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Annex 1. Methodology of the Land Settlement Review in Burkina Faso

The Burkina case study research was designed and implemented by three senior team members. Kimse Savadogo, Chair, Department of Economics, University of Ouagadougou, was responsible for the design, testing, and analysis of the economic questionnaires at all four study sites (See Savadogo 1989a,b,c,d), as well as for writing draft sections on farming systems and diversification for the final report. Jean Baptiste Nana, sociologist, was responsible for coordinating research at the Niangoloko, Solenzo, and AVV Rapadama Study sites (see Nana 1989a,b,c,d,e,f), as well as for contributing draft sections for the final report on land tenure, recent political history, immigration in connection with the classified forests, and immigration types. Della McMillan, anthropologist, Institute for Development Anthropology, was responsible for the overall coordination of research and analysis as well as for research in the AVV planned settlements at Mogtedo, Mogtedo-Bombore, and Linoghin, and on spontaneous new land settlement at Kompienga. McMillan was also responsible for writing the first and second drafts of the national case study based on the site reports, sector analyses, and other research conducted by the team (McMillan 1989). In addition to the main case study research, we benefitted from several special case studies that were contributed by other researchers (Table A.1).

Table A.1 Site and Field Reports Completed as Part of the Land Settlement Review in Burkina Faso

Savadogo, Kimseyinga	
1989a	Analysis of Off-Farm Income. September.
1989b	Land Tenure Systems. September.
1989c	Livestock in the Farming System. September.
1989d	Factors Explaining Household Food Production Systems. October.
Savadogo, Kimseyinga, John Sanders, and Della McMillan	
1989	Farm and Female Incomes and Productivities in the River Blindness Settlement Programs of Burkina Faso.
Nana, Jean Baptiste	
1989a	Rapport sur le Site de la Zone de Sous-secteur de Niangoloko et de la Forêt Classée de Toumousseni.
1989b	Rapport sur le Site. Programme PGTV Rapadama.
1989c	Rapport sur le Site de Sous-secteur de Solenzo.
1989d	Enquête Ressources Naturelles de la Zone de Niangoloko.
1989e	Enquête Ressources Naturelles dans le Sous-secteur de Solenzo.

The Burkina case study is based on a mixture of quantitative and qualitative research at the

four study sites and a series of complementary special studies on market systems, gold mining, the agropastoralist zone at Gadeghin, settler turnover in the AVV sponsored settlements, and local and national institutions. We made a deliberate decision to focus most of the research at each study site on a small group of sample farmers whom we attempted to visit consistently over a three-to-eight month period (the length of fieldwork varied at the different study sites). We believed that the trust instilled over time improved the quality of the answers we received. The sample sizes used in different surveys are described in Table A.2.

Core Methodology at the Study Sites

Socio-economic Surveys

Information on the socio-economic effects of settlement-related development at each site was drawn from four interrelated surveys.

FARMING SYSTEMS SURVEY. A total of 141 households were included in a farming systems survey at three of the study sites (Table A.2). The survey included a stratified random sample of 27 animal traction and manual farmers in two study villages at Solenzo and all 9 of the tractor-owning

Table A.2 Sample Size of the Economic Surveys Conducted in Burkina Faso, 1988-1989: Number of Households

	Farming systems survey		*Revenues and expenditures*			
Site	*Daboura*	*Dar/Kie*	*All*	*F.S.*[a]	*New*[b]	*Pastoralists*
Solenzo						
Manual	7	6	13	4		
Animal	6	8	14	5		
Tractor	4	5	9	3		
ALL	17	19	36	12		
AVV-UP1						
Restudy of the 1979 Statistical Service Survey						
AVV-Linoghin			20	10[c]		
AVV-Mogtedo			20	5		
AVV-Mogtedo-Bombore			20	4	4	
ALL			60	19	4	
Restudy of the Longitudinal						
Case Study at V3 Mogtedo			20	14	3	
Assisted Settlement Program Rapadama					6	
Kompienga (town)						
Former AVV Mossi Settlers			7	5		
Mossi Settlers, non-AVV			6	2		
Yana			6	2		
Gourmantche			6	2		
Fulani (pastoralists)						3
ALL			25	11		
Special Studies of Pastoralists						
Kompienga						10
Mogtedo V3						10
Gadeghin						10

a. Subsample of the Sample Households included in the Farming Systems Survey.
b. New Households, not included in the Farming Systems Survey but included for other reasons, including long-term familiarity with the research.
c. At Linoghin, 10 households were included in the revenue study, but only 4 in the expenditure survey. The decision to augment the size of the revenue sample was made because of evidence of a high level of off-farm employment at the site.

households in the two villages for a subtotal of 36 households; a random sample of 60 of the 144 households that were included in the 1979 farm monitoring program of the AVV Statistical Service (Murphy and Sprey 1980) in the AVV planned settlements at Mogtedo, Mogtedo-Bombore, and Linoghin (114 of the original 144 are still living there; see Table A.3); 20 households that have been included in an intensive longitudinal case study of 25 households in a single planned settlement at Mogtedo (McMillan 1983, 1986, 1987a, 1987b); and a stratified sample from the major ethnic groups in the town of Kompienga. Interviews were conducted with the male household head concerning crop production techniques, labor utilization, and inputs on the fields worked collectively by all members of the household. Each family member was also interviewed about crop production on his or her private fields. The male household head and one wife—usually the wife considered to have the largest private crop area or most active involvement in off-farm employment—were interviewed concerning production techniques, input use, and harvests for their private fields; livestock ownership, expenses, and sales; crop sales; and income from different nonagricultural sources. We conducted rough estimates of field size (measuring length and width), and verified them with more precise measurements of a subsample of fields at Mogtedo V3, Solenzo, and Kompienga. A smaller number of fields were measured for the 60 farmers in the restudy of the 1979 Statistical Service Survey. Each family was visited at least three to five times over several months between December 1988 and July 1989 at Kompienga, between February and July 1989 at the AVV, and between March and May 1989 at Solenzo.

HOUSEHOLD EXPENDITURE AND REVENUE SURVEY. A subsample of 56 farm families in the Farming Systems Survey were selected for a more detailed analysis of household expenditures and revenues. In contrast to the Farming Systems Survey (which interviewed only one male and one female household head in each family), each member of the family was interviewed concerning her or his crop, livestock, and off-farm production. Each person was also interviewed about expenditures for different categories of objects and services for the preceding month and for certain large expenditures (house repairs, bicycles) for the preceding year. The expenditure and revenue survey included four additional households (from Mogtedo-Bombore) that were not included in the main farming systems survey but with whom McMillan had worked since 1978. We also included three additional households, with large herds, at Mogtedo V3 in order to offset the bias that resulted from the wealthiest households in the longitudinal case study leaving the project.

Six farm families that had been newly incorporated into the assisted settlement program at Rapadama were also interviewed. In addition, we were able to interview three pastoralist families at Kompienga.

As part of this survey, we conducted a survey of price changes since 1979 for the major products that—according to our interviews—were most frequently purchased by the farm families.

Table A.3 Follow-up of Farmers Included in the 1979 Statistical Service Survey

		Changes since 1979				
AVV planned settlement Bloc/UD	*Families in 1979*	*Left project*	*Deceased*	*Expelled*	*Replaced by family members*	*Total no. of families who remained in 1989*[a]
Linoghin	48	3	4	—	4	45
Mogtedo	72	24	3	—	1	46
Bombore	24	1	—	—	—	23
Bane	48	2	4	2	1	41
Kaibo-Sud	72	20	1	2	—	49
Kaibo-Nord	48	7	—	—	—	41
Total	312[b]	57	12	4	6	245

a. If the male household head was replaced by a member of his extended family, the family is counted as still being there.
b. We could locate only 96 of the original 97 families in the original sample at Mogtedo.
Source: Guira, DEPC, AVV, September 1989.

SURVEYS OF PASTORALIST PRODUCTION SYSTEMS. Thirty pastoralist families (defined as the unit residing together at a permanent camp under the leadership of one individual) were interviewed at three sites. These include pastoralists living in the area immediately outside of the town of Kompienga, pastoralists working as herders in the area around the AVV planned settlements at Mogtedo, and ten pastoralist families in the agropastoral zone at Gadeghin. Each individual in the family was interviewed about the number of animals he or she owned, animal losses due to theft or death during the preceding five years, sales of animals and animal products during the preceding years, cash expenses for livestock production, and other income-earning sources. As at the other sites, the interviews took place over an extended period in order for us to adjust to fluctuations in residential patterns and for them to get better acquainted with us. The major exception was at Gadeghin, where the interviews were conducted over a two-week period but where several of the pastoralists had known the individual conducting the interview for 10 to 15 years. At Kompienga and Gadeghin we attempted to select those interviewed from groups that the settlers themselves had identified as wealthy, average, and poor. Three pastoralist families—one from each of these groups—were included in the revenue and expenditure survey at Kompienga.

SURVEY OF LOCAL MARKETS AND SERVICES. A fourth set of surveys focused on the impact of new lands settlement on the development of local and regional markets and services. These interviews were conducted at Kompienga town; in markets frequented by settlers living in the AVV planned settlements at Mogtedo, Linoghin, and Mogtedo-Bombore; for Niangoloko town; and for all markets in the Solenzo subsector.

Special Issues Related to Women

To complement the information on women, we interviewed women about their perceptions of their current situation, as compared to their situation before immigration to the project. These interviews were conducted at each site with the woman who was included in the farming systems survey. Like the immigration survey, they were generally open-ended interviews, but reported on a standard form to improve the likelihood of getting comparable data.

Natural Resource Issues

Village migrant and host leaders, as well as a few of our key informants from the other surveys, were chosen for open-ended interviews on natural resource issues, following a questionnaire format designed by John Buursink. Informants were asked questions about land-use patterns before large-scale immigration, current land-use issues, and their projections for the future. Results of these interviews were synthesized into a report on natural resource issues at each of the study sites.

Immigration Patterns

EXTENSIVE IMMIGRATION SURVEY. Three of the study sites (Kompienga Town, Niangoloko, and Solenzo) lacked basic information on immigration trends. At Niangoloko and Solenzo we conducted interviews with village migrant and host leaders in order to discover the number of migrant households, their approximate size, their prefecture of origin, and the period when they immigrated. These interviews were often verified by personal interviews with the identified male household heads. The town census at Kompienga gathered similar data on each of the identified household heads (male and female) living in the town in August 1989.

IMMIGRATION HISTORIES AND SOCIAL INTEGRATION. We conducted a series of open-ended interviews with household heads in the main study sample (Table A.2) about their past immigration histories and their relationships with other groups in the new immigration areas. To ensure comparability, the interviews were reported on a standard form.

Organization of Research at Individual Study Sites

The AVV-UP1

ASSISTED SETTLEMENT PROJECT AT RAPADAMA. The case study of the UP1 assisted settlement program at Rapadama examines the early economic and social results of this experimental assisted settlement project at the end of its first year. Research focused on discussions with the village land management committees, extension agents, and participating settlers. The initial 1987 census of spontaneous settlers who were surveyed for

inclusion in the program provided the basis for a follow-up study to determine how many of these settlers actually remained at the new site and what was their level of participation in extension programs. Six settlers considered to be representative of new settlers participating in the program were included in the study of household expenses and revenues.

PLANNED SETTLEMENTS AT MOGTEDO, LINOGHIN, AND MOGTEDO-BOMBORE. Research in the AVV planned settlements focused on a restudy of sample farmers that were included in an AVV-wide farm monitoring survey during the 1978 and 1979 agricultural seasons. The baseline survey covered 313 households that were randomly chosen in all the major AVV village groups in existence at the time (97 of the 313 households were in the contiguous blocs of Mogtedo and Mogtedo-Bombore; 48 of the study households were from Linoghin). At the time of the study, the sample settlers had been living at the project for periods of one to five years. The farm monitoring survey gathered basic information on crop technology, production, and income for the four 1.5-hectare bush fields (or, in the case of a very large family, four 3.0-hectare bush fields) and 1- or 2-hectare house sites. The results of the farm monitoring survey for 1978 and 1979, are analyzed for farmers living at the project for different lengths of time as well as by size of family labor force (Murphy and Sprey 1980).

Twenty-seven of the 96 sample families that were included in the 1979 Statistical Service Survey of the blocs of Mogtedo and Bombore, and 3 of the 48 sample families at Linoghin, had left the project and were not replaced by family members (Table A.3). A random sample of 60 of the 114 remaining households was chosen for inclusion in the farming systems survey (Table A.2). The goal of the farming systems survey in the AVV planned settlements was to compare the settlers' patterns of social and economic organization today (10 to 15 years after coming to the site) with what had been observed in 1979 after they had been living there for periods of 1 to 5 years. The 1979 farm monitoring survey and the extensive records kept by the AVV extension agents were an unusual and valuable resource that enabled us to assess specific patterns of longitudinal change.

A second source of baseline information included a more-intensive longitudinal case study of settlers from one of the main recruitment zones. That case study compares a single group of settlers who migrated from the same home village and were in the same project villages in 1979, with related households that did not migrate but remained in the settlers' home village. This research was conducted over a two year period from 1978 to 1980. The results of this comparative case study were compared with the results obtained from the AVV farm monitoring survey (McMillan 1983). Short restudies of the settlers were conducted during 1983 and 1986 (McMillan 1986, 1987a, 1987b, 1989a, 1989b).

Many of the hypothesized relationships between length of settlement and settler patterns of socioeconomic development were formulated on the basis of observations made during restudies of the longitudinal case study.

Solenzo

Our research in the Solenzo region focused on two levels. At the regional level, we were concerned with gathering accurate information on the rate and patterns of immigration to different villages, since the earlier assessment of settlement-related development in the area by AVV (1985c) had lacked certain vital information on the immigration process. At the village level, we gathered information that would be comparable with our economic research at the other sites and with the ongoing farm monitoring efforts by the CRPA du Mouhoun.

An extensive migration survey was conducted in 19 villages in the Solenzo subsector. Five of these villages were chosen for more intensive interviews on immigration histories and social integration with village host and migrant leaders by the senior team member working there.

Thirty-six households representing the three main crop technology groups—manual, animal traction, mini-tractors—were included in the farming systems survey. In the manual and animal traction groups, 27 farmers were chosen randomly on the basis of census data provided by the CRPA. The 9 mini-tractor households represent the entire population of tractor farmers living in the two villages. These 36 farm families were divided between two villages—Kie/Dar-es-Salaam and Daboura. Daboura is one of three test sites for the Village Land Management Programme (PNGT) in the CRPA du Mouhoun. Dar-es-Salaam, originally a migrant cultivation hamlet of Kie, has recently requested and received

recognition as an independent village with its own extension *groupement*.

A survey was conducted of the Solenzo and Daboura market. In addition, we benefitted from a survey of village and cultivation hamlet markets in the Solenzo subsector conducted by the *Cellule Suivi-Evaluation* of the CRPA du Mouhoun in March-April 1990.

Kompienga

Kompienga has been the subject of several excellent regional surveys on migration and resource issues that were conducted in connection with planning for the dam (SAED 1980; Dr.-ing. Walter International 1987). Our analysis of regional trends is drawn largely from the documents produced by Agrotechnik, the consulting firm that conducted the final regional development plan (Agrotechnik 1989). Information on settlement trends in the immediate river basin is drawn from AVV planning documents. Our separate research has focused on the study of the new town, which grew from three large compounds with fewer than 100 persons in 1985 to an estimated 5,000 persons at the peak of dam construction, and numbered 3,239 persons in August 1989, not counting civil servants.

Because the departure of the dam workers is so recent, no information on the size, ethnic composition, or activities of the town was available when we started the research in early 1989. Moreover, the settlers were highly suspicious of outside researchers. We decided, therefore, to focus the economic survey on a sample of 25 agriculturalists and 10 pastoralists chosen by our research assistant. The research assistant had worked with McMillan in AVV Mogtedo in 1983 and 1986. He and his family were among the 55 families (452 persons, or 14 percent of the total population excluding civil servants) living at Kompienga who left the AVV planned settlements between 1987 and 1989. The research assistant worked with immigrant and indigenous leaders with whom he was acquainted to choose "representative" families from each of the major ethnic groups represented in the village. Special efforts were made to include large, small, wealthy, and average income families. Although limited to the personal network of the research assistant, the smaller sample provided a much higher quality of information on farm and off-farm income than could have been acquired by outsider researchers. In addition to the 25 farm families, efforts were made to follow, in a less intensive fashion, the crop and livestock activities of 10 FulBe pastoralist families. Our increasing familiarity with the different immigrant groups allowed us to develop complementary studies on the development of off-farm employment and commercial activities in the town.

Niangoloko

Our methodology at Niangoloko focused on: (1) a migration survey of the 15 villages in the Niangoloko subsector and the 4 villages around the classified forest; and (2) interviews with indigenous and migrant leaders in both zones about past and present patterns of immigration, income growth, and natural resource use.

Complementary Studies

Guira Frederic, *Contrôleur*, DEPC, ONAT (ex-AVV), prepared a special report on the history of *groupement* activities in the AVV planned settlements at Linoghin, Mogtedo, and Mogtedo-Bombore, and a second special study on the Linoghin market. Sommaila Sawadogo, sociologist, AVV-UP1, prepared a study of settler turnover in the AVV planned settlements at Mogtedo and Mogtedo-Bombore. Moustapha Ouedraogo prepared two special studies on gold mining and the Gadeghin agropastoralist zone.

The *Cellule Suivi-Evaluation*, CRPA du Mouhoun (Chef, Traore Adama) reacted to our initial discussions of results by implementing a separate study to examine the history and size of markets in the subsector and goods included in them. Fatou Kabore, *Animatrice, Bureau Ministère de l'Environnement et du Tourisme*, Mogtedo, and Mogtedo CR *Délégué Chef*, Joseph Guigma, worked with us to prepare a brief history of the town and market of Mogtedo, in addition to following market activity during several seasons.

Annex 2. Political History of Burkina Faso

Under colonial rule, Upper Volta was defined as a "military territory" from 1896 to 1904, and then as the colony Haut-Sénégal Niger from 1904 to 1919, before becoming the Colony of Upper Volta from 1919 to 1932. In 1932 the colony was dismembered and divided between the neighboring colonies of Côte d'Ivoire and Sudan-Niger; it was reunified in 1947.

Since attaining independence in 1960, the country has known several successive political regimes (Savonnet-Guyot 1986).

1960-1966. The first national government, referred to as the First Republic, was the Presidential Regime of Maurice Yameogo. He governed with the *Rassemblement Démocratique Africain* (RDA), which became the official State Party.

1966-1970. He was succeeded by the military regime of General Sangoulé Lamizana, who ruled with the *Conseil Supérieur des Forces Armées* (CSFA), which came to power during street manifestations of 3 January 1966.

1970-1974. The military government was succeeded by the Second Republic with *un régime parlementaire rationalisé*, based on a constitution adopted June 1970. General Lamizana remained in power during this time, but the government was directed by the Prime Minister, whose activities were controlled by a National Assembly. A conflict between the Prime Minister and the National Assembly led to social unrest, which returned the military to power on 8 February 1974.

1974-1978. General Lamizana suspended the national constitution, and the National Assembly installed two new successive national governments referred to as the *Gouvernement Renouveau National* (GRN), the GRN 1 from 8 February 1974 to 9 February 1976, and the GRN 2 from 1976 to 1978. The latter encountered strong opposition from the labor movements in October 1977, which resulted in the dismissal of the Ministers of Finance, Plan, Rural Development, and Environment. Many political activities that had been suspended were reinstated in 1977. A constitution was adopted in November 1977 and elections planned. Legislative elections were held in May 1978 and presidential elections in June, giving birth to what is referred to as the Third Republic.

1978-1980. During the Third Republic there was a return to the multiparty activities of the three parties that were constitutionally recognized. The Third Republic was brought down by powerful opposition from the labor movement.

1980-1982. In 1980 the military took power again under Colonel Sayé Zerbo, who presided over the *Comité Militaire de Redressement pour le Progrès National* (CMRPN).

7 November 1982-4 August 1983. A 7 November coup d'état directed by the *Conseil de Salut du Peuple* (CSP) suppressed the earlier activities of the CMRPN. The CSP was presided over by Commandant Jean Baptiste Ouedraogo with Captain Thomas Sankara as First Minister. Sankara was dismissed from the government 17 May 1983.

4 August 1983 - 15 October 1987. An armed insurrection proclaiming the creation of the

Révolution Démocratique et Populaire by the *Conseil National de la Révolution* (CNR) presided over by Captain Thomas Sankara represents a decisive break with the country's earlier regimes. The objective of the takeover was *l'edification d'une société de démocratie populaire* through the organization of people into *Comités de Défense de la Révolution*. The committees were organized to represent all the different geographic units of the country (village, neighborhood, commune, department, province) and such professional and social sectors as government and international offices, military and paramilitary units, and educational facilities. On 4 August 1984 the CNR renamed the République de Haute Volta as Burkina Faso, and made parallel changes in the national flag, emblem, and anthem.

15 October 1987 - 2 June 1991. In October 1987, the Popular Front, directed by Captain Blaise Compaore deposed the CNR but with the idea of "preserving the noble ideals of the Democratic and Popular Revolution." Important activities included the restructuring of the various CRs that were considered to have often abused their power into a new structure of local, regional, provincial, and sociopolitical CRs or *Comités Révolutionnaires*.

2 June 1991. A constitutional referendum was held. The newly adopted constitution reinstates civilian rule and elections were expected to be held before the end of the year.

December 1991. Only one candidate, Blaise Campaoré, ran in the the presidential elections. He was elected and sworn in as President of the 4th Republic on 9 December 1991.

Annex 3. Supplementary Tables on Consumer Prices and Price Indexing

Table B-1 IMF Consumer Price Index, Burkina Faso

Year	*1979= 100*	*1988= 100*
1979	100.0	61.8
1980	112.2	69.3
1981	120.1	74.6
1982	135.1	83.4
1983	146.5	90.5
1984	153.5	94.8
1985	164.2	101.4
1986	159.9	98.8
1987	155.3	95.9
1988	161.9	100.0

Source: IMF 1989; World Bank 1989:63

Table B-2 Price Changes in Important Products Purchased by Farmers, 1979-1989, and Percent Change (1979=100)

Product	*1979*	*1988-89*	*Percent change*
Plow	—	—	—
Donkey cart	40,000	95,000	137
Bicycle	29,000	50,000	72
Yamaha Dame motorcycle	—	400,000	na
Mobylette CT	45,000	165,000	267
Cement (1 sack)	1,100	2,400	118
One roofing tin	1,050	2,300	119
1 pack of sugar	125	355	184
1 small soap	45	95	111
1 medium soap	75	150	100
1 large soap	150	280	87
1 small pail	600	1,800	200
1 large pail	1,250	2,600	108
1 box matches	10	15	50
1 liter gas (reg.)	80	275	244
1 liter kerosene	40	160	300
1 large metal plate	600	1,500	150
1 bicycle tire	750	1,850	147
1 "jente" velo	750	1,850	147
Cube maggi (2)	5	10	100
1 soda	75	150	100
1 beer (non-local)	—	225	na
1 plate cooked rice	15	50	233
1 calebasse dolo (local beer)	05	50	900
1 liter oil			
peanut	200	400	100
cotton	175	350	100
(5) Bonbons	5	25	400
Rice (1 plate of white rice)	250	500	100

n.a. Not applicable.
— Not available.
Source: Guira, F. DEPC, AVV, March 1990.

Table B-3 Price Ranges of the Major Crops at the Study Sites, 1988-1989[a]

	White sorghum	*Red sorghum*	*Millet*	*Maize*	*Cotton*	*Peanut*	*Earth pea*	*Cow pea*	*Sesame*	*Rice*	*Tubers*
Scenario I Low prices AVV	44	40	45	33	95	60	60	68	60	80	50
Scenario II Medium prices AVV	47	45	45	33	95	60	60	115	60	80	50
Scenario III High prices	50	50	45	33	95	60	60	167	60	80	50

Note: Gumbo and roselle were given a price of 90 FCFA/kg.
Source: Savadogo 1989a.
a. There are substantial variations of prices between the high levels in the "hungry period" before harvest and the customary post harvest price collapse. Price ranges are more relevant than either the pre or post-harvest prices.

Table B-4 Retrospective Prices for Major Products, the Linoghin Market 1988-1989[a] (August, December, March)

	White sorghum			*Red sorghum*			*Millet*		
Year	*Aug.*	*Dec.*	*Mar.*	*Aug.*	*Dec.*	*Mar.*	*Aug.*	*Dec.*	*Mar.*
1988/89	83	26	41	90	20	40	120	40	60
1989/90	67	25	50	60	26	40	100	40	70
	Maize			*Peanuts*			*Beans*		
1988/89	60	20	50	83	36	71	240	50	100
1989/90	80	30	60	95	36	71	240	60	130

a. Retrospective prices for the three time periods were collected from farmers at Linoghin. In view of large differences between the recorded prices and data recorded by the ORD for Mogtedo and Zorgho during 1984-1985, we are not reporting those results. Information was elicited for *assiettes* (plates). Estimated weights per plate were 3.0 kg for white sorghum, 2.5 kg. for red sorghum, 2.5 kilograms for millet, 2.5 kilograms for maize, 2.1. kilograms for peanuts, and 2.5 kilograms for beans.

Table B-5 Retrospective Study of Prices for Livestock, 1979-1989

Year	*Chicken*	*Guinea fowl*	*Goat*	*Sheep*	*Donkey*	*Pig*
1979	250	300	2,250	2,500	13,000	4,000
1980	350	350	2,500	3,000	16,000	4,750
1981	400	450	2,750	3,500	20,000	5,000
1982	375	250	3,000	3,750	20,000	5,750
1983	400	300	3,250	3,700	22,000	6,000
1984	400	275	3,275	3,800	22,500	7,500
1985	375	300	3,350	4,000	23,000	8,000
1986	375	275	3,400	4,250	23,700	9,000
1987	350	300	3,500	4,500	23,700	10,000
1988	175	225	4,000	5,000	24,000	11,000
1989	500	400	5,000	6,500	25,000	15,000
1990	750	600	6,500	7,500	27,500	16,000

Methodology: Retrospective prices based on interviews with sample farmers at Linoghin. Recorded prices cross referenced with prices recorded in other surveys.
Source: Guira, F. 1989 and AVV-DEPC .

Table B-6 Cereals Food Balance (in 000 tons)

Year	*Domestic production*	*Imports*
1980	1,028	66
1981	1,2249	59
1982	1,179	74
1983	1,099	77
1984	1,318	173
1985	1,791	190
1986	1,709	67
1987	1,759	60

Source: World Bank 1989:57.

Table B-7 Official Producer Prices and Prices Used to Calculate the Value of Production in the 1979 AVV Statistical Service Survey

Crop	*Market survey*[a]	*Official producer price*[b]
Cotton	54	55 (first choice) 45 (second choice)
White sorghum	62	40
Red sorghum	55	32
Millet	—	40
Maize	57	40
Cowpeas (niebe)	79	45
Peanuts (in shell)	81	37
Rice	72	
Millet	65	
Cereals (house compound)	50	

a. Murphy and Sprey 1980:58; 22.
b. Office National des Céréales, Arrette n° 001458/MCODIM/MDR, portant fixation des prix d'achat au producteur des céréales locales pour la campagne 1983-84. Tableau II. Evolution des Prix des Productions.

Annex 4. Supplementary Tables on Livestock Production

Table C-1 Number of Cattle and Sheep/Goats Lost to Disease and Theft, Five-Year Period

	AVV		*Solenzo*		*Kompienga*	
	Death	*Theft*	*Death*	*Theft*	*Death*	*Theft*
Cattle						
Small	15	0	12	0	25	5
Large	42	27	109	4	9	1
All	57	27	121	4	34	6
Sheep/Goats						
Small	298	21	74	17	139	4
Large	428	290	178	45	81	4
All	726	311	252	62	220	8

Source: Savadogo 1989c.

Table C-2 Rates of Losses of Cattle and Sheep/Goats by Death and Theft, on a Yearly Basis[a] (by percent)

	AVV			*Solenzo*			*Kompienga*		
	Death	*Theft*	*All*	*Death*	*Theft*	*All*	*Death*	*Theft*	*All*
Cattle									
Small	3.0	0	3.0	1.7	0	1.7	7.4	1.5	8.9
Large	3.5	2.2	5.7	7.9	.3	8.2	1.6	.2	1.8
All	3.3	1.6	4.9	5.8	.02	5.8	3.8	.7	4.5
Sheep/Goats									
Small	13.8	1.0	14.8	15.1	3.5	18.6	24.8	.7	25.5
Large	13.2	8.9	22.1	15.6	3.9	19.5	14.3	.7	15.0
All	13.4	5.8	19.2	15.5	3.8	19.3	19.6	.7	20.3

a. Rates are defined as losses per year due to the relevant cause divided by stock at interview time. This gives a rough approximation of the probability of losing an animal during a particular year.
Source: Savadogo 1989c.

Table C-3 Expected Annual Livestock Income for the Heads of Household, by Region

	Total (CFA per farm per year)		*Per ALE* (CFA/ALE)	
	High scenario[a]	*Low scenario*[b]	*High scenario*[a]	*Low scenario*[b]
Linoghin	80,898	57,599	21,897	15,590
Bombore	29,312	8,723	6,797	2,022
Mogtedo	66,438	35,898	14,764	7,977
Mogtedo V3	18,683	-5,107	5,415	-1,480
AVV[c]	57,164	32,958	7,934	13,762
Solenzo	143,541	104,335	24,779	18,011
Kompienga	48,257	35,239	8,522	6,223

a. High Scenario: includes lowest cost situation (nonpurchased feed not valued, low loss rates).
b. Low Scenario: includes highest cost situation (imputed cost for nonpurchased feed, high rates of loss).
c. Does not include V3. Data seem underestimated.
Source: Savadogo 1989c.

Annex 5. Supplementary Tables on Farming Systems

Despite the constraints on livestock ownership, livestock remains the AVV settlers' most important form of investment. When settlers and extension agents were asked to classify the settlers living in a village according to wealth, they invariably grouped the families in different categories by patterns of livestock ownership (Annex 5, Table D-5). The point of reference was the basic AVV model of two animal-traction animals (Category AVV Simple). Below that were farmers who, for one reason or another had lost and refused to repurchase their animal-traction animals (Category Simple). A third group was identified as farmers who had accumulated a few cattle (2 or 3) beyond the animals they used for plowing, as well as small livestock. These categories became the "Improved AVV Model." Beyond this were farmers who had fairly extensive livestock investments—from 5 to 14 large livestock and small animals (Category Superior). These were settlers who often also had one or more family members involved in a specialized trade or in general commerce. The wealthiest farmers were those with livestock herds of over 15 animals (Category Exceptional). Like those in the second category to the top, Category Superior, they were often involved in commercial activities.

When the 80 families in the farming system survey were grouped according to these wealth categories, the data did show that the settlers in the top three categories had a higher average of total crop income (Annex 5, Table D-5). The differences were much less remarkable when broken down by labor units (Annex 5, Table D-5) Nevertheless, the poorest group—the 20 to 25 percent of farmers who had sold or lost their cattle—ranked substantially lower on net income as well as on net livestock income (high scenario), and on cereal and cotton production per unit labor.

The average family size of the settlers in the category "AVV Simple" and "Simple/Manual" tended to be smaller than those in the top three wealth categories. Small families, with limited labor, were forced to farm small areas and were less able to engage in on-farm livestock activities or in nonfarm employment than larger families. Other factors, besides size of the family labor force, that influenced economic status included entrepreneurship, health, age, and losses or gains of key workers through accidents of nature (death, disability), ambition (out-migration), and/or schooling. As the structure and size of the labor force of individual households changed over the life cycle, their production patterns and income levels also changed.

For example, one family in the longitudinal case study that would have been classified in the wealth category "AVV Improved" in 1979 and 1983, was classified in the category "Simple/Manual" in 1988. In 1979 and 1983 the family consisted of two brothers, their wives and children, and their mother. The older brother earned a high annual income from a secondary occupation as a *mobylette* (moped) and bicycle mechanic. The younger brother supervised the family's crop and livestock production, while the older brother

traveled to market every third day. When the younger brother moved away to establish his own farm in a neighboring AVV planned settlement, the older brother was forced to abandon his trade. A combination of illness and lack of labor finally forced the older brother to sell the family's oxen.

Households can move up in wealth categories as well as down. This was especially noticeable for one of the case-study farmers who had a large family but only young sons in 1979. In 1979 he would have been classified in the category "AVV Simple." By 1988/89, this same head of household had two sons in their early twenties who took an active role in the family's cooperative crop production. The father helped them establish a small local and regional trade in petty consumer items. The family's level of crop production, livestock ownership, and off-farm income placed them in the AVV Superior category in 1988/89. [It is interesting to note that this family left the project in 1992 to settle in the southwest. Since this was after the study ended, they were not counted in our out-migration figures.]

Farmers in the poorest category tend to be those with the smallest family sizes. Within this group were two relatively distinct subgroups. The first subgroup's households were usually headed by men who had broken off from a brother or who had recently lost a father. These farmers generally grow cotton and plan to move up to greater levels of investment in livestock and cash cropping. A second subgroup within the two bottom categories includes small families whose activities are hampered either by the age or health of the male head of household and/or one of the wives. Many of these farmers had lost their older children through emigration; a few never had any male children who lived beyond infancy.

For the first subgroup—the young households undergoing temporary labor shortages—possibilities exist for moving up to more diversified patterns of investment. Opportunities for a change in fortune are more limited for families in the second subgroup. Some of the families in this group were "eating" their animals—selling off animals to purchase grain or pay medical bills.

Although differences exist, they are not striking, except for the poorest group. While total family crop production, net income, and income from livestock are much higher for the top three than for the bottom two groups, the differences are less remarkable when broken down by labor units. In contrast, the poorest group—the 20 to 25 percent of farmers who have sold or lost their cattle—is always poorer, ranking substantially lower on almost every measure of production or income.

A. Solenzo

Table D-1 Division of Cereal Production between Privately and Cooperatively Worked Fields, Solenzo 1988/1989 (in percent)

Village and technology type	*Cooperative*	*Private fields*		
		All	*Men's*	*Women's*
Dar-es-Salaam/Kie				
Manual	100	0	0	0
Animal traction	79	21	10.5	10.5
Tractor	100	0	0	0
Daboura				
Manual	95	5	0	5
Animal traction	98	2	0	2
Tractor	100	0	0	0

Source: Savadogo 1989d.

Table D-2 Mean Input Costs for the Male Heads of Household with Different Levels of Farm Technology, Solenzo 1988/1989 (per family in CFA)

	Fertilizer, urea, rock phosphate, manure, and insecticides		*Hired labor (cash and kind)*	*Costs of equipment mini-tractors (cash and kind)*
	Dar/Kie	Daboura		
Manual	36,018	15,117	2,925(Kie)	1,000(Kie)
Animal traction	84,167	36,251		
Tractor	920,172	416,645		650,000[a]

a. Expenses for purchase, maintenance, and depreciation of tractors were estimated at 650,000 CFA per year.
Source: Savadogo, Analysis 1989.

Table D-3 Average Livestock Holdings for Male Heads of Household at Different Levels of Technology, and Expected Annual Livestock Income per Adult Labor Equivalent (ALE), Solenzo 1988/1989

Average Family Labor Force (ALE)	*Dar/Kie*	*Daboura*	*All Solenzo*
Manual	2.8 (6)	2.6 (7)	2.7 (13)
Animal traction	5.3 (8)	2.5 (6)	4.1 (14)
Tractor	10.9 (5)	13.8 (4)	12.2 (9)
Cattle ownership (numbers)			
Manual	—	—	8.3
Animal traction	—	—	6.2
Tractor	—	—	25.8
Expected annual livestock income for male household heads (high scenario) (CFA per ALE)			
Manual	938	3,737	—
Animal traction	11,182	-4,911	—
Tractor	71,907	10,921	—
Expected annual livestock income for male household heads (low scenario) CFA per ALE			
Manual	200	-14,456	—
Animal traction	7,561	-16,516	—
Tractor	66,922	3,168	—

— Not available.
Source: Savadogo 1989c.

Table D-4 Distribution of Cattle Ownership, Solenzo 1988/1989

	Number of households		
Number of cattle	*Dar/Kie*	*Daboura*	*All*
0	11	6	17
1	1	0	1
2	0	1	1
3-4	0	2	2
5-10	2	1	3
11-20	3	2	5
21-40	1	3	4
41 and over	1	2	3

Source: Savadogo 1989c.

B. The AVV Planned Settlements

Table D-5 Characteristics of Settler Households with Different Levels of Investment in Livestock, the AVV Planned Settlements 1988/1989

	Linoghin	*Mogtedo*	*Mogtedo V3*[a]	*Bombore*
Residents (number)				
1. Exceptional	20	13	0	23
2. Superior	11	13	11	15
3. AVV improved	0	15	9	0
4. AVV simple	9	9	7	10
5. Simple/manual	8	5	9	9
6. Unclassed	0	0	12	0
Labor force (in ALE)				
1. Exceptional	6.2 (3)	5.2 (3)	0	11.0 (1)
2. Superior	3.5 (2)	5.2 (3)	5.1 (2)	4.9 (3)
3. AVV improved	0	6.6 (2)	3.5 (6)	0
4. AVV simple	3.2 (7)	3.8 (10)	2.4 (7)	4.2 (11)
5. Simple/manual	3.5 (8)	1.8 (2)	2.9 (3)	2.9 (5)
6. Unclassed	0	0	6.1 (2)	0
Average Net Crop Income (Private and Cooperative)				
Average net crop income (CFA)				
1. Exceptional	552,508	327,968	0	694,409
2. Superior	393,100	519,532	457,784	345,295
3. AVV improved	0	393,045	273,911	0
4. AVV simple	231,402	218,887	208,302	282,822
5. Simple/manual	223,739	76,399	171,641	141,407
6. Unclassed	0	0	238,251	0
Mean	292,673	283,513	250,429	277,419
Average net crop income (CFA per ALE)				
1. Exceptional	89,595	62,470	0	63,128
2. Superior	112,314	100,554	89,323	70,229
3. AVV improved	0	59,327	78,260	0
4. AVV simple	71,991	57,225	87,051	68,001
5. Simple/manual	63,359	43,656	58,848	47,934
6. Unclassed	0	0	38,898	0
Mean	76,766	65,742	72,588	64,329
Net livestock income (high scenario) (CFA per ALE)				
1. Exceptional	19,866	-6,914	0	0
2. Superior	21,515	30,825	-2,233	3,984
3. AVV improved	0	16,414	15,046	11,906
4. AVV simple	26,693	13,094	5,005	2,700
5. Simple/manual	18,238	646	4,873	16,492
6. Unclassed	0	0	-3,747	0

Numbers in parentheses are numbers of households: 20 in each settlement. Net crop income is for total of all crops—cotton plus cereals.

a. Two families at V3 defied classification because of their mixed family patterns and production strategies. One is a family of displaced pastoralists that still farms only a small amount; the second is a family where half the family emigrated to Kompienga. Production in both families is somewhat disorganized at the moment because of considerable mobility of various family members.

Source: Savadogo, Analysis 1989.

Table D-6 Mean Number of Cattle, Goats, and Sheep, and Mean Anticipated Income, the AVV Planned Settlements 1988/1989

	Per family	*Per ALE*
Linoghin	80,898	21,897
Bombore	29,312	6,797
Mogtedo	66,438	14,764
Mogtedo V3	18,683	5,415
All AVV		
with V3	48,832	12,208
without V3	57,164	14,486

Source: Savadogo 1989c.

Table D-7 Livestock Ownership for the Study Households in Mogtedo, Mogtedo-Bombore, and Linoghin, the AVV Planned Settlements 1988/1989

Number of livestock	*Cattle*	*Sheep/Goats*
0	24	20
1	0	0
2	28	13 (1-5 animals)
3-4	9	0
5-10	15	17
11-20	0	16
21-40	4	12
41+	0	2
Total households	80	80

Source: Savadogo 1989c.

Table D-8 Subdivision of Cereal Production between Privately and Cooperatively Worked Fields, Kompienga 1988/1989

	Ex-AVV	*Non-AVV*	*Yana*	*Gourmantche*	*All*
Number	7	6	6	6	25
Percent					
Cooperative	85	89	99	86	89.5
Private	15	11	1	14	10.5
Women's	6	4.5	0	0	2.8
Men's	9	6.5	1	14	7.7

Source: Savadogo, Analysis 1989.

Table D-9 Distribution of Livestock for Male Heads of Household at Kompienga, 1988/1989

	Number of households	
Number of animals	*Cattle*	*Sheep/Goats*
0	13	9
1	0	0
2	2	6 (1-5)
3-4	0	0
5-10	5	1
11-20	3	7
21-40	0	2
41+	2	0
Total households	25	25

Source: Savadogo 1989c.

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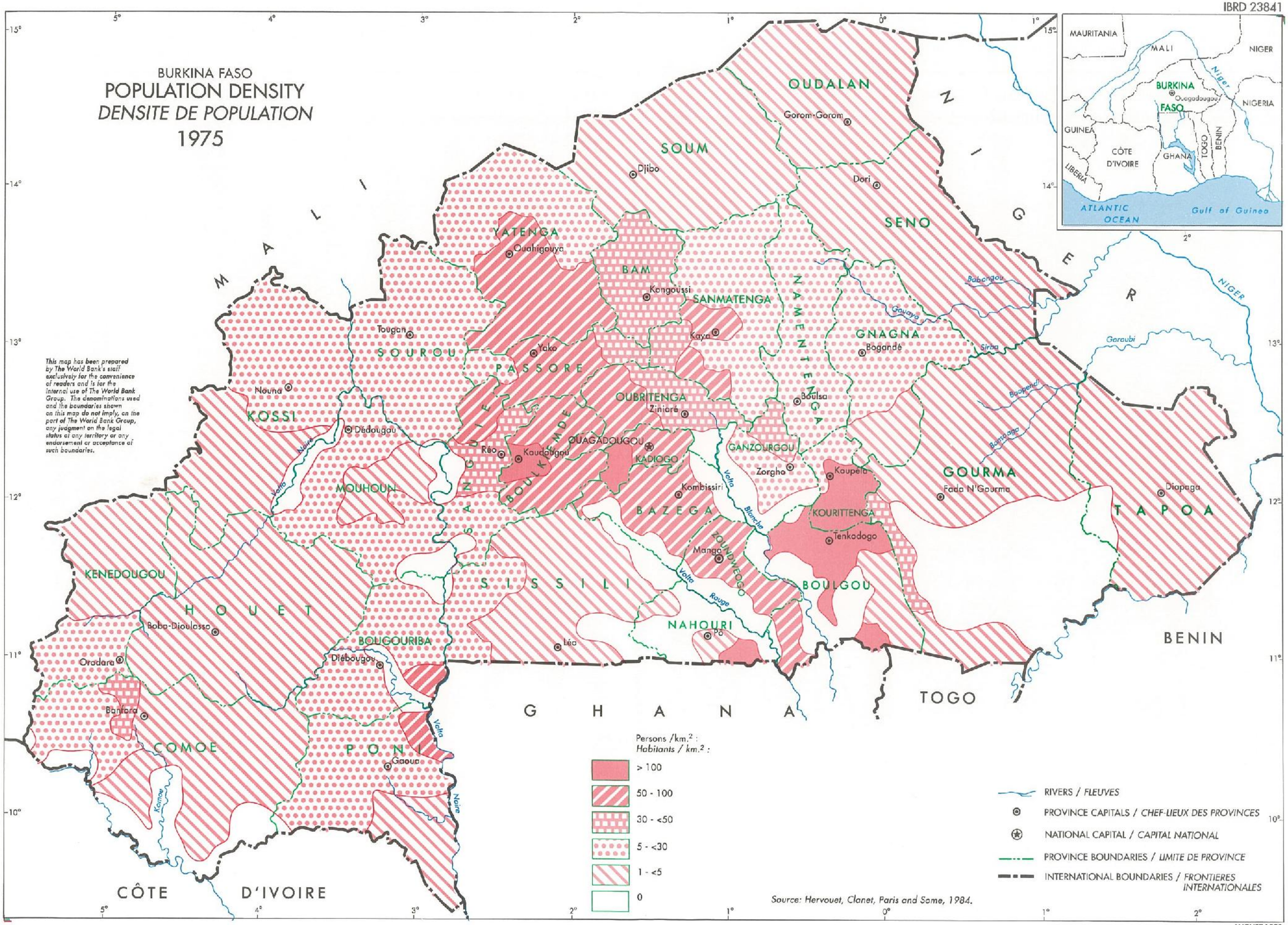
BURKINA FASO
POPULATION DENSITY
DENSITE DE POPULATION
1975



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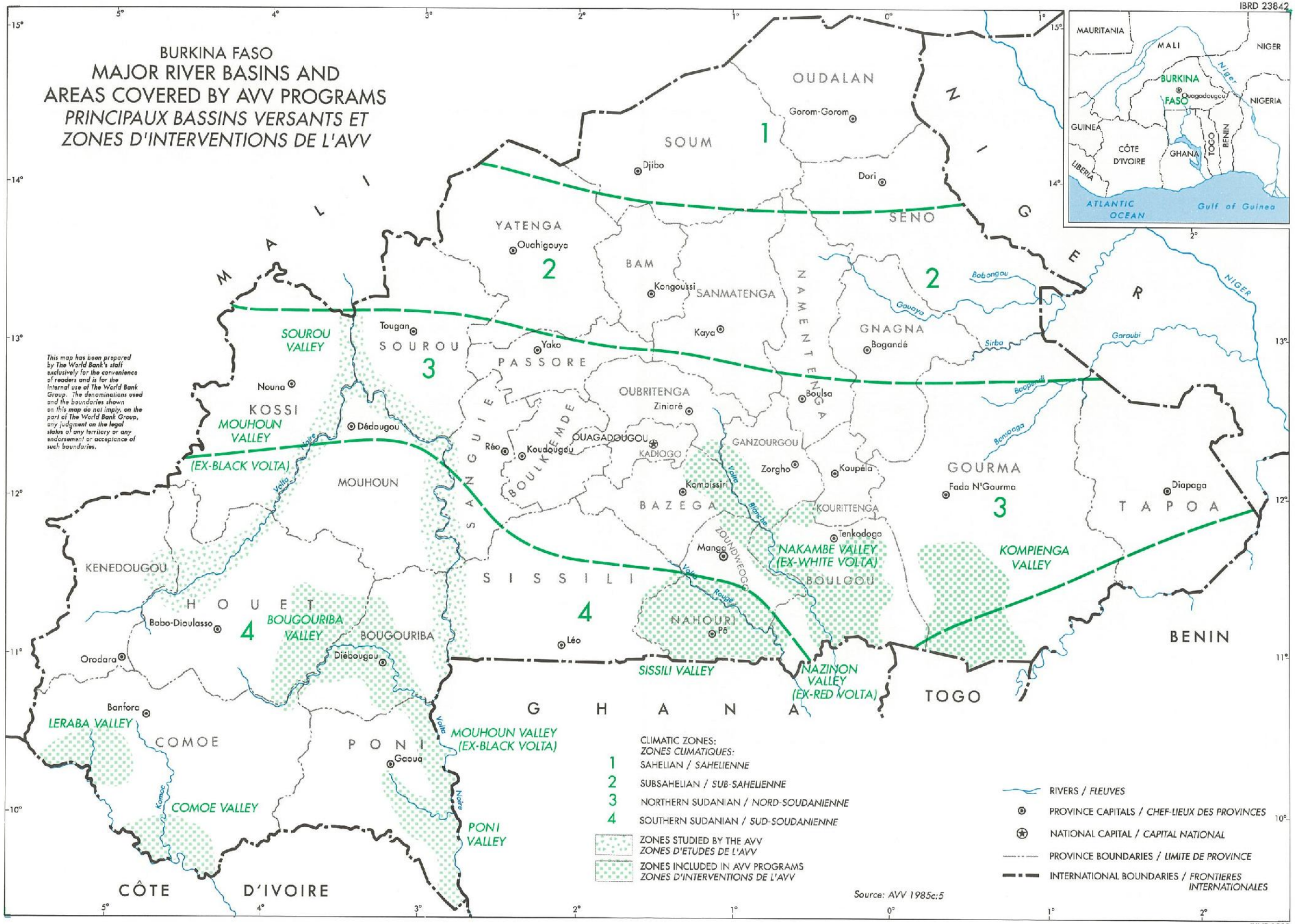
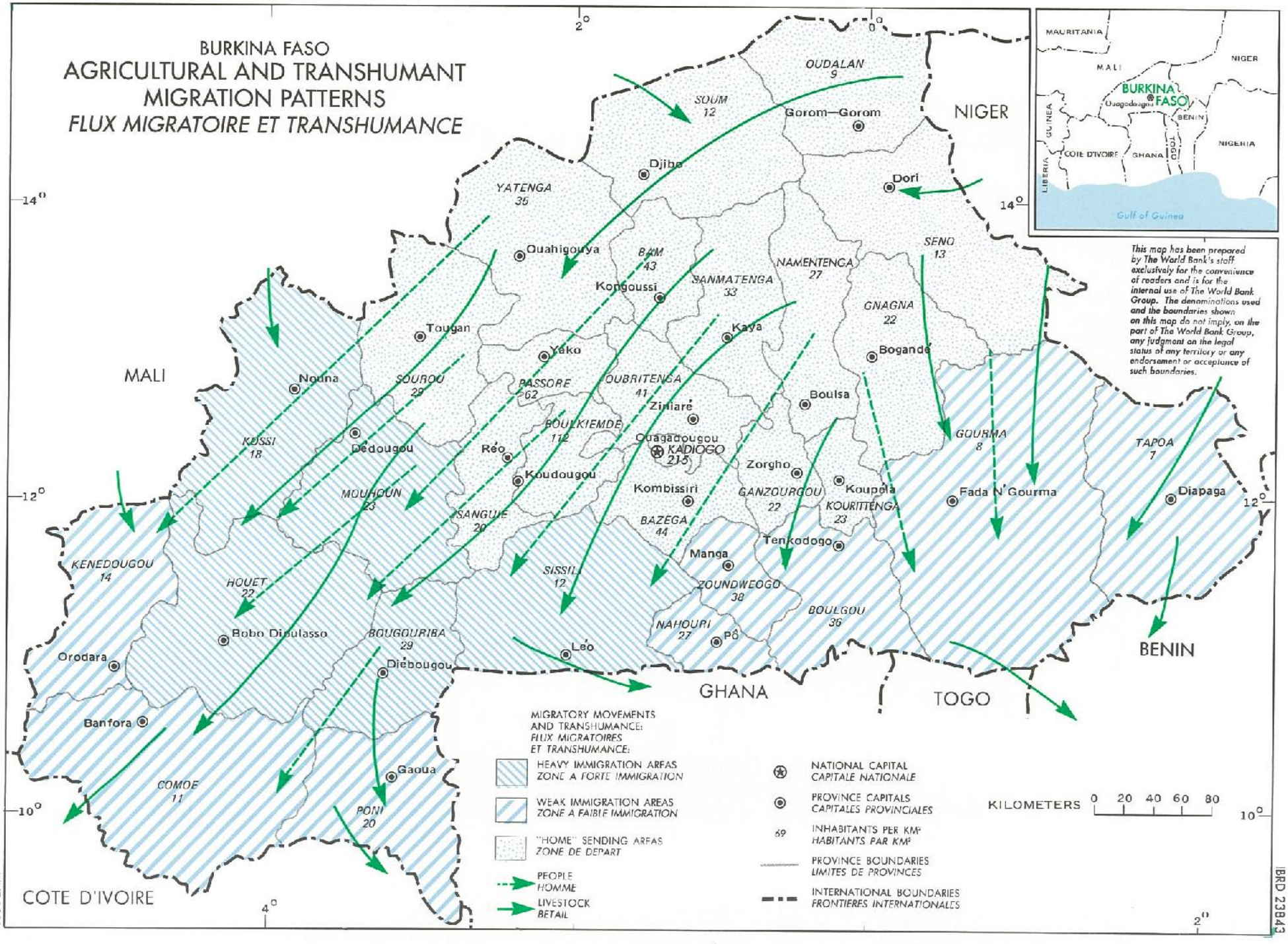
BURKINA FASO
MAJOR RIVER BASINS AND AREAS COVERED BY AVV PROGRAMS
PRINCIPAUX BASSINS VERSANTS ET ZONES D'INTERVENTIONS DE L'AVV



JUNE 1992


BURKINA FASO
AGRICULTURAL AND TRANSHUMANT MIGRATION PATTERNS
FLUX MIGRATOIRE ET TRANSHUMANCE
MALI
NIGER
GHANA
TOGO
BENIN
COTE D'IVOIRE
OUDALAN 9
SOUM 12
YATENGA 35
BAM 43
SANMATENGA 33
NAMENTENGA 27
SENO 13
GNAGNA 22
SOUROU 29
PASSORE 62
OUBRITENGA 41
BOULKIEMDE 112
KADIOGO 215
KOSSI 18
MOUHOUN 23
SANGUIE 20
BAZEGA 44
GANZOURGOU 22
KOURITTENGA 23
GOURMA 8
TAPOA 7
KENEDOUGOU 14
HOUET 22
SISSILI 12
ZOUNDWEOGO 38
BOULGOU 36
NAHOURI 27
BOUGOURIBA 29
PONI 20
COMOE 11
Gorom—Gorom
Djibo
Dori
Ouahigouya
Kongoussi
Tougan
Yako
Kaya
Bogandé
Nouna
Dédougou
Réo
Koudougou
Ziniaré
Ouagadougou
Boulsa
Zorgho
Kombissiri
Koupéla
Fada N'Gourma
Diapaga
Tenkodogo
Manga
Pô
Léo
Bobo Dioulasso
Diébougou
Orodara
Banfora
Gaoua
MAURITANIA
MALI
NIGER
BURKINA FASO
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GUINEA
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MIGRATORY MOVEMENTS AND TRANSHUMANCE:
FLUX MIGRATOIRES ET TRANSHUMANCE:
HEAVY IMMIGRATION AREAS
ZONE A FORTE IMMIGRATION
WEAK IMMIGRATION AREAS
ZONE A FAIBLE IMMIGRATION
"HOME" SENDING AREAS
ZONE DE DEPART
PEOPLE
HOMME
LIVESTOCK
BETAIL
NATIONAL CAPITAL
CAPITALE NATIONALE
PROVINCE CAPITALS
CAPITALES PROVINCIALES
69 INHABITANTS PER KM²
HABITANTS PAR KM²
PROVINCE BOUNDARIES
LIMITES DE PROVINCES
INTERNATIONAL BOUNDARIES
FRONTIERES INTERNATIONALES
KILOMETERS 0 20 40 60 80
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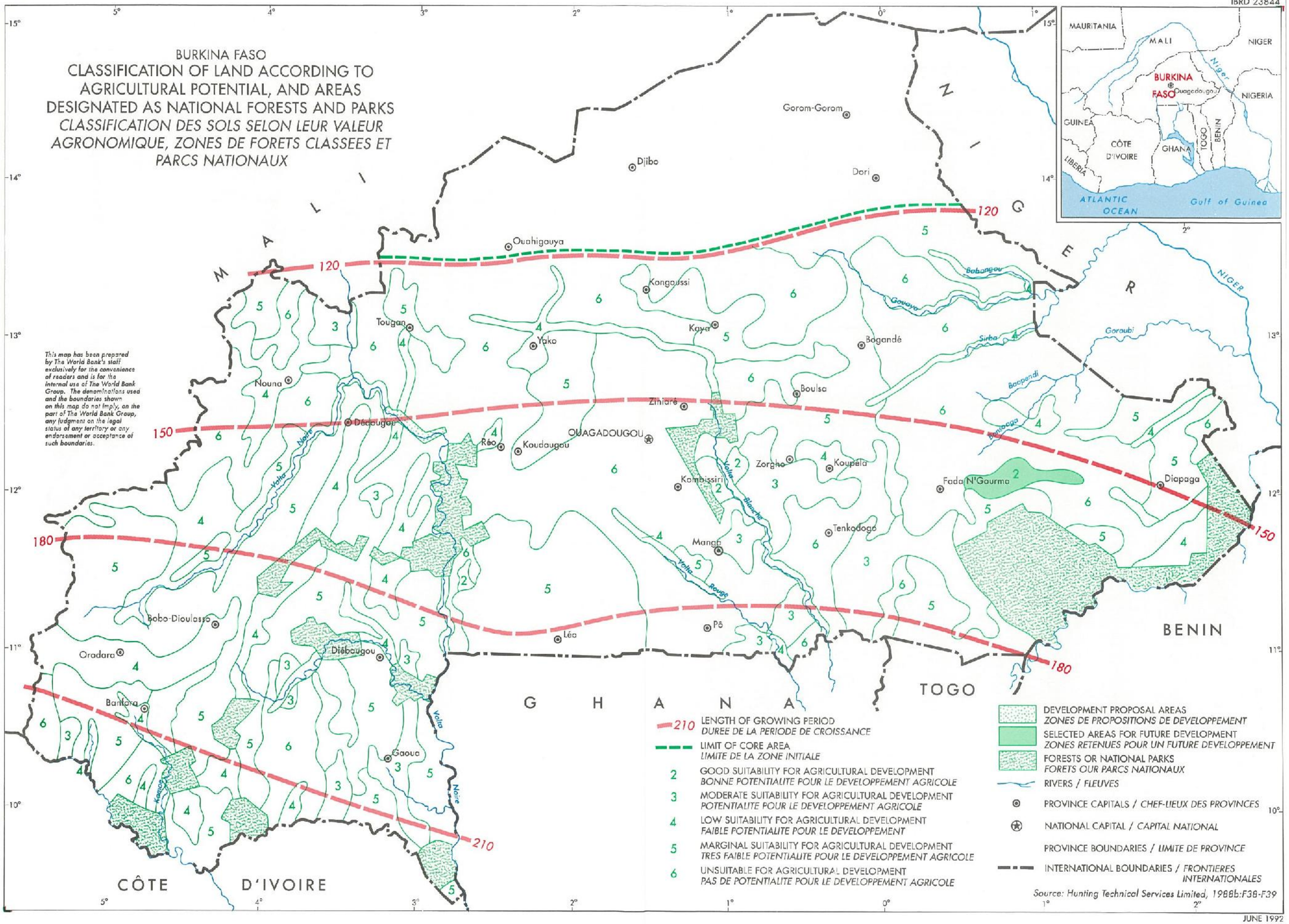
CLASSIFICATION OF LAND ACCORDING TO AGRICULTURAL POTENTIAL, AND AREAS DESIGNATED AS NATIONAL FORESTS AND PARKS

CLASSIFICATION DES SOLS SELON LEUR VALEUR AGRONOMIQUE, ZONES DE FORETS CLASSEES ET PARCS NATIONAUX



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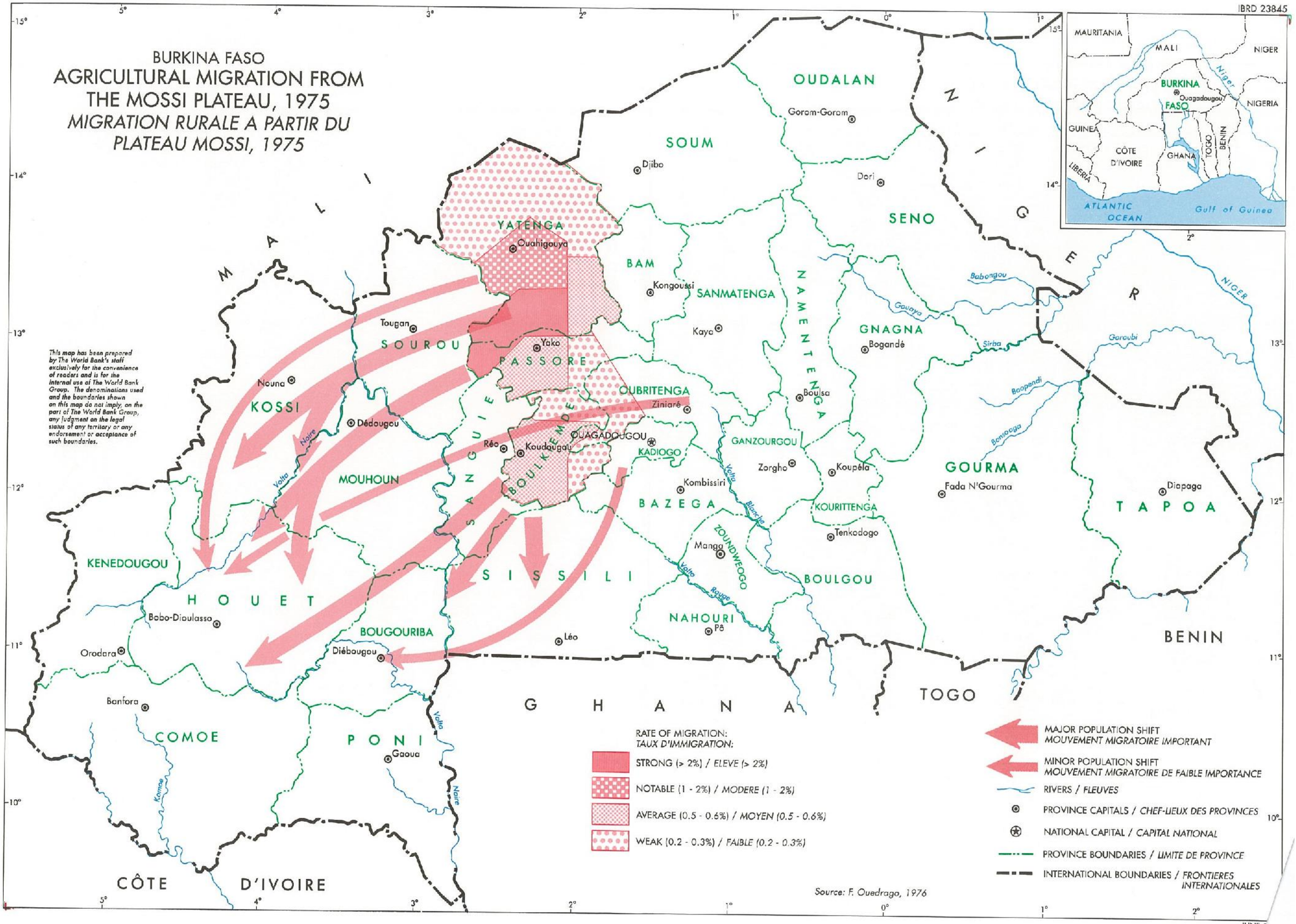
AGRICULTURAL MIGRATION FROM THE MOSSI PLATEAU, 1975
MIGRATION RURALE A PARTIR DU PLATEAU MOSSI, 1975



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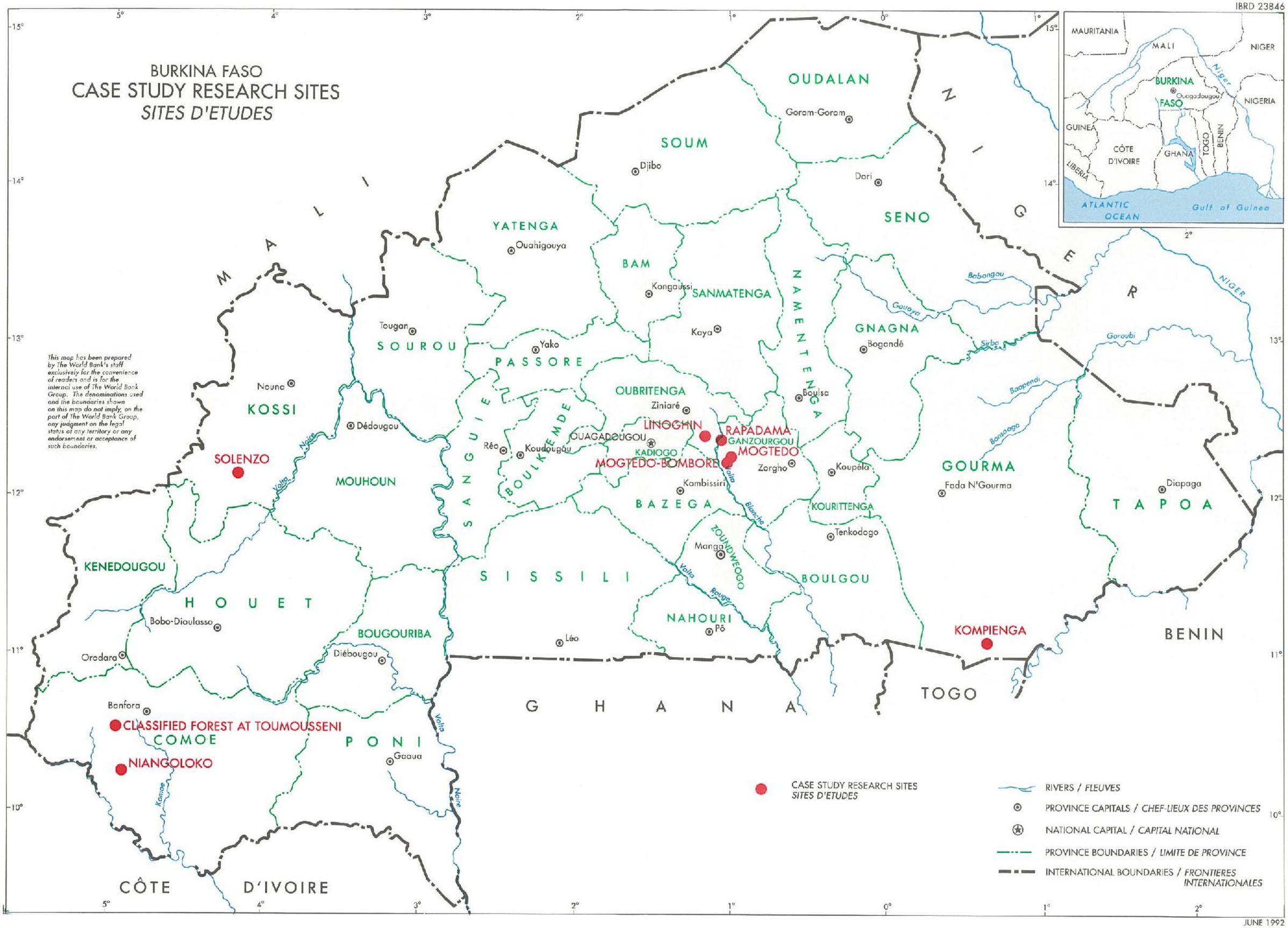
CASE STUDY RESEARCH SITES
SITES D'ETUDES



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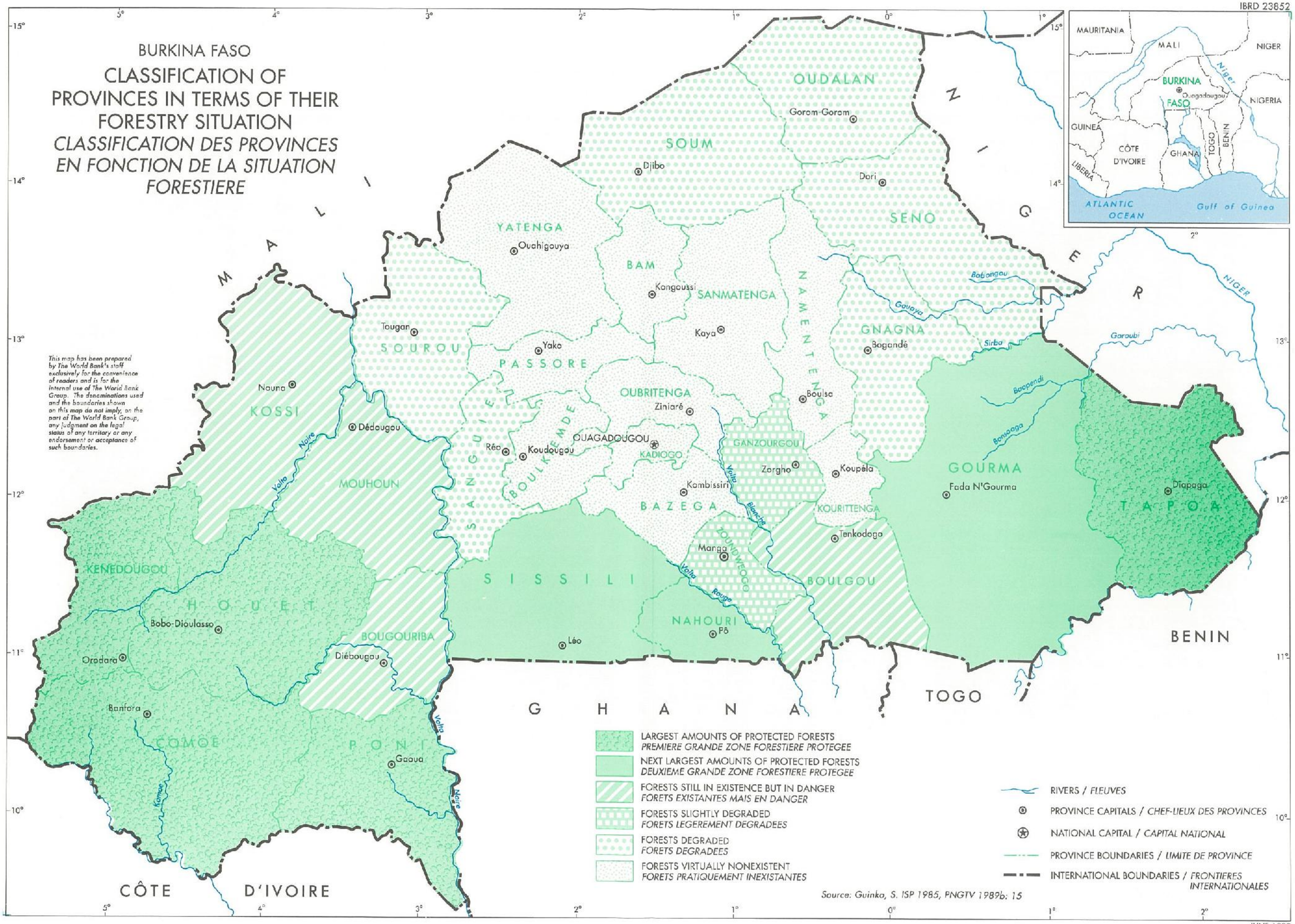
CLASSIFICATION OF PROVINCES IN TERMS OF THEIR FORESTRY SITUATION
CLASSIFICATION DES PROVINCES EN FONCTION DE LA SITUATION FORESTIERE



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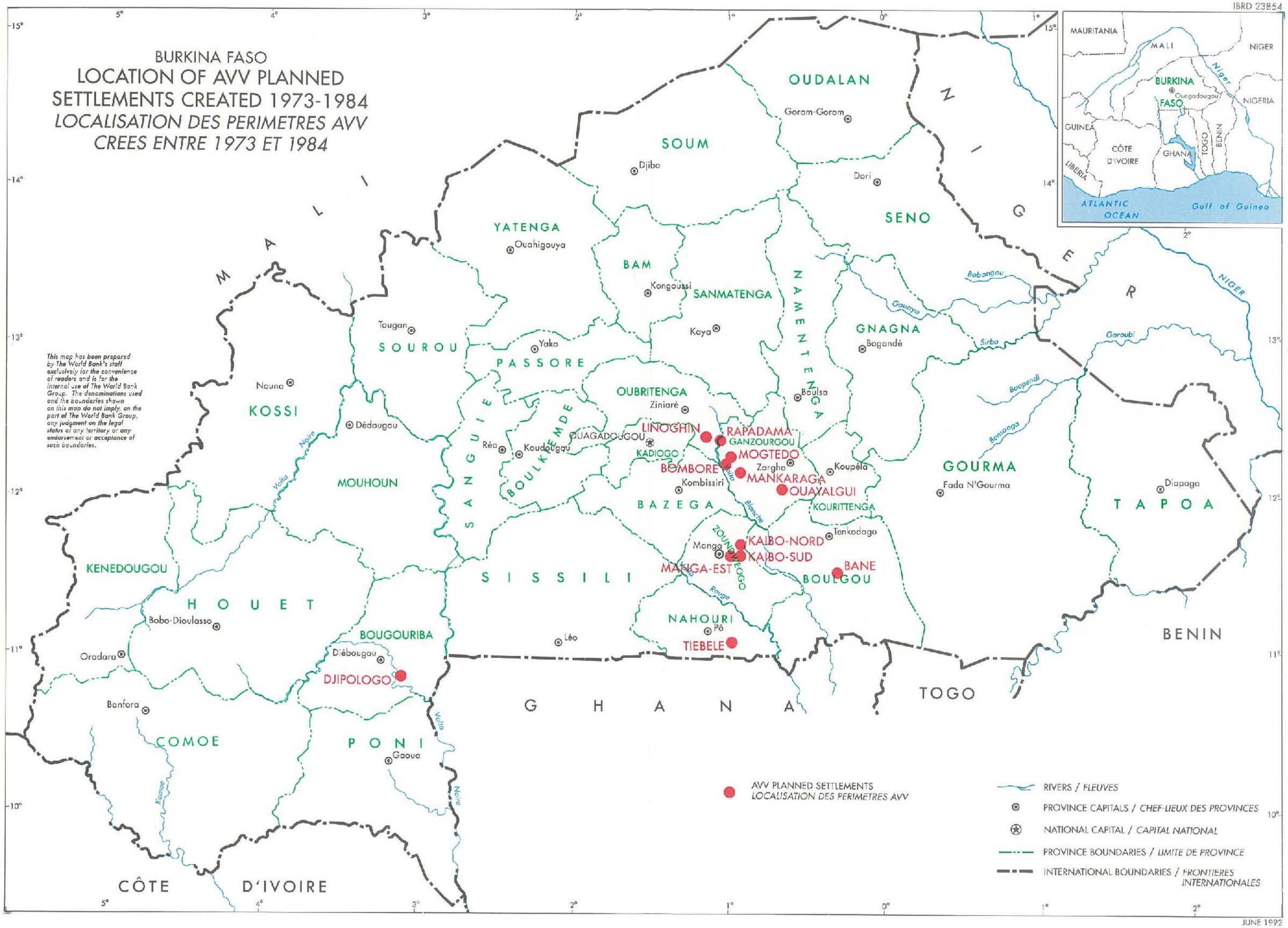
LOCATION OF AVV PLANNED SETTLEMENTS CREATED 1973-1984
LOCALISATION DES PERIMETRES AVV CREES ENTRE 1973 ET 1984



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1. There is potential for frontier

2. Need for devl planning for these ar

[illegible] [illegible] [illegible] not appropriate?

3. [illegible] [illegible] ~~we [illegible] few [illegible]~~ incr. [illegible]

4. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] diversity w/ [illegible] [illegible] the [illegible]

[illegible] [illegible] rate [illegible] [illegible] Kolp

[illegible] [illegible] [illegible] [illegible] Berry [illegible]

[illegible] [illegible] [illegible] "frontier" [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] the [illegible] [illegible] center

Nelly/Stern eight pres 3 key factors:

1 [illegible] 4. roads
2 [illegible] 5. occurrence & [illegible] --
3 markets able [illegible]

All occur w/o [illegible] [illegible]
Emp. also not all like this -- some not [illegible]
[illegible] [illegible] w/ [illegible] [illegible] [illegible]
Here to a Frontier

Buckingham County largest area affected
~~Clean from start~~ Trad. of op. [illegible]

next to SW.
[illegible] expected DCPa/increase
[illegible] [illegible]
1. Biggest [illegible] diffe [illegible]
2. [illegible] [illegible] ([illegible])
(always [illegible] white [illegible])
3. highest [illegible] black [illegible]

[illegible] the local development:
Possibility [illegible] [illegible]
2. [illegible] typical of [illegible]
[illegible] migration [illegible] -- still [illegible] [illegible] [illegible] level [illegible]
Same for [illegible]

[illegible] [illegible]

[illegible] [illegible] [illegible]

[illegible]

5. Other [illegible] [illegible] 2 [illegible] [illegible] the [illegible] productive
1. [illegible] ([illegible])
2. [illegible] [illegible]

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