed, markets must incorporate a much wider public, including spontaneous agriculturalists and pastoralists. The growth of markets on the periphery of the sponsored settlements highlights their usefulness at the interfaces of the different types of settlement that shape development in a particular area.

Policy Implications

Reinforce the Development of Regional Market Capacity

Markets in the OCP river basins form a hierarchy in terms of periodicity, number of participants, volume, nature of commodities and services exchanged, and radius of the market's drawing power. Price analysis is a simple tool that economists have used for generations to identify inefficiencies in market dynamics. This same tool could be used to alert policymakers to marketing bottlenecks that reduce the development potential of new lands settlement in an area.

Phase in Development Planning in Order to Reinforce the Evolving Market Hierarchy

Market hierarchies are not fixed, but change over time, along with patterns of settlement and settlement related development. The existing hierarchy of markets provides planners with a point of departure for efforts to assist settlement and to promote a broader base of area development. By examining market growth in relation to settlement areas, and product prices in these markets in relation to product prices in less isolated mar-

kets, planners can discern what services and infrastructure investments will be needed to enhance the facilities in an area. It is important for development to be phased in, and sensitive to important shifts in market dynamics.

Special Market Planning Problems in Areas of Sponsored Settlement

Phased reinforcement of market centers will probably be easier to carry out in areas of gradual spontaneous settlement than in areas of sponsored settlement or near dams where large areas are apt to be settled in a very short period of time. Given the importance of socioeconomic centers, planners dealing with sponsored settlement in more isolated regions should consider the option of a staged approach to market center development. This option might include two stages: first, linking a small sponsored settlement core having a center with outlying areas of spontaneous settlement; then, in a second stage, reinforcing the development of roads and markets that may develop in other locations in response to wider area settlement and development after ten or fifteen years.

Special Planning Needs of Regional Trade and Administrative Centers

Planners must anticipate the impact of successful settlement related development on existing market and administrative centers. In the short run, successful settlement is likely to expand the size of area markets. In the long run, the associated increase in opportunities to develop services and trade will attract increasing numbers of merchants and expand the number of permanent boutiques and the demand for housing. Thus planners can predict growing competition for commercial and housing space. Planners should thus anticipate a growing need to delineate commercial and housing areas.

Urban zoning, if carried out by local leaders working with the administration, can protect the rights of indigenous inhabitants while it improves migrants' social and economic access to developing urban markets. Such planning is probably better carried out in the early stages of urban growth rather than later, after problems have begun to emerge. The only example we had of early planning is at Linoghin, where commercial space near the AVV market was zoned from the very begin-

ning, and allocated as registered parcels. Spontaneous immigrants and indigenous inhabitants who wanted space in the market were able to apply for and receive one of the registered spaces. This early zoning was one of many factors that facilitated the peaceful growth of the Linoghin market.

Note

1. In the legend on Figure 8.2, where two years appear next to a market, the first date indicates the year the market was created; the second marks the year the market was moved.

9

Integration of Hosts, Settlers, and Pastoralists

The Importance of Integration

Settlers moving into an OCP river basin are aware that their long-term success is linked to their ability to become integrated into regional and local economic and social systems. These systems engage settlers in a wide range of relationships with (McMillan, Painter and Scudder 1990):

- (1) the indigenous agriculturalists or hosts who lend them land;
- (2) pastoralists who have traditionally grazed their animals, and had villages or camps in the area; and
- (3) other immigrant agriculturalists and pastoralists.

Mutually beneficial linkages are different at each stage of the settlement process. To design more effective programs, policymakers need to be aware of the relationships between the three groups, and of the factors that contribute to or detract from the peaceful integration of their different interests.

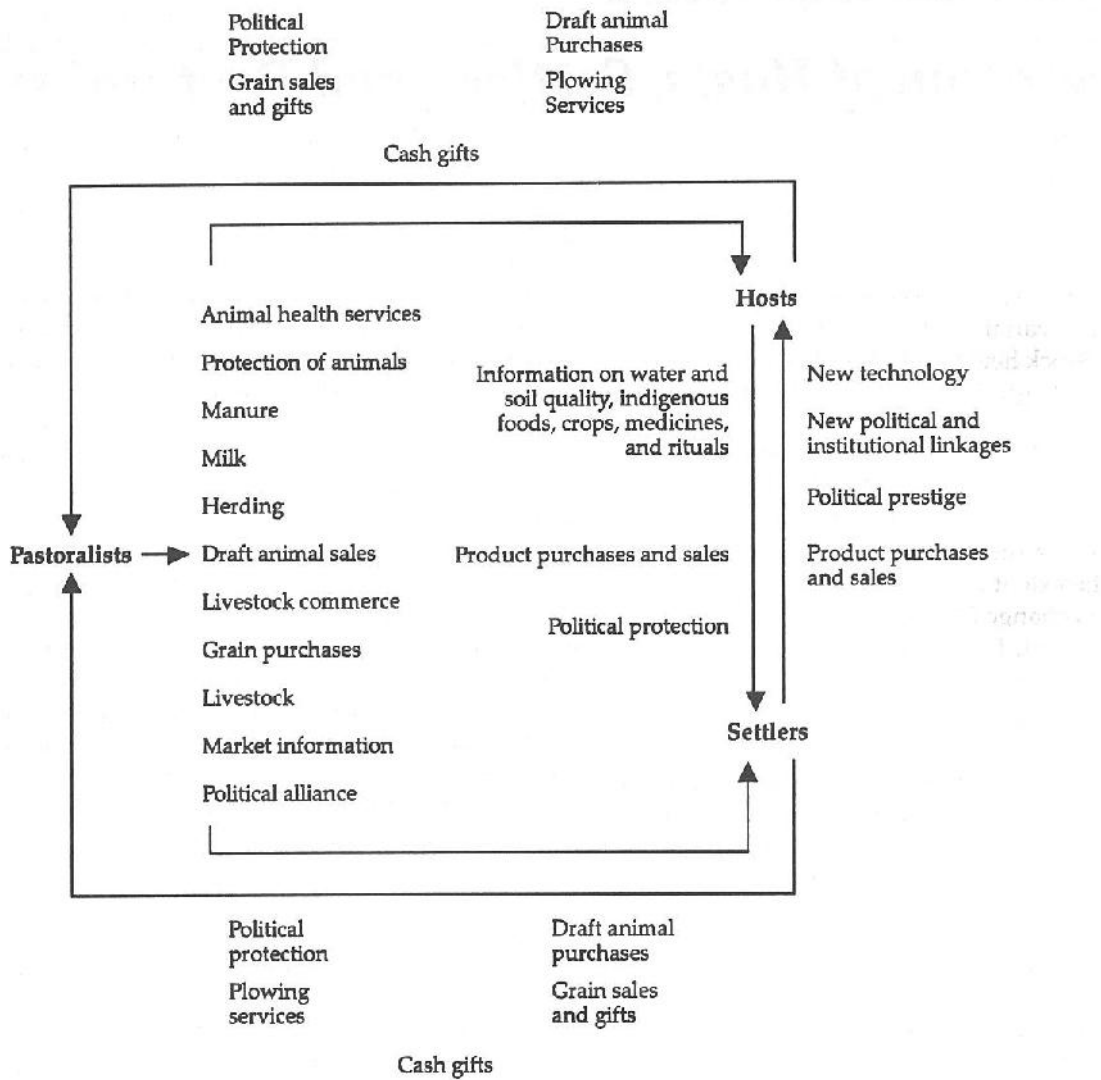
Integration of Hosts with Settlers

A complex interweaving or synergism exists between settlers (agricultural and pastoral) and hosts who provide access to land (Figure 9.1). The indigenous inhabitants also provide settlers with information on suitable settlement sites, soil quality, and water sources. They are also knowledgeable about gathered foods, which are the main

source of green vegetables in the daily sauces in most settler diets, and medicinal herbs, herb specialists, and healers. Learning from their hosts about the ritual status of specific sites, appropriate areas for burial, market sites, and the local hierarchy of political and social groups, helps settlers feel more at home (See McMillan 1983: 205-207). For their part, settlers provide new markets for host farmers' products, contributing to the well demonstrated correlation between new lands settlement and expanded area markets. Settlers also stimulate area development to the extent that they bring information or experience with such new technology as plows, tractors, cotton (Niangeloko, Solenzo), or new linkages to outside trade and administration (Niangeloko, Solenzo, Kompienga).

The first immigrants in some of the Solenzo, Niangeloko, and Kompienga villages were often sponsored by host families. The typical pattern was for a group of kinsmen to request land from an indigenous inhabitant. Early immigrants then typically sponsor the immigration of later settlers from the same home area. Even when this occurs, the sponsor will usually take the newcomer to the same friendly sponsor who helped him or her to first acquire land. The settler family thus increases its allies, while at the same time increasing the allies of its own sponsor. By granting land, the indigenous sponsor gradually increases his power in the community. If immigrants and the indigenous population are from the same or related ethnic groups, these social bonds will often be

Figure 9.1 Integration of hosts, settlers, and pastoralists



Source: McMillan, Painter, and Scudder 1990.

reinforced by later intermarriages between the lineages of indigenous grantor and migrant grantee. Such sponsorship and mutual aid typically provide the power base for the first generation of indigenous and migrant political leaders who guide the new hybrid communities.

The value placed by settlers on peaceful, mutually beneficial integration with the host community is reflected in the tendency of spontaneous settlers to continue traditional land tenure practices despite a 1984 change in national land tenure law. Settlers know that official land title or not, they will have few opportunities for a satisfactory social or economic life if they have antagonistic relationships with the local people.

Integration of Hosts and Settlers with Local Pastoralists

Successful settlement related development in Burkina is invariably linked to increases in the size of livestock herds of agriculturalists and pastoralists and to greater linkages between the agriculturalists and pastoral populations (Figure 9.1). Livestock continues to be the principal source of investment for rural farmers; it augments their income as well. For pastoralist populations, livestock provides their principal source of income and—to the extent that livestock or livestock services are exchanged for grain or used for meat and milk—food. Livestock manure is an important part of any long-term strategy to develop sustainable cropping systems. Small livestock are also one of the most important sources of income and investment for women.

High levels of conflict between pastoralists and agriculturalists hurt the agriculturalists' chances of negotiating herding and manure contracts. Local pastoralists, in turn, can be penalized with high fines for the destruction of farmers' crops by animals, although determining whose animals are at fault is complicated because such a large number of itinerant pastoralists move in and out of the settlement areas.

Although pastoralist-agriculturalist conflict was a factor at all of the sites, it was more pronounced in some. In general, factors that seemed to promote more peaceful relations between pastoralists and agriculturalists were some of the same factors that promoted peaceful relationships between migrants and indigenous inhabitants. Especially important was whether the pastoralists approached indigenous leaders to

acquire cultivation and grazing rights. This approach to acquiring land rights helped create positive relationships between indigenous inhabitants and area pastoralists, minimizing conflict and promoting peaceful collaboration.

Agriculturalist-Pastoralist Relations over Time

At all of the sites, the first immigrants to the region were pastoralists. Unfortunately, because of difficulties in identifying the immigrant pastoralists, the site reports often underestimate their role in area land use patterns and settlement related development.

Nana and Kattenberg's research on patterns of spontaneous settlement showed that pastoralists were slowly moving into the upper Nakambe region near Linoghin, Mogtedo, and Mogtedo-Bombore in the late 1960s (Nana and Kattenberg 1979), long before the AVV planned settlements were created. The combination of access to local and regional markets, availability of pasture land, isolation from agricultural settlements, and access to water made the area attractive to pastoralists in the rainy season. The late sixties showed a growing number of pastoralists shifting their "permanent" rainy season camps to the river basins.

By 1979, a second wave of pastoralists, attracted to the area by the prospect of working as herders for the newly rich AVV settlers, flooded into the upper Nakambe basin. In the AVV planned settlements, the "herder" pastoralists were generally poorer families who had lost all or part of their herds through drought, disease, or some other personal misfortune. Guarding the wealthier agriculturalists' animals is a way of reconstituting their herds. In return for working as herders they receive grain and cash. From the larger livestock owners, herders also receive a percentage of the young animals born under their care and have rights to drink and sell the animals' milk.

Herding out their cattle to pastoralists has four major benefits for hosts and settlers (McMillan, Painter and Scudder 1990). One is better use of family labor, since the demands for herding frequently are beyond the capacity of farming households (Delgado 1979). Second is the reduced risk of theft. High labor demands and risk of theft were two important reasons why about one-fourth of the families in the AVV settlements no longer have draft oxen, despite easy availability of credit with which to purchase animals. A third

benefit is better care of livestock, because herders have knowledge of and access to more distant forage, as well as a better understanding of local medicinal plants and modern preventive measures. The fourth is a reduced likelihood of conflicts over crop destruction, as animals are herded away from fields during the cropping season.

In the AVV villages, pastoralists generally preferred to herd the animals of one powerful family or a group of related powerful families. Pastoralist households thereby gained political protection in addition to the other benefits of the relationship. The wealthier agriculturalists' interest in facilitating integration with the herders is reflected in an incident we observed in one of the AVV planned settlements. When the first rumors circulated about creating a village land management program, wealthier settler leaders took the initiative of encouraging the FulBe pastoralists to organize to ensure that their needs would be considered.

The same success that attracts livestock herders tends to attract more immigration by agriculturalists. This increases pressure on crop and pasture resources over time. The degree of pressure depends on the rate of immigration, which in turn is a function of other attractive features (e.g. opportunities for trade) that may attract settlers to an area. As population densities increased, the first generation of pastoralists' access to water and pasture became more circumscribed.

The emerging "crisis" was accompanied by a steady escalation in accusations and formal litigation concerning livestock damage to crops. We can surmise that a similar pattern of escalating conflict developed at some point in the past in the Solenzo subdistrict.

Faced with growing conflict, pastoralists must choose between leaving or developing new patterns of closer, and generally more sedentarized, interaction with agriculturalists. Pastoralists with significant herds that make them less dependent on the activities of neighboring agriculturalists generally chose to move on. When such migration occurred in the area around the AVV sponsored settlements, a substantial growth in market activity appeared in the frontier zone between the sponsored settlements and the river (Markets 3, 5, 7, 16, 18, and 22 in Figure 8.1).

Emigration away from advancing agriculturalists is not a choice for pastoralists with small herds who are forced to work as herders. It is these pastoralists whom we find still living in

permanent camps around the AVV sponsored settlements.

Another option for pastoralists without herds of their own is sedentarization, and with sedentarization comes increased cropping. The Solenzo settlements, for example, include a sizable number of pastoralists farming at levels similar to those of agriculturalists. Three of the four FulBe pastoralist households that were included in the farming systems survey had adopted animal traction. Savadogo (1989d) observed that cropping systems of the sedentarized FulBe resembled those of the agriculturalists. Passing through the customary authorities to obtain permission to graze and farm may have contributed to the successful integration of pastoralists in Solenzo.

Since 1983 an increasing number of pastoralists have oriented their immigration away from the more saturated northern basins of the Nakambe, Nazinon, and Mouhoun (former White, Red, and Black Volta Valleys). This trend was reflected in the case study research, which shows a fairly recent increase in pastoralist immigration into the Kompienga Basin (Agrotechnik 1989). Large-scale pastoralist immigration to the Niangoloko subsector and the Toumousseni Classified Forest is also recent.

In sum, pastoralist immigration to Burkina's OCP river basins follows a regional trend toward the shift of transhumant patterns further south. Countries such as Ghana, Benin, Togo, and Côte d'Ivoire received a growing amount of spontaneous pastoralist immigration from the Sahelian countries in the 1970s but, by this move south, the "FulBe problem" was merely exported, not resolved. Burkina's OCP basins are now catching the "backwash" of this earlier immigration. In late 1987, several thousand alleged Burkinabe pastoralists—virtually the entire FulBe population of Ghana—were expelled from that country by government edict. The expelled FulBe were quickly attracted by the prospect of huge water resources and markets near the Kompienga Dam. This sudden increase in the number of cattle and of FulBe put additional pressure on the Kompienga Basin's already stressed pasture and water resources and on agriculturalist-pastoralist social relations.

Social disturbances between agriculturalists and pastoralists also caused many pastoralists to flee across the Côte d'Ivoire border in late 1988—some in such a hurry that they abandoned their herds. The repulsed pastoralists fled into the OCP

basins creating a sudden, dramatic, almost immediate increase in the area's pastoralist population, in agriculturalist-pastoralist conflict, and in the threat of livestock depredations in the area's classified forests.

Factors That Affect Integration Dynamics

Various factors contributed to or detracted from the peaceful integration of hosts, settlers, and pastoralists into regional social and economic systems.

- *Authorization of Land Tenure Rights.* One of the principal factors influencing host-settler and host-pastoralist relations was whether or not settlers passed through the customary channels to acquire land.

- *Same Area of Origin.* Other factors being equal, there are fewer problems between settlers, and between settlers and hosts, when they come from the same area of origin. The fact that the AVV settlers at Linoghin were from the same Oubritenga region as the indigenous inhabitants whose land they were granted by the AVV was one of several factors that reduced conflict between the two groups. By 1989, we counted:

- (1) five daughters of spontaneous immigrants who were married to AVV settlers in the Linoghin Planned Settlements, Villages 1, 2, and 5;
- (2) six daughters of AVV sponsored settlers who were married to spontaneous migrants; and
- (3) four daughters of indigenous inhabitants of the region who were married to AVV sponsored settlers, also in Villages 1, 2, and 5.

This pattern of intermarriage and increasing social integration contrasts sharply with the gross lack of social integration in the AVV planned settlements at Mogtedo and Mogtedo-Bombore.

Shared area of origin and, even more important, long-term acquaintance, also influenced the AVV settlers' choice of which FulBe families to board their animals with.

- *Distance from Indigenous Villages, Rate of Immigration, and Pre-existing Population Densities.* The AVV planned settlements that were created in less populated areas have had fewer conflicts with the indigenous inhabitants. Similarly, conflicts over livestock are generally minimal at lower popula-

tion densities, and increase as settlement densities increase.

- *Immigration Rhythms.* Indigenous social and economic institutions can effectively accommodate high rates of immigration if it occurs steadily over a long period of time. Sudden, massive streams of immigration—of pastoralists or agriculturalists—tend to overload the capacity of local social and economic institutions to negotiate mutually beneficial land use patterns. The fairly sudden breakdown of these systems, and parallel increase in social conflict, can be seen at Kompienga.

- *Present Role of Village Extension Groups.* In most areas of Burkina, farmers are required to belong to a settler extension *groupement* in order to acquire credit. The *groupement* is then responsible for insuring that individual settlers repay their loans. To acquire credit, settlers are forced to join the same *groupements* as the indigenous farmers. This shared membership has reinforced the social and economic integration of hosts and settlers.

These *groupement* structures have been less effective for incorporating pastoralists. While several of the sedentarized pastoralists living at Daboura were equipped with animal traction, our impression from other interviews was that this tended to be the exception rather than the norm. In general, the pastoralists have not been readily incorporated into existing *groupements*. Instead, most official dealings with the pastoralists have focused on special pastoralist *groupements*.

- *Religion.* Religion was frequently cited as a factor that worked both for and against peaceful integration. First, the animal sacrifices made through their sponsors when immigrants received land were an important sign of their respect for (not necessarily adoption of) the local customs and authority of the indigenous people. Second, practicing the same world religion—whether Catholic or Muslim—encouraged collaboration. Religious instruction was a third way that religion provided a mechanism to promote social integration. Agriculturalist (or, in the case of the Classified Forest at Toumousseni, pastoralist) settlers who were Koranic masters would board children of other settlers as well as the children of indigenous farmers in the region. This was considered to be an asset for hosts in areas where they had previously had to send their children to other parts of the country for Koranic schooling.

Just as religion can facilitate, it can also work against settler integration. In the Solenzo area,

for example, the Yatenga immigrants tend to be Muslim; the indigenous Bobo, animist. Religion was usually offered as the reason that the two groups did not intermarry, despite long years of living together.

Strong pressure was exerted on AVV settlers to convert to either Christianity or Islam when they immigrated to the AVV. In most cases, the patterns of conversion followed political lines.

In one AVV village, for example, almost half the settler households were from the same home village, and over half those settlers from one of seven clans in that same home village. The three clans most closely identified with the chieftaincy were almost exclusively Muslim. Each of the other clans, without any historic claim to the home village chieftaincy, tended to be a mixture of animist-Christian. When they first immigrated, one of their leaders suggested that the entire group convert to Islam as a means of reinforcing the fact they were from the same home village. The non-Muslim groups were unanimous in their refusal. One of the reasons given for this was the association of Islam with the traditional chieftaincy. One settler said:

In the home village we were under the sway of the traditional chiefs. Why should we convert and put ourselves back under them?

- *Markets.* If settlers were instrumental in the creation of new markets that benefitted the indigenous people as well as themselves, this eased economic and social relations between the different groups. We observed this at Linoghin, Kompiembiga (an immigrant community near Kompienga) and Kompienga town, and throughout the Solenzo and Niangoloko region. Several pastoralists invested in large boutiques in the Mogtedo market. There were also a number of prominent pastoralist merchants at the Kompienga market. The active social and economic participation of the pastoralists in these markets provided one of the most important means for immigrant pastoralists and agriculturalists to become better acquainted with one another. The markets—especially the Kompienga market—also provide an important center for the nonformal adjudication of disputes between pastoralist and immigrant leaders.

- *Political Allegiances and Political Change.* Government reforms to promote more democratic village governance have sometimes had the unintended consequence of creating new sources of conflict between immigrants and indigenous in-

habitants. After 1983, the indigenous chieftaincies were theoretically replaced by the elected CDRs (Committees for the Defense of the Revolution). Since the immigrants tended to vote as a block, they would dominate the CDRs in the villages where they were predominant. This switch in the political hierarchy almost always brought about a fairly immediate and direct increase in migrant-host conflicts even in villages where hosts had always been quite hospitable.

Similarly, one of the unintended consequences of the 1984 Agrarian Reform Act has been to make agriculturalists more reluctant to host transhumant pastoralists on their fields, lest they then try to claim residence as “permanent” inhabitants and acquire “permanent” pasture and cultivation rights. We found this especially true in the Kompienga region where area villages have been inundated by “stranger” pastoralists expelled from Ghana.

Policy Implications

The most successful development planning is likely to be that which strives for a balance in promoting the economic interests of all the groups affected—host and migrant agriculturalists, as well as pastoralists. Interventions or events that threaten the economic, social, or political security of any one of these groups reduce the chances for successful integration. Lack of successful integration, in turn, reduces the chances that immigrants will invest the first generation of returns from new lands settlement in the development of more sustainable land use practices. Successful integration increases the chances that the three groups will be willing to collaborate to resolve future problems with soil degradation, reforestation, agriculturalist-pastoralist conflicts, and natural resource zoning. Most likely to succeed will be programs that combine land tenure rules and zoning (to protect the rights to pasture and cultivation areas of both immigrant and indigenous agriculturalists and pastoralists) with efforts to reinforce the capacity of local institutions.

Need to Promote Village Zoning for Agriculture, Pastoralism, and Common Resource Management

Burkina's *Programme National de Gestion des Terroirs* (PNGT) is a promising model for village land use management that is designed to facilitate the integration of hosts, settlers, and pastoralists. The

PNGT model, which is described in greater detail in Chapter 10, combines zoning (to delineate land to be used for crop cultivation, livestock, and managed and unmanaged forests) with the creation of (and outside institutional recognition of) a village land management committee. The land management committee is supposed to include elected representatives from all of the major social groups. In theory, only village pastoralists (that is, pastoralists who have settled permanently near a village and who farm) and village agriculturalists are entitled to keep their animals in the village area zoned for pasture. Under the model, any immigrant family—pastoralist or agriculturalist—must pass through the committee to acquire land rights in the village. Once constituted and officially recognized, the village land management committee can place certain restrictions on the acquisition of land rights, such as specifications concerning land use practices and the amount of land that can be legally cleared.

If implemented early in the settlement process rather than later as part of an effort to rehabilitate land that has already been damaged by extensive cultivation (such as our study sites at Daboura near Solenzo and the area surrounding the AVV sponsored settlements), the PNGT model offers an unusual opportunity to protect the interests of indigenous inhabitants by allowing them a certain amount of control over immigration onto their land. Second, it gives settlers some legal recognition of their claims. Third, it protects village pastoralists and settlers who own cattle by assigning them a clearly delineated area for pasture.

Need for Large Agropastoral Zones

Zoning village lands for agriculture, pastoralism, and common resource management is not a viable alternative for settlers with large herds. For this reason, most area planning models need to include the delineation of one large contiguous region reserved exclusively for agropastoralists with large herds.

Burkina Faso has launched several of these experimental agropastoralism zones. Again, as in other types of assisted settlement, the goal is to facilitate sedentarization of the pastoralists' production systems by providing roads, wells, schools, and health, veterinary and extension services.

Most pastoralists we worked with strongly favored the creation of such pastoral zones, princi-

pally because the zones created areas where they could live without competition and conflict with agriculturalists. Once pastoralists throughout the valleys had heard of the existence of such projects, they kept asking us if a program like the one at Nouhao would be created near Kompiega. In the pastoralists' opinion, the zones represent their best chance for living peacefully and protecting their lifestyle.

An intensive case study, focusing on the evolution of a small sample of family groups within these agropastoral zones, would make an excellent contribution to the literature on settlement and development in the OCP river basins. Unfortunately, we were able to conduct only a brief survey of ten pastoralist families who had been living in the Gadeghin zone for two agricultural seasons and in the general area for periods of five to ten years. We were impressed by the pastoralists' enthusiasm for the project and the efficiency with which the pastoralists had organized their Revolutionary Committees (CR) to patrol the zone boundaries in an effort to keep out non-member pastoralists and their herds. The CR and village land management committee also have successfully met to discuss various problems with animal depredations, manure contracts, and herding arrangements with settlers living in sponsored settlements as far away as Mogtedo-Bombore. Especially impressive was the fact that the herders appear to be organizing these activities on their own with only minimum directives from the AVV-UP1 staff. We were also impressed by the fact that agriculturalists in the surrounding area seemed to support the concept.

In the agriculturalists' view, if the Gadeghin scheme is successful, it will provide a more stable base for agropastoralism in the Nakambe basin. Although the Gadeghin settlers are expressly forbidden to board agriculturalists' animals within the agropastoral zone, this is difficult to enforce. Nor is this necessarily desirable since area farmers would naturally prefer to board their animals with a nearby family that they know will remain in the region. In turn, pastoralists who plan to remain in the zone have a vested political and economic interest in helping their agriculturalist neighbors to control theft and to develop peaceful herding and manure contracts.

This strong base of settler initiative and relatively peaceful relations with the neighboring agriculturalists bodes well. By far the most pressing problem the agropastoral zones face today is

overstocking. When we conducted the survey, the President of the Village Land Management Committee estimated that there were about 5,000 animals living in a zone area planned for 2,000. Zone leaders are struggling with the best means of getting settlers to regulate the size of the herds they will be authorized to keep in the zone. Crop production programs as well as efforts to grow improved fodder for the animals have been literally trampled in the dust by overstocking.

Need to Promote Intensification of Livestock Systems

For the concept of area zoning for pastoralists to be effective, it must be combined with programs to intensify livestock production systems. To date, local livestock production programs have emphasized animal vaccination. Far less attention has been focused on questions of animal nutrition and breeding, programs that could presumably make it possible for pastoralists to reduce livestock densities without losing income.

Need to Develop Programs for Controlled Pastoralism near Classified Forests

Our research supports other studies that show that the most immediate threat to Burkina's classified forests is grazing, not cultivation. Present programs to regulate land use in the classified forests focus on agriculturalists, however. The FAO project to develop renewable income sources in

the Classified Forest at Toumousseni is one example of this type of innovative program but one that is primarily attractive to agriculturalists.

A strong priority needs to be to develop experimental programs to associate the pastoralists living in villages near classified forests. Transhumant pastoralists are less likely to know or to respect forest boundaries. In view of the difficulty of distinguishing pastoralists who are eligible for forest grazing from those who are ineligible, it is probably better to forbid any sort of grazing in the forests.

For rules against grazing to be enforced, the local sedentarized and semi-sedentarized FulBe must be associated. To accomplish this requires the development of complementary zoning for agropastoralists in adjacent areas, along with programs to help pastoralists intensify their own livestock production systems. For the pastoralists to respect area zoning, they must feel a strong economic and social investment in remaining in the agro-pastoral zone. To date, we are unaware of any programs that have been in existence long enough to provide demonstrated models. Indeed past experience with the development of more sedentary pastoralist production systems in the Niangoloko region has been quite negative. The question of how best to combine zoned areas for livestock with programs to promote more intensive agropastoralist systems is still, in our opinion, one of the weakest areas in development planning for all of Burkina's OCP river basins.

10

Knowledge and Management of the Natural Resource Base

The Dilemma of Spontaneous New Lands Settlement

The extensive crop and livestock systems being established in Burkina's river basins make sense under a given set of environmental conditions when "new" land, with good potential for rain-fed agriculture, is still easily acquired and cleared, and when there are low social and economic costs to abandoning worn-out land.

If immigration rates are low, as in the Niangoloko area and the Kompienga Basin (before construction of the dam), extensive agricultural cultivation is generally ecologically and socially sustainable; population densities are low, and agricultural lands are still plentiful. In addition, there is usually little in the way of social or economic infrastructure other than access roads and markets that makes one village setting more attractive than another for outside migrants. Under these conditions, the primary factor determining household production levels is the size of the family labor force. The rational strategy for settlers under these circumstances is to clear and plant the largest area possible and to abandon the older fields at the first sign of erosion. Farmers in the Niangoloko region, for example, have traditionally farmed a field only five years before leaving land fallow for an average of 20-25 years. In the past, the abundance of reserve fields made this long fallow possible.

As population densities increase, it becomes more difficult to find new land to allow the set-

tlers' fields to lie fallow for the length of time necessary to restore soil fertility. Increased pressure on agricultural land is generally associated with rising levels of social conflict. Predictable sources of conflict include livestock damage to agriculturalists' fields, growing problems with potable water because of higher demand and pump maintenance requirements, pastoralist resentment at being denied access to former grazing areas and water sources, and a diminished supply of easily accessible fuelwood.

If agriculturalists and pastoralists have an option, when these problems start to arise, they will move. This is a process that is as old as African agriculture—a process that has become romanticized and played out in the origin myths of Burkina's different villages and ethnic groups (Izard 1965).

The traditional Mossi patterns of marriage, lineage, and politics have for centuries facilitated the reinstatement of settler crop production, livestock, trade, and market networks in areas of new lands settlement (Skinner 1957, 1960, 1962, 1964a, 1964b, 1970; Izard 1965, 1970, 1971; Izard-Hertier and Izard 1959). Moreover, the Mossi people expected that a certain amount of lineage fragmentation to colonize new lands would be a natural result of their extensive cultivation practices. Once established in a new region, the settlers would request a representative of their former chief. This new chief would then be linked to their former chief as well as to the former chief's alliances with other village, regional, and provincial

chiefs in the Mossi kingdoms. By requesting and receiving an official "chief," the colonists reinforce their linkages with their former home areas and the wider kingdom. Historically, these social and political linkages played a vital role in validating the territorial rights of different groups and in facilitating peaceful trade relations between areas with different resource endowments.

This traditional system for colonizing "new" land worked as long as land was plentiful; it began to break down when land became scarcer. As population densities increased on the Mossi plateau, it became increasingly difficult for agriculturalists to let the land lie fallow for a sufficient period of time to renew soil fertility.

Early Plans for and Response to the AVV Model for Sustainable Agriculture

The early AVV program was a deliberate attempt to offset some of the deleterious land use practices commonly associated with spontaneous new lands settlement. The first step of the AVV land use model involved a series of aerial photos and surveys of soil and water. On the basis of this research, all the land in a given river basin was classified according to its best and highest use for forestry, livestock, crops, or tourism. These surveys were then used to develop a tentative plan for a series of settlement, managed forestry, livestock, and dam construction projects (Figure 10.1).

Planned settlements were created in groups or blocs of six to seven villages, in areas selected for the quality of their soils. The settlers' cultivation was restricted to one or two ten hectare farms, which was considered to be the maximum amount of land that they could farm with the proposed program for intensive cultivation. In addition, each planned settlement included areas set aside for forestry and livestock. In return for the right to cultivate a farm in one of the "improved" project villages—with access to roads, schools, health facilities and wells—settlers were required to adopt a recommended package of intensive cultivation techniques and to respect the project zoning.

A comparison of the project plan for restricted, registered land use with actual land use patterns ten years later shows that the settlers did respect the broad outlines of the crop cultivation bands. In contrast, in areas such as Solenzo where no such controls were imposed, the settlers used

plows and tractors to cultivate the largest area possible. At the Solenzo site, a few successful tractor farmers were able to cultivate as much as 40-50 hectares per family with mini-tractors. This accounts for the sizeable difference in total land area farmed per ALE between the AVV sites, where controls were exercised, and the Solenzo region, where they were not (Figure 10.2).

Thus, while the land use restrictions in the AVV sponsored settlements contributed to the development of more "stable" production systems (i.e., less prone to extensive land clearance than were the unrestricted cotton systems), overall, the production practices were not more sustainable. Moreover, neither settlers nor extension staff were able to control unauthorized immigration of cultivators and pastoralists onto village lands designed for other purposes. By 1979, the area around most of the AVV sponsored settlements was being occupied by spontaneous settlers. The production methods used by these farmers were even more extensive than those of the sponsored settlers. By 1987, when most of the spontaneous settlers at Rapadama had been living there for ten years, they were already facing a crisis. Almost the entire region had been occupied and the settlers were experiencing increasing problems with declining yields, a proliferation of *Striga hermonthica*, and other weeds (AVV 1988).

The AVV was also unable to control illegal woodcutting in areas around the sponsored settlements. Thus, by the time more effective national controls were put in place in 1984, the thick savanna bush forests that once encircled the AVV planned settlement in the upper Nakambe (ex-White Volta) were almost entirely cleared.

Early Plans for and Response to Zoning for Agropastoral Areas

Land use planning for pastoralists in the OCP river basins has focused on the development of large, separate agropastoral zones at Gadeghin, Sondre-Est, Nouhao, and Leo. Both pastoralists and agriculturalists who can demonstrate previous residence are eligible to participate. Each zone is supposed to be equipped with basic veterinary services, dispensaries, schools and roads, as well as water points for humans and animals. In return for the right to herd its animals in the area, a herder family was required to follow a recommended program to promote intensive crop and livestock production.

BURKINA FASO
 PROJECTED INSTALLATION OF AVV PLANNED
 SETTLEMENTS AND OTHER TYPES OF LAND USE
 PLANNING IN THE NAKAMBE AND NAZINON (EX-
 WHITE AND RED VOLTA) RIVER BASINS, 1974
 ZONES DE DEVELOPPEMENT ENVISAGEES POUR
 LA REGION DES BASSINS DU NAKAMBE ET DU
 NAZINON (EX- VOLTA BLANCHE ET ROUGE)
 COUVERTE PAR LE PROGRAMME OCP, 1974

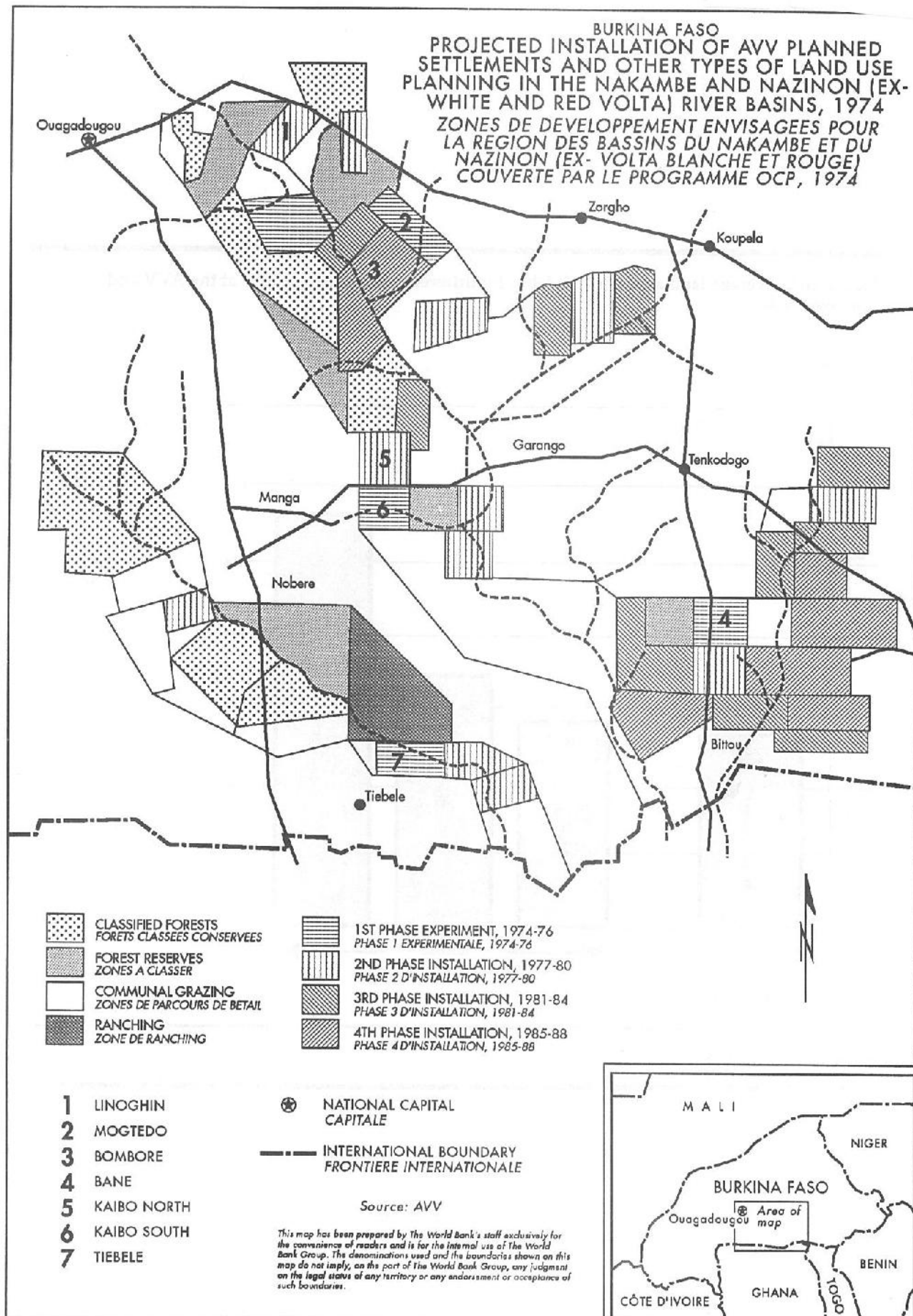
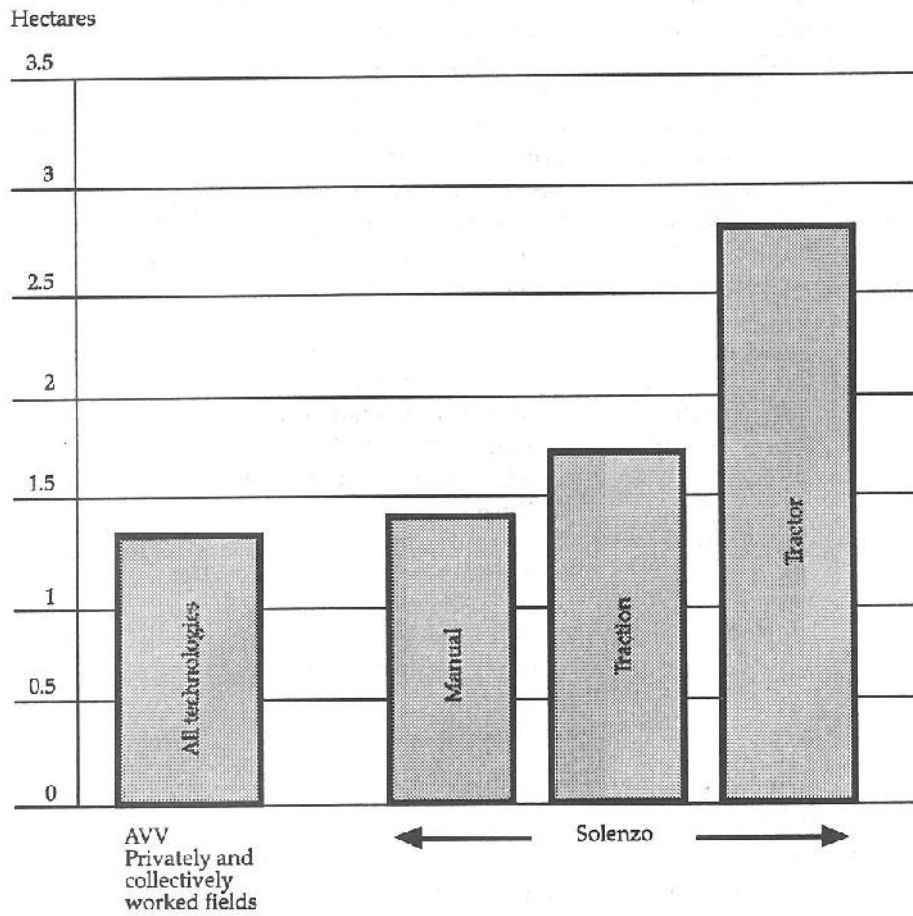


Figure 10.2 Average land area per unit labor for different technology groups at the AVV and Solenzo, 1988



Source: Tables 7.1 and 7.8.

Burkina's agropastoral projects have been plagued by many of the same planning problems as the AVV planned settlements. Chief among these is the determination of zone boundaries and lack of clear land tenure. Each of these agropastoral zones was selected in the early 1970s as part of the initial AVV planning for the OCP river basins. In general, however, the actual projects did not get under way until after the first decade of sponsored settlements, when mounting levels of social conflict between cultivators and pastoralists forced planners to do something with and, therefore, something for the pastoralists. By then many of the zones designated for pastoralist development, like the present Nouhao and Gadeghin Projects, had already been occupied by spontaneous settlers.

This delay in planning and forced relocation of spontaneous settlers can disrupt the evolving patterns of economic and social integration in a region. At Gadeghin, for example, more than 200 families had to be removed, when the AVV began to enforce zoning and to create the proposed base of infrastructure in 1980. Almost all the "illegal," spontaneous, agriculturalist settlers had immigrated to the site since 1974, when the zoning had first been recommended. They blamed their forced removal on the sponsored settlers—a fact that soured the unusually hospitable relations that had existed between the two groups before this time. These ill feelings and the forced displacement of the spontaneous settlers contributed to the virtual collapse of the Gadeghin/V9 Rapadama market (number 5 on Figure 8.1) which had become the most prosperous interior market on the "frontier" between the sponsored settlements, the pastoralists, and the spontaneous agriculturalist settlement in the river basin. The hostility associated with the forced relocations, coupled with the collapse of commercial activities, contributed to the departure of seventeen households from the closest AVV sponsored settlements in 1988.

Early Plans for and Response to Zoning for Classified Areas

The national government has faced similar sorts of problems in its attempts to protect classified forest. Traditionally forests were considered dangerous places where wild animals, serpents, and spirits (both good and bad) reside. The spiritual qualities of the forests were reflected in the sacri-

fices and rituals associated with initiations. Forest products (fruits, leaves, wood) have always played a central role in the local rural economies.

In contrast to crops, forests and forest products are considered "a gift from God," and a collective good. For this reason farmers have generally not been involved in active forest management, outside selective weeding to allow high value trees such as the *karité*, *nééré*, baobab, prunier, and *Acacia albida* to survive in cleared fields. Even this right was denied to outside migrants, who were restricted from planting or harvesting trees on "borrowed" land.

In an effort to preserve some of the country's remaining forest areas, the colonial government exercised its legal right to reserve certain areas as classified forests. The majority of these classified areas were created in the country's low density river basins (Map 23844). Local populations were pressed into assisting the administrators with the delineation of the protected forest zone. Forced labor was also used to carry out reforestation projects, especially along the major roads. This history of forced labor and imposed limits contributed to the development of hostile attitudes toward forest agents—attitudes that still remain.

Since independence Burkina has found it increasingly difficult to satisfy the growing demand for fuelwood. By 1985, only the extreme southeast and extreme southwest were considered to have sufficient fuelwood supplies (Map 23852). This combination of rising demand for fuel and construction wood, plus growing demographic pressure on land in the northern river basins has made it more and more difficult to control illegal cutting, cultivation, and grazing in the country's classified forests. Although precise figures are lacking, one survey identified 31 classified forests with varying degrees of forest depredation (*Ministère de la Question Paysanne* 1987). Twenty-six of the 31 forests that were identified as having problems are located in the river basins of the "cotton boom" provinces of Houet, Moulhoun, Bourgouriba, and Sourou. The classified forests near roads and those within a one hundred mile radius of major cities like Kaya, Ouagadougou, Banfora, and Bobo-Dioulasso are especially vulnerable.

Until recently, the low population densities and relative isolation of the classified forests in the most southern provinces of Tapao, Gourma, Sissili, Comoe, and Poni have protected them. For example, conflicts between settlers and the ad-

ministration were minimal at our case study site in the Classified Forest of Toumousseni until 1983. From 1954 to 1982, only 33 verbal reprimands were issued by the administration: 21 for hunting, five for illegal wood cutting, one for illegal grazing, and six for illegal bush fires.

Since 1983, however, the rate of pastoralist immigration to the area has increased dramatically (SAED 1988). About 60 percent of the households identified as immigrant in our interviews with leaders in the four villages around the Toumousseni Forest had immigrated since 1981 (Figure 10.3). Since we focused only on immigrants, this does not count FulBe whom the village leaders classified as non-permanent residents. A recent survey by the local prefecture estimates the ratio of pastoralist immigrants to agriculturalists to be as high as seventeen to one.

Alternative Models for Village Land Management: PNGT

By 1983 it was clear that top-down projects like the AVV and the system of classified forests which attempted to legislate zoned land use were almost certainly doomed to failure. Without voluntary collaboration from the local inhabitants, it was too expensive to enforce either the boundaries or the proposed land use practices. One of the primary goals of Agrarian and Land Tenure Reorganization was to develop a more holistic approach to natural resource management. This approach would combine comprehensive land use planning for agriculture, livestock, and forestry based on the natural potentials of the areas, with the voluntary implementation of these programs through the village and regional Revolutionary Committees (CRs).

Growing out of the August 1985 decree on the implementation of the *Réforme Agraire et Foncière*, the *Département du Monde Rural de la Présidence du Faso* (DMR) elaborated a proposition for a program of village land management, "*gestion des terroirs villageois*." At the initiative of the DMR, two joint meetings of the World Bank, the GTZ (*Gesellschaft für Technische Zusammenarbeit* [German Development Agency]), CILSS (*Comité Permanent Inter-états de Lutte contre la Sécheresse dans le Sahel*) and the *Caisse Centrale* were organized in 1986. The goal of the meetings was to define a national program that would help villages and regional development authorities with the implementation of the themes advocated by

agrarian reform. The themes and approach adopted were heavily influenced by the extensive experience of the AVV in land use and cooperative development (Guyon 1986:12). The committee presented a four-step village program.

STEP ONE: Information and Election. A series of information sessions to inform villagers of the goals and the necessity for this type of collective program precedes the village's election of a "land management" committee responsible for determining land allocation and dealing with outside authorities. The land management committees include representatives of the major social groups living in the village—recent immigrants, the indigenous population, and pastoralists.

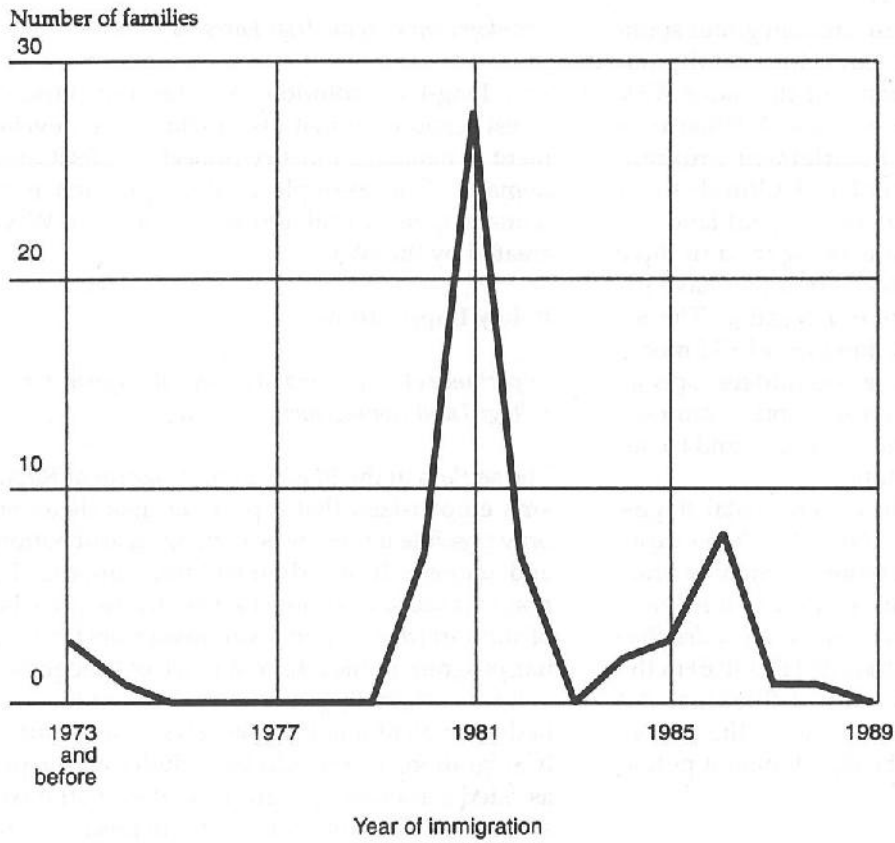
STEP TWO: Delineation of the Village Frontiers. The rights of each group—pastoralists, agriculturalists, recent immigrants, and long-time residents—must be represented in the delineation of village frontiers. These boundaries are based on soil and topographic maps that are usually based on aerial photos. The delineation is organized by the local land-use committee working in cooperation with regional authorities and neighboring villages.

At Solenzo this step was subdivided. First, the villagers proposed their own land management plan. Then the extension service presented a second "counter-proposal" to discuss with the local people.

STEP THREE: The Village Contract. This step involves the negotiation of a signed contract between the community (represented by the land management committee) and the State. The community agrees to respect certain themes for soil and forestry conservation, improved pasturage and suppression of bush fires. In return, the state agrees to help the villages with the realization of basic infrastructure and land improvements. In theory, the village contract and land survey guarantee official recognition of the villagers' rights to the land and any future improvements that they make on it.

STEP FOUR: Realization of the Terms of the Contract. This step refers to the realization of the terms of the contract by the villagers and the relevant state agencies. A national Coordination Unit (*Cellule de Coordination*) was created in 1986 to help ministries implement a series of pilot projects following the village land management model. The Unit, which provided some limited assistance with conceptualization of the pilot projects, was attached to the Ministry of Plan,

Figure 10.3 Year of immigration for settlers living in villages surrounding the classified forest at Toumousseni, 1989



Source: Nana 1989

with special aid from the World Bank, *Caisse Centrale*, and other donors. During the first three years, the Cellule's activities focused on monitoring the pilot projects in an attempt to refine the program guidelines and recommendations (PNGTV 1989a).

A number of experimental programs to work with spontaneous agriculturalist and pastoralist settlers in the OCP basins have grown out of the agrarian reform movement. Some of these have been directly incorporated into the national PNGTV program, which is now referred to a national village land management program, which is now referred to as the *Programme National de Gestion des Terroirs* or PNGT.

One of the first PNGT test sites integrates spontaneous settlers into the extension, credit, and land management programs of the older AVV planned settlements at Rapadama. Another type of experimental assisted settlement program aims at the incorporation of agriculturalist and pastoralists hosts and settlers into joint land use committees. The program is being tried in three villages in the CRPA du Mouhoun that have experienced different rates of in-migration. The Solenzo program basically follows the PNGT model of creating village land-use committees. Special emphasis is being placed on attempts to promote more sustainable production practices and to stabilize rampant forest clearance.

Although it is still in the experimental stages, in several instances the PNGT has been quite successful in introducing more sustainable practices. One of the most interesting is the *Projet Aménagement des Terroirs et Conservation des Ressources dans le Plateau Central* (PATECORE) in the Bam province of north central Burkina. Although it is not an OCP river basin, the project provides an example of the development potential of the PNGT concept.

Land-Use Planning in Connection with Forest and Wildlife Preserves

Small-Scale Projects to Develop Renewable Income Sources from Classified Forests

Projects like the FAO multiple use forestry project in the Classified Forest at Toumousseni are a promising model for development in areas near classified forests. Although still very new, the Toumousseni project was enthusiastically received in the three villages where it was implemented. The

most active participants in different project activities (cutting and selling firewood, charcoal making, beekeeping) have been the youth.

The genius of this sort of project which increases farmers' and pastoralists' income from renewable forest products is that it creates a group of people with a vested economic interest in controlling illegal cutting, grazing, and farming in protected forests. The country's fledgling Ministry of Environment and Tourism does not have the manpower to do the job alone. To be effective, however, such projects need to be combined with the development of other sectors, including crop and livestock production.

Development of Industrial Forestry Projects

Any long-term solution to protecting Burkina's forest resources must also include the development of managed forestry projects to offset urban demand. One example of this approach is the managed, industrial forestry project at Wayen created by the AVV.

Policy Implications

Importance of National and Regional Support for Village Land Management Programs

The settlers in the PNGT pilot program at Rapadama emphasized that a program like theirs was only possible if there was a strong base of national and regional level administrative support. This point was brought home to them by the early lack of support from regional administrators for a similar program in the adjacent block of Linoghin.

It was originally planned that Linoghin, which had equivalent if not higher rates of spontaneous immigration, also would be included in the pilot assisted settlement program created by the AVV at the UP1. This did not occur, however, because one village of spontaneous settlers—many of them civil servants and wage laborers from Ouagadougou and the FulBe (who aligned with the dissident spontaneous settlers)—refused to cooperate with a preliminary census. The dissident settlers then carried their case to the newly created Ministry of the Peasant Question and got the project officially terminated, but not before threats of physical violence were made against AVV and UP1 staff, who were conducting the studies, and against settlers, who allowed themselves to be interviewed. The civil servants' fear

of reprisals for being absentee landlords appears to have motivated their lack of cooperation.

Clarification of the Role of the Village Land Management Committees

A striking feature of all the village land management committees was the speed with which hosts and settlers were able to organize village land management committees. After less than one month of discussion, groups were organized at both Daboura and Rapadama. We were impressed by the high level of enthusiasm and the efficiency of the committees. Caution must be exercised, however, to ensure that the organization of the committees does not become an end unto itself. These committees must be given the means to carry out development programs on their own. Care must also be given to work in collaboration with traditional authorities in the villages.

Clear Delineation of Village Boundaries

Planning for future projects should include greater attention to and a longer time period for the delineation of settlement boundaries, a task far more complex than it would first appear. It was cited as one of the principal problems at Daboura (CRPA du Mouhoun 1990b). Neighboring villages often have difficulty agreeing on village limits. Other problems are created by house and field sites that appear in frontiers. Boundary delineation must therefore be viewed as a long-term, evolving process rather than something that is carried out at a single point in time.

Delimitation of Areas for Pastoralists

Settlers and hosts realize that long-term development of their own diversified production systems is linked to good relations with the pastoralists. Facilitating development of large agropastoral zones as well as village areas dedicated to pastoralists enhances the probability that the two groups will be able to regulate their separate and interrelated land use patterns with less conflict. Programs are more likely to succeed if there is a clear, early attempt to indicate the boundaries for agropastoral zones with painted or inscribed markings that are easy to identify.

Clarification of Adjudication Procedures

Clarification of the procedures for adjudicating land disputes and individual tenure rights would give "teeth" to current legislation. To date, the process for negotiating disputed land claims or certification of family tenure rights is still unclear.

Coordination of Participating Institutions

The concept of interdisciplinary collaboration between different ministries (Agriculture and Livestock, Water, Environment and Tourism, Finance, Peasant Cooperatives) is considered vital to the design, implementation, and evaluation of an integrated, holistic approach. To achieve this sort of interdisciplinary coordination on the ground, however, takes a great deal of time. The institutional mechanisms for achieving collaboration at the regional or national level need to be more effectively determined (CRPA du Mouhoun 1990b).

Extension

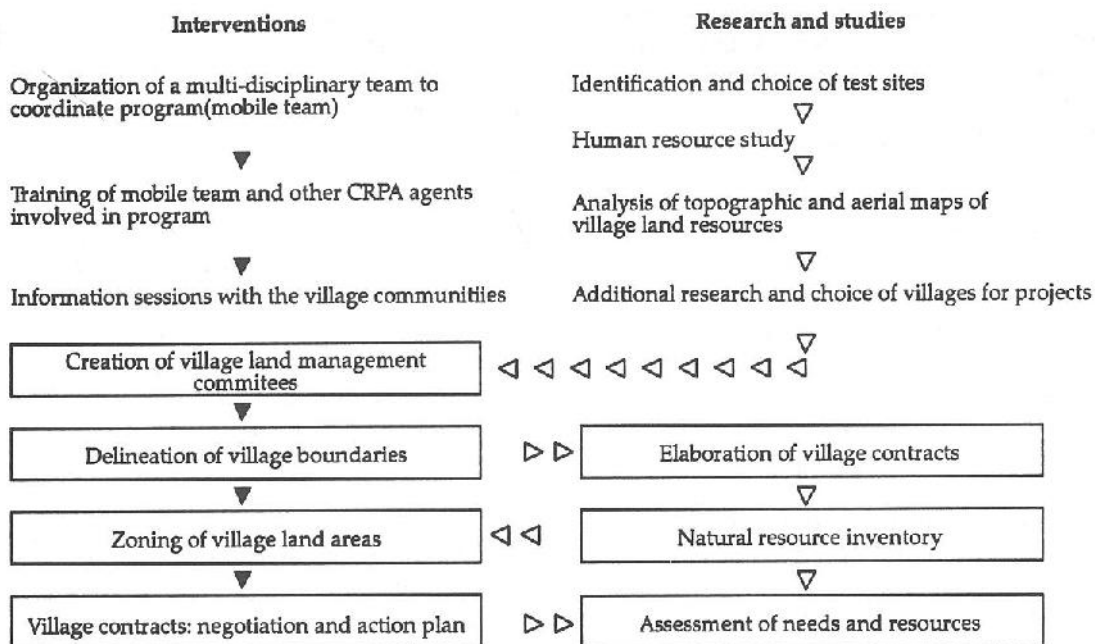
Extension programs continue to focus on either crop or livestock production, with relatively little attention given to how they are interrelated. Questions of dry season irrigated gardening and nonfarm employment have been addressed in only a few isolated cases. The extension programs need to take a much broader perspective.

Research

The PNGT program foresees a vital role of research in connection with every stage of a village land management program (Figure 10.4). To date, however, these research programs tend to follow the lead of extension and continue to focus most heavily on crop production. Research projects need to take a broader perspective on the land use patterns, economic returns, and linkages between different types of agricultural and nonagricultural employment.

Farmers and extension agents alike are tired of a proliferation of descriptive, baseline studies. Whenever possible, village research should be linked to the evaluation of particular types of innovations or programs in order to make recommendations for future action. Caution should be exercised so that the energies of the extension staff and the inhabitants are not drained by an endless stream of disparate student theses. Thesis research is important, but

Figure 10.4 Interrelated research and interventions: the PNGTV approach



Source: CRPA du Mouhoun 1990