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PROJECT PAPER

UPPER VOLTA

EASTERN REGION FOOD PRODUCTION MANAGEMENT ASSISTANCE

PROJECT NO. 686-0244

AGENCY FOR INTERNATIONAL DEVELOPMENT

UNCLASSIFIED

BEST AVAILABLE DOCUMENT

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT PAPER FACESHEET		1. TRANSACTION CODE <input type="checkbox"/> A ADD <input checked="" type="checkbox"/> C CHANGE <input type="checkbox"/> D DELETE	PP <hr/> 2. DOCUMENT CODE 3
3. COUNTRY ENTITY UPPER VOLTA		4. DOCUMENT REVISION NUMBER <input type="checkbox"/>	
5. PROJECT NUMBER (7 digits) <input type="text" value="686-0244"/>	6. BUREAU/OFFICE A. SYMBOL: AFR B. CODE: <input type="text" value="06"/>	7. PROJECT TITLE (Maximum 40 characters) <input type="text" value="E REGION FOOD PRODUCTION MGT ASSISTANCE"/>	
8. ESTIMATED FY OF PROJECT COMPLETION FY <input type="text" value="86"/>		9. ESTIMATED DATE OF OBLIGATION A. INITIAL FY: <input type="text" value="81"/> B. QUARTER: <input type="text" value="3"/> AC. FINAL FY: <input type="text" value="82"/> (Enter 1, 2, 3, or 4)	

10. ESTIMATED COSTS (\$000 OR EQUIVALENT \$1 -)						
A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. TOTAL	E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL	30		30	1,980	1,020	3,000
(GRANT)	(30)			(1,980)	(1,020)	(3,000)
(LOAN)						
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY		10	10		390	390
OTHER DONOR(S)				(ca. 12,670)	(ca. 15,630)	(ca. 28,300)
TOTALS	30	10	40	(ca. 14,650)	(ca. 17,040)	(ca. 31,690)

11. PROPOSED BUDGET APPROPRIATED FUNDS (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>81</u>		H. 2ND FY <u>82</u>		K. 3RD FY _____	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1)	189 B	050		2,000		1,000			
(2)									
(3)									
(4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY _____		O. 5TH FY _____		LIFE OF PROJECT		12. IN-DEPTH EVALUATION SCHEDULED <input type="text" value="MM 09 YY 84"/>
	Q. GRANT	P. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	
(1)							
(2)							
(3)							
(4)							
TOTALS							

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

1 = NO
 2 = YES

14. ORIGINATING OFFICE CLEARANCE		15. DATE DOCUMENT RECEIVED IN AID/W. OR FOR AID/W. DOCUMENTS, DATE OF DISTRIBUTION	
SIGNATURE	Richard C. Meyer <i>Richard C. Meyer</i>		
TITLE	Director, USAID/Upper Volta	DATE SIGNED	
		MM DD YY 015 / 16 81	MM DD YY

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT IDENTIFICATION DOCUMENT FACESHEET (PID)				1. TRANSACTION CODE A = Add C = Change D = Delete		Retention No.		DOCUMENT CODE	
2. COUNTRY/ENTITY UPPER VOLTA				3. PROJECT NUMBER 6860244		1		1	
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6. ESTIMATED FY OF AUTHORIZATION OBLIGATION/COMPLETION				7. ESTIMATED COSTS (\$000 OR EQUIVALENT \$1 =)					
A. Initial FY 811				FUNDING SOURCE		LIFE OF PROJECT			
B. Final FY 812				A. AID		3,000			
C. PACD 816				B. Other U.S.		1. _____ 2. _____			
				C. Host Country		200			
				D. Other Donor(s)					
				TOTAL		3,200			
8. PROPOSED BUDGET AID FUNDS (\$000)									
A. APPRO- PRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH CODE		D. 1ST FY		E. LIFE OF PROJECT			
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan		
(1)	189 B	050		2,000		3,000			
(2)									
(3)									
(4)									
TOTALS				2,000		3,000			
9. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)						10. SECONDARY PURPOSE CODE			
070		140		660		660			
11. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)									
A. Code		R/AG		TNG					
B. Amount		700		300					
12. PROJECT PURPOSE (maximum 480 characters)									
<p>To improve the capacity of the GOV to manage development of food production in the Eastern Region, particularly food production, through higher-level training, monitoring/evaluation and special studies during 1981-1985.</p>									
13. RESOURCES REQUIRED FOR PROJECT DEVELOPMENT									
Staff:									
Capital Projects Development Officer									
Training Specialist									
Sociologist/Anthropologist									
Environmental Scientist									
Funds									
For four weeks of first, and two weeks each of latter three									
14. ORIGINATING OFFICE CLEARANCE		Signature Richard C. Meyer				15. DATE DOCUMENT RECEIVED BY AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION			
		Title Director, USAID/Upper Volta				Date Signed MM DD YY 10/15/81			
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18. ACTION APPROVED BY		Signature			19. ACTION REFERENCE			20. ACTION DATE	
		Title						MM DD YY 	

UPPER VOLTA

EASTERN REGION FOOD PRODUCTION ASSISTANCE PROJECT (686-0244)

CONTENTS

	Page
FACESHEETS	
CONTENTS	
LIST OF TERMS	
I. PROJECT DESCRIPTION	
Summary	1
A. AID and Development of the Eastern Region to 1981.	1
B. The Multi-National Program, 1981-1985.	4
C. Objectives of the AID Project, 1981-1985	6
D. Project Components	8
E. Project Benefits	10
F. Project Implementation	12
II. RESULTS OF TECHNICAL ANALYSES	
A. Management of Development in the Eastern Region.	13
Training	13
Monitoring and Evaluation	15
Administrative Feasibility	17
B. Economics and Finance	18
C. Social Soundness	19
D. Environment	21
III. FINANCIAL PLAN AND BUDGET.	23
IV. IMPLEMENTATION PLAN.	27
V. EVALUATION PLAN	30
VI. CONDITIONS.	31
ANNEXES	
A. Tables and Maps	
B. Statutory Checklist	
C. Logical Framework	
D. Authorization, Action Memorandum.	
E. Training Plan	
F. Risk/Benefit Analysis of Pesticides	
G. The Context of the Project and Scope of the IFAD-led Program	
H. Organization and Change of the E. ORD	
I. Social Soundness Analysis	
J. Bibliography	
APPENDICES (kept in AFR/DR and USAID files)	
A. AfDB <u>Appraisal Report</u> , 1981	
B. GOUV-IFAD Loan Agreement, 1981	
C. IFAD. "Operational Guidelines on Monitoring and Evaluation". n.d.	
D. Touche Ross & Co. "Eastern ORD of Upper Volta: Management and Accounting Study". Abidjan, 1980.	

LIST OF TERMS

AfDB	African Development Bank
AFR/SWA	African Bureau / Sahel and West Africa
AID	Agency for International Development of the United States of America
BND	Banque Nationale de Développement (National Development Bank)
CCCE	Caisse Centrale de Coopération Economique (Central Fund for Economic Cooperation)
CDSS	Country Development Strategy Statement
CESAO	Centre d'Etudes Economiques et Sociales pour l'Afrique Occidentale
CERCI	Centre d'Expérimentation du Riz et des Cultures Irriguées (Irrigated Crops and Rice Experimentation Research Center)
CFA Franc	Franc de la Communauté Financière Africaine (African Financial Community Franc) \$1 = 250 CFA in this paper; \$1 = 205 CFA in AfDB <u>Appraisal Report</u> .
CILSS	Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (Permanent Interstate Committee for Drought Control in the Sahel)
CNCA	Caisse Nationale de Crédit Agricole (National Agricultural Credit Bank)
CY	Calendar year
E.ORD	Eastern Regional Organization for Development
FAO	Food and Agriculture Organization
FX	Foreign Exchange
FY	Fiscal Year, U.S. = Jct 1 - Sept 30
GDP	Gross Domestic Product
GOUV	Gouvernement de Haute-Volta
HA	Hectare = 2.47 acres
IBRD	International Bank for Reconstruction and Development (World Bank)
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
IRR	Internal Rate of Return
KM	Kilometer = 0.62 mile
LC	Local Currency
MEU	Monitoring and Evaluation Unit
MRD	Ministry of Rural Development
MSU	Michigan State University
NPV	Net Present Value
OFNACER	Office National des Céréales (National Cereals Office)
ORD	Organisme Régional de Développement (Regional Organization for Development)
PACD	Project Assistance Completion Date
PAID	Pan African Institute for Development
PD	Policy Determination
PhD	Doctor of Philosophy
REDSO/WA	Regional Economic Development Services Office, West Africa (AID - Abidjan)
STO	Senior Training Officer
UNDP	United Nations Development Program
USAID	United States Agency for International Development, Ouagadougou

I. PROJECT DESCRIPTION

SUMMARY

This project will support and further develop the management capacity in Upper Volta to undertake development of food production in the Eastern Region. It has three related, focused components costing \$3.0 million that transfer technology: higher-level training, technical assistance for monitoring and evaluation, and special studies. It will cover the second five years of a necessarily long process of rural development in the region oriented to increasing food production and access to basic services and employment for the rural poor. The first phase of this development was supported by AID's Eastern ORD Rural Development Project (686-0201) and other AID-financed undertakings and by a set of interventions supported by other international assistance organizations operating more or less independently in the late 1970's.

This project will be part of a new large and complex program of development efforts in the region. This program will be coordinated during 1981-1985 on the basis of one overall concept and led by the International Fund for Agricultural Development (IFAD). Through a parallel financing arrangement IFAD, and the French Caisse Centrale (CCCE) will support capital transfers and, with the United National Development Program (UNDP), additional technical assistance, applied research and training. The program will have a total cost of about \$31.7 million. It will provide credit, village development, improvement of agricultural inputs, training, management assistance, roads, land development and monitoring and evaluation.

The new program will continue and expand activities begun, in part, under the first AID project. It will address problems identified during implementation of that and other earlier efforts. While increasing production, strengthening community development and management capacity, and improving basic infrastructure in the short-run, it will set the stage for self-sustaining growth in the the Eastern Region in the coming decades.

A. AID and Development of the Eastern Region to 1981

AID has a long-standing commitment to supporting food production activities in Upper Volta. As one of the world's "relatively least developed countries", and the Sahel's most populous, Upper Volta has a predominantly traditional rural economy with an average per capita gross national product of \$180. Agriculture directly supports 80 percent of the estimated 6.15 million population (1980), and contributes 37 percent of GDP and 90 percent of the country's recorded exports. AID's 1983 Country Development Strategy Statement (CDSS) reiterates food production-related activities as the top priority in United States assistance here.

One focus of such AID-supported activities has and will continue to be at the regional and sub-regional level. This fits the current decentralized nature of Upper Voltaic rural development management. More importantly, it enables a concentration of effort in targeted, especially deprived areas at a scale of management and conception that is relatively efficient and easily monitored. The Eastern Region was chosen as a project site for four reasons: its poverty and need for infrastructural developments, its potential for new land development and some export crop production, USAID's experience in

the area, and the practical opportunity at this point to help build and perfect a regional development authority there: the Organisme Regionale de Developpement de l'Est (E.ORD).

The purpose of the first AID project in the Eastern Region was to achieve a measureable impact on farmer productivity in four intensive zones and to increase the capacity of the E.ORD to assist small farmers to increase agricultural production and income. This was to be accomplished through the provision of credit, agricultural inputs, extension services, infrastructure, and development of the E.ORD through training, planning and applied research. In addition to beginning the creation of a viable development authority where there had been none, the major innovations entailed in the first project were the introduction of animal traction and development of agricultural production packages for farmers, and the extension of credit to finance agricultural inputs through farmer groups at the village level. Considerable progress was made, but this was attended by serious though eventually correctable problems.

Under the first project (Phase I), by 1980, 3,835 short- and medium-term loans at a value of \$425,000 had been extended to farmers in the Eastern Region for the purchase of improved seed, fertilizer, draft animals and equipment (\$170,000 from AID funds). With these loans, approximately 1,200 sets of animal traction equipment and animals have been placed with farmers since 1975, and an additional 600 sets have been financed from farmers' own resources. More than 2,000 sets of plows, weeders, and ridgers were financed. Considerable progress was made in the development of packages of technical inputs for improved food production. For one period the salaries and operating expenses of 40 extension agents were funded by AID. An elaborate data baseline was created. From these interventions it is estimated that by the end of the current project 2,000 families will have benefitted directly from loans or equipment provided by AID, and 10,000 families will have received basic extension services generated by the AID project.

Rural development requires institution building if progressive, ultimately self-sustaining development is to be achieved. It is a slow process. With AID support, the E.ORD has made progress. At the beginning of the first project the E.ORD, which had been created in 1968, was moribund. From a base of 88 staff members (28 of whom extension agents), two houses and a warehouse in 1974, it grew in breadth and depth. By 1981 the staff totaled 408, of whom more than 200 have received training. Physical facilities have been increased tenfold. A Bureau of Economic Research and Planning has been established. Through the provision of technical assistance provided under a contract with Michigan State University, impressive documentation has been provided, beginning with baseline data analyses and including practical analyses of animal traction potentials, credit systems and regional planning needs. (See Annex J., Bibliography.)

A number of lessons have been learned which have informed the design of this second AID project and the larger conception of the IFAD-led program to begin in 1981.* They are only discouraging if a short-term, impatient perspective is applied. Briefly, it has been found that:

- there are severe difficulties in starting up capital-intensive activities such as technical assistance teams, long-term training, equipment provision, and credit schemes;
- timely coordination of projects in the one area supported by various donors operating on different schedules and according to different styles of implementation and reporting requirements is difficult;
- the E.ORD cannot now, and will not for some time be able to meet its operating expenses without considerable external (international donor) assistance intended over the long term;
- development of the capacity of the E.ORD, in particular to manage efficiently its financial and human resources, will take at least a decade; and
- development of technical packages of agricultural production inputs to be provided to farmers in the various micro-agro-climatic areas of the Eastern Region, packages that are reliable and a good risk to the borrowing individuals, takes a lot of time and effort and has not been achieved yet. If intensive, well monitored effort is not applied, there is considerable risk of alienating farmers and setting back food production through widespread extension of faulty technology by inept extension agents. With the best management, significant improvement in the productivity of food agriculture here will take at least a generation.

Similar lessons have been learned in the implementation of other projects in the region supported by AID and other donors. AID has three on-going or completed projects which have encountered some of the same problems: Rural Roads (686-0215 and 686-0247), building 159 km of roads, the Rural Enterprise Development Project (686-0219) which provides credit assistance to small entrepreneurs. At present seven other international assistance agencies are involved in the Eastern Region. The two major ones are the Caisse Centrale de Cooperation Economique (CCCE) which supports a \$3.3 million rural development (primarily seed farm and extension) effort in the Diapaga sector, and UNDP/FAO which support a \$1.8 million rural development project in the Fada N'Gourma sector.

* See, inter alia, Roger Poulin, Alice Morton, Anita Mackie, "Evaluation of the Eastern ORD Integrated Rural Development Project", AID, 1979; Stephen Reyna, "Social Analysis - Eastern Region Food Production Project" AID-Abidjan, December 1979; and AID, Audit Report No. 81-44, Feb. 13, 1981.

AID and these other donors have a stake in the continued and accelerated development of the Eastern Region and its development authority, the E.ORD. Progress so far has been sufficiently encouraging that the interested donors, with the significant addition of IFAD, have agreed that current experience should be built upon. They have agreed that it is now opportune to provide a heavily capitalized push for significantly increased food production and social and infra-structural development that builds on the expertise and structures now in place. For AID the opportunity presents itself to provide selected, carefully controlled ingredients in this overall program. They are ones whose necessity and efficacy stand independently; but whose short-term contribution to the large coordinated effort will be significant; and whose long-term contribution to development in the region will have continuity and force.

B. The Multi-National Program, 1981-1985

The design, arrangement for and movement of a development program supported by several entities of the national government (GOUV) and four participating international assistance agencies in this case are complex and time-consuming. The program intended for 1981-1985 is outlined in the Appraisal Report prepared by the African Development Bank for IFAD. (Revised Draft, January 20, 1981, See Annexes A&G). Although this presents a coherent overview and economic and social analyses at the scale of the region, some specificity is understandably lacking. For, two institutions of the GOUV (the Ministry of Rural Development [MRD] and the E.ORD) have planning and analysis undertakings which bear on program design that are not completed at this time. And the CCCE will support training and applied research, among other things which will complement those intended by AID, but will not complete the appraisal of its next project until early 1982. IFAD, however has moved ahead to obligate its share of the program's funding. With that, it is justified to approve the AID project described here, given the focus of its intent and rationale, and the flexibility built into its three components.

The IFAD-led program is projected to cost \$29.14 million, not counting host-country contributions and not counting about two-thirds of the planned AID contribution (which was negotiated after the draft Appraisal Report was completed). The total donor contribution of approximately \$31. million will be disposed in the following manner (Appraisal Report, p. 12, subsequent agreements and USAID estimates):

- the provision of credit (1) to farmers to buy production inputs, draft animals and equipment, and (2) to village and women's groups to establish cereal banks -- ca. \$3.8 million, IFAD, CCCE;
- establishment of a village development fund (1) to finance community facilities such as small maternity hospitals, dispensaries, village wells, and grain warehouses on a grant basis, and (2) to provide credit funds for the stimulation of village enterprises, cottage industry and local crafts -- ca. \$1.1 million, IFAD;

- improvement of animal health facilities through the rehabilitation and construction of vaccination units and the supply of vaccines for draft animals -- ca. \$0.9 million, CCCE;
- the extension of erosion control (5,000 ha) and land development for rice cultivation (on 1,000 ha of swampland) -- ca. \$1.8 million, IFAD;
- improvement and construction of 208 km of rural tracks and roads -- ca. \$3.5 million, IFAD, CCCE;
- strengthening of the Agricultural Support Center (Centre d'Appui) at Diapaga, including a seed farm, applied research, training and some extension -- ca. \$3.3 million, CCCE.
- Management Support through technical assistance, training and institutional support for management and extension services -- ca. \$7.4 million, IFAD, UNDP, AID;
- monitoring and evaluation, including technical assistance, facilities, and special studies -- ca. \$3 million, IFAD, AID
- physical and price contingencies, ca. \$6.5 million, shared among donors.

A description of the objectives and components of the AID project is in following sub-sections of this project description. Here it may be noted that AID will share responsibility for supporting training and monitoring and evaluation (including research) with IFAD, CCCE and UNDP in the following ways:

- training -- UNDP will provide a Senior Training Officer (STO) to the CCCE-supported Agricultural Support Center which will be the origin of most lower-level training. The STO will also direct planning for higher-level training to be supported through AID's training component and further advised through short-term technical assistance to the Monitoring and Evaluation Unit (MEU) provided by AID.
- monitoring and evaluation -- IFAD will fund the physical facilities of the MEU (which will be independent of the ORD answering to the Ministry of Rural Development, MRD), and its director, a long-term technical advisor. AID will provide long- and short-term technical assistance to the MEU in the fields of agronomy, sociology, economic geography, training, environmental protection and evaluation.
- research (special studies) -- AID's project has a component for the funding of special studies, demand for which will arise from monitoring and evaluation activities of the MEU. These applied studies (including environmental impact analyses) will be complementary or additive to those undertaken elsewhere in the program as supported by IFAD, CCCE and the E.ORD.

The multi-donor program outlined above is enormous. It befits the needs and opportunities in the Eastern Region and carries on at a larger scale the activities and institutional developments already afoot. It is natural to be concerned, however, about the absorptive capacity and implied speed required to achieve the projected results. Evidence suggests there is a good chance that such heavy capital transfer will pay off in the long run, if perhaps only to a medium degree during the period 1981-1985. Moreover, economies of scale and agglomeration derived from such an effort could well force the pace of change where slower, more limited interventions could face earlier (or lower) thresholds of inefficacy. It is appropriate to quicken the pace; the needs in the Eastern Region are immense.

C. Objectives of the AID Project, 1981-1985

Given the above, it is of great importance that the overall program be monitored and evaluated intensively and lessons applied swiftly. It is as important that the accumulated knowledge of conditions, management dynamics and the nature of change in this rural region be soundly delineated and recorded so that later phases of intervention there will be even more apt. That is the justification for such a large investment in monitoring, evaluation and special studies. And, taking the longer view, continuous and accelerating training for development managers in this ORD, and for officials concerned with ORD development at the ministry level, is critical -- regardless of the pace at which the IFAD-led program will proceed.

Therefore AID's support for management of accelerating food production initiatives in the Eastern Region in the period 1981-1985 will concentrate on these specific and self-justifying activities. It is unnecessary that AID provide capital investments in this period given the contributions of the other donors; and for roads or ORD operations per se, they would have been difficult to design satisfactorily at this point, given the overall program's development

The objective of AID-supported training is defined as a logical follow-up to current AID and ORD experience. The first AID project failed to fulfill its training goals. That is owed to the inability of the ORD and MRD to provide training candidates. Technical analysis of the training situation now indicates that sufficient numbers of officials already employed by the ORD at middle and upper echelons need training directly associated with their responsibilities (especially financial management, programming and planning) and could be made available to take such training.

The E. ORD already provides for such training, primarily utilizing experienced institutions in Upper Volta but to an inadequate degree. This training and the small amount of short-term training in the United States provided under the first project have been successful. However, to the present, the Director of the Eastern ORD has been entirely responsible for selection of candidates and, in effect, for financing and scheduling training. The bottleneck thus created, due in part to immediately conflicting management needs of the organization, should be partially eliminated by the increased participation in and control over the process planned by the central government: the MRD's Directorate of Planning, Human Resources and Professional Training. This reorganization of responsibilities should have the added positive effect of making a third resource pool of trainees available for the use of AID's training resources according to another of its objectives. This is the limited but important training of central MRD officials who have responsibility for the management of ORDs.

The objective inherent in support of monitoring and evaluation with special studies is more complex. IFAD has taken the lead to provide for monitoring and evaluation of the entire program in a form which conforms to IFAD's excellent guidance on the subject (Directives Operationnelles en Matiere de Surveillance et d'Evaluation, Rome: 1979). The Monitoring and Evaluation Unit will undertake continuous monitoring, identification and execution of studies, and on-going evaluations -- all attuned to program management that is evolutionary and problem-solving. AID finds itself in the helpful position of having living experience in development in the Eastern Region, and a significant opus of studies, reports and recommendations concerning specific problems and opportunities. Analysis indicates that monitoring will and must be cost-intensive, beginning with baseline data analysis. Also, certain thrusts of development planned in the overall program should certainly receive special attention at an early date. Finally, the resources of the ORD and even the Agricultural Support Center in the first years of implementation of this program will probably have to be devoted largely to operations, as opposed to planning and research per se.

Therefore, AID intends to achieve three related objectives through technical assistance support of the MEU: (1) enhanced capacity of the MEU to sustain comprehensive monitoring on the basis, initially, of base-line information collected during the first AID project; (2) intensive analytical attention to critical problems of rural development, at first guided by past research results resulting from AID and other projects in Upper Volta; and (3) guidance and arrangement for application of the resources of the training and special studies components of the new AID project.

Technical analyses of past and current development initiatives and trends in the Eastern Region indicate three broad, interrelated fields that present solvable problems and are crucial. They are: development administration (regional and national), delivery and acceptability of appropriate inputs to farmers (package development, financing, equity, logistics), and regional dynamics (produce marketing, infrastructure, regional planning, environmental impact). As discussed in Section II of this paper, the needs are clear. The means to provide monitoring of impacts that will improve implementation of the whole program are feasible. The complementarity and supportiveness of this activity to the interventions supported by other donors and the GOUV are clear cut. It should be emphasized that the earlier such AID support, and higher-level training begin in the life of the IFAD-led program, the better in the long run.

Thus the underlying but fundamental objective of the immediate AID project is to encourage and support increased food production in the Eastern Region on a cooperating basis with institutions of the GOUV and the range of other international assistance agencies which have greater capital resources and find development needs and opportunities there important. This kind of multi-national collaboration and sharing out of responsibilities is crucial in the Sahel -- both for the provision of adequate resources and for the confluence of ideas, experience and judgment that all regard as essential.

One other objective, from AID's point of view, that is less obvious but also significant is simplicity of project management. Lessons from current

AID projects and the changing nature of development administration in Upper Volta both indicate that, for the present, AID resources should not be committed to management by the E.ORD. Therefore AID funds in the case of technical assistance to the MEU will be under the direct control of the Ministry of Rural Development; the resources of the training and special studies components will be held by USAID to be disbursed as necessary, for the most part by direct AID contract, but otherwise through the MRD; and the overall technical assistance contractor will provide for self-sufficiency of AID-supported MEU activities as well as guidance to the GOUV, E.ORD and USAID on and to some extent management of appropriate use of the training and special studies funds.

D. Project Components

Training - It is proposed to fund higher-level training for E.ORD officials and MRD executives at a cost of \$800,000 over five years. In the overall IFAD-led program it is expected that some training will be provided to all E. ORD employees. Indeed, in-service training is needed at all levels and is a planned element of the scopes of work for the technical assistants to be provided by UNDP, IFAD and AID. Higher-level training supported by AID will be more selective and intensive, utilizing both the technical seminar approach in the E. ORD and MRD, and training and degree programs at various Upper Voltaic and foreign institutions. Because of the reorganization of the E.ORD and MRD, caution is necessary now in determining key positions for which advanced training should be intended. But the fields of greatest need are clear: financial management and accounting, personnel management, programming and planning, economic analysis, agronomy, sociology, statistics, training, regional analysis, and environmental protection.

The use of AID's training funds will be determined by a process of needs identification, consultation, feasibility assessment and approval involving the E.ORD, the MEU, the MRD, other donors, and USAID. Analysis of training needs and costs for the purpose of this paper has quantified by type the minimum expected requirement over the life of the project and the overall donor-supported program. It has also identified the likely training institutions in Upper Volta and abroad with adequate facilities and programs. (See Annex E.) Briefly, the training plan is this:

- Short-term technical assistance provided to the MEU, combined with long-term technical assistance provided by IFAD, AID, and UNDP will assist in defining needs and completing proposals for the use of AID's training component funds. Expatriate technical assistants will also train in situ.
- In-country short-term training is tentatively programmed at \$200,000, including two sets of locally managed seminars, and three sets of seminars assisted by expatriate experts provided for under the AID technical assistance contract (one at the national level).
- In-country long-term training is tentatively programmed at \$60,000, to support two trainees in regional planning at the Pan-African Institute of Development (PAID), Ouagadougou.

- Out-of-country short-term training is tentatively programmed at \$40,000, to support four trainees at the University of Pittsburgh.
- Out-of-country long-term training is tentatively programmed at \$325,000, to support four trainees at institutions in West Africa and three in the United States, with added field work in Upper Volta.
- Physical and price contingencies have been provided for at \$175,000.

It should be noted that although the primary objective is to improve operations during the life of the project and afterward specifically in and for the Eastern Region, long-term training and the highest level of short-term training will inevitably result in the movement of some trained personnel to other institutions of the GOUV. It is impractical to expect otherwise; which is why the rationale for AID support of higher-level training must encompass improvement generally of Upper Voltaic capacity to manage regional development. Only to an incomplete degree can it be expected (and covenanted) that the expatriate technical assistants now required will be replaceable by trained, experienced Voltaic personnel during the life of the 1981-1985 program.

Technical Assistance - Technical assistance will be provided, preferably, under one contract to an institution that can deliver the complete set of skills, back-up and experience required. This is estimated to cost \$1.5 million, including contingencies and overhead. Subject to modification during project implementation, the following should be provided:

- one long-term agronomist/team leader, for three years;
- one long-term sociologist/anthropologist, for two years;
- one long-term economic geographer/statistician, for two years;
- one training advisor for ten months over three years;
- one environmental scientist for six months over three years;
- short-term assistance in evaluation; and
- management of resources for local staff and facilities, vehicles and contingencies.

It is expected that the team leader would be in place toward the end of the program's first year, following the establishment of the MEU in Fada N'Gourma and the provision of the UNDP's technical advisors. The schedules of the other advisors and their exact scopes of work (including training duties) would be determined by the team leader in consultation with the management committee overseeing the overall program. The monitoring and evaluation process prescribed by IFAD and outlined in the program's Appraisal Report calls for an evaluation of the program at the end of its third year, to which the AID-provided technical assistance (and studies) will contribute. Following that, it may be desirable to contemplate the next AID project (Phase III) in the Eastern Region. This would effect continuity of AID involvement after the current program's fourth year. If so, the technical assistance team would assist in that design.

As noted, the purpose of AID's technical assistance is at once to improve monitoring and evaluation of the multi-lateral program's management and impact and to inform the use of AID's training and special studies components. The fields of specialization of the advisors have been chosen to comprehend the particular problems and opportunities that technical analyses have identified as crucial in the overall program. Thus the range of technical evolution of farming packages and their testing and impacts will be the responsibility of the agronomist. Problems of adoption, equity impact, extension provision and the collection and use of social statistics will be handled by the sociologist/anthropologist. Problems of general statistical analysis, environmental impact, marketing, infrastructure development and regional planning will be treated by the economic geographer, aided in some technical aspects by the short-term environmental scientist. Short-term training advice has already been discussed. There will also be technical assistance on evaluation per se.

Special Studies - It is premature to specify exactly by type and quantify by need and opportunity the required special studies. By the nature of the project and program, these will evolve through mutual consultation on the basis of monitoring results. (But see Section II for analyses of problems meant to be alleviated by such research including perfection of farming systems packages and analysis of environmental impact of the program.) An indicative breakdown has been worked out at a total of \$700,000. The apparent needs and possibilities, including the potential for contracting with existing research institutions in Upper Volta, like SAFGRAD, suggest a distribution of funds thus: surveys, \$150,000; farming systems, \$250,000; regional planning, marketing and infrastructure, \$100,000; village-level adoption, \$50,000; and environmental impact, \$150,000.

E. Project Benefits

Technical analyses demonstrate that a minimum level of benefits from this project can be confidently predicted which justify the obligation and disbursement of \$3.0 million by AID, 1981-1985. These benefits begin with the necessity and feasibility of providing essential training and information resources to the E.ORD and MRD for which there would be a clear requirement regardless of other external assistance.

Minimum direct benefits can be projected for the training component by estimating the numbers of expected trainees at various levels, understanding that this must remain flexible as the training plan of the E.ORD and advice of the Senior Training Officer are awaited. It is intended that seven officials receive long-term technical training out-of-country (three for three years each in the United States, four for two years each in West African institutions of higher learning). The probable fields are financial management, regional planning, rural sociology and agronomy/agricultural economics. These same fields would be the concentration as well, but with emphasis on management and planning, of the short-term advanced training provided for four in a French language program such as that at the University of Pittsburgh and for three in long-term, in-country training (three years at PAID). Up to twenty senior MRD and ORD officials would be expected to benefit directly from the national seminar on ORD staff training.

Six seminars in the E.ORD are planned, each six-weeks long, that will be directed by expatriate specialists. These should involve, in total, at least 150 ORD and MRD staff members, including Sub-Sector directors and all higher-level headquarters staff. Short-term training in in-country training institutions in ten suggested events at CESA0 and PAID should give additional management training to about 30 E.ORD officers.

Indirect beneficiaries of the technical assistance to the MEU and special studies will be, first, the managers of development in the E.ORD and MRD, and second, the projected beneficiaries of the capital investments noted below. That is: about 300 officials, 64,000 rural poor receiving improved farming inputs through credit and better market information, and (in the first three years, but more indirectly) the 190,000 people living in the Bogande and Diapaga sectors where infrastructural improvements, land development and regional planning efforts will be concentrated.

Given the commitment of the donor group, the economic and social benefits projected for the overall program will be attributable, in some part, to AID. Such benefits are difficult to project exactly now as pointed out above, given the indeterminacy of the timing and precise inputs intended by the other donors, the fluid nature of GOUV development policy and institutional development, and the expectation that some will only be fully realized after the program's completion and some benefits will only be fully realized level. The program's expected benefits include productivity improvements for 8,000 farm families whose income per capita is currently calculated at \$100 per year. They also include improved accessibility, new lands development, community development and greater rural employment, not least of women. The program's draft Appraisal Report does not estimate direct beneficiaries of these latter interventions. (They would appear to be at least 50,000 additional people.) But its budget counts inputs, as follows: 108 km of feeder roads around the development nuclei of Bogande and Diapaga, erosion control on 5,000 ha., 1,000 ha of swamplands prepared for rice cultivation, \$525,000 for community development (to finance approximately four maternity clinics, four dispensaries, 100 village wells and 60 cereals warehouses), and \$660,000 in revolving credit funds to support income-generating village enterprises, including those of women's groups.

AID has a particular advantage concerning the overall program, and a particular responsibility. The advantage is that of long experience with this sort of food production and integrated rural development effort, and the USAID Mission's intensive, localized capacity for project implementation. The responsibility is recognized -- and it is conveniently placed in the MEU -- for constant observation of and assistance to the implementation of the program as a whole.

AID also recognizes that, subject to the availability of its resources and policy evolution, it has assumed a responsibility for promoting development in the Eastern Region that probably transcends the life of the project and program described here. Thus benefits at another level can be foreseen: AID's increased ability to offer (and presumably potential here for) development assistance in the future. And at the very least, the lessons learned from the monitoring and evaluation of this program will markedly advance the sophistication of Voltaic, Sahelian, and international development agencies in treating the dire needs for growth and equity in remote, populous, poor rural areas.

F. Project Implementation

Implementation of the AID project, limited though its goals and components may be, still will have pitfalls. One that seems unlikely is that there would be nothing to monitor and train. A Condition Precedent to disbursement of AID funds will require specification and agreement on the lead donor's (IFAD's) project.

Concerning the use of the training and special studies components, there will be adequate controls set out in the Project Agreement. Most, if not all of the funds in these components will be administered through direct AID contracts, backed up by technical advice and to some extent direct implementation provided for in the technical assistance contract. Is \$1.5 million for training and special studies necessary and absorbable? Analyses indicate that it is. But the project's design allows for slippage and re-targeted support according to developments (or their absence) outside of AID's control and identification of new needs.

The practical implementation problem that cannot be eliminated by structural niceties of project design is delivery and effectiveness of the technical assistance. It is highly desirable that this be provided in one package under one AID contract. That is: the long-term and short-term technical advisors, the advice to USAID on use of training and special studies funds, the arrangement of certain training events, and the logistical support of all that in the United States, Ouagadougou and Fada N'Gourma. Technical analyses of development problems and needs in the Eastern Region indicate the need for the expertise as described here. The necessary timing of technical assistance efforts cannot be completely scheduled at present. The pitfalls therefore are: disaggregation of the contracting that burdens USAID, inappropriate choice of individual experts, and faulty timing (too early, too late).

Another issue is the support facilities for the technical assistance team and visitors in Fada N'Gourma. A Condition Precedent to disbursement under the technical assistance component will be AID's retention of use of the three residences constructed in Fada under AID's current Eastern ORD project. The office and functional facilities for the MEU will be financed largely by IFAD, including those for the expanded expatriate assistance provided by AID. Arrangement for vehicles, employment of local staff, special training of them, and contractual modes for funding training and special studies through local institutions will have to be established in detail well in advance of the arrival of technical assistance personnel.

AID also has the requirement to evaluate its own project in its own terms. The project's evaluation plan calls for a mid-term evaluation which actually will fall just after the three-year evaluation of the overall program to be undertaken by the MEU. This will be the occasion to reflect on the desirability of planning longer-term assistance (Phase III) to development efforts in the Eastern Region; and doing so will be a part of that evaluation team's scope of work. An ex-post evaluation is planned for the sixth year following the commencement of the project (one year after the PACD), but should be somewhat later if Phase III has begun.

Relationship of Project to A.I.D. Country Strategy

The country strategy is directed towards increased food production through improvement of agricultural inputs and techniques employed in farming systems and support to a wide variety of production-related activities. A group of international assistance organizations (including A.I.D.) has reached agreement to parallel-finance a program of capital and technical assistance for rural development in the eastern region of Upper Volta at a total cost of approximately \$31.3 million during 1981-1985. Given the intentions of the other donors and in response to audit recommendations, A.I.D. has agreed to concentrate on discrete, necessary elements which constitute technology transfer and will provide long-term benefits. This project will increase the capacity of the GOUV to manage food production activities in the eastern region, thereby, contributing to the achievement of national food self-sufficiency.

II. RESULTS OF TECHNICAL ANALYSES

A. Management of Development in the Eastern Region

Training

Annex E. contains the Training Plan. It explains the division of responsibilities among the participants in the overall program for the Eastern Region in 1981-1985, and the rationale and details of the training component of the AID project. It is recognized generally that training for the personnel at all levels of the E.ORD is essential. In view of recent experience in providing training there, the nature of the E.ORD's organization and work, and the disaggregation of development activities in the Eastern Region to fit the project concepts of the four donors, the following principles should apply:

- there should be broad in-service training;
- in-service training at higher levels should be an integral part of the work program of the technical advisors;
- in-service training at the lower levels (especially for extension agents, animal use advisors and the like) should be the responsibility of the Agricultural Support Center at Diapaga;
- higher-level (middle- and upper-echelon) training should occur as much as possible in situ and be provided through the use of training institutions located and experienced in Upper Volta;
- high level training should concentrate, first, on program management, including accounting, planning, programming and data management;
- advanced-level academic training should be designed to treat specifically the needs for greater expertise in food production management of the E.ORD and the MRD;
- out-of-country short-term training should be conducted in an institution having a specially-designed program for Francophone African rural development managers;
- out-of-country long-term training should provide for initial exposure to E.ORD procedures and for field work in the Eastern Region as part of degree training to the extent possible;
- given the mobility of higher ORD officials and the needs in the central government (MRD) for better trained managers, training programs should recognize the likelihood that not all trainees will return immediately to positions in the E.ORD, and capitalize on this fact in design of training curricula and consultation with the MRD in the interests of long-run benefits to food production management at the ORD level in Upper Volta; and

- a review of ORD training needs, processes and results should be held at the national level at a mid-point in the training program.

The training component of the AID project will support higher-level training in a variety of ways, institutional settings and locations. This has been designed to provide coverage of the subjects, personnel, and special programs identified as most important during the course of the IFAD-led program -- with minimized disruption of day-to-day work of the E.ORD and the MRD. All indications from the E.ORD and MRD, including their training plans so far show that adequate numbers of trainees, distributed among the appropriate echelons of the organizations are in place now and should be available for training.

Two training institutions located in Upper Volta, the Centre d'Etudes Economiques et Sociales pour l'Afrique Occidentale (CESAO) and the Pan African Institute for Development (PAID) have been examined. They are experienced in providing training for the E.ORD and can be expected to offer the types of additional in-country short-term and long-term training programs for the numbers and at the costs indicated in the Project Description (above) and Annex E. Short- and long-term training out-of-country is also something in which there is experience. Subject to requirements to be specified during project implementation and to contracting opportunities, the institutions in which such training should take place include practiced universities in francophone Africa and the United States. Some short-term training, in French, has already been provided to E.ORD personnel at the University of Pittsburgh, for example.

To simplify and coordinate the inputs of the AID project's training component, its direction will be assisted under the technical assistance contract of the technical assistance component. It is envisaged that the contractor will provide both the short-term training advisor to the MEU and management of these four sub-components of the training component: two six-week training seminars in the E.ORD, four six-week training evaluation and planning sessions in Upper Volta, one national seminar on ORD staff training, and long-term academic training for three executives in a U.S. university (sub-components 3, 4, 5 and 9, respectively). The first three would be conducted with the assistance of additional short-term technical advisors.

The entire training effort associated with the overall IFAD-led program will be orchestrated through consultation with the GOUV, E.ORD and the other donors. Each has a part to play, and the complexities of timing and needs identification are what prohibit more exact programming of the AID training component at this time. One Senior Training Officer (STO) will be provided to the overall program by the UNDP and stationed at the Agricultural Support Center supported by the CCCE. The STO will coordinate all training activities supported by the donors and advise the E.ORD on its other training needs and programs. The MEU, supported by IFAD and AID, will monitor and evaluate training as an integral part of its work program.

The AID technical assistance component, as noted, will provide repeated, short-term advice in Upper Volta on both monitoring and evaluation of training and use of the AID-provided resources for higher-level training.

The major technical advisors provided to the MEU (Agronomist, Sociologist/ Anthropologist, Economic Geographer, Environmental Scientist) will train their counterparts in situ. They will also informally train technicians in the E.ORD at the request of its Director, and executives of the MRD at the Ministry's request. The training component of the AID project should be evaluated at a mid-term point (about three years after project commencement) and at the end of the project. This will follow overall program evaluations conducted by the MEU and is specified in the Evaluation Plan of the AID project (part V. of this paper).

Monitoring and Evaluation

Under IFAD's thorough guidelines the MEU has two main functions. The budgets for the MEU sponsored by IFAD and AID (Annex A; Part III) reflect the plans to carry these out, including timing, staff and facilities. The first function is to follow the program's receipt of funds, technical assistance, and commodities from the donors' projects and the GOUV and record the results of program activities. This is basically an internal process which relies on the projects records and serves the management needs of the GOUV, E.ORD and the donor agencies.

The second function is to assess the effect of program outputs and the impact of these effects on food production, income and the quality of life of the target group. This is a function that relies more heavily on information gathered by the MEU itself and from sources outside of the coordinated projects. The MEU will be outside of the line of authority conducting Eastern Region development (the E.ORD) and accountable at the same level, i.e., the Ministry of Rural Development. In order that the MEU coordinate its work effectively and be of maximal use to the bureau of the E.ORD, it will be located in Fada N'Gourma.

The overall development program for the Eastern Region is large and complex and the sorts of activities the MEU must follow and assess are diverse and will evolve rapidly. At this stage (Phase II) of development of food production in the region, and with interventions planned at this magnitude and breadth, a strong, intensive monitoring and evaluation effort (and institution) are called for.

The annual IFAD-led program includes major components (e.g. credit and roads) that will directly affect food production of the small farmer. Minimally it will be necessary to look at effects on labor allocation in the household, yields, productivity, income, and on the distribution of income within the community. Credit effectiveness in the long run, of course, will depend on the ability of the system to generate income. At the outset, the E.ORD will have the advantage of access to a functioning computerized loan record system developed with AID support. This is intended to be further refined and continued in use during the life of the project.

Infrastructural investments -- roads, trucks and land development, but also community facilities -- should be planned and made according to

information provided by the MEU on both potential beneficiary impact (numbers, access) and environmental impact. With respect to bas fonds development, it will be necessary, at a minimum, to monitor levels of water-related disease and to see how the valorization of previously unclaimed and unused lands gets into the land tenure system.

The program will seek to improve the level of extension support services available to the farmer. It will be necessary to assess and monitor the strengths and weaknesses of the present system as perceived by farmers and to analyze and suggest corrections to the system of ordering and distributing agricultural inputs so that timeliness and reliability of delivery are improved.

In addition, the MEU should see that information is available on factors external to the program that affect impacts -- for example market prices, weather and the activities of other projects and GOUV agencies that impinge on the project area. In the case of market prices, the MEU may have to collect the data itself, and this may be a subject for treatment by special studies under the guidance of the economic geographer in the MEU.

The major client of the MEU's monitoring efforts will be the E.ORD, and especially its Bureau for Economic Analysis and Planning, the Agricultural Support Center and the Bureau of Agricultural Production (as constituted at present). The first should be assisted by the MEU to formulate its informational needs at the earliest possible opportunity. The Support Center should be advised on ways to test how well extension agents absorb and retain the information they receive, and how effectively they transmit this to farmers. The Bureau of Agricultural Production will need information, inter alia on whether the correct quantities of inputs are reaching farmers early enough in the season, and whether pest management is proceeding properly.

Animal traction is a common ingredient of food production projects in the Sahel, but in few cases are area expansion and yield effects documented; in fewer yet are a farming systems approach or whole-farm budgeting techniques applied. The work of the MSU technical assistance provided under the first AID project in the Eastern Region, however, provides some of the best information available on the effects of animal traction on farm production and household income, for the year 1978-1979. Extending the survey data to cover the same sample of households over several years would be a major contribution of the MEU. Another asset created under the first AID project is the very comprehensive set of baseline data on the target area, on areas proposed as target areas, and on the Eastern Region outside the IFAD-led program's target sectors. Table 15 gives a breakdown of sample households by zone, and Table 16 (both in Annex A) lists the information available for sample households (or, in some cases, subsamples). An early priority for the MEU should be to plan use of these data and expand the data base. Several methods of estimating yields, in particular, should probably be applied, and data collection and periodicity determined for the life of the program at the outset.

For certain special studies, survey data will have to be supplemented by new surveys and by structured and unstructured interviews with a wide range of key informants. An important topic the study of which should be directed by the AID-provided sociologist/anthropologist is the functioning of the village groups and individual and group response to community development initiatives and credit obligations.

Administrative Feasibility

The administrative feasibility of the AID project depends on the nature of its components, the administrative environment in which it will find itself, and, as a project whose purpose is to improve management of a program, the management improvements it seeks to effect. As, for design reasons, the MEU is outside of the authority and structure of the E.ORD, it will require special attention so that its purposes are fulfilled.

First, working relationships with the various bureaus of the E.ORD will have to be carefully established and maintained at all levels. Second, to function the MEU must be staffed and equipped fully according to a schedule which will permit it to commence activities before major investments under the 1981-1985 program begin. The feasibility of this is dependent, in turn, on: (1) recruitment of technical experts, (2) recruitment of Upper Voltaic staff, (3) availability of facilities (housing, offices, vehicles, etc.), and (4) information provided by the E.ORD on which to begin working. According to the AfDB's Appraisal Report, the GOUV will be required by IFAD to present a detailed proposal concerning the MEU not later than six months after loan effectiveness. Indeed it is a precept of IFAD that the monitoring and evaluation plan be completed before a project begins. Because of the multidonor nature of support to the MEU, however, it is anticipated that close coordination among the GOUV and IFAD, UNDP and AID will be required in the summer of 1981.

Third, the individual projects of the four donors that are coordinated under the IFAD-led program overlap in purpose and financing, and this will affect the establishment and operations of the MEU. For practical purposes, the six expatriate advisors not supplied by AID are intended to be recruited under one contract administered by the UNDP, including the Director of the MEU. The GOUV will supply the MEU's facilities under the IFAD credit. AID's technical assistance contract will not only provide for additional long- and short-term technical assistance to the MEU but also for assistance in direction of certain training activities and special studies provided under the AID project. Thus coordination of inputs and timing of commencement of activities will only be feasible if intensive preparation is undertaken by all parties.

The management improvements that the AID project is intended to support are discussed elsewhere in this paper. They turn largely on increased generation and better application of basic information concerning food production practices, regional planning and program management. They are to be effected through the monitoring function of the MEU and are not constituted as direct interventions in the operation of the E.ORD. The E.ORD's structure, however has been analyzed (Annex H), and its evolution evaluated. Restructuring along the lines recommended in the Touche Ross report financed by AID has been accepted in the AfDB Appraisal Report. The new form of E.ORD management is intended to reduce over-centralization of decision making and facilitate better financial management, sub-component implementation, planning and information flow. The E.ORD is now fully staffed and has adequate physical facilities to begin implementation of the enlarged Phase II.

Two things are lacking: concrete, comprehensive plans for 1981-1985, and staff trained to the desired level at all echelons. The planning and budgeting process of the GOUV in regard to the former is expected to be completed by the summer of 1981. For the E.ORD, the planning conference scheduled for August, 1981 with MSU's participation supported by AID should carry the planning process still further on the basis of agreements with donors on the 1981-1985 program. For reasons noted above, it is impossible to project for 1981-1985 a trained staff of the E.ORD that would be ideal. However, the desire of the GOUV and E.ORD to apply special attention and resources to training has justified the programming of considerable training resources during the life of the program. (See Annex E.) A major function of the MEU will be to advise on and monitor this training throughout the E.ORD and project area. This will be made administratively feasible by: (1) the creation in the MRD of its Directorate for Planning, Human Resources and Advanced Training; (2) the presence of the Senior Training Officer at the Agricultural Support Center during the life of the project; and (3) the contractual arrangements intended for delivery of the AID inputs.

B. Economics and Finance

The AID project will support improvement in the management of food production and related interventions in the Eastern Region during 1981-1985. The institutional nature of the project makes it cost effective, especially with regard to the "early warning" aspect of the MEU which will assist in keeping the capital inputs on track.

In addition, continuing monitoring will be directed toward economic benefits to be derived from the project as set forth in the AFDB Appraisal Report. The results of the economic rate of return analyses (ERR) as presented on page 35 of the Report will be closely monitored, for example, in order to carefully relate expectations to the realities of project implementation.

The Report does not quantify the economic returns to literacy programs for women, community development or extension programs, nor the returns in the form of increased on- and off-farm employment. It does discuss the program's risks which for economic benefits accruing to increased food production lie first in vagaries of the weather, and marketing opportunities for the incremental food production. The latter, as well as the added risks of non-delivery and adoption of necessary production packages to and by farmers and loan delinquencies, are expected to be mitigated by the increased efficiency of the E.ORD (and MRD and other central institutions). This is already in train and planned as an integral result of the overall program, especially its management development, training and monitoring and evaluation components.

The risks of adopting the planned traction equipment are considerable: in other agricultural projects it has seemed that a minimum farm size of about 4 ha. is necessary to be able to pay the costs of donkey-drawn equipment; while about six hectares are needed to be able to pay the higher costs of ox-drawn equipment. It is not advisable that the project try to equip smaller farms with the traction equipment in the name of equity, however. Program managers should think hard as well about improving the productivity of staple crops--sorghum and millet--on farms that are not using animal traction. For, animal traction equipment is a large investment for farmers: both the timely delivery of the equipment and animals and the continued availability of repair services and extension advice are crucial in determining whether farmers are ultimately able to make their investments pay. The Eastern ORD's strategy has been to put enough traction units in place to justify a dense network supplying support services to the farmer. This should be closely monitored.

The proposed extension system will be based on the unité d'encadrement -- six to eight villages to be served by each encadreur (extension agent) at least every two weeks. At present, encadreurs are faced with a bewildering number of responsibilities, including: running demonstrations, forming GVs (groupements villageoises), managing credit, and distributing inputs for production. It is recommended that some of these responsibilities be cut back in order to concentrate on the distribution of inputs. This should be the case as credit and commercial functions of the ORDs are gradually assumed by the central government. The role of the MEU in monitoring these proposed changes should focus on the continuing evolution of the extension agents and increased efficiency in on-time delivery of materials needed by farmers along with appropriate instruction in the utilization of the inputs.

The present system of extension is almost exclusively oriented to pre-cooperative groups: the village groups (GVs), the women's groups, the Cereal Banks, and the 4-C clubs. Of these, the GV's and the 4-C clubs seem to encounter real difficulties as organs for local decision-making. Relatively few household heads participate in the GVs, and research indicates that farmers find collective work under the direction of an (often inexperienced) encadreur distasteful. This should be monitored and new approaches sought. One approach might in some cases be to apply other criteria than the collective cash-crop field as an indicator of the strength of the GVs.

The program aims to strengthen the training of extension workers through short-term training. The MEU should work with trainers to devise later retests on subject matter covered in short-term training courses in order to diagnose strengths and weaknesses in the training materials being used. Similarly, the MEU should periodically check on how well farmers understand their debt burdens and their equipment, how well they can estimate areas and weights for fertilizer doses, and whether they understand the planting densities.

In the course of examining the planned IFAD-led program, several subjects have been identified that will require study in the course of the project: the

The monitoring/evaluation and training inputs supported by the AID project have been designed to improve the economic efficiency of the overall program. The present stage of food production development in the Eastern Region is one where information on which to make decisions is still critically lacking. The technical package of inputs for farmers, for example, is untested for the varying conditions in the project areas. And the realities of credit use, optimal crop/marketing associations, and regional access (infrastructure) requirements are imperfectly understood. The positive approach is to study these intensively and train officials in the lessons as large-scale investments proceed, and to make rapid adjustments on the basis of new knowledge. The economic desirability of a big capital push outweighs the alternative of a more gradual and linear approach in the next five years. To develop the optimal combinations and formulations of investments for farmers while guaranteeing the necessary capital and management resources and delivering them simultaneously requires a significant investment in information. Hence the budgets and financial plans for the AID project and IFAD's MEU component.

Section III, below indicates the intended flows of AID inputs and other donor contributions to the program, and tables in Annex A indicate the intended multi-donor financial contribution (less that of AID) in detail. It is understood, however, that the upward curve of production increases in the Eastern Region will meander and that take-off is somewhat distant. The financial planning of the overall program, therefore, will be reassessed on the basis of MEU analyses at a mid-point in program implementation. One decision then will be whether or not to expand the project area to an additional one and one-half sectors in the region. Another will concern speed of delivery of capital investments.

C. Social Soundness ^{a)}

The premise of the social soundness analysis is that the largest factors influencing the rates of adoption of production packages included in the IFAD-led program for the E.ORD will be their reliability under the full range of soil and weather conditions in the project's target area and their productivity within the context of the farming system. Research on Gourmantché agriculture shows that farmers readily try out innovations where the risk of failure is small, and particularly that a series of years with low rainfall have made farmers anxious to try out drought-resistant varieties. Several zones within the project area (particularly around Bogande) are relatively densely populated, and farmers seem to have adopted some labor intensive practices to raise the yields of staple crops. This section notes conclusions on these and other aspects of the overall IFAD-led program on which the AID project's technical assistance and special studies components should be applied to assist program monitoring and evaluation -- how and why.

Animal traction techniques require several years of experience, and put a heavy strain on household cash flow (even among relatively successful adopters). Most households that have adopted ox-drawn or donkey-drawn equipment tend to be larger than average households and to have a greater than average area under cultivation. It appears that most adopters so far have been among the relatively well-off in the region. With net household income per capita ranging from 8,250 to 15,080 FCFA in 1978-79, however, these farmers are still among the truly needy (See Annexes G and I.)

a) See also "Project Benefits" pp 10-11.

problems of the care and feeding of draft animals, the question of whether the GVs are an effective base for extension and credit work, the problem of reducing arrears in the repayment of credit (57 percent arrears as of 31 March 1981, see tables 17 and 18, Annex A), and a whole set of crop production difficulties, starting with the planting dates. Some of these problems will require a period of study under farm conditions. Although it has been proposed that CCCE handle all on-farm testing, some complementary applied research along these lines may be desirable in the MEU. If it becomes evident that there are additional needs for on-farm research, it may be convenient to contract for this with the Farming Systems Unit of SAFGRAD in Upper Volta.

D. Environment

This analysis is limited to those aspects of the overall IFAD-led program which are currently known and anticipated. It concentrates on positive contributions to environmental protection that the AID project can provide within its limited participation in the overall program through support of the MEU and higher-level training.

In developing a "package of practices" for the small farmer in the region, the use of pesticides will play an important role. In Annex F are the risk/benefit analysis and guidelines as specified in amended Regulation 16 of the Code of Federal Regulations Part 216. Procedures are recommended for evaluating the risks and benefits of pesticides used in the Eastern Region. Although AID will not be supplying, housing or financing the use of pesticides, nevertheless, through its support of the MEU it will have an opportunity to influence pesticide usage and promote the integrated pest management (IPM) concept (as it does on other Upper Voltan projects) to reduce pesticide usage and encourage the use of those products registered for use by the U.S. Environmental Protection Agency. This should be done initially through special studies prior to broad pesticide application supported by the overall program, and continued through training of E.ORD staff.

As part of the overall program, several roads and numerous tracks will be upgraded. The customary salient points concerning road impacts should be noted by the MEU, incorporated into the environmental studies and training programs concerning road construction supported by other donors, and periodically monitored. Protection against soil erosion from slopes is essential, also from road run-off and in the surrounding drainage area. Culverts, fords and bridges need to be carefully planned. The construction will probably be labor-intensive and this should be considered at the design stage. (See AID, Environmental Design Considerations for Rural Development Projects, Washington: AID, 1980, Chapter II.)

The overall program will develop approximately 1,000 hectares of land for irrigation, principally for rice production. Virtually every aspect of an irrigation activity may have environmental implications. Most aspects enhance the environment and improve the economic well-being and quality of life of the target population; but some aspects can have negative impacts which should be anticipated and carefully monitored. Proper use of pesticides is critical, as under intensive rice cultivation all conditions are conducive to increasing the population dynamics of pests. Irrigation projects are commonly associated with human health problems more generally, vectored by mosquitoes such as malaria and yellow fever, or water-borne, such as Schistosomiasis, dysentery and typhoid fever. Therefore, two important aspects of the irrigation investments are an effective agricultural, training and extension effort, and an educational program for the rural population.

The overall program will improve and increase the utilization of animal traction as well as livestock production. Animal health centers and assistance will play a major role in preventing the spread of animal diseases and improving the breeding stock. It will be necessary to ascertain and devise safe control measures concerning the vectors of Nagana disease and the Tsetse fly. Some of the project area is adjacent to an extensive game reserve where a variety of alternate hosts can be reservoirs of trypanosomes. The problem of overgrazing (range management) must also be given attention. It can be mitigated by careful planning of water distribution points for dry season maintenance of livestock.

In short, the environmental studies and training efforts which ought to be undertaken at the instigation of the MEU and with the support of the AID project include the following subjects: water quality, (especially total salts and sediments levels), quantity of water inflow, outflow, ground water levels, soil fertility levels, soil erosion, disease vectors, presence of water-borne disease in the population, animal health and range use, and the range and effectiveness of interventions supported by the overall program, such as cultivation methods, seed and pesticide use, water control, road location and construction and human and animal disease prevention.

Thus, the technical assistance to the MEU and the resources for training and special studies, which constitute the entire AID project, are intended to have beneficial impacts on the environment of the Eastern Region and on environmental management by the E.ORD. In recognition of the fact that the IFAD-led, multi-donor program is a cooperative effort, special attention has been given to means by which AID resources will prevent or mitigate environmental hazards arising in the Eastern Region in 1981-1985 associated with the investments of the other cooperating parties, including the GOUV. As the details of the GOUV and other donors' plans for program components normally indicating more extensive environmental analysis are not now available, further analysis will be undertaken when such details are presented.

III. FINANCIAL PLAN AND BUDGET

Tables in Annex A provide the indicative budget of the overall IFAD-led program. These were drawn up before the AID project was designed and do not reflect later donors' negotiations on the division of responsibility among their particular projects. Table 1, below, indicates what would appear to be the general magnitudes and interventions that the four donors will support through their projects.

TABLE I

<u>Donor</u>	<u>Component</u>	<u>Approximate Amount</u> (\$ million)
IFAD, CCCE	Credit	3.8
IFAD	Village Development	1.1
CCCE	Animal Health	0.9
IFAD	Erosion Control	1.8
IFAD, CCCE	Rural Tracks/Roads	3.5
CCCE	Agricultural Support Center	3.3
IFAD, UNDP, AID	Management Support (including higher-level training)	7.4
AID, IFAD	Monitoring/Evaluation	3.0
IFAD, CCCE, UNDP, AID	Physical and Price Contingencies	6.5
TOTAL		<u>\$31.3</u>

The contributions of IFAD and CCCE will be financed through concessional loans, those of UNDP and AID by grants. A condition of the IFAD loan will cause the Ministry of Rural Development to:

- establish and maintain separate project-related accounts for IFAD, CCCE, UNDP and AID, in accordance with sound and recognized accounting practices, to reflect the projects' financial and operational position;
- have the accounts audited annually by auditors acceptable to IFAD;
- submit certified copies of the audited accounts and the auditors' report to IFAD and the cooperating institutions within three months of the end of each project year;
- ensure that the reports of the auditors are of such scope and detail as IFAD and the cooperating institutions may reasonably request; and
- furnish such other information concerning its accounts as IFAD and the cooperating institutions may reasonably require.

Given the nature of development financing in Upper Volta, the host country contribution to financing the overall program is expected to be significant but small: in the range of five percent of overall costs. In the AID Project, this will come in the form of facilities and salaries. So far as development in the Eastern Region writ large is concerned, it should be remembered that

the IFAD-led program will concentrate on two sectors (locations) in the first three years, to be followed by the addition of one and one half more in the final two years. This constitutes about half of the area of the Eastern Region. The ORD, with its own resources, will continue to promote development and provide services over the entire area; and some of the benefits of the IFAD-led program will be brought to those areas outside of its concentration. Conversely, the GOUV and E.ORD's budgets for development elsewhere in the Eastern Region will contribute benefits that are associated with the goals and expenditures of the IFAD-led program.

With respect to the AID project in particular, training of ORD officials will continue with budgetary support from sources additional to those provided by AID. The GOUV will also contribute the time of its officials who receive training. The Monitoring and Evaluation Unit is designed according to IFAD's principles to be financed fully from external sources. This is justified on the basis of its uniqueness in Haute Volta and its extraordinary magnitude necessitated by the large rapid influx of donor capital. Nevertheless, certain participation by GOUV officials is anticipated. As noted, housing for the technical advisors, possession to which would have been transferred to the GOUV on completion of the present AID project in the Eastern Region, will be retained for use in the new project.

In total, the contribution of the GOUV to the AID-supported project is estimated to be about \$390,000, or 13 percent of the AID grant (Table 3). The AID grant has been disaggregated in the Indicative Budget, Table 2, below. For clarity concerning the proposed technical assistance contract, a column has been included that indicates by budget line the foreign exchange costs attributable to that. The most precision attaches to the technical assistance component. The training component has cost estimates for the types of training required; but the numbers and magnitudes of seminars, participants and degree programs are liable to change somewhat, within the total amount for this component.

The special studies component has been created to fill crucial gaps of information and applied research that will emerge during monitoring and evaluation, and to assure attention to certain problems in Eastern Regional Development of special importance to AID. Analyses of the problems and needs projected through the life of the IFAD-led program, and of the capacity of local research institutions and potential technical assistance contractors indicate that the total investment in this component is adequate and absorbable. The magnitudes of particular budget lines are indicative of a general set of priorities and recent costing of such studies. But the eventual distribution of these funds might differ from this considerably, yet conforming to the guidelines for approval of studies discussed in the project's implementation plan and to be elaborated later by USAID.

In addition to the auditing and reporting requirements provided for in the IFAD-GOUV agreement referred to above, it will also be a Condition Precedent to disbursement of AID funds that all outstanding audit recommendations concerning the first AID Eastern ORD Project will have been cleared. Financial management of the technical assistance contract and contracts for training and special studies will be according to AID practice and initiated

and monitored by USAID/Ouagadougou. No AID funds will be contributed to the E.ORD. To the extent that AID may directly fund activities of the GOUV, this will become the direct responsibility of the Ministry of Rural Development.

TABLE 2
INDICATIVE BUDGET FOR AID PROJECT (\$)

	<u>LC</u>	<u>FX</u>	<u>FX(contractor)</u>	<u>TOTAL</u>
I. TRAINING COMPONENT				
A. In-country short-term				
1. CESA0 (8 trainees)	10,000			10,000
2. E.ORD (2 1-mo seminars)	50,000			50,000
3. Training Seminars (2 6-week)	15,000	45,000	45,000	60,000
4. Training & Evaluation Mission (4 sessions, 6 weeks each)		60,000	60,000	60,000
5. National Seminar	10,000	10,000	10,000	20,000
B. In-country long-term (2 trainees)	60,000			60,000
C. Out-of-country short-term (4 trainees)		40,000	40,000	40,000
D. Out-of-country long-term				
1. 4 trainees, West Africa	100,000			100,000
2. 3 trainees, U.S.		225,000		225,000
E. Physical & Price (10%) ^a Contingencies	<u> </u>	<u>175,000</u>	<u>50,000</u>	<u>175,000</u>
TOTAL Part I	245,000	555,000	205,000	800,000

^a Price contingency = \$75,000, based on projected timing of inputs

II. TECHNICAL ASSISTANCE COMPONENT

A. Long-term Advisors ^a				
1. Agronomist/Team Leader (3 years)		390,000	390,000	390,000
2. Sociologist/Anthropologist (2 years)		260,000	260,000	260,000
3. Economic Geographer (2 years)		260,000	260,000	260,000
B. Short-term Advisors ^a				
1. Training Expert (10 months)		80,000	80,000	80,000
2. Environmental Scientist (6 months)		50,000	50,000	50,000
C. Facilities & Back-up Support	100,000	129,000	129,000	229,000

TABLE 2 (continuation)

	<u>LC</u>	<u>FX</u>	<u>FX(contractor)</u>	<u>TOTAL</u>
D. Local Staff	150,000		0	150,000
E. Short-term Technical Assistance for Project Mid-term Evaluation ^b		45,000		
F. Price Contingency	<u> </u>	<u>100,000</u>	<u>100,000</u>	<u>100,000</u>
TOTAL Part II	250,000	1,250,000	1,205,000	1,500,000

^a encumbered salaries/benefits and international travel.
^b not part of Technical Assistance Contract.

III. SPECIAL STUDIES COMPONENT

A. Surveys	100,000	50,000		150,000
B. Farming Systems	200,000	50,000		250,000
C. Regional Planning & Marketing	100,000			100,000
D. Adoption & Social Impact	50,000			50,000
E. Environmental Impact	<u>75,000</u>	<u>75,000</u>		<u>150,000</u>
TOTAL Part III	525,000	175,000		700,000
GRAND TOTAL	<u>1,020,000</u>	<u>1,980,000</u>	<u>1,410,000</u>	<u>3,000,000</u>

T A B L E 3

PROJECTION OF EXPENDITURES BY FISCAL YEAR^a

<u>Project Inputs</u>	FY 1981			FY 1982			FY 1983			FY 1984			FY 1985			T O T A L		
	AID (FX)	AID (LC)	GOUV															
I. TRAINING																		
A. In-country short-term	--	--	--	25	30	5	30	30	5	30	20	5	25	5	5	110	85	2.
B. In-country long-term	--	--	--	--	25	15	--	30	15	--	25	15	--	--	--	--	80	45
C. Out-of-country short-term	--	--	--	--	--	--	30	--	10	--	--	--	--	--	--	30	--	10
D. Out-of-country long-term	--	--	--	110	--	40	110	--	40	85	--	20	--	--	--	305	--	100
TOTAL Part I	--	--	--	135	55	60	170	60	70	115	45	40	25	5	5	445	165	175
II. TECHNICAL ASSISTANCE																		
A. T.A. Advisors	--	--	--	520	--	--	520	--	--	330	--	--	25	--	--	1,395	--	--
B. Facilities & Back-up	--	--	--	--	25	50	--	25	50	--	25	50	--	25	20	--	100	170
C. Local Salaries	--	--	--	--	45	10	--	45	10	--	45	10	--	45	5	--	180	35
D. Evaluation	--	--	--	--	--	--	--	--	--	30	--	--	--	--	--	30	--	
TOTAL Part II	--	--	--	520	70	60	520	70	60	360	70	60	25	70	25	1,425	280	205
III. SPECIAL STUDIES	25	--	10	15	85	--	30	265	--	30	165	--	10	60	--	110	575	10
GRAND TOTAL	25	--	10	670	210	120	720	395	130	505	280	100	60	135	30	1,980	1,020	390

^a Physical and price contingencies distributed by estimate.

IV. IMPLEMENTATION PLAN

It is desirable that the five-year AID project commence in CY 1981 and that initial obligation be in FY 81. There are four reasons for this. First, it was agreed with the cooperating donors that such would be the case. Second, it is necessary to reassure the GOUV of AID's continued interest in development of the Eastern Region, while accelerating the satisfactory close-out of the current project (Phase I). Third, contracting for the technical advisors to be provided by AID, UNDP and IFAD will be a lengthy process, involving mutual cooperation and conformity of plans and arrangements; the certainty of AID's intent and approach should facilitate this process. Fourth, monitoring should begin with preparation (or assimilation) of baseline data before programmed capital investments begin.

The schedule for implementation of the overall IFAD-led program is necessarily imprecise at this point. With respect to other donor agreements, clarity must await the appraisal by CCCE of its new project, and financing arrangements by UNDP for provision of technical assistance and by IFAD for that and its other components. Refinement of plans for assistance to management cannot be completed until the GOUV has published its new economic planning and development administration directives, including reorganization of ORD responsibilities and creation in the MRD of the Directorate for Planning, Human Resources and Professional Training,

Within the E.ORD itself, planning follows the GOUV's fiscal year (April 1 through March 31st), but has been incomplete due to the uncertainties of future donor support this year. A review of development progress is planned for August, 1981, with technical participation (Michigan State University) supported by AID. This will concentrate on a synthesis of all research findings supported under the initial AID contract, and result in a work plan for the coming years. In addition, PAID will provide training resources to the ORD in June, 1981 from which certain lessons will be learned. And a technical assistance team will review the training needs and plans of the E.ORD in September-October, 1981.

The desirable and likely schedule therefore is this:

- agreements with IFAD, AID, and UNDP, will be signed by mid-1981;
- the agreement with CCCE for its new project following on existing programs in Diapaga will be signed early in 1982;
- a plan for monitoring and evaluation will be proposed by the GOUV in late 1981 (as a condition of IFAD's loan effectiveness);
- contracting for technical assistance by UNDP, IFAD and AID will begin in mid-1981;

- construction of facilities for the MEU will begin in late 1981, temporary facilities will be furnished in early 1982;
- the Director of the MEU will be in place in early 1982, and work on base-line data will commence;
- following that and the completion of facilities, the AID-supported technical team will arrive.

As noted, the needs for monitoring and evaluation and the timing of delivery of capital assistance make detailed planning of the technical assistance and special studies components of the AID project unwise now. However, certain principles will apply. First, while the AID project has a five-year life, its technical assistance component should occupy only about three years. This is based on the nature of the work intended and the important feature of the MEU's work plan which calls for an evaluation after the third year of the program's effectiveness. Review by other donors of progress at that point will indicate the direction of the program for its remaining two years (now intended to expand the areas of concentration to one and one half additional areas/sectors.) That is the point at which AID should review its contribution to the program and, as necessary, plan further support in a new project (Phase III), to begin in the fourth year of the IFAD-led program. Overlap with this project (Phase II) would involve only the training and special studies components, whose time-scale and results are expected to encompass five years at any rate.

Second, the AID technical assistance team's leader, who will arrive first, will be key in determining the arrival of other long- and short-term advisors, as well as identifying and arranging for the use of certain funds from the training and special studies components. Flexibility must be retained to react to circumstances and opportunities as the overall program evolves. An indicative technical assistance delivery schedule is this:

- team leader arrives spring, 1982, for three years;
- sociologist/anthropologist and economic geographer arrive autumn, 1982, for two years each;
- training advisor spends three months in 1982 at project site;
- environmental scientist spends two months early 1983 at project site;
- time of training advisor, environmental scientist and evaluation specialists after that is determined later;
- all advisors participate in the three-year evaluation and its immediate aftermath.

Scopes of work and credentials for the AID -supported technical assistance will be worked out in consultation with the GOUV and cooperating donors following project obligation. This will be coordinated by the project officer in USAID/Ouagadougou and the results incorporated in an RFP for publication in the United States. Review of proposals and contracting will be handled by offices in AID/W with participation of USAID/Ouagadougou and/or REDSO/WA. The following outline is meant as guidance only.

- Agronomist - PhD, ten years' experience in developing countries, project management experience, fluent French, comprehension of monitoring and evaluation principles. He or she will be required to treat all elements of agronomic development and its monitoring, including training, to act as chief advisor to USAID on use of training and special studies funds, to supervise the work of the AID-provided technical assistance team, and to manage in Upper Volta all aspects of the overall contract, including training of counterparts, management of facilities, accounting and reporting to AID. This would be supported by significant backstopping and logistical support from the home office.
- Sociologist/Anthropologist - PhD, five years' experience in Africa, fluent French, experience in survey methodology and on issues of equity, village development, adoption of new technologies, non-farming employment, and monitoring and evaluation. He or she will be required to treat, inter alia, the above subjects, prepare monitoring and evaluation reports, promote the use of special studies funds in these fields, and train counterparts and survey staff, also informing the use of AID's training funds as appropriate.
- Economic Geographer - PhD, five years' experience in developing countries, fluent French, experience in regional analysis, transport analysis, land-form analysis, statistical analysis, market analysis, and environmental impact analysis. He or she will be required to treat, inter alia, the above subjects, prepare monitoring and evaluation reports, promote the use of special studies funds in these fields, and train counterparts and survey staff, also informing the use of AID's training funds as appropriate. He or she will also direct the use of short-term technical assistance in the field of environmental science. The most probably important aspects of this will be: use of pesticides, water control, land degradation, ecological impact (plants and animals), highway impact and disease control.
- Training Specialist - Advanced training, ten years of relevant experience in developing countries, passable French. He or she will be guided by the resident team members on selection of candidates, institutions and programs for training to be supported by AID, advising USAID and the GOUV. With support of the contractor's home office, he or she will identify and arrange for training in certain institutions in Upper Volta and the United States, as well as advising on the use of AID training funds not directly part of the technical assistance contract.
- Environmental Scientist - PhD, 5 years' relevant experience in developing countries. He or she will be guided by the resident team members on direction of monitoring and evaluation efforts concerning environmental protection. He or she will recommend special studies arising from such

monitoring and evaluation and advise USAID, the GOUV and the cooperating donors on environmental problems that are entailed in the overall program's investments. He or she will specifically arrange for monitoring of pesticide use and the progressive replacement of pesticides proscribed by U.S. law by equally efficacious but acceptable ones. A special report on this subject will be prepared for the three-year evaluation of the overall program and the mid-term evaluation of the AID project.

The third principle is that the funding of special studies must follow certain guidelines, mutually agreed to by AID, the GOUV and the other donors, as informed by the technical assistance provided by AID, UNDP, IFAD and CCCE. Such guidelines will be determined in consultation but should include the following desiderata: essentiality of the study to implementation of the overall program, direct relationship to structural change in the Eastern Region, practicality of obtaining useful results in a timely manner, maximal use of local research institutions, adroit application of American technology, and ease of AID contracting.

As discussed earlier, the project has been designed to minimize the implementation load of USAID/Ouagadougou -- mainly by narrow specification of the project's components and delivery of inputs through AID contracts. However, in the first year of the project's life, considerable creativity and time will be necessary to ensure technically adequate contracting that conforms to the work plans of the other donors' projects and the E.ORD and MRD. The Mission will calculate its needs for assistance on these matters at an early date so that the relevant offices in AID/W and REDSO/WA can plan their work accordingly.

V. EVALUATION PLAN

Monitoring and evaluation of the overall IFAD-led program is one of the two thrusts of the proposed AID project. Technical analysis has indicated that the general guidance of IFAD for establishment and work of the MEU is sound. In particular, the mid-term evaluation that will direct investments in the remaining two years of the program is a good idea and, under the circumstances, absolutely necessary.

It will be important to evaluate the AID project in its own terms on a schedule and with particular emphases that are in line with the evolution and management of the overall program. That is why a mid-term evaluation of the AID project is scheduled to take place immediately after the three-year evaluation of the IFAD-led program.*AID-supported technical assistance will have contributed to that evaluation. So the opportunity will present itself both to use and to judge those results. This evaluation is mid-term with respect to the use of training and special studies funds; but it will occur toward the end of the technical assistance input. Therefore it will have three purposes:

- to evaluate the results of the technical assistance component;
- to evaluate the results to date of use of training and special studies funds and recommend improvements; and
- to recommend to AID what, if any, Phase III project initiatives should be

* It is budgeted in the project at \$45,000. (See III., above, Table 2)

commenced, including possible continuance of the then terminating technical assistance.

This mid-term evaluation should be carried out by personnel with expertise in the fields covered by the technical assistance and in project management and evaluation. Issues which appear at this point to be of importance are:

- capability of the MEU to follow the IFAD guidelines;
- degree of special attention given to the most crucial problems;
- use of monitoring and evaluation results by the E.ORD, MRD and cooperating donors;
- trends in development of the Eastern Region that monitoring and evaluation have been able to delineate and which are suggestive of problems and opportunities for future assistance there and in similar settings;
- effectiveness of the technical assistance in directing timely and efficient use of the AID training and special studies funds;
- number and level of trainees, as against need and past and current jobs; and
- number and quality of studies, as against demand and end use and foreseen and unforeseen problems in project implementation and rural development (farming systems, adoption, environment, etc.).

The AID project should also have an ex-post evaluation. Its timing should remain open and depend on the planning for Phase III or, alternately the termination of AID assistance in the Eastern Region at the end of the current project. If, in the former case, continued involvement is intended, ex-post evaluation should be delayed to accommodate the initial results of the new initiatives so that there is continuity of review of AID projects in the region. Such an evaluation should concentrate on the specific inputs and results of this project and the lessons from them which justify continued and/or new types of investments by AID.

VI. CONDITIONS

The major Condition Precedent to disbursement of AID funds will be the completion of agreements between the GOUV and IFAD, the lead-donor.

It is assumed that the conditions in the IFAD-GOUV loan agreement concerning financial management, establishment of the Monitoring and Evaluation Unit under the Ministry of Rural Development and construction of facilities will be effective. These should serve the needs of the AID project as well. On review of the IFAD-GOUV loan agreement, any necessary additional or amplifying conditions will be identified by USAID and incorporated into

amendments to the AID Project Agreement as new Conditions Precedent and/or Covenants.

One necessary AID Condition Precedent is agreement by the GOUV that permits AID to retain use of the three residences constructed in Fada N'Gourma under the current project. Such use would be allowed to lapse at the end of this project unless otherwise agreed by USAID and the GOUV.

Another Condition Precedent will require that all audit recommendations associated with the first AID Eastern ORD Project (686-0201) will have been cleared.

It will be covenanted that all individuals trained with AID funds will return to project-related positions in the E.ORD or MRD unless otherwise agreed in special cases by USAID.

Disbursement of \$30,000 to support the technical assistance of MSU in August/September 1981 for a consultation, review and planning conference in the E.ORD will be excepted from these Conditions Precedent and Covenant.

No waivers will be required prior to project obligation. As necessary, waivers for non-advertisement in the Commerce Business Daily concerning minor construction of facilities (if any), and for third country procurement of training (as identified) will be requested during project implementation, following standard practice in Sahelian AID programs. The same procedure will be followed concerning AID versus host-country contracting (PD 68), as necessary.

ANNEX A

TABLES AND MAPS

TABLES

- 1-10 - Cost Estimates for Overall IFAD-Led Program, from AfBD draft Appraisal Report, (January 20, 1981), Appendix I.
- 11 - Country Data - Upper Volta
- 12 - Basic Data on the Eastern Region
- 13 - IFAD-Led Program - Total Production per Sector
- 14 - IFAD-Led Program - Incremental Production per Sector
- 15 - MSU Sample Structure
- 16 - Subjects of Inquiry in MSU/EORD Socio-Economic Study, 1978-79
- 17 - Loan Repayments to March 31, 1981
- 18 - Loan Repayment Rates 1976-77 through 1980-81

MAPS

- 1. - Location of Eastern ORD
- 2. - Project Area
- 3. - Population Density of Eastern Region (by MSU)
- 4. - Climatic Characteristics of Eastern Region (by MSU)
- 5-6. - Detail of Settlements in Eastern Region (by MSU)
- 7. - Surface Transportation in Eastern Region (by MSU)
- 8. - Graph of Existing Roads Proposed for Construction (by MSU)
- 9. - Location of Public Services. (MSU)

HAUTE VOLTA/UPPER VOLTA

PROJET DE DEVELOPPEMENT RURAL DANS L'IND (DE L'EST/EASTERN-IND) RURAL DEVELOPMENT PROJECT

Estimations des Coûts/Cost Estimates

Credit (CFA'000)

<u>Campagne/Seasonal</u>	<u>Coût Initial/Initial Cost</u> S/ha	<u>QT</u>	<u>Année du Projet/Project Year</u>					<u>Total</u>	<u>Devises</u>	<u>1</u>
			<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>			
Entrant/Hipote		40 000	160 000	5 000	5 000	25 000	5 000	200 000	180 000	
Banques Céréales/ Cereal Banks	1 500	80	80 000	-	-	-	-	80 000	-	
Coût de Base/Base Cost			250 000	5 000	5 000	25 000	5 000	280 000	180 000	
Provision pour:										
- Imprévus Physiques/ Physical Contingencies			25 000	500	500	2 500	500	28 000		
- Hausses des Prix / Price Contingencies			12 093	784	1 270	8 885	2 382	26 303		
Sous-Total / Sub-Total			287 093	8 284	8 770	38 485	7 882	345 383	180 000	55
<u>Moyen Terme/Median term</u>										
Traction Animale/ Draft Animals	200	2 400	20 000	80 000	120 000	160 000	120 000	480 000	202 000	
Coût de Base/Base Cost			20 000	80 000	120 000	160 000	120 000	480 000		
Provision pour:										
- Imprévus Physiques/ Physical Contingencies			2 000	6 000	12 000	18 000	12 000	48 000		
- Hausses des Prix/ Price Contingencies			1 045	8 240	31 020	58 000	57 420	158 805		
Sous-Total/Sub-Total			23 045	75 240	163 020	234 000	168 420	684 805	342 403	50

HAUTE VOLTA / UPPER VOLTA

PROJET DE DEVELOPPEMENT RURAL DANS L'OND DE L'EST / EASTERN-OND RURAL DEVELOPMENT PROJECT

Estimation des Coûts/Cost Estimates

Fonds de Développement Villagonia / Village Development Fund

(CFA'000)

	Prix Unitaire	QT	Année du Projet/Project Year					Total	Devisee	A
			1	2	3	4	5			
I. Biens Collectifs / Community Goods										
- Dispensaires et Equipement/ Dispensaries & Equipment	6 000	4	-	12 000	6 000	6 000	-	24 000	12 000	
- Maternité et Equipement/ Maternity Hospital & Equipment	10 000	4	-	20 000	10 000	10 000	-	40 000	20 000	
- Puits Villagonia/ Village Wells	200	100	-	10 000	5 000	5 000	-	20 000	10 000	
- Grain Warehouse	400	60		6 000	6 000	6 000	6 000	24 000	12 000	
II. Biens Individuels/ Individual Goods										
- Fonds de Roulement/ Involving Fund			-	18 000	30 000	40 000	30 000	118 000	-	
Coût de Base / Base Cost				64 000	57 000	67 000	38 000	224 000	90 000	
Provision pour:										
- Imprévus Physiques/ Physical Contingencies				6 400	5 700	6 700	3 600	22 400		
- Hausse de Prix/ Price Contingencies				10 011	15 079	24 870	17 705	67 785		
Sous-total / Sub-Total				80 411	77 779	98 870	57 305	314 165	125 888	40

HAUTE VOLTA/UPPER VOLTA

PROJET DE DEVELOPPEMENT RURAL DANS L'ORD DE L'EST/EASTERN-ORD RURAL DEVELOPMENT PROJECT

Estimations des Coûts/Cost Estimates
Action Vétérinaire/Veterinary Services
(CFA 000)

	Coût Unitaire Unit Cost	QT	Année du Projet/Project Year					Total	Devises	%
			1	2	3	4	5			
<u>Investissements/Investments</u>										
<u>1. Construction</u>										
Bureau/Office	100	40 m2	3 200	-	-	800	-	4 000		
Pharmacie et labo/Pharmacy and laboratory	100	100 m2	8 000	-	-	2 000	-	10 000		
Poste vétérinaire/Veterinary Post	40	150 m2	4 800	-	-	1 200	-	6 000		
Parcs à vacc./Vaccination Areas	-	-	28 000	-	-	7 000	-	35 000		
<u>2. Véhicules et Equipement / Vehicles & Equipment</u>										
Véhicules/Vehicles	4 000	4	6 400	8 400	-	3 200	-	18 000		
Equipement/Equipment	-	-	-	30 000	-	-	-	30 000		
Vélos/moteurs/Motorcycles	120	25	3 000	-	-	-	-	3 000		
<u>3. Alimentation/Fodder</u>										
Stylos/tales	3	2000	4 800	-	-	1 200	-	6 000		
<u>Fonctionnement/Operations</u>										
Graines de coton/cotton seed	1	2000 kg	100	300	800	500	300	2 000		
Personnel/Personnel	1 000	25	8 000	8 000	8 000	8 000	8 000	45 000		
Vaccins/Vaccines	0,020	1200000	1 500	4 500	8 000	8 000	4 000	24 000		
Véhicules/Vehicles	-	-	320	320	320	320	320	1 600		
Coût de Base/Base Cost			89 120	50 520	18 120	31 220	13 820	182 600	77 300	
Provision pour										
Incidents Physiques/Physical Contingences			8 012	4 152	812	2 222	462	13 780		
Hausse de Prix/Price Contingences			3 770	7 651	4 189	10 709	5 531	31 859		
Sous-total/Sub-total			78 911	82 323	23 221	44 151	18 813	228 218	85 850	42

HAUTE VOLTA/IMPÉR VOLTA

PROJET DE DEVELOPPEMENT RURAL DANS L'IND DE L'EST/EASTERN-IND RURAL DEVELOPMENT PROJECT

Amélioration des Bas Fonds/Lowland Development

(CFA'000)

	Coût Unitaire Unit Cost	Qt	Année du Projet/Project Year					Total	Devises	%
			1	2	3	4	5			
I. Investissements/Investments										
Véhicules et équipement/ Vehicles and equipment			44 200	-	8 575	-	-	53 875		
II. Construction										
Anti-Erosif / Erosion Control	12 300/ha	5 000	2 478	8 185	12 300	18 585	22 302	81 950		
Bas Fonds/Low Lands	118,4/ha	1 000	-	11 840	23 080	35 520	47 380	118 400		
Bas Fonds Améliorés/ Improved Low Lands	124/ha	300	-	-	8 200	12 400	18 800	37 200		
III. Fonctionnement/Operation										
			4 275	8 550	8 550	8 550	8 550	38 475		
IV. Personnel										
Coût de Base/Base Cost			55 008	38 535	73 053	80 402	112 248	387 417	208 500	
Provision pour:										
- Imprévus Physiques/ Physical Contingencies			5 101	2 858	8 070	7 783	8 881	31 283		
- Niveau des Prix/ Price Contingencies			2 010	5 332	17 823	31 121	50 712	107 807		
Sous Total/Sub-total			83 108	44 525	88 848	128 398	172 842	518 617	288 770	57

TABLE VI.1A/ANNEX VI.1A
PROJET DE DEVELOPPEMENT RURAL DANS L'ORD DE L'EST/EASTERN-IND RURAL DEVELOPMENT PROJECT

Centre d'Appui/Support Centre
(CFA'000)

A. <u>Ferme Semencière/Seed Farm</u>	<u>Coût Unitaire</u> Unit Cost	<u>Qté</u>	<u>Année du Projet/Project Year</u>					<u>Total</u>	<u>Devise</u>	<u>1</u>
			<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>			
<u>Investissement/Investments</u>										
- Bureaux et Labo/Offices & Labo	40	400 m ²	10 000					10 000	5 000	
- Logement Cadre/Staff Houses	13 750	2	27 500					27 500	13 750	
- Bureau et Magasins/Offices & Warehouses	40	200 m ²	8 000					8 000	4 000	
- Magasins Semences/Seed Warehouses	30	100 m ²	3 000					3 000	1 500	
- Garages et Ateliers/Workshops	30	200 m ²	6 000					6 000	3 000	
- Véhicules/Vehicles	4 000	2	8 000					8 000	4 000	
- Equipement/Equipment	10 000	1	10 000					10 000	5 000	
- Motos/Motorcycles	150	6	900					900	450	
- Camionnettes/Small Trucks	3 000	1	3 000					3 000	1 500	
- Mobilier/Furniture			3 500					3 500	1 750	
- Tracteur à Roue/Miscel Tractor	2 800	1	28 000					28 000	14 000	
<u>Fonctionnement/Operation</u>										
<u>1. Personnel</u>										
- Y' Directeur/Adjoint/Deputy Director	30.000	1	6 000	6 000	6 000	6 000	6 000	30 000	-	
Agronome Ferme Semencière / Agriculturalist Seed Farm	6 000	1	1 800	1 800	1 800	1 800	1 800	6 000	-	
Assistants	4 000	6	5 760	5 760	5 760	5 760	5 760	28 800	-	
Cadre Administrative/ Clerical Staff			2 460	2 460	2 460	2 460	2 460	12 300	-	
- 2. Véhicules et Equipement/ Vehicles & Equipment			1 028	1 028	1 028	1 028	1 028	5 140	2 570	
<u>Coût de Base/Base Cost</u>			<u>128 048</u>	<u>17 048</u>	<u>17 048</u>	<u>17 048</u>	<u>17 048</u>	<u>187 140</u>	<u>77 470</u>	
<u>Provision pour</u>										
- Imprévus Physiques /Physical Contingencies			11 203	103	103	103	103	11 705		
- Hausse de Prix /Price Contingencies			7 850	2 300	3 761	5 294	6 838	28 142		
<u>Sous-Total/Sub-total</u>			<u>148 100</u>	<u>19 541</u>	<u>20 912</u>	<u>22 445</u>	<u>23 880</u>	<u>234 887</u>	<u>82 350</u>	<u>70</u>

PROJET DE DEVELOPPEMENT RURAL DANS L'IND DE L'EST/EASTERN-IND RURAL DEVELOPMENT PROJECT

Centre d'Appui/Support Centre
(FA'000)

D. <u>Formation/Training</u>	<u>Coût Unitaire</u> Unit Cost	<u>QT</u>	<u>Année du Projet/Project Year</u>					<u>Total</u>	<u>Devise</u>	<u>1</u>
			<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>			
<u>Investissement/Investments</u>										
- Salle de Conférence et logements / Conference Room & Sleeping Quarters			20 000					20 000	8 000	
- Véhicules Tous-Terrains / 4 Wheel Drive Vehicles	4 400	1	4 400					4 400	4 400	
- Camionnette / Light Truck	2 000	1	2 000					2 000	2 000	
- Bœufs / Draft Animals	85	4	340					340	-	
- BV20	10,25	4	73					73	55	
- Outoures/Bigues	0,45	8	36					36	28	
- Charrette/Cart	50	4	200					200	150	
- Mobilier/Furniture	5 000	3		15 000				15 000	7 500	
- Triangle/Arrow			10					10	5	
<u>Fonctionnement/Operation</u>										
1. <u>Formation/Training</u>										
- Bouvier/Animal Trainers	800	20	3 120	3 120	3 120	3 120	3 120	15 600	-	
- Encadreurs/Extension Agents	600	143	17 160	17 160	17 160	17 160	17 160	85 800	-	
- Paysans/Farmers	50	400	4 000	4 000	4 000	4 000	4 000	20 000	-	
- Cadre/Staff	1 000	25	5 000	5 000	5 000	5 000	5 000	25 000	-	
2. Bourses/Scholarships	18 000	8	36 000	36 000	36 000	36 000	-	144 000	72 000	
3. Véhicules et Equipement/ Vehicles & Equipment			1 200	1 740	1 740	2 040	2 480	9 200	4 800	
Coût de Base/Base Cost			101 550	82 020	87 020	87 320	31 780	349 670	88 808	
Provision pour:										
- Imprévus Physiques / Physical Contingencies			3 020	1 670	170	200	248	5 808		
- Hausses de Prix / Price Contingencies			6 057	11 811	14 838	20 833	17 281	70 230		
Sous total/Sub-total			111 227	85 311	81 828	88 153	49 289	425 808	121 408	28

HAUTE VOLTA/UPPER VOLTA

PROJET DE DEVELOPPEMENT RURAL DANS L'ORD DE L'EST/EASTERN-ORD RURAL DEVELOPMENT PROJECT

Centre d'Appui/Support Centre
(CFA'000)

G. Mission d'Appui et Recherche Appliquée / Consultant Services & Applied Research	Coût Unitaire Unit Cost	QT	Année du Projet/Project Year					Total	Devises	!
			1	2	3	4	5			
- Consultants			8 150	4 100	2 050	-	-	12 300	12 300	
- Recherche Appliquée/ Applied Research			20 500	20 500	20 500	20 500	20 500	102 500	48 125	
Coût de Base/Base Cost			28 650	24 600	22 550	20 500	20 500	114 800	58 425	
Provision pour										
- Imprévus Physiques/ Physical Contingencies			1 025	1 025	1 025	1 025	1 025	5 125		
- Hausse des Prix/Price Contingencies			1 315	3 578	5 552	7 080	8 358	28 885		
Sous Total/Sub-Total			28 990	28 204	29 127	28 605	30 884	148 810	73 405	50

HAUTE VOLTA/UPPER VOLTA

PROJET DE DEVELOPPEMENT RURAL DANS L'ORD DE L'EST/EASTERN-ORD RURAL DEVELOPMENT PROJECT

Assistance technique/Technical Assistance

(CFA'000)

I. Investissement/Investments	Coût Initial Unit Cost	Qr	Année du Projet/Project Year					Total	Devise	1
			1	2	3	4	5			
- Maisons/Mhouses	25 000	8	150 000					150 000		
- Vehicules/Vehicles	4 400	8	-	28 400	-	-	-	28 400		
- Equipement et Mobilier/ Furniture & Equipment	5 000	8	-	30 000	-	-	-	30 000		
II. Fonctionnement/Operation										
- Directeurs/Directors	40 000	2	8 000	16 000	16 000	16 000	16 000	80 000		
- Directeur Centre d'Appui/ Director Support Centre	18 750	1	3 750	8 438	8 437	8 438	8 437	37 500		
- Formateur/Trainer	18 750	1	3 750	8 437	8 438	8 437	8 438	37 500		
- Ingen. IR et Agronomes/ Rural Engin & Agronomist	37 500	2	7 500	16 875	16 875	16 875	16 875	75 000		
- Vehicules et Equipements/ Vehicles & Equipment			-	1 410	1 410	1 410	1 410	5 040		
- Coût de Base/Base Cost			173 000	109 500	53 160	53 160	53 160	442 040	234 281	
Provision pour:										
- Imprévus Physiques/ Physical Contingencies			15 000	5 781	141	141	141	21 204		
- Haussa des Prix/ Price Contingencies			0 414	12 186	11 825	16 500	21 485	71 390		
Sous total/Sub total			107 414	127 527	85 126	88 801	74 766	534 834	283 358	51

HAUTE VOLTA/IMPÉR VOLTA

PROJET DE DEVELOPPEMENT RURAL DANS L'ORD DE L'EST/EASTERN-ORD RURAL DEVELOPMENT PROJECT

Soutien à L'OM/Project Management
(CFA' 000)

1. Investissement/Investments	Coût Initial Unit Cost	Qté	Année du Projet/Project Year					Total	Devises	N
			1	2	3	4	5			
- Bureau/Office	40/m ²	400 m ²	18 000					18 000	8 000	
- Magasin Secteur/ Sector Warehouse	40/m ²	1 200 m ²	38 400			0 600		48 000	15 380	
- Magasin Sous-secteur/ Sub sector Warehouse	40/m ²	1 800 m ²	57 600			14 400		72 000	23 040	
- Mobilier/Furniture	1 000	18	12 800			3 200		16 000	8 000	
- Camions/Vehicles	4 000	3	0 600			2 400		12 000	12 000	
II. Fonctionnement/Operations										
- Encadrement/ Extension Agents	2 400	85	31 200	31 300	31 200	31 200	31 200	156 000	-	
- Agents Côte Rural/ Rural Engineering Agents	3 000	8	3 800	3 600	3 800	3 800	3 800	18 000	-	
- Formateurs/Trainers	2 400	8	2 880	2 880	2 880	2 880	2 880	14 400	-	
- Chauffeurs/Drivers	1 800	3	1 080	1 080	1 080	1 080	1 080	5 400	-	
- Gardiens/Watchmen	2 400	18	7 680	7 680	7 680	7 680	7 680	38 400	-	
- Manœuvres/Labor	1 500	11	3 300	3 300	3 300	3 300	3 300	18 500	-	
- Mobilier/Furniture	200	18	-	640	640	640	1 280	3 200	1 800	
- Camions/Vehicles	2 000	3	500	1 000	1 500	1 500	1 500	8 000	3 000	
- Coût de Base/Base Cost			104 840	51 380	51 880	81 480	52 520	421 800	71 000	
Provision pour										
- Imprévus Physiques/ Physical Contingencies			13 490	104	214	3 174	278	17 320		
- Hausse des Prix/ Price Contingencies			10 742	7 108	11 437	25 544	21 058	75 878		
Sous Total/Sub-total			208 872	58 742	83 531	110 188	73 858	515 188	88 553	17

TABLE VI A/ANNEX VIIA

PROJET DE DEVELOPPEMENT RURAL DANS L'IND DE L'EST/LASTERN-IND RURAL DEVELOPMENT PROJECT

Encadrement/Extension Services
(CFA'000)

<u>I. Investissements/Investments</u>	<u>Coût</u> <u>Unitaire</u> Unit Cost	<u>01</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>Total</u>	<u>Devise</u>	<u>1</u>
- Maisons Chef de Secteurs/ Sector Chief houses	5 000	4	14 000			8 000		20 000	8 000	
- Maisons Chefs Sous-secteur/ Sub-sector Chief houses	4 000	12	33 000			14 400		48 000	14 400	
- Vehicules/Vehicles	4 400	4	14 000			3 520		17 800	17 800	
- Motoyettes/Motorcycles	150	80	13 500					13 500	13 500	
<u>Fonctionnement/Operation</u>										
- Statisticien/Statisticians	4 800	4	3 840	3 840	3 840	3 840	3 840	19 200	-	
- Enqueteurs/Surveyors	4 000	8	7 200	7 200	7 200	7 200	7 200	38 000	-	
- Infirmeries Veterinaires/ Veterinarians	4 000	10	8 000	8 000	8 000	8 000	8 000	40 000	-	
- Animaux(trices)/ Assistant Ext. Agents	1 800	8	2 880	2 880	2 880	2 880	2 880	14 400	-	
- Chef de Sous-secteur/ Sub-sector Chiefs	4 000	12	8 600	8 600	8 600	8 600	8 600	48 000	-	
- Agent Credit/Credit Agent	3 000	12	7 200	7 200	7 200	7 200	7 200	38 000	-	
- Encadreur de Base/ Extension Agents	2 400	80	33 120	33 120	33 120	33 120	33 120	185 600	-	
- Encadreur C. Attelage/ Extension Agents Animal traction	2 400	12	5 360	5 360	5 360	5 360	5 360	26 800	-	
- Infantants/Assistants	2 400	12	5 360	5 360	5 360	5 360	5 360	28 800	-	
- Vehicules/Vehicles			1 712	1 712	1 712	1 712	1 712	8 560	4 280	
- Motoyettes/Motorcycles			270	270	270	270	270	1 350	875	
Coût de Base/Base Cost			150 722	84 542	84 542	108 482	84 542	521 810	58 455	
<u>Provision pour:</u>										
- Amélioration Physique/Physical C.			7 710	108	198	2 580	108	10 000		
- Hausse des Prix/Price Contingencies			9 930	20 328	18 821	33 857	33 852	118 587		
Sous total/Sub total			177 377	105 008	103 361	144 009	118 502	640 317	70 125	10

Haute Volta/Upper Volta

PROJET DE DEVELOPPEMENT RURAL DANS L'INDUSTRIE L'ESTABLISSEMENT RURAL DEVELOPMENT PROJECT

Suivi et Evaluation/Monitoring & Evaluation

(CFA'000)

I. Investissement/Investments	Coût Unitaire Unit Cost	Qt	Année du Projet/Project Year					Total	Provision	%
			1	2	3	4	5			
- Bureau/Office	40/m ²	400 m ²	8 000	8 000				16 000	8 000	
- Logement Cadres/ Staff Houses	13 750	3	20 825	20 825				41 250	20 825	
- Logement Enquêteurs/ Surveyor Houses	800	12	4 800	4 800				9 600	4 800	
- Vehicule tout terrain/ 4 Wheel Drive Vehicles	4 400	7	8 800	8 000	13 200	8 800	8 800	48 400	48 400	
- Machine à Calculer/ Calculators	8 700		2 000	2 000	1 000	1 700		8 700	8 700	
- Motoylettes/Motorcycles	150	12	1 200		800			1 800	1 800	
- Mobilier/Furniture	1 000	1	1 000					1 000	500	
I. Fonctionnement/Operation										
- Adjoint/Dputy	8 000	1	1 800	1 800	1 800	1 800	1 800	9 000	-	
- Statisticien/Statistician	7 200	1	1 440	1 440	1 440	1 440	1 440	7 200	-	
- Agro-économiste	7 200	1	1 440	1 440	1 440	1 440	1 440	7 200	-	
- Enquêteurs/Surveyors	4 800	12	11 520	11 520	11 520	11 520	11 520	57 600	-	
- Secrétaire/Secretaries	2 700	1	540	540	540	540	540	2 700	-	
- Dactylos/Typists	1 800	2	720	720	720	720	720	3 600	-	
- Chauffeurs/Drivers	240	7	400	860	1 600	1 600	1 600	8 480	-	
- Vehicules et Equipement/ Vehicles & Equipment			1 200	2 200	3 700	3 700	3 700	14 500	7 250	
- Coût de Base/Base Cost			85 505	84 845	37 640	33 340	31 640	233 030	170 578	
Provision pour:										
- Imprévu Physique/ Physical Contingencies			4 783	4 843	1 850	1 420	1 250	13 928		
- Hausse des Prix/ Price Contingencies			3 259	8 400	8 025	10 831	13 475	45 790		
Sous total/Sub total			<u>73 587</u>	<u>78 088</u>	<u>48 315</u>	<u>45 591</u>	<u>48 365</u>	<u>282 754</u>	<u>214 288</u>	<u>73</u>

HAUTE VOLTA/UPPER VOLTA

UNITES DE DEVELOPPEMENT RURAL DANS L'ORD DE L'EST/EASTERN-ORD RURAL DEVELOPMENT PROJECT

Estimation des Coûts/Cost Estimates

Recapitulation des Coûts/Summary Cost Table

	<u>Devise</u>	<u>Local</u>	<u>Total</u>	<u>Devise</u>	<u>Local</u>	<u>Total</u>
	----- FCFA' 000 -----			----- US\$' 000 -----		
1. <u>Credit</u>						
A. <u>In Compagne/Seasonal</u>	100 000	155 383	345 383	827	750	1 085
B. <u>Moyens Terme/Medium Term</u>	342 403	342 402	684 805	1 070	1 070	3 340
2. <u>Fonds de Developpement Villageois/ Village Development Fund</u>	125 800	100 000	314 185	813	820	1 533
3. <u>Action Vétérinaire/Veterinary Services</u>	95 850	132 369	228 219	488	845	1 113
4. <u>Amélioration des Bas Fonds/Low Land Development</u>	288 770	217 847	506 617	1 408	1 083	2 472
5. <u>Routes/Rural Tracks</u>	504 075	322 873	800 948	2 848	1 575	4 424
6. <u>Centre d'Appui/Support Centre</u>						
a. <u>Centre semencière/Seed Farm</u>	82 350	142 837	234 807	450	608	1 148
b. <u>Formation/Training</u>	121 460	304 402	425 808	582	1 485	2 077
c. <u>Mission d'Appui et Recherche Appliquée/ Consultant Services and Applied Research</u>	73 405	73 405	146 810	358	358	718
7. <u>Assistance Technique/Technical Assistance</u>	283 358	251 278	534 634	1 382	1 228	2 608
8. <u>Soutien à l'ORD/Project Management</u>	88 553	420 848	515 180	422	2 001	2 511
9. <u>Encadrement/Extension Services</u>	70 125	578 182	648 307	342	2 825	3 187
10. <u>Suivi et Evaluation/Monitoring & Evaluation</u>	214 208	78 458	282 754	1 045	383	1 428
TOTAL	2 568 255	3 217 361	5 785 616	12 475	15 832	28 107 *

* USAID estimates of May, 1981 raise this projection to \$29.1 million, including funding attributable to AID of \$800,000, but not the remaining \$2.2 million of the AID project the addition of which raises the total programs cost estimate to \$31.3 million.

COUNTRY DATA - UPPER VOLTA

GNP PER CAPITA IN 1978 = US\$ 1601. GROSS NATIONAL PRODUCT IN 1975 1/

	<u>US\$ million</u>	<u>%</u>
GNP at Market Prices	629.9	100.0
Gross Domestic Investment	117.0	18.6
Gross National Savings	33.7	5.4
Current Account Balance	105.6	-16.8
Exports of Goods, NFS	81.7	13.0
Imports of Goods, NFS	240.3	38.2

2. ANNUAL RATE OF GROWTH (% , constant 1968 prices)

<u>1960-1973</u>	<u>1973-1975</u>
2.2	8.2
2.6	-2.0
n.a. 2/	n.a. 2/
n.a. 3/	n.a. 3/
2.6	7.6
3.5	-6.0

3. OUTPUT, LABOUR FORCE AND PRODUCTIVITY IN 1976

	<u>Value Added</u>		<u>Labour Force</u> 1/	
	<u>US\$ million</u>	<u>%</u>	<u>('000)</u>	<u>%</u>
Agriculture	197.1	34.6	2 796	93.4
Industry	104.1	18.3	72	2.4
Services	<u>268.6</u>	<u>42.9</u>	<u>126</u>	<u>4.2</u>
Total	569.8	100.0	2 994	100.0

1/ World Bank staff estimate.

2/ Not available.

3/ Not applicable.

4. RATE OF EXCHANGE

1975 US\$ 1.00	=	CFAF 214.32
1977 "	=	CFAF 245.00
1978 "	=	CFAF 225.64
1979 "	=	CFAF 212.74

5. MONEY, CREDIT AND PRICES

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
	<u>(CFAF billion at end of year)</u>					
Money and Quasi Money	14.62	17.53	24.32	31.56	34.84	42.52
Bank Credit to Public Sector	-6.13	-9.27	-4.90	-6.95	-7.74	-3.29
Bank Credit to Private Sector	9.16	15.38	17.43	27.94	40.03	54.41
	<u>Percentages of Index Numbers</u>					
Money and Quasi Money as % of GDP	14.6	15.7	15.6	22.6	20.73	n.a. 2/
General Price Index (1975=100)	77.4	84.2	100.0	91.6	121.7	158.2
Annual percentage changes in:						
General Price Index	-	8.8	18.8	-3.4	33.0	30.0
Bank Credit to Public Sector	-	51.2	-47.2	-41.8	-11.3	+57.7
Bank Credit to Private Sector	-	67.9	33.2	60.0	43.3	35.9

6. TRADE PAYMENTS AND CAPITAL FLOWS (in millions of current US\$)

BALANCE OF PAYMENTS	<u>1974</u>	<u>1975</u>	<u>1976</u> ^{4/}
Exports of Goods, NFS	67.7	81.7	100.4
Imports of Goods, NFS	<u>166.2</u>	<u>240.3</u>	<u>251.8</u>
Resource Gap (deficit = -)	-98.5	-158.6	-151.4
Interest Payments (net)	1.8	2.0	2.6
Workers' Remittances (net)	33.6	39.7	40.8
Other Factor Payments (net)	-4.7	-6.0	-8.3
Net Transfers	<u>10.4</u>	<u>17.3</u>	<u>21.2</u>
Balance of Current Accounts	-57.4	-105.6	-95.1
Direct Foreign Investment (net)	5.0	5.0	4.5
Official Capital Grants	53.2	84.2	60.9
Net MLT Borrowings	14.1	18.9	23.4
Disbursements	(16.7)	(22.5)	(n.a. ^{2/})
Repayment	(-2.6)	(-3.6)	(n.a. ^{2/})
Other Items ^{5/}	<u>-6.7</u>	<u>-10.5</u>	<u>2.0</u>
Change in Reserves (end year)	-8.7	+7.0	-4.3
Foreign Reserves (end year)	74.2	67.5	
Fuel and Related Materials			
Imports:			
of which: Petroleum	9.1	12.6	11.0
Exports:			
of which: Cotton	6.4	7.1	24.2

7. MERCHANDISE EXPORTS

(Average of 1973-77)

		<u>%</u>
Livestock	19.3	28.9
Cotton	<u>14.4</u>	<u>21.6</u>
Groundnuts	3.6	5.4
All Other	<u>29.5</u>	<u>46.1</u>
Total	66.8	100.0

^{4/} Preliminary.^{5/} Including errors and omissions.

8.	<u>EXTERNAL DEBT. DECEMBER 31. 197</u>	
	Public Debt, incl. guaranteed	261.2
	Non-guaranteed Private Debt	
	Total outstanding and disbursed	108.0
9.	<u>DEBT SERVICE RATIO FOR 1975</u>	
	Public Debt, incl. guaranteed	3/
	Non-guaranteed Private debt	3/
	Total outstanding and disbursed	5.8%

Area:	49,992 sq. km.
Population:	410,526
Population density:	8 per sq. km.
No. of Villages:	650
Cultivated Area:	204,121 ha.
Rainfall:	700 mm-1000 mm per annum
<u>Bas-fonds</u> suitable for intensive agriculture:	830 ha.
<u>Bas-fonds</u> already developed:	85 ha.
As of 3/31/77:	
No. of plows in ORD:	930
Area fertilized	438 ha.
Area receiving extension services:	16,435 ha.

TABLE 13

A - 19

HAUTE VOLTA/UPPER VOLTA

PROJET DE DEVELOPPEMENT RURAL DANS L'ORD DE L'EST/EASTERN-ORD RURAL DEVELOPMENT PROJECT

Productions totales/Total Production per Sector
(tonnes/tons)

	Année du Projet/Project Year							
	0	1	2	3	4	5	6	7
<u>SORGHO/SORGHUM</u>								
Bogandé	8 915	9 871	10 540	12 112	12 524	12 940	13 597	13 254
Diapaga	4 530	5 077	5 519	6 247	6 500	6 667	6 660	6 652
Kantchari (Nord)	-	-	-	1 554	1 825	1 952	2 056	2 071
Kantchari (Sud)	-	-	-	1 402	1 884	1 794	1 798	1 796
Total	13 445	14 748	16 059	16 359	22 534	23 353	23 811	23 773
<u>MIL/MILLET</u>								
Bogandé	2 562	2 824	3 122	3 844	3 782	3 929	3 961	3 993
Diapaga	2 495	2 808	3 043	3 389	3 368	3 405	3 375	3 345
Kantchari (Nord)	-	-	-	427	555	599	619	622
Kantchari (Sud)	-	-	-	751	808	464	696	680
Total	5 057	5 632	6 165	7 013	8 613	8 897	8 651	8 650
<u>ARACHIDE/GROUNDNUTS</u>								
Bogandé	867	790	1 252	2 179	3 171	3 891	4 181	4 527
Diapaga	61	72	123	348	484	556	643	720
Kantchari (Nord)	-	-	-	138	187	310	597	629
Kantchari (Sud)	-	-	-	16	23	37	147	162
Total	728	862	1 375	2 577	3 665	4 594	5 557	6 038
<u>PAIS/PEASE</u>								
Bogandé	1 092	1 178	1 348	1 680	1 859	1 936	1 993	2 051
Diapaga	491	557	701	1 077	1 282	1 392	1 531	1 639
Kantchari (Nord)	-	-	-	212	224	243	291	298
Kantchari (Sud)	-	-	-	149	180	237	290	411
Total	1 583	1 733	2 049	2 757	3 525	3 508	4 205	4 397
<u>COTON/COTTON</u>								
Bogandé	-	-	-	-	-	-	-	-
Diapaga	-	-	135	508	798	939	1 102	1 225
Kantchari (Nord)	-	-	-	-	-	-	-	-
Kantchari (Sud)	-	-	-	-	-	71	314	338
Total	-	-	135	508	798	1 010	1 416	1 563
<u>NIÈRE/OLIVEAS</u>								
Bogandé	420	524	682	952	1 128	1 198	1 216	1 284
Diapaga	240	310	392	575	655	673	666	718
Kantchari (Nord)	-	-	-	70	101	118	159	164
Kantchari (Sud)	-	-	-	70	101	118	180	164
Total	660	834	1 074	1 561	1 965	2 077	2 231	2 310
<u>SOJA/SOYAS</u>								
Bogandé	-	-	150	450	600	1 500	1 500	1 500

TABLE 11

HAUTE VOLTA/UPPER VOLTA

PROJET DE DEVELOPPEMENT RURAL DANS L'ORD DE L'EST/EASTERN-ORD RURAL DEVELOPMENT PROJECT

Productions Additionnelles/Incremental Production Per Sector
(Tonnes/tons)

	Année du Projet/Project Year							
	0	1	2	3	4	5	6	7
<u>SORGHO/SORGHUM</u>								
Bozance	-	756	1 525	3 197	3 809	4 025	4 182	4 339
Diapaga	-	547	986	1 717	1 570	2 137	2 130	2 122
Kantchari (Nord)	-	-	-	-	272	388	502	517
Kantchari (Sud)	-	-	-	-	292	392	386	394
Total	-	1 303	2 514	4 914	6 133	6 932	7 210	7 372
<u>MILLET</u>								
Bozance	-	282	560	1 052	1 220	1 367	1 399	1 421
Diapaga	-	313	548	874	873	910	880	850
Kantchari (Nord)	-	-	-	-	123	172	162	185
Kantchari (Sud)	-	-	-	-	157	213	145	136
Total	-	595	1 108	1 926	2 373	2 662	2 618	2 615
<u>ARACHIDES/GROUNDNUTS</u>								
Bozance	-	123	585	1 512	2 504	3 224	3 514	3 880
Diapaga	-	11	62	257	423	495	521	553
Kantchari (Nord)	-	-	-	-	48	172	459	491
Kantchari (Sud)	-	-	-	-	4	16	126	143
Total	-	134	647	1 769	2 980	3 709	4 622	5 133
<u>PAIS/MAIZE</u>								
Bozance	-	84	256	588	767	844	901	959
Diapaga	-	86	210	585	771	901	1 040	1 146
Kantchari (Nord)	-	-	-	-	12	31	79	84
Kantchari (Sud)	-	-	-	-	31	88	241	262
Total	-	150	466	1 174	1 581	1 864	2 261	2 453
<u>COTON/COTTON</u>								
Bozance	-	-	125	508	788	939	1 102	1 225
Diapaga	-	-	-	-	-	-	-	-
Kantchari (Nord)	-	-	-	-	-	71	314	338
Kantchari (Sud)	-	-	-	-	-	-	-	-
Total	-	-	125	508	788	1 010	1 416	1 563
<u>NISS/CO-PEAS</u>								
Bozance	-	104	252	552	708	748	795	844
Diapaga	-	70	152	329	415	423	455	479
Kantchari (Nord)	-	-	-	-	31	48	85	94
Kantchari (Sud)	-	-	-	-	31	48	89	94
Total	-	174	414	881	1 155	1 277	1 420	1 510
<u>SOJA/PEAS</u>								
Bozance	-	-	150	450	900	1 500	1 500	1 500

Table 15 : MSU Sample Structure		<u>Number of Households</u>	
	Agroclimatic Zone	Traditional	Animal Traction
Target Zone I	Bogendé	36	
	Mani	36	
	Piélà	18	18
	Logobou	36	18
Target Zone II	Kantchari	35	
	Ougarou	18	18
Control Zone	Diabo	18	53
	Partiaga	36	
	Yondé	35	
	Diapangou	18	18
	Boutou	37	
	Pama	32	
		<hr/>	<hr/>
		355	125

TABLE 16

SUBJECTS OF INQUIRY IN MSU/EORD
SOCIO-ECONOMIC STUDY, 1978-79.

<u>NUMBER</u>	<u>TITLE</u>
1	Semences, fumures, et produits phytosanitaires utilisés
2	Récoltes des champs
3	Récoltes des carrés de rendement
4	Temps de travail perdu dû à des indispositions des membres du ménage
5	Achats et réparations de facteurs de production
6	Ventes de produits cueillis par le ménage
7	Achats de semences et produits agricoles
8	Ventes de produits agricoles produits par le ménage
9	Commerce de produits agricoles
10	Achats d'animaux
11	Ventes d'animaux et produits animaux
12	Dépenses pour l'élevage
13	Alimentation des animaux
14	Gardienage et maladies des animaux de trait
15	Coûts et revenus provenant d'occupations non-agricoles
16	Prêts en espèces
17	Prêts en nature
18	Remboursements reçus
19	Emprunts en espèces
20	Emprunts en nature
21	Remboursements effectués
22	Cadeaux donnés
23	Cadeaux reçus
24	Paiements reçus pour les ventes à crédit

LISTE DE QUESTIONNAIRES (Suite) P. 2

<u>NUMBER</u>	<u>TITLE</u>
25	Paiements effectués pour les achats à crédit
26	Transformation des produits agricoles : achats et ventes
27	Précisions sur les dépenses pour les animaux de trait
40	Temps de travail de chaque membre du ménage sur le champ : _____
41	Temps de travail au champ par des personnes extérieures aux ménages
42	Traction animale : utilisation des attelages dans les champs
43	Traction animale : Transport par charrette
44	Temps de Travail des membres du ménage dans les champs d'autrui
45	Temps de travail des membres du ménage dans toutes les activités d'hier
46	Temps du travail en élevage de chaque membre du ménage
50	Recensement initial des membres du ménage
51	Recensement initial des champs du ménage
52	Historique des champs
53	Inventaire du cheptel mort et matériel agricole
54	Valeur de cheptel mort et le matériel agricole
55	Inventaire du cheptel vif
56	Changement démographique dans les ménages
57	Stockage des récoltes
58	Mesurage des superficies des champs , cultures présentes, et carrés de densité
59	Recensement de vendeurs et services aux marchés locaux
60	Recensement des occupation non agricoles
61	Recapitulatif des champs
62	Changement dans la taille des troupeaux

LISTE DE QUESTIONNAIRES (Suite) P.3

<u>NUMBER</u>	<u>TITLE</u>
	(achats et ventes exclus) et les impacts des maladies
63A	Situation des prêts en fin d'année
63B	Situation des emprunts en fin d'année
64	Historique des animaux de trait
65	Récapitulatif des infirmités
66	Précisions sur la productivité des différentes catégories de travailleurs
67	Prix aux marchés locaux
68	Revenus reçus au cours de l'année écoulée
69	Problèmes spécifiques des cultures
70	Stock de matériel et équipement utilisés dans les activités non-agricoles
71	Ration Alimentaire du ménage
72	Historique de l'utilisation de la traction animale
73	Achats de biens de consommation
74	Coûts des invitations de culture
75	Institutions traditionnelles d'épargne et le crédit
76	Système formel de crédit et coûts implicites .
77	Contact avec l'O.R.D.
78	Historique des ikuani
79	Régime foncière
80	Liste des ménages
81	Superficies des champs
82	Kilométrage effectué pendant les heures de mission
83	Valeur de cheptel vif
84	Répartition de la journée
85	Codes des secteurs et villages
86	Liste des questionnaires
87	Prix trimestriels des produits agricoles
88	Prix de vente de sorgho/mil

LISTE DES QUESTIONNAIRES (Suite) P. 4

<u>NUMBER</u>	<u>TITLE</u>
89	Evaluation de la qualité des données par les enquêteurs
100	Tirage de l'échantillon
101	Ordre des questionnaires dans les classeurs
102	Renseignements sur les animaux de trait
103	Programme des tournés
104	Poids des unités de mesure utilisés sur fiches 02 et 13
105	Inventaire de l'équipement traction animale
106	Mesurage des animaux de trait
107	Poids des louches et calebasses
108	Comparaison de la campagne 1978 aux campagnes précédentes
109	Renseignements supplémentaire sur les champs
110	Parcage aux champs
111	Degats aux champs
112	Rapport mensuel
113	Questionnaire supplémentaire sur la traction animale
114	Vérification des données des récoltes, des ventes, et des stocks
115	Système formel de crédit et coût implicites
158	Coordonnées rectilignes
161	Récapitulatif des champs pour utilisation avec fiche 58
200	Dépouillement de fiche 50 (page 1)
201	Dépouillement de fiche 50 (page 2)
202	Dépouillement de fiche 50 (page 3)
203	Liste des cultures présentes aux champs en 1978 (De fiche 1 et fiche 2)
204	Fiche de calcul - heures du travail
205	Dépouillement -traction animaux

TABLE 17

Loan Repayments to March 31, 1981/(FCFA)

<u>Sector</u>	<u>Amount Owed</u>	<u>Amount Received</u>	<u>% Received</u>
Bogande	7,058,928	2,697,681	38.2
Comin-Yanga	1,843,065	1,353,653	73.4
Diabo	11,188,401	4,257,569	38.1
Diapaga	10,391,968	2,097,979	20.2
Fada	6,873,176	2,794,275	40.7
Kantchari	6,339,498	2,028,060	32.0
Mattakoali	3,908,567	1,096,418	28.0
Pama	3,904,684	2,843,690	72.8
FORD Management	341,485	124,765	36.5
TOTAL EORD	51,849,772	19,294,090	37.2

Source: EORD

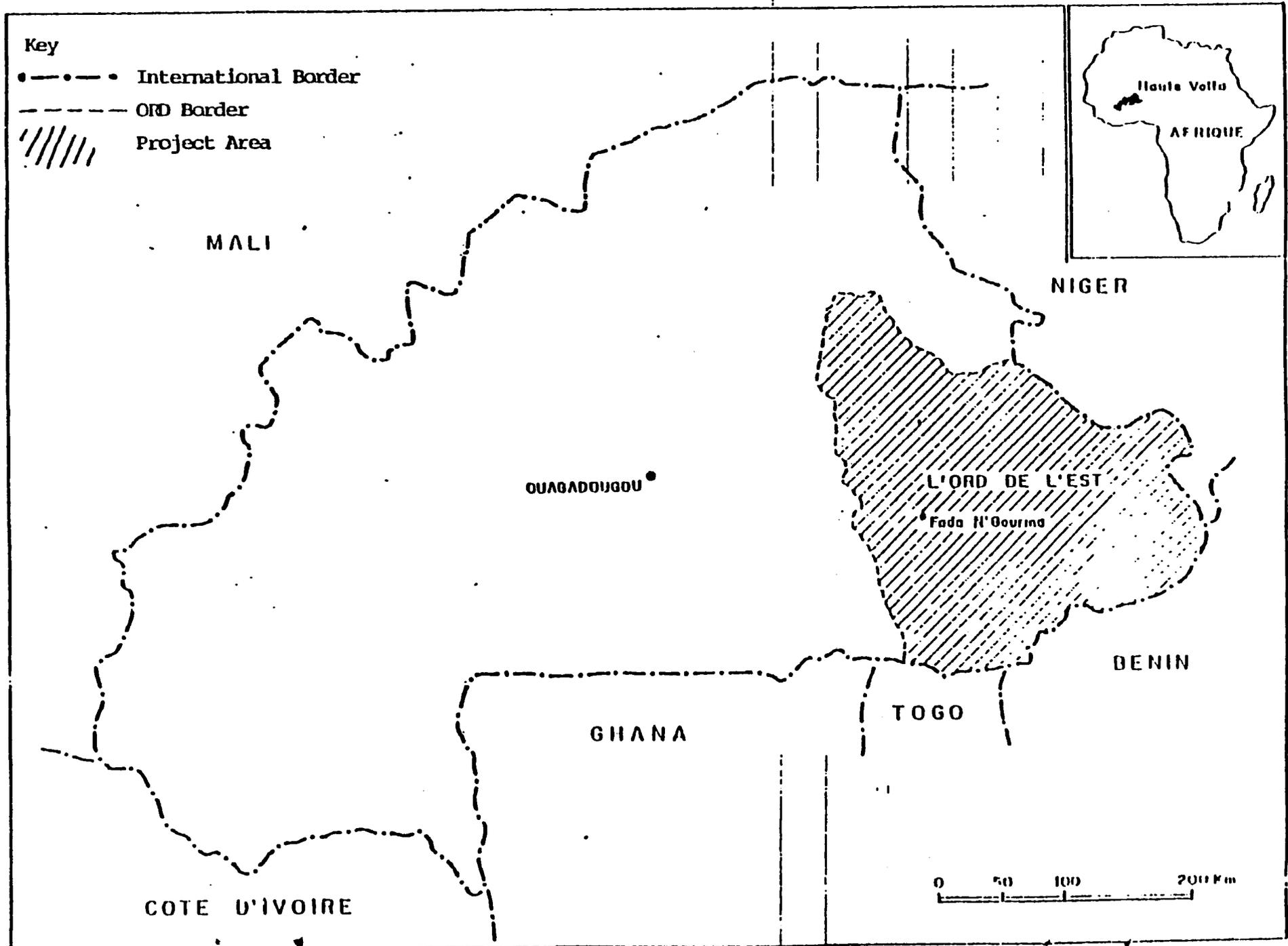
TABLE 18

Loan Repayment Rates, 1976-77 through 1980-81

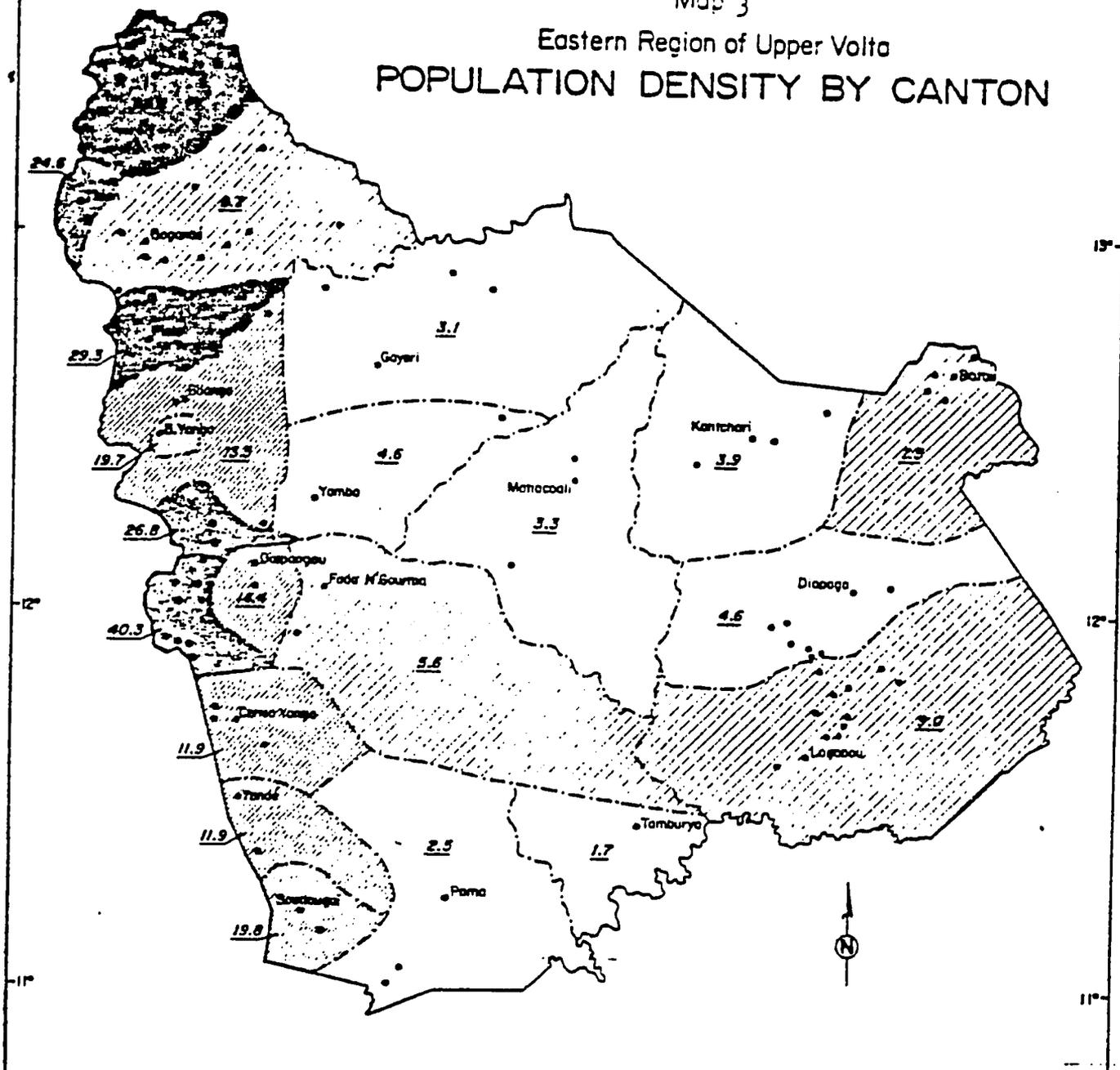
<u>Fiscal Year</u>	<u>Repayment Rate (%)</u>	<u>Delinquency Rate (%)</u>
1976-77	25	75
1977-78	41	59
1978-79	32	68
1979-80	25	75
1980-81	43*	57

Source: EORD

* Not counting loans to EAORD management. If included = 37.2



Map 3 Eastern Region of Upper Volta POPULATION DENSITY BY CANTON



Population Density by Canton
(persons / sq. km)

- 0 - 4.9
- 5 - 9.9
- 10 - 14.9
- 15 - 19.9
- 20 - 24.9
- 25 and over

• Towns or villages with 1,000 or more persons

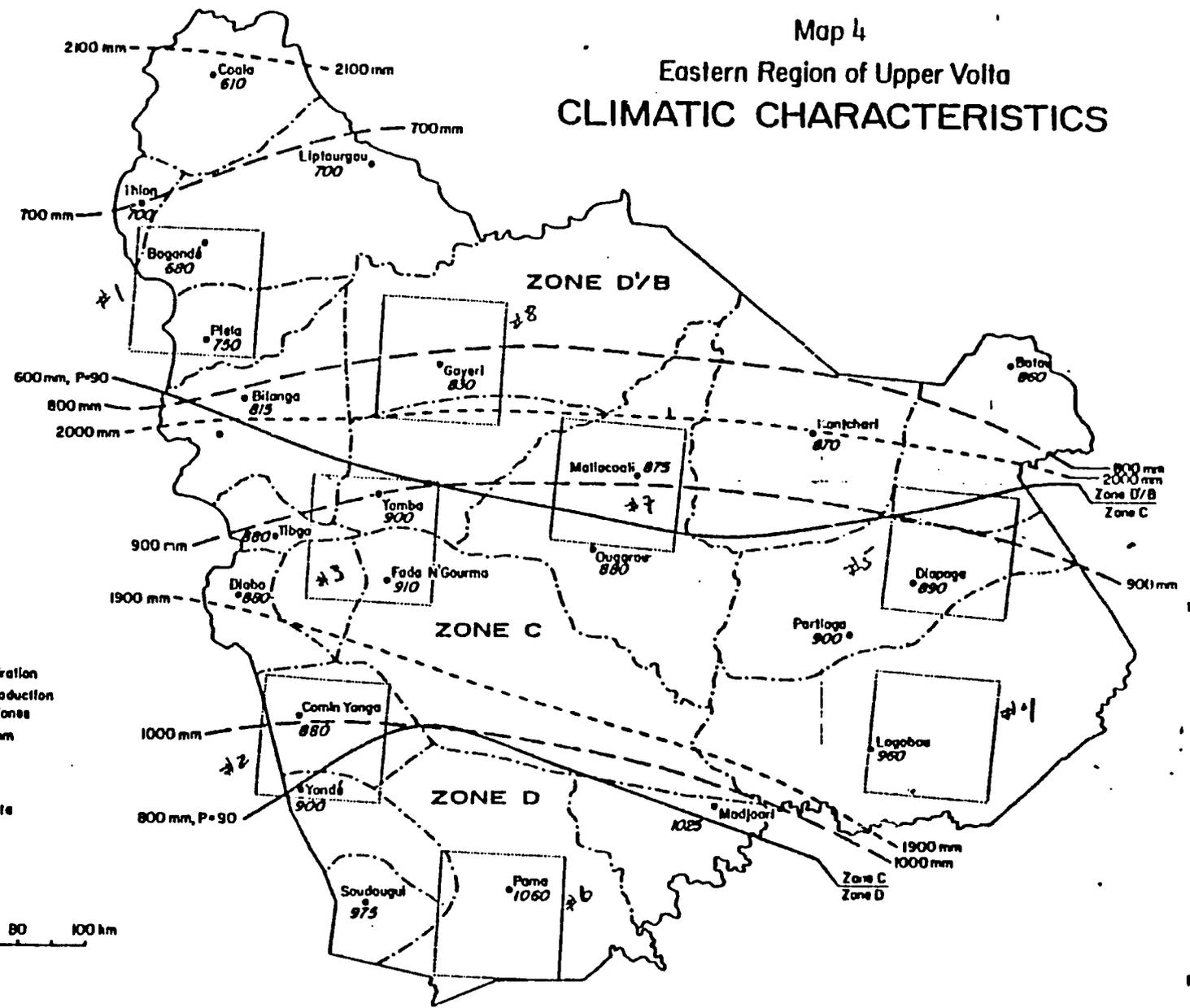
20.9 Density of Canton Population (persons / sq. km)



Map 4 Eastern Region of Upper Volta CLIMATIC CHARACTERISTICS

- Isohyet
- - - Evapotranspiration
- Climatic / Production Potential Zones
- 750 Rainfall in mm
- Detail map

Sources: Atlas de l'Haute Volta
SAED, 1979
John Hunter, 1977



MAP 5

Detail of Settlements in Eastern Region

Plate 1

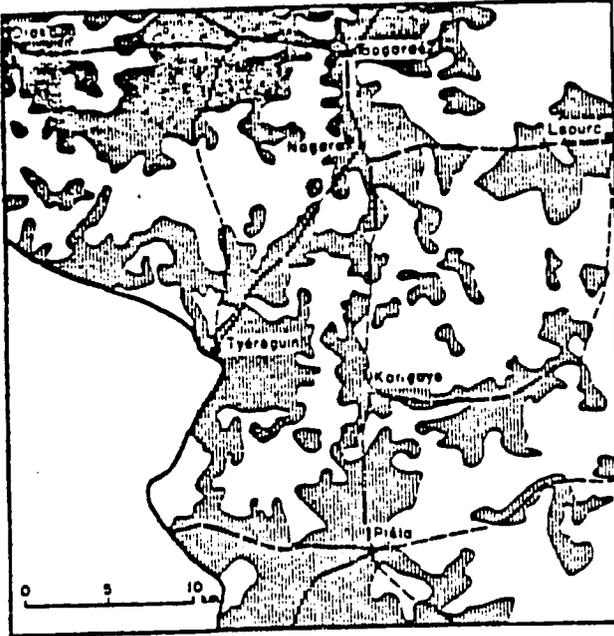


Plate 2

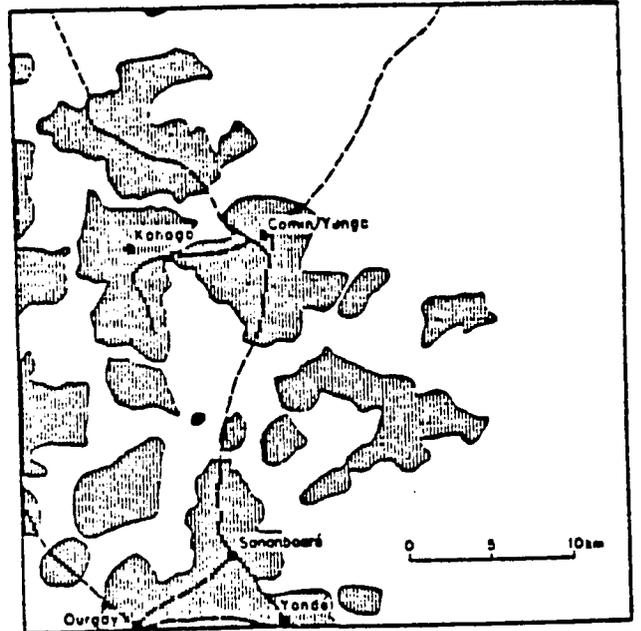


Plate 3

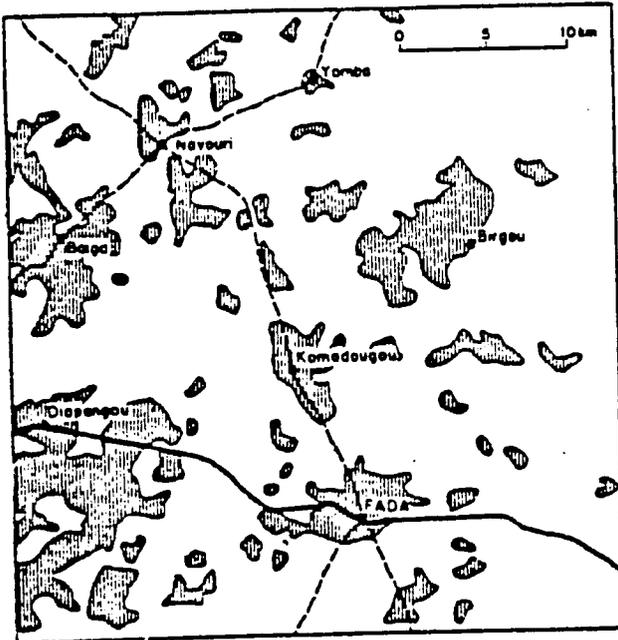
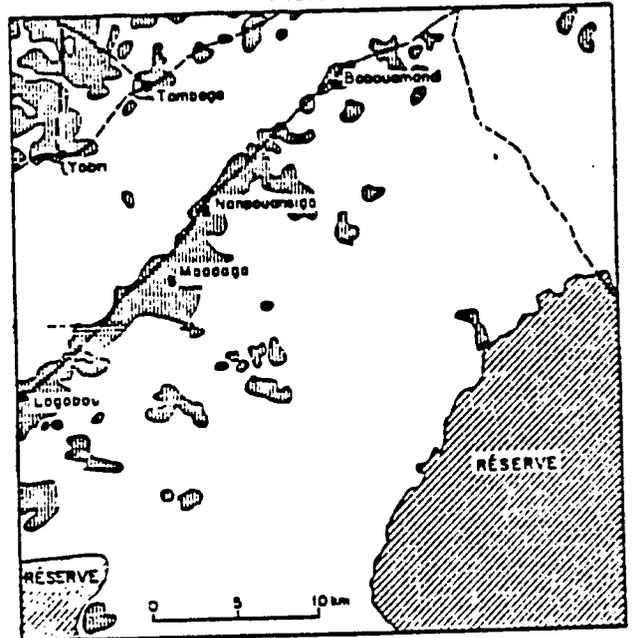


Plate 4



MAP 6
Detail of Settlements in Eastern Region

Plate 5

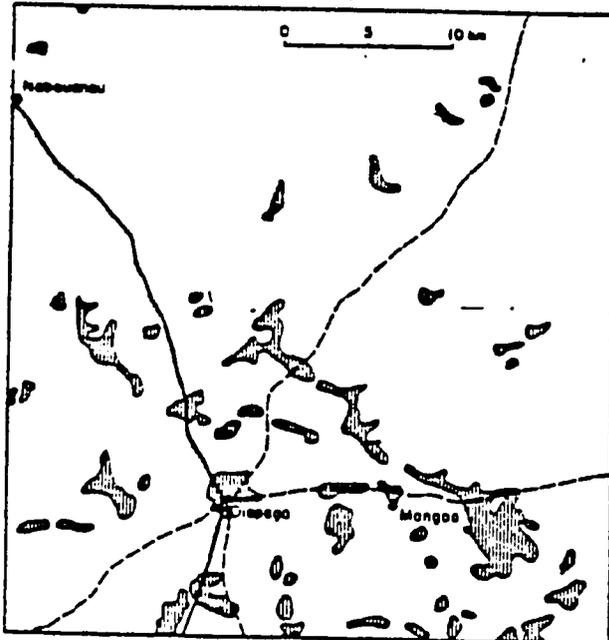


Plate 6

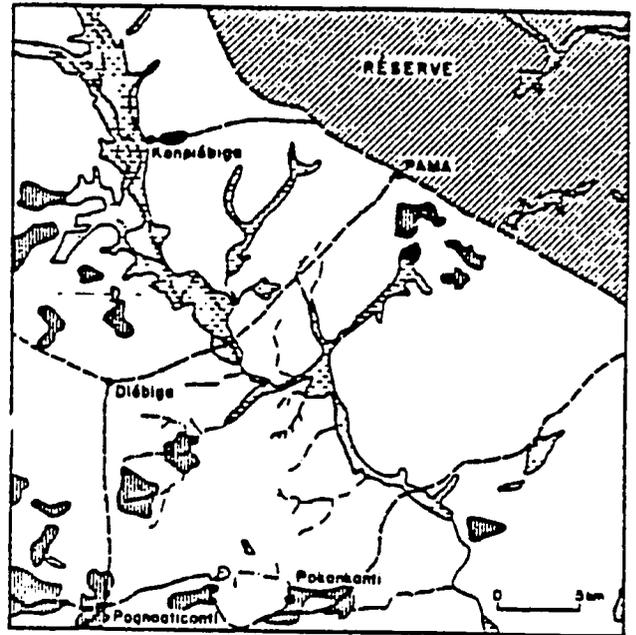


Plate 7

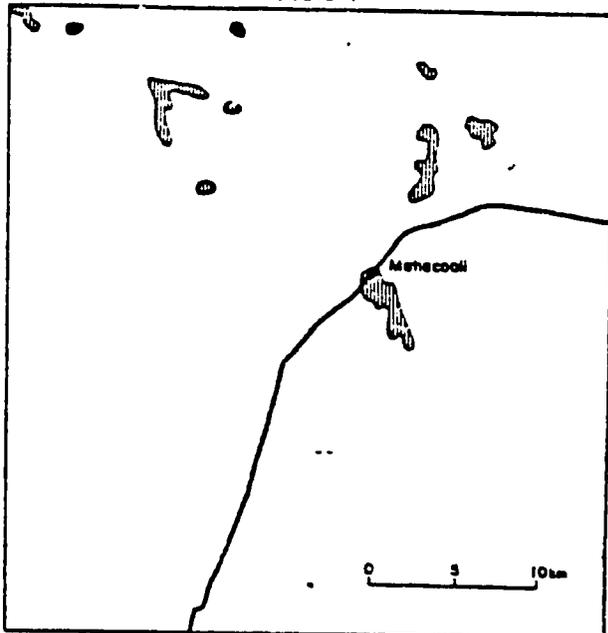
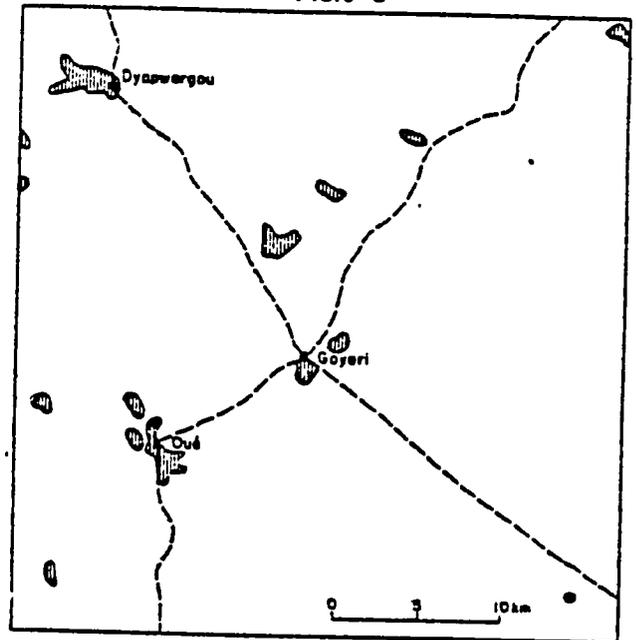
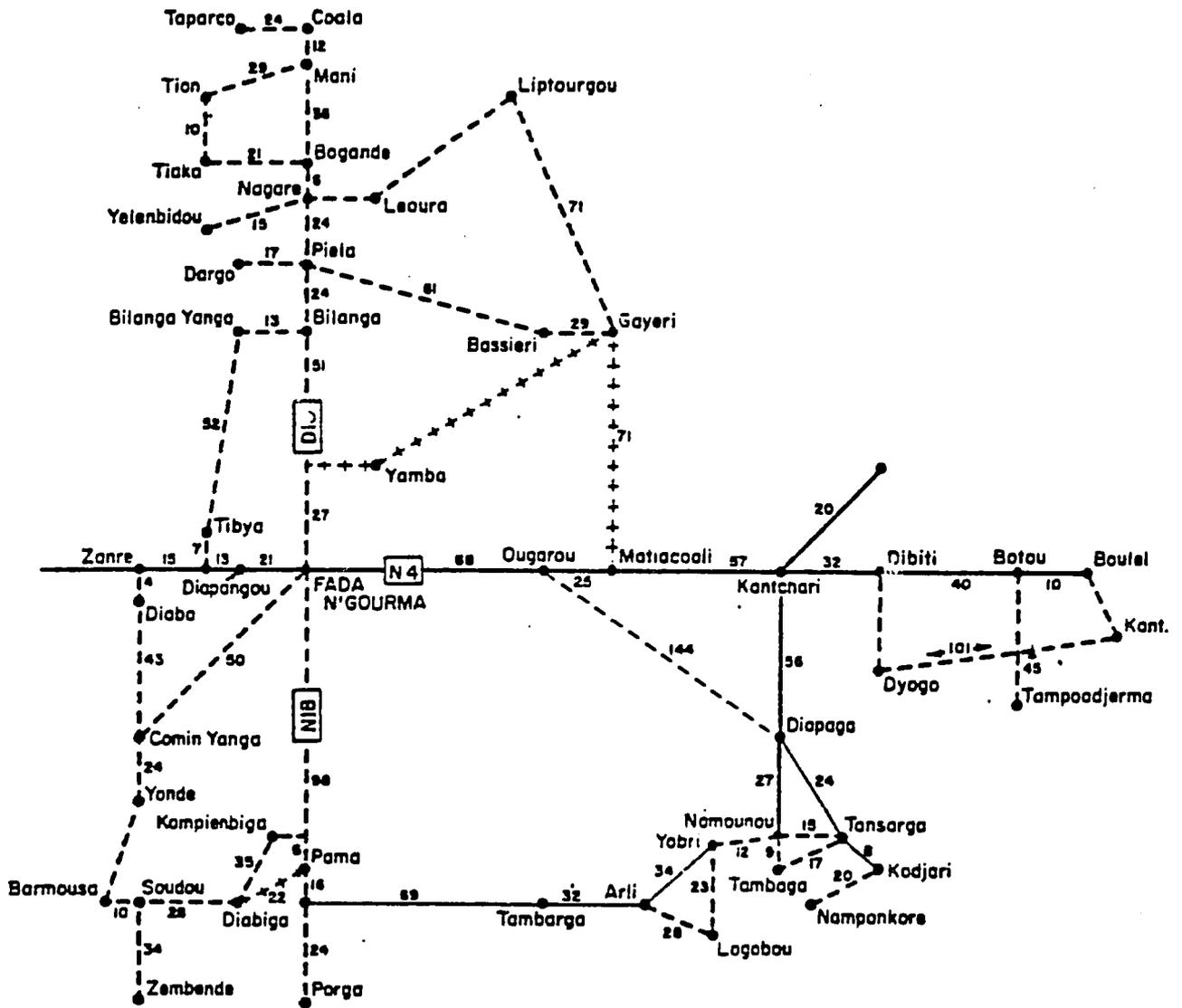


Plate 8



MAP 8 Eastern Region of Upper Volta Graph of Existing Roads and Roads Proposed for Construction



- All-weather existing
- - - - - All-weather planned
- Dry weather existing, no improvement indicated
- - - - - Dry weather planned
- + + + + + Trails existing, no improvement indicated
- 96 Distance in kilometers
- N4 Highway designation

Annex B - /
STATUTORY CHECKLIST

5C(1) - COUNTRY CHECKLIST

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Economic Support fund.

A. GENERAL CRITERIA FOR COUNTRY ELIGIBILITY

1. FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in a consistent pattern of gross violations of internationally recognized human rights? Yes

 2. FAA Sec. 481. Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the United States unlawfully? No

 3. FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement? Yes

 4. FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government? No

 5. FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities? No
-

A.

6. FAA Sec. 620(a), 620(f); FY 79 App. Act, Sec. 106, 114 and 600. Is recipient country a Communist country? Will assistance be provided to the Socialist Republic of Vietnam, Cambodia, Laos, Cuba, Uganda, Mozambique, or Angola? No
7. FAA Sec. 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression? No
8. FAA Sec. 620 (j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property? No
9. FAA Sec. 620(l). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, convertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason? N/A
10. FAA Sec. 620(o); Fishermen's Protective Act of 1967, as amended, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters: N/A
- a. has any deduction required by the Fishermen's Protective Act been made?
- b. has complete denial of assistance been considered by AID Administrator?
11. FAA Sec. 620; FY 79 App. Act, Sec. 603.
 (a) Is the government of the recipient country in default for more than 6 months on interest or principal of any AID loan to the country?
 (b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds? No
12. FAA Sec. 620(s). If contemplated assistance is development loan or from Economic Support Fund, has the Administrator taken into account the percentage of the country's budget which is for military expenditures, the amount of foreign exchange spent on military equipment and the N/A

amount spent for the purchase of sophisticated weapons systems? (An affirmative answer may refer to the record of the annual "Taking Into Consideration" memo: "Yes, as reported in annual report on implementation of Sec. 620(s)." This report is prepared at time of approval by the Administrator of the Operational Year Budget and can be the basis for an affirmative answer during the fiscal year unless significant changes in circumstances occur.)

13. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?

No

14. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?

Not in arrears

15. FAA Sec. 620A, FY 79 App. Act, Sec. 607. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism?

No

16. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA?

No

17. FAA Sec. 669, 670. Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? Has it detonated a nuclear device after August 3, 1977, although not a "nuclear-weapon State" under the nonproliferation treaty?

No

6. FUNDING CRITERIA FOR COUNTRY ELIGIBILITY

1. Development Assistance Country Criteria

a. FAA Sec. 102(b)(4). Have criteria been established and taken into account to assess commitment progress of country in effectively involving the poor in development, on such indexes as: (1) increase in agricultural productivity through small-farm labor intensive agriculture, (2) reduced infant mortality, (3) control of population growth, (4) equality of income distribution, (5) reduction of unemployment, and (6) increased literacy?

Yes, see FY 1982 and FY 1983 Country Development Strategy Statements.

E.I.

b. FAA Sec. 104(d)(1). If appropriate, is this development (including Sahel) activity designed to build motivation for smaller families through modification of economic and social conditions supportive of the desire for large families in programs such as education in and out of school, nutrition, disease control, maternal and child health services, agricultural production, rural development, and assistance to urban poor?

N/A

2. Economic Support Fund Country Criteria

a. FAA Sec. 502E. Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights?

N/A

b. FAA Sec. 533(b). Will assistance under the Southern Africa program be provided to Mozambique, Angola, Tanzania, or Zambia? If so, has President determined (and reported to the Congress) that such assistance will further U.S. foreign policy interests?

N/A

c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

N/A

d. FY 79 App. Act, Sec. 113. Will assistance be provided for the purpose of aiding directly the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights?

N/A

e. FAA Sec. 620B. Will security supporting assistance be furnished to Argentina after September 30, 1976?

N/A

5C(2) - PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual fund sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE?
HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PRODUCT?

A. GENERAL CRITERIA FOR PROJECT

1. FY 79 App. Act Unnumbered; FAA Sec. 653 (b); Sec. 634A. (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) Is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure)?

a) Congressional notification forwarded on May, , 1981
b) Yes

2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

a) Yes.
b) Yes.

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

No further legislative action required, certain reorganization is necessary and has been made a condition precedent to disbursement.

4. FAA Sec. 611(b); FY 79 App. Act Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per the Principles and Standards for Planning Water and Related Land Resources dated October 25, 1973?

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?

Yes, See Annex E.

6. FAA Sec. 209. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.

No

Annex B 6

A.

7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

- a) Yes. Through increased agricultural exports.
- b) N/A
- c) N/A
- d) N/A
- e) Yes. Through improved seed technology.
- f) N/A

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

N/A

9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

Upper Volta is acknowledged as one of the world's poorest countries and has difficulty meeting its recurrent budget. It nevertheless will fund 4 additional staff positions for this project.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?

The U.S. has no excess foreign currency in Upper Volta.

11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?

Yes

12. FY 79 App. Act Sec. 602. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar, or competing commodity?

Groundnuts, the production for export of which will be a partial result of the project, may be in surplus during a cyclical high in world production. No substantial injury to U.S. producers is anticipated.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(b); 111; 113; 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained

a) The project will directly assist the rural producers by giving them access to appropriate and productive seed.

1.1.1

basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

b. FAA Sec. 103, 103A, 104, 105, 106, 107.
Is assistance being made available: (include only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.)

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

(2) [104] for population planning under sec. 104(b) or health under sec. 104(c); if so, extent to which activity emphasizes low-cost, integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

(i) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(ii) to help alleviate energy problems;

(iii) research into, and evaluation of, economic development processes and techniques;

(iv) reconstruction after natural or manmade disaster;

b), c) access to improved seed will provide a self-help opportunity to farmers.

d) women as well as men will have access to improved seed. Also as a major marketing force in the region women will benefit from increased marketing activity.

e) N/A

Project is funded under the Sahel Development Account, FAA Section 121. The project falls within the food production sector of the multi-donor Sahel Development Program.

Annex B 8

E.1.b.(4).

(v) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(vi) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

c. [107] Is appropriate effort placed on use of appropriate technology?

Yes

d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

N/A for SDP project. Nevertheless, the GOUV is contributing (in-kind) \$350,000.

e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to the Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"?

Upper Volta is a "relatively least developed" country.

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental and political processes essential to self-government.

The project contains a major training component in order to develop the institutional capacity to Voltaic management of the seed program.

g. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase or productive capacities and self-sustaining economic growth?

Yes

2. Development Assistance Project Criteria
(Loans Only)

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects.

N/A

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

N/A



1.

3. Project Criteria Solely for Economic Support Fund

a. FAA Sec. 531(a). Will this assistance support promote economic or political stability? To the extent possible, does it reflect the policy directions of section 102?

N/A

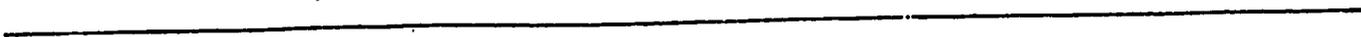
b. FAA Sec. 533. Will assistance under this chapter be used for military, or paramilitary activities?

N/A

4. Additional Criteria for Sahel Development Program

How will assistance contribute to the long-term development of the Sahel region in accordance with a long-term multi-donor development plan?

By developing the Voltaic capacity to produce improved seed the project will strengthen a key link in the production cycle contributing to the major regional goal of food self-sufficiency.



SC(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

- | | |
|---|-----|
| 1. <u>FAA Sec. 602</u> . Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed? | Yes |
| 2. <u>FAA Sec. 604(a)</u> . Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him? | Yes |
| 3. <u>FAA Sec. 604(d)</u> . If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the United States on commodities financed? | N/A |
| 4. <u>FAA Sec. 604(e)</u> . If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? | N/A |
| 5. <u>FAA Sec. 608(a)</u> . Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items? | Yes |
| 6. <u>FAA Sec. 603</u> . (a) Compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates. | Yes |
| 7. <u>FAA Sec. 621</u> . If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the | Yes |



A.7.

facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

N/A

E. International Air Transport. Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?

Yes

9. FY 79 App. Act Sec. 105. Does the contract for procurement contain a provision authorizing the termination of such contract for the convenience of the United States?

Yes

E. Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?

N/A

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

Yes

3. FAA Sec. 622(i). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the United States not exceed \$100 million?

Yes

C. Other Restrictions

1. FAA Sec. 122 (e). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

N/A

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?

N/A

3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-bloc countries, contrary to the best interests of the United States?

Yes

4. FAA Sec. 635(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the United States, or guaranty of such transaction?

Yes

C.

5. Will arrangements preclude use of financing:
- a. FAA Sec. 104(f). To pay for performance of abortions or to motivate or coerce persons to practice abortions, to pay for performance of involuntary sterilization, or to coerce or provide financial incentive to any person to undergo sterilization? Yes
 - b. FAA Sec. 620(a). To compensate owners for expropriated nationalized property? Yes
 - c. FAA Sec. 660. To finance police training or other law enforcement assistance, except for narcotics programs? Yes
 - d. FAA Sec. 662. For CIA activities? Yes
 - e. FY 79 App. Act Sec. 104. To pay pensions, etc., for military personnel? Yes
 - f. FY 79 App. Act Sec. 106. To pay U.N. assessments? Yes
 - g. FY 75 App. Act Sec. 107. To carry out provisions of FAA sections 209(d) and 251(h)? (Transfer of FAA funds to multilateral organizations for lending.) Yes
 - h. FY 75 App. Act Sec. 112. To finance the export of nuclear equipment, fuel, or technology or to train foreign nations in nuclear fields? Yes
 - i. FY 75 App. Act Sec. 601. To be used for publicity on propaganda purposes within United States not authorized by the Congress? Yes

ANNEX C

LOGICAL FRAMEWORK

<u>Narative Summary</u>	<u>Objectively Verifiable Indicators</u>	<u>Means of Verification</u>	<u>Important Assumptions</u>
<p>GOAL : To improve food production and the quality of life in the Eastern Region of Upper Volta in the long term.</p>	<p>Higher levels of food production, higher rural income and increased access to markets and social services in Project area.</p>	<p>MEU evaluations. Project Evaluations.</p>	<p>Muti-donor support delivered as planned. GOUV policies applied as intended.</p>
<p>PURPOSE : To improve the capacity of the GOUV to manage rural development in the Eastern Region through higher-level training, monitoring/evaluation and special studies during 1981-1985.</p>	<p>Higher-level training effected per Training Plan. Monitoring and evaluation by MEU according to IFAD directive. Special studies completed on subjects concerning over-all program such as : environmental impact, adaptation and adoption of technical packages, and regional planning needs.</p>	<p>Same</p>	<p>Same</p>
<p>OUTPUTS : (1) officials of EORD and MRD better trained to manage development, especially financial management, planning, training and research ; (2) continuous monitoring/evaluation of IFAD-led program ; and (3) special studies on critical issues in the multi-donor program.</p>	<p>Amount and quality of training received, monitoring and evaluation reports from MEU, and special studies, per Project description.</p>	<p>MEU evaluations. Project evaluations. Reports by MRD. Reports to USAID by contractors.</p>	<p>Same, plus MEU functions as planned and USAID contractors deliver inputs as planned.</p>
<p>INPUTS : (1) training funds and TA, (2) TA for MEU, and (3) funds and TA for special studies. USAID contracting for this with responsibility in MRD.</p>	<p>See Project Budget.</p>	<p>Same</p>	<p>Same</p>

ANNEX D

PROJECT AUTHORIZATION, ACTION MEMORANDUM

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PROJECT AUTHORIZATION

Name of Country: Upper Volta

Name of Project: Eastern Region Food
Production Management
Assistance

Number of Project: 686-0244

1. Pursuant to Section 121 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Eastern Region Food Production Management Assistance Project (the "Project") for Upper Volta (the "Cooperating Country"), involving planned obligations of not to exceed three million United States dollars (\$3,000,000) in grant funds over a two-year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the Project.

2. The Project will improve the ability of the Government of Upper Volta (GOUV) to manage food production development programs in the Eastern Region of Upper Volta during 1981-1985. It will consist of assistance for higher-level training of officials concerned with such food production development in the Eastern Region and the Ministry of Rural Development, technical assistance to a new Monitoring and Evaluation Unit (MEU) to be established under a credit from the International Fund for Agricultural Development (IFAD), and funds for special studies to be carried out by the MEU.

3. The Project Agreement, which may be negotiated and executed by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegations of Authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

4. a. Source and Origin of Goods and Services

Except for ocean shipping, goods and services financed by A.I.D. under the Project shall have their source and origin in the Cooperating Country or in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing. Ocean shipping financed under the Grant shall be procured in the United States or the cooperating country except as A.I.D. may otherwise agree in writing.

b. Conditions Precedent

Prior to any disbursement under the Project, or the issuance of commitment documents with respect thereto, except disbursement of Thirty Thousand United States Dollars (\$30,000) for technical assistance to conduct a consultation, review and planning conference in the Eastern ORD in August/September, 1981, the GOUV shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D.:

(1) Evidence that the Project will retain use of the three residences in Fada N'Gourma constructed and occupied during the current Eastern ORD Integrated Rural Development Project, for the three A.I.D. financed technical assistants, and that such use will remain with the Project until the

completion of the Project;

(2) evidence that the GOUV has taken all necessary steps set out in A.I.D. Audit Report No. 81-44 concerning A.I.D. Project No. 686-0201, in order for the relevant auditors' recommendations (2a, 2b, 5a, 5b) to be cleared;

(3) evidence that a project agreement or its equivalent has been signed with the lead donor institution (IFAD) and that such agreement provides for a program in the Eastern Region according, roughly, to IFAD's Appraisal Report, and the accords signed by GOUV and the donors in Rome on March 11, 1981, or according to such other programs of the Eastern ORD mutually agreed upon by the cooperating country and A.I.D.

Prior to disbursement for technical assistance or the issuance of commitment documents with respect thereto, except the \$30,000 referred to above, the GOUV shall furnish in form and substance satisfactory to A.I.D., except as A.I.D. may otherwise agree in writing, evidence that:

(1) a Monitoring and Evaluation Unit, satisfactory to IFAD, has been established as specified in the Government of Upper Volta-IFAD loan agreement, and

(2) the expatriate Director of the MEU has been named.

Prior to each disbursement of funds for training, or the issuance of commitment documents with respect thereto, GOUV shall furnish a training plan, which is satisfactory in form and substance to A.I.D., for each trainee or group of trainees to be furnished by that disbursement, and which has been approved by the Director of the Eastern ORD, the Ministry of Rural Development and the donors and A.I.D.

Prior to the disbursement of funds for special studies, or the issuance of commitment documents with respect thereto, the GOUV shall furnish in the case of each sub-grant, a study plan for each discrete effort satisfactory in form and substance to A.I.D.

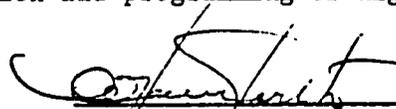
e. Covenants

The GOUV shall covenant:

(1) to provide in a timely manner all necessary Upper Volta personnel for the project's implementation, including the staff of the MEU as may be agreed with IFAD, and trainees selected by agreement between the GOUV and A.I.D. Said trainees shall receive wages from the GOUV for time spent in training under this grant at least at the level to which their rank entitles them at the time of commencement of training. Such trainees will be expected by the GOUV, as employer, to return, following said training, to positions in the GOUV directly related to the implementation of the multi-donor program, or to other positions mutually agreed to by the GOUV and A.I.D.;

(2) to provide for an evaluation of the overall IFAD-led program at the end of its third year, which should be undertaken by the MEU under the direction of the Ministry of Rural Development and the donors, as agreed to in detail between the GOUV and IFAD; and

(3) to establish in the Ministry of Rural Development a "Directorate for Planning, Professional Training and Human Resources", or a like institution, whose special responsibility will be the direction of ORD planning, monitoring and evaluation and programming of higher level training.

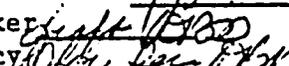


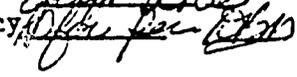
W. Haven North
Acting Assistant Administrator
for Africa
6/4/81

date

Clearances:

AFR/DR/SWAP: JRMcCabe 

AFR/SWA: ICoker 

AFR/DP: RStacy 

JUN 4 1981

ACTION MEMORANDUM FOR THE ACTING ASSISTANT ADMINISTRATOR FOR AFRICA

FROM: AAA/AFR/DR, John W. Keefring

SUBJECT: Upper Volta Eastern Region Food Production Management Assistance
Project (686-0244)

I. Problem: Your approval is required to execute a grant of \$3,000,000, \$2,000,000 of which are to be obligated in FY 81 from Section 121 of the Foreign Assistance Act, Sahel Development Program Fund, to the Government of Upper Volta (GOUV) for the subject project.

II. Discussion

A. Project Description

This project will support and further develop the management capacity in Upper Volta to undertake development of food production in the Eastern Region. It has three related, focused components which transfer technology: higher-level training; technical assistance for monitoring and evaluation; and special studies. It will cover the second five years of a necessarily long process of rural development in the region oriented to increasing food production and access to basic services and employment for the rural poor. The first phase of this development was supported by AID's Eastern ORD Rural Development Project (686-0201) and other AID-financed undertakings, and by a set of interventions supported by other international assistance organizations operating more or less independently in the late 1970's.

This project will be in support of a new, large and complex program of development efforts in the region. This program will be coordinated during 1981-1985 on the basis of one overall concept and led by the International Fund for Agricultural Development (IFAD). Through a parallel financing arrangement, IFAD and the French Caisse Centrale (CCCE) will support capital transfers and, with the United Nations Development Programme (UNDP), additional technical assistance, applied research and training. This program will have a total cost of about \$31.7 million. It will provide credit, village development, improvement of agricultural inputs, training, management assistance, roads, land development and monitoring and evaluation.

The new program will continue and expand activities begun, in part, under the first AID project. It will address problems identified during implementation of that and other earlier efforts. While increasing production, strengthening community development and management capacity, and improving basic infrastructure in the short-run, it will set the stage for self-sustaining growth in the Eastern Region in the coming decades.

AID's 1983 Country Development Strategy Statement for Upper Volta emphasizes increased food production through improvement of agricultural inputs and techniques employed in farming systems and support to a wide variety of production-related activities. Given the intentions of the other donors and in response to audit recommendations, A.I.D. has agreed to concentrate on discrete, necessary elements which constitute technology transfer and will provide long-term benefits. This project will increase the capacity of the GOUV to manage food production activities in the Eastern Region, thereby contributing to the achievement of national food self-sufficiency.

Direct beneficiaries will include approximately 200 participants in higher level training and about 300 ORD and MRD officials as recipients of technical assistance. Indirect beneficiaries of the whole international program will include 64,000 rural poor receiving improved farming inputs through credit and better market information, and (in the first three years, but more indirectly) the 190,000 people living in the Bogande and Diapaga sectors where infrastructural improvements, land development and regional planning efforts will be concentrated.

B. Financial Summary

AID LOP funding will amount to \$3,000,000. First year and LOP budgets have been established as follows:

	(\$ thousands)	
	First Year	LOP
Technical Assistance	1,000	1,220
Commodities	- 0 -	- 0 -
Participants	250	635
Special Studies	50	125
TOTAL	<u>1,300</u>	<u>1,980</u>
Local Cost Financing	700	1,020
GRAND TOTAL	<u>\$2,000</u>	<u>\$3,000</u>

Host country contribution to AID Project equals \$390,000. Total international donor program equals \$31.7 million.

C. Socio-economic, Technical and Environmental Description:

The major socio-economic acceptability of the project stems from its nature as a management tool providing training, information resources and an evaluation unit to focus on all aspects of the international program, and through the monitoring process, pinpoint and correct specific problems. The scope of AID's interventions cover management techniques, technical packages, environmental impacts and social development studies.

There are no direct human rights implications in this project.

The technological transfer envisaged in all parts of this project are feasible and can be accomplished; the project is, therefore, technically sound.

This project has no direct environmental impact; the threshold decision was a negative determination. However, technical assistance provided by this project will support studies of major elements of the overall donor program which could have significant environmental impact, e.g., bas fonds development and road building. These studies will be of the same depth as AID's own environmental assessments and, like the pesticide Risk-Benefit Analysis presented in the Project Paper and I.E.E., will be brought to the attention of both the host country and the other donors.

D. Conditions, Covenants and Project Implementation

In addition to the normal reasons of coordination and good contractual practices, there is a Condition Precedent that relates to an unfavorable Audit Report (81-44) which refers in part to the precursor of the subject project. This condition requires evidence that all audit recommendations pertaining to the financial management of the first Eastern ORD project have been cleared prior to disbursement of funds other than the initial \$30,000 to be obligated in FY 81.

No waivers are expected to be needed for this project. Vehicles will be purchased through the standardization plan expected from the Mission within the next two months.

The personnel needed for technical assistance and special studies will be hired by means of AID direct contract.

The Project Paper's plan for implementation has flexibility as a key element. This flexibility is not only vital to the project's support role, but equally allows implementation to be reasonable and realistic. The Project Committee agrees that the AID project can be implemented in a timely manner.

The major donors of the project are: International Fund for Agricultural Development (IFAD); Caisse Centrale (CCCE); U.N. Development Programme (UNDP); and AID. The major GOUV institutions involved are the Ministry for Rural Development (MRD) and the Eastern Regional Organization for Development (E. ORD). For reasons of the Audit Report mentioned above, no AID funds are to be programmed through the E. ORD.

E. Committee Action and Congressional Apprisement

A Project Review was chaired by AFR/DR/SWAP Jonathan R. McCabe on June 1. The Review concurred in minor changes suggested by the Project Committee and incorporated in the attached PP. The Review then recommended that the PP continue through the authorization process.

Congressional Notification was sent to Congress on 20 May 1981. The waiting period expires on 3 June 1981.

The requirements of Section 611(a) of the FAA have been satisfactorily met.

Responsible Project Officers are:

David B. Dawson
Project Officer
AFR/DR/SWAP

Gordon Bertolin
USAID/Upper Volta

The recommendations of the Audit Report 81-44 regarding the previous project, sometimes referred to as Phase I, have been addressed in the development of this project and reflected in the attached Project Paper.

III. Recommendation: That you sign the attached project authorization and thereby approve life-of-project funding of \$3,000,000.

Clearances:

AFR/DR/SWAP:JRMcCabe (draft)
GC/AFR:GLecce (draft)
AFR/DR/ARD:DSchaer, *with Dr. R. B. Dawson*
AFR/DR/EHR:MSeymour (draft)

ASIA/PD:JOsborn (draft)
AFR/SWA:ECostello (draft)
AFR/DR/E:HLMiles (draft)
AFR/DP:JAnderson (draft)

Drafted by:AFR/DR/SWAP:DBDawson:fn:6/2/81: ext 28242

TRAINING PLAN

Introduction

This training plan for the USAID component within the IFAD project for rural development management in the Eastern ORD contains the following elements:

- The Semantics of "External Training"
- Past training
- Determining Priority fields for Advanced Training
- Training structures
- On long-term training
- Centralization of External Training Dossiers
- Selection of Training Candidates
- Indicative Estimates of High-Level Training Costs
- Comments on Nine Training Components

A C R O N Y M S

AFBD	African Development Bank
(US)AID	Agency for International Development
BEPC	Brevet elementaire premier cycle
CENATRIN	Centre National pour le Traitement de l'Information
CESAO	Centre d'Etudes Economiques et Sociales pour l'Afrique Occidentale
FAO	Food and Agriculture Organization
FSN	Foreign Service National
GOUV	Government of the Republic of Upper Volta
IBRD	International Bank for Reconstruction and Development (World Bank)
IFAD	International Fund for Agricultural Development
INADES- FORMATION	African Institute for Economic and Social Development-Training
ORD	Regional Development Organization
PAID	Pan African Institute for Development
PID	Project Identification Document

THE SEMANTICS OF "EXTERNAL TRAINING"

The donors' meeting in Rome on March 11, 1981, over which the GOUV Minister of Rural Development presided, determined that a major part of USAID's contribution to the next Eastern ORD rural development project would consist of "la formation - extérieure (les bourses)". This item was not made more explicit at that time. It was stipulated, however, during the same meeting that other or "internal" levels of training would be the financial responsibility of the CCCE. Hence, a close collaboration between the two co-financing sources became necessary. A preliminary discussion was held among CCCE and USAID authorities and technicians on April 17, 1981 in an effort to launch such a collaboration. It was agreed between the two parties that dividing up training between the internal and external training sites was not as useful a distinction as separating high-level training from lower-level training. The actual site of where training would take place involves a decision which cannot be made at the outset, but only after a number of questions are answered, such as what fields of training (subjects, disciplines), what degree levels (masters, bachelor's degrees, etc.), long- or short-term. Furthermore, the meaning of "external" was equivocal. "External" to what? To Africa? to Upper Volta? To the Eastern ORD? Consequently, on the basis of a revised and more rational nomenclature, USAID began to examine what

types of high-level training would provide the most effective assistance to the Eastern ORD.

Past Training

An FAO study on the reorganization of ORDs produced in February 1981 ("Reorganisation des Organismes Regionaux de Developpement") contains a summary appraisal of training in the past for ORD personnel. "In-service training is necessary for all categories of personnel. It is organized too rarely, too informally and is not always adapted to real needs." (page 6).

Three documents treat specifically past training in the Eastern ORD. The PID on Eastern Region Food production written in October 1980 delineates four types of training dispensed:

- 200 ORD staff members (primarily extension agents) were trained;
- 2 senior ORD staff members were sent to the University of Pittsburgh to take its ten-week course in public administration and management held in French and designed for African managers;
- ORD staff members were trained on-the-job by U.S. technical assistants;
- 10 draft animal trainers ("bouviers") were trained by the U.S. technical assistant in livestock (page 9).

Annex 13 of the AfED draft Appraisal Report of October 1980 for the IFAD-led Eastern Region Development program states that 12 ORD officials were trained in Bobo-Dioulasso at

CESAO (Centre d'Etudes Economiques et sociales pour l'Afrique Occidentale) for the 1979-80 agricultural campaign.

AID's "Review of selected AID-Financed Activities in Upper Volta Audit Report No. 81-44 of February 1981" offers both figures and findings concerning past training. The "Review" notes that \$198,000 had been allotted for training in the 1974 Project Agreement, including \$81,000 with which to train four Voltaic counterparts each for two years in the U.S. The auditors found that no such Voltaic counterpart training took place in the U.S. and they assessed the funds expended on in-country training to be \$19,482. The auditors' basic conclusions regarding past training were that one, Voltaics were not trained (as planned) to replace U.S. technical assistants; and two, the substantial ORD staff increase from 68 employees in 1974 to 402 employees in 1980 was not accompanied by an effective training program.

Determining Priority Fields for Advanced Training

The search to identify priority fields for advanced training of ORD staff leads to three sources: past training needs assessments, logic, and future training needs assessments.

The principal document devoted to the assessment of personnel and training needs in each of the ORDs is the "Travaux de la Sous-Commission -- Formation ---" produced in July 1976 by the Ministry of Rural Development within the framework of the "Commission du Developpement Agricole. The sub-committee requested each ORD to estimate its personnel needs in all categories for the period 1977-85. The report includes tables which present personnel requirements for each ORD for each professional category. The National Civil Service nomenclature is followed, namely four specialized technical categories (A through D in descending order) plus a fifth general administrative category.

The stated training needs for the Eastern ORD concerning the most advanced level (A) over the period 1977-85 are the following: six agronomists, three economists, two ag economists, two sociologists, two veteránarians, two specialists in cooperatives, and one officer (each) for youth, education, home economics, nutrition, land use planning, civil engineering, water resources and rural agricultural education. The total number of A-category positions for which training was judged necessary was 25 (page 20).

A number of documents include recommendations as to advanced training for Eastern ORD personnel without necessarily being based on formal training needs

assessment. The AfBD draft appraisal report of October 1980 declares that there will be "one advanced level training course for the managerial staff who will eventually take over the foreign assistance (page 7)." The training fields implied therein and represented by the technical assistants are the following: project execution, accounting, training, agronomy, rural civil engineering, and evaluation. It is also suggested (by AfBD) that a certain number of scholarships be offered to senior GOUV officials for training outside of Upper Volta in some combination of the above six fields. Furthermore, intermediate level training for sector chiefs, sub-sector chiefs, and agents from central services is foreseen both within the ORD and in other national training institutes, such as CESAO and CENATRIN (AfBD Annex 13, page 3).

The above cited AfBD general plan for external training coincides precisely with that proposed in the FAO/IFAD "Rapport de la Mission de Preparation du Projet de Developpement Rural dans l'ORD de l'Est," in June 1980.

The October 1980 PID points to three problems in Eastern ORD management, implying that (advanced) training is necessary:

- budgeting,
- record keeping
- regional planning

The AID-contracted Touche-Ross "Management and Accounting Study" of September 1980 recommends bringing in "on a full-time basis, qualified persons to train the assistant ORD directors (page 2)." The most needed training fields were defined as internal control, accounting systems, financial reporting, inventory keeping and management.

Logic would dictate that advanced training should be given to those ORD staff (who need it) who are in the most responsible positions. The 1980 PID, Annex G names six bureaus under the Eastern ORD Director: Corps Production; Community Development; Planning and Economic Analysis; Accounting and Financial Management; Livestock Management; and Civil Engineering Management.

The Touche-Ross study and the "Negociations de l'Accord de Financement du Projet de Developpement Rural de l'ORD de l'Est" of the GOUV and IFAD (March 1981) propose a re-organization of the ORD leadership in Fada to include three principal divisions under the ORD director: operations; planning; administration and finance. A fourth division, personnel, would have a manager rather than a deputy or assistant director at its head and would report directly to the ORD director. Beyond the ORD director and the above-named four senior officers, next in the hierarchy one finds the sector heads. The "chef de secteur" has undergone agricultural training following his first cycle of

secondary school (four years).

At this writing, proposals are being considered for reorganization of ORD structures on a national scale and also in the particular case of the Eastern ORD. In view of this reorganization, one could argue for some caution in determining key positions for which advanced training should be recommended.

In addition to the uncertainty surrounding the adoption of a new personnel structure for the Eastern ORD, there are other factors which militate against a premature determination of the priorities for advanced training. The FAO reorganization Plan for the Eastern ORD produced in February 1981 states that "an FAO mission will establish a master plan for training (page 6)." Secondly, the Eastern ORD director has reportedly requested a mission, to be financed by the CCCE, to ascertain overall training needs in the ORD in September. Thirdly, the CCCE will not have defined the nature of its support to the training component before early 1982. The interest each donor expresses in training constitutes a continuous concern and demonstrates powerfully the need for coordination and consultation regarding training programs.

Training Structures

Training structures refer to both the institutional

base and the resource pool from which trainers will be called upon to dispense training during the life of the program. Many of the same structures will be utilized for both lower-level and advanced training.

The first training structure to note is the support center ("centre d'appui") located in Diapaga within the Eastern Region. This center is oftentimes referred to as the support and training center. It will be created as part of the total financial coverage underwritten by the CCCE for the entire Diapaga sector. The center will have three basic purposes: to operate training programs; to manage a seed farm; and to conduct applied research. Most of the training programs will be formal and will be directed to lower echelons such as farmers and extension agents (encadreurs) . Some will involve medium and senior cadres. The UNDP-financed long-term technical assistants plus other trainers at the support center, one international recruited specialist in training (Senior Training Officer) will be located at the Support Center for four years. The four other proposed long-term specialists will represent the following fields: project operations; accounting and finance; agronomy; and rural civil engineering. All five specialists will be integrated into the ORD structure and will report to the ORD director.

The March 1981 Rome donors' meeting agreed upon the general principle of consultation among donors at all critical stages of project development. One particular subject singled out for joint agreement was the terms of reference and qualifications for the selection of the technical assistants. As the two donors responsible for developing an effective training component, the CCCE and USAID representatives on April 17, 1981 agreed that the terms of reference for the UNDP long-term advisors should include a part-time role as trainer. That is, besides a role of advisor, planner, project facilitator, researcher, or whatever, each technical assistant will be expected to participate in training endeavors in both formal and informal structures. For instance, the technical assistants will be part-time leaders of training programs at the Diapaga support center. They will also work closely with Voltaic collaborators on a continuing and informal basis. It will be understood by all parties that the ORD director and his staff will count upon the availability of his technical assistants to facilitate the transfer of skills. The types of skills would vary for each field, but could include illustratively the following: explanations in how to establish a survey sample, how to evaluate a training program, how to assure a feedback system to help project management, how to determine the best location for small dam construction. The technical assistants who apply for the job will know that a part-time training role is expected from them. Consequently,

the familiar situation where the technical assistant claims that he is a doer (often choosing to work alone) and not a trainer will be avoided. The training role will naturally find its place among the performance evaluation criteria.

Among these five specialists, the Senior Training Officer will have a particularly key coordinating role to play. He should have a masterful grasp of all aspects of the training sphere, external and internal, low, mid, and high-level, short-term and long-term. His voice should be heard concerning the development of training programs, the selection of trainees, the identification of trainers, the monitoring of on-going training, the evaluation of past training. The Training Specialist should be both trainer and facilitator of training. He should assist in encouraging frequent dialogue regarding training matters between the Eastern ORD authorities and the central officials in the Rural Development Ministry who have special responsibility for personnel and training.

A third training structure is the contingent of short-term consultants that will come to assist the training sector. Some will come directly to the support center in Diapaga to hold formal training sessions. Some will come to the Eastern ORD to hold training seminars under the sponsorship of an intermediate training institution, such as PAID,

CESAO, INADES-FORMATION. The site of such short-term training programs will not always be in Diapaga. They will also occur in Fada, Ouagadougou or Bobo-Dioulasso.

U.S. technical assistants that come on long- and short-term missions will work within another new framework, the monitoring and evaluation unit (MEU), to be created in Fada. This unit will be headed by an IFAD-financed technical assistant who will be assisted by three long-term U.S. technicians, an agronomist, a sociologist, and an economic geographer. The MEU will be basically autonomous, although located in Fada, reporting to the Ministry of Rural Development in Ouagadougou. The short-term U.S. training consultants who come periodically to work within this unit will develop and execute evaluation plans to examine training at all levels within the Eastern ORD and external training involving Eastern ORD personnel. Their findings will be translated into recommendations for improvement of the training components and use of the AID-provided training funds held in the training component of the AID project.

The institutional base for conducting advanced training related to the Eastern ORD's needs outside of the ORD is varied. A fourth training structure is PAID located in Ouagadougou. (PAID's three other African offices are in Cameroon). PAID has been funded substantially by AID for two decades, although the Ouagadougou

center is new. The Ouagadougou center has ten professional trainers (six African, four European) and offers short-term management (especially project management) and rural development social science skills training courses upon request to francophone countries within the West Africa region circumscribed by Mauritania, Niger and Benin.

PAID began playing an important role in advanced ORD staff training in 1979 when it led three seminars for ORD directors (nine out of eleven attended) and their deputies. Financed by IBRD, these seminars treated project design, project implementation, and project evaluation. As a follow-on to this seminar, the Eastern ORD director asked PAID to run a seminar on project management for thirty advanced (levels "A" and "B") Eastern ORD cadres in May 1981. Financed by UNDP, four trainers will run a month-long course in Fada, upon which a series of recommendations will be produced related to future training needs for the Eastern ORD.

In addition to its willingness and capacity to run short-term training sessions in the ORDs, PAID has contacted African governments (upon their original request) regarding the creation of the Institute's first long-term training program. A three-year program to be located in Ouagadougou but comprising substantial field experience is being planned in the field of regional planning. Filling

a void in offering long-term training in such a field besides responding favorably to African government requests also demonstrates compliance with one of the major recommendations included in AID's mid-term evaluation of its current support grant to the Institute. Concerning the present Eastern ORD project, PAID's involvement in both short-term and long-term advanced training is envisaged.

The fifth training structure has already been utilized by Eastern ORD staff (see "past training" above): CESAO in Bobo-Dioulasso. Whereas PAID has emerged as a strong training institution for rural development project analysis and socio-economic considerations to be kept in mind while undertaking field research, CESAO has long experience in running short-term (typically three-week) seminars in other fields such as credit, cooperative development, women's participation in development activities, and playing a more direct role in village self-development. Like PAID, CESAO responds to requests from Upper Volta government entities and from other funding sources; both PAID and CESAO can tailor-make a training program.

The sixth training structure will be grouped under the heading, African training institutions outside of Upper Volta. In the past, Voltaics have received middle- and high-level training, essentially in agriculture in Senegal, Mali, Togo, Ivory Coast, Niger and in North Africa.

Application to institutions in these countries is handled centrally through the Service of Training and Scholarships ("stages et bourses") of the Ministry of Higher Education and Scientific Research.

The seventh training structure is grouped under the heading, European institutions. A number of senior officials in Upper Volta's ORDs received their higher training in Europe. Students continue periodically to return from European universities to be integrated within the ORD structure. Under the present project where the U.S. government was assigned the financial underwriting of advanced training, European universities will not be able to be used for AID-funded training.

The eighth and last training structure contains both short- and long-term training in the United States. Short-term training at the University of Pittsburgh in public administration and management for African managers has been taken by two Eastern ORD officials in the recent past. This ten-week course, offered annually and held in French, undoubtedly represents the most appropriate type of training the U.S. can offer. In May of 1981, the University of Pittsburgh training course director will visit Upper Volta in his annual evaluation and recruitment visit.

Long-term instruction, such as two-year Master's training in the U.S., represents a long-shot possibility, if all the training pre-conditions are to be satisfied. For example, one must usually plan for a six-month intensive English language instruction period. A popular course for Sahelians is the agricultural economics Master's Degree offered at Michigan State University. A number of institutions offer Masters-level training in management, specially designed for young managers from developing countries.

On Long-Term Training

It is commonplace to provide for long-term training, generally, abroad, within the framework of specific foreign-financed development projects. Such training is a complement to general non-project-related training such as the Sahel Manpower Development Program. The rationale behind project-related training is that host country nationals will acquire skills which will be "reinvested" in the project, to strengthen the eventual impact of the project in its target area. Often the long-term training is designed for counterparts to the expatriate advisors -- with the purpose of the host country nationals' "taking over" those expatriate jobs, thus assuring continuity and effective "Africanization"

Experience in Upper Volta (and elsewhere) has demonstrated fallacies with such a rationale. For, if a trainee leaves a project-related job for two to three years of training abroad, the tendency is for him not to solicit or accept a job within that project upon return. Having joined an elite group of advanced degree holders, the returned trainee is usually successful in applying leverage to get a job where he chooses (not where the project has planned) and very likely outside the previous employment structure (ORD, for instance).

There are some exceptions to this rule and this may be welcomed by higher-level institutions in the national government (here, the Ministry of Rural Development, for example) which, themselves are short of highly qualified personnel in higher policy positions. Some long-term trainees from ORDs have successfully negotiated with their ORD directors before they left the terms of a new satisfactory ORD position they would hold upon return. On the whole, however, the long-term trainee ties up substantial project funds and runs a great risk of being "lost" to the project afterwards. One might envisage a type of "bonding" system, whereby a trainee is under a written, legal obligation to serve in either a given locality or a given capacity for some preappointed duration (three to six years, for example). Other African countries employ such practices; rarely, however, are they enforced. The subject was brought up numerous times with GOUV

authorities and was repeatedly dismissed as impractical and undesirable.

One must add the fact/^{at}this point that ORD employees are national civil servants. Identifying a promising candidate for long-term training in the Eastern ORD carries no assurance that upon his return he will remain in that ORD. High-level ORD officials have an estimated duration of assignment in any one ORD of from three to five years. Due to the realities of this national government system, the basic tenet of strengthening an ORD in particular must be questioned. Donors are at best strengthening a national capacity although focussing on one geographical zone. Strengthening the national capacity to manage ORD-level development should not be entirely dismissed as a project objective here: the long-term benefits to development of the Eastern Region derived from improved management capacity of the Center could be significant.

The discussion to date has assumed the existence of candidates for long-term training. However, concerning the Eastern ORD, the October 1980 PID states that "trainees were unavailable for long-term training programs because they could not be spared from jobs at the ORD (page 11)" Hence, the \$81,000 programmed in the 1974 AID Project Agreement for long-term training was not used to that end.

The AfED appraisal report of October 1980 recommends 15 person/years of long-term training abroad, with a project cost of 40,000,000 FCFA, or \$195,000 at the rate of exchange then used (\$1=205 CFA). Given the 1974-80 project record of no long-term training having been accomplished, even 15 person years appears ambitious. Yet the donor consensus for the magnitude of support for long-term training in the present project is five times as much (\$1,000,000)!

No, it does not make sense to count on finding candidates to spend 40 person/years in long-term training (a year's training cost estimated at \$25,000). Yet the reaction in the face of such a situation need not be one of despair: there are alternatives. The first alternative is to plan to send a realistic number of long-term training candidates to the U.S. (two or three over the life of project) -- or the second is to plan long-term training so that it will not remove the candidate physically and professionally for long periods of time from his project work atmosphere (see below).

The third alternative is to conceive of long-term training opportunities in Africa more predominantly than in the United States. The fourth alternative is to develop high-level but short-term training opportunities in-country. In discussions held with the CCCE, who share in USAID's belief that one million dollars for long-term training

abroad is not a realistic figure, it has been made clear that the CCCE is willing to discuss the sharing of funding responsibilities for in-country training with AID.

Clearly, with the disappointing record in phase I of the EORD's long-term training efforts, new strategies are in order. One example of how trainees can maintain a meaningful association with their eventual employment is the following. Physical presence and professional interest in one's eventual employment atmosphere before and during training have proved to be factors that raise the chances of the trainee's returning to his intended employment. If a long-term training position is being sought for, say, an agronomist within the Eastern ORD, then the selected candidate (supposing he may come from another ORD) spends a few weeks in the Eastern ORD becoming familiar with the staff, the region, and the nature of the work. He leaves for training with a clear appreciation of the employment atmosphere to which he will return. Secondly, it would be planned that he return to the Eastern ORD at a mid-point during training to renew both personal and professional contacts. His mid-point stay can usually serve the double purpose of qualifying for academic credit, as he accomplishes some specific pre-arranged list of tasks relevant to his training program and relevant as well to the ORD's program. This mid-point visit obviously has budget implications and requires as well a special understanding from university instructors and ORD management.

Centralization of External Training Dossiers

One of the main new directions in the current reorganization of ORD structures is the decreasing autonomy of ORDs, especially concerning their independent pursuit of myriad (including commercial) programs and the increasing monitoring role of the Ministry of Rural Development. A similar centralization role has been attributed to the short-term training ("stages") and scholarship service of the Ministry of Higher Education and Scientific Research regarding all candidacies for out-of-country training.

This service plays a major role concerning Upper Volta's students abroad on GOUV scholarships. The minor but important role the service plays or can play regarding Upper Voltan students abroad on bilaterally-funded scholarships includes the following:

- following pre-selection by ORD directors of candidates for external training, the service verifies the compatibility of the proposed training program and the trainee's level.
- the Permanent Secretariat of the National Commission of scholarships attribution and control meets on short notice to approve candidacies for external training.
- if appropriate, the service announces the scholarship conditions over the radio. Radio announcements are made to the general public but it can be stated that ORD employees will be favored candidates. In the past the service has instructed candidates to send dossiers to the ORD director for action and to the service for information.
- the service can contact potential training institutions in Africa.

Selection of Training Candidates

Selection of candidates for high-level training in view of ORD staff advancements has previously been handled essentially through an ORD director's initiative.

Current documents state that an ORD director's training candidates are submitted to^a/project-related management commission ("comite de gestion") for approval.

In the future, the selection process will be modified to take into consideration two basic realities: first, an ORD is not an autonomous, self-contained entity concerning personnel assignments; and second, the tendency of the new directors in ORD reorganization is toward increasing central participation and control.

An employee from the Eastern ORD may be trained abroad and then be reassigned to another ORD. Conversely, an employee from another ORD may receive training and subsequently be assigned to the Eastern ORD. Consequently, it is not reasonable to limit one's recruitment efforts to the present resource pool of the Eastern ORD.

Secondly, the Ministry of Rural Development has recently planned a Directorate of Planning, Human resources and Professional Training. This office is designed to play a role of coordination in the various aspects of training including candidate selection, for the entire ORD system.

It is planned that candidate recruitment for advanced level training will be organized centrally, and involve communications to all ORD directors in the initial identification of candidates. Bearing in mind that there are also admissions requirements by the receiving institutions, it would be preferable that at least two candidates be submitted by the GOUV for each training position available. Unfortunately, in the past, a single candidacy proposed by government has, on occasion, resulted in non-acceptance by a training institution, or an eventual abandoning of the academic program by the candidate, who turned out to manifest certain problems. The submission of multiple candidates provides some assurances for the obtainment of successful students and against the risk of attrition.

The recent invigoration of the central authority regarding training and ORD performance monitoring represents a particularly significant event. This fact was brought out in discussions the USAID design team held in Fada with the ORD director and in Ouagadougou with the Secretary-General of the Ministry of Rural Development. Aware of the difficulty of locating a sufficient number of training candidates in his own ORD, the Eastern ORD director agreed that despite the regional focus of the proposed IFAD-led program in the Eastern ORD, the AID project in particular

can be conceived as an institution-building project that strengthens the national capability for rural development management.

AID would like to encourage the recent self-assertion demonstrated by central authority by the following stipulation regarding the selection of advanced training candidates. In addition to the resource pools of the Eastern ORD on one hand, and all other ORDs on the other, to be scoured for the best possible candidates, AID will propose to add a third resource pool: namely, the central officials of the Ministry of Rural Development who have professional responsibility for ORD activities. The newly created Directorate of Planning, Human Resources and Professional Training will be an example of a central entity the calibre of whose staff could play a vital role in the coordination of ORD activities. Such central office personnel of high-level status should not be excluded from the candidate pool for the various training opportunities described in this training plan.

INDICATIVE ESTIMATES OF HIGH-LEVEL TRAINING COSTS

(9 sub-components)

<u>Type and Location of Training</u>	<u>Component</u>
In-Country short-term	1, 2, 3, 4, 5
In-Country long-term	6
Out-of-country short-term	7
Out-of-country long-term	8, 9

<u>Sub-Components</u>	<u>Cost</u>
1 - 8 trainees at CESAO, Bobo-Dioulasso	\$10,000
2 - 2 one-month seminars to be run in Eastern ORD by PAID (4 consultants each seminar) (\$25,000 X 2)	50,000
3 - 2 six-week training seminars to be run in Eastern ORD by U.S. consultants (2 U.S. consultants each seminar)	60,000
4 - 4 six-week training evaluation and planning sessions to be held in Upper Volta (1 U.S. consultant) (\$15,000 X 4)	60,000
5 - 1 national seminar on ORD staff training	20,000
6 - 2 Eastern ORD trainees to PAID regional planning 3-year program (\$10,000 per person per year)	60,000
7 - 4 Eastern ORD trainees to University of Pittsburgh 10-wk management program in French (\$10,000 per person)	40,000

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	<u>Cost</u>
8 - 4 Eastern ORD trainees to African Universities for 2-year programs, \$12,500/person per year	100,000
9 - 3 Eastern ORD trainees to U.S. for Masters Programs (3 years each) (\$25,000 per person per year)	225,000
TOTAL SUB-COMPONENTS 1-9	625,000
Contingency (12%)	75,000
Inflation (14%)	100,000
GRAND TOTAL	<u>\$800,000</u>

Comments on 9 Training Components

Sub-Component 1. Eight trainees at CESAO in Bobo-Dioulasso, Upper Volta. The short-term (usually 3-week) courses CESAO has been running for several years are already popular with ORDs. Twelve Eastern ORD staff have received training there. This sub-component allows for eight additional Eastern ORD staff members to be exposed to CESAO training. Two trainees would be released a year during the last four project years. CESAO offers training in over a dozen fields such as credit, cooperatives, women's activities. Courses are designed to farmers, extension agents, and low/mid-level rural development bureaucrats.

Sub-Component 2. Two one-month seminars to be run in Eastern ORD by PAID (4 consultants each seminar). These seminars to be held in project years two and four, will be similar to the seminar PAID will run in Fada in May 1981. The subjects of the two seminars will be determined following the running of the May 1981 seminar but will most likely be related to project management or field research techniques. The May 1981 seminar will be given to 30 mid- and high-level ORD staff: it is anticipated that the two seminars within the project framework will expose approximately 50 additional cadres to this training experience.

Sub-Component 3. Two six-week training seminars to be run in Eastern ORD by U.S. consultants (two U.S.

consultants each seminar). This component is the first to be part of the contractual responsibility of the U.S. institution which is selected. The trainers must be French speakers. The subjects of the training seminars can be determined only toward the beginning of 1982 when a training needs assessment has been analyzed. The subjects may be related, however, to accounting and management. Approximately twenty mid- to high-level ORD officials will attend each seminar in project years three and four. The six-week duration allows a week of preparation time before and a week of evaluation and debriefing activities after the month-long seminar.

Sub-Component 4. Four six-week training evaluation and planning missions to be held in Upper Volta (one U.S. consultant). This is the second component to be developed and executed by the contractor. The four trips will be spread out equally over the life of the project and take place approximately every 15 months. The consultant will be expected to play both a planner and an evaluation role. He should be knowledgeable about rural development in Upper Volta and about training systems.

He must be able to relate the particular training problems and programs in the Eastern ORD with those of the entire ORD system as perceived by the Ministry of Rural Development. His institutional affiliation during his

Upper Voltan visit will be the monitoring and evaluation unit in Faça. He will work closely with the UNDP training advisor and with the support center staff in Diapaga. He will advise the USAID mission on the perceived effectiveness of AID's training component. He will make suggestions concerning several training features, including selection of trainees, training follow-up, and appropriate training opportunities for the future. Like all U.S. consultants involved in the project, he must be French speaking.

Sub-Component 5. One national seminar on ORD staff training. This is the third component assigned to the contractor. It is anticipated that the major organizer of the seminar will be the consultant responsible for sub-component four. The idea of the national seminar is the following. The Eastern ORD project will have experimented with a variety of training opportunities designed to upgrade staff performance. Whatever lessons may be drawn from the Eastern ORD training experience over the period 1981 - 1985, they should be exposed to national scrutiny. At the present time of reorganization within the ORD structure and a reassuming of central authority, the Ministry of Rural Development should be especially anxious to draw conclusions from separate experiences which may or may not constitute useful models. A nationwide seminar with training representatives from

each ORD, representatives from the monitoring and evaluation unit, plus officials from the Ministry of Rural Development is particularly appropriate due to the frequent geographical relocation of ORD agents. Training experiences undergone by Eastern ORD staff have repercussions in other ORDs due to the frequency of reassignments. To have drawn the most valid conclusions on the Eastern ORD training experience, the seminar should be held near the end of the fourth year.

Sub-Component 6. Two Eastern ORD trainees to PAID regional planning three-year program. This program is admittedly experimental. It will probably be inaugurated in late 1981. It represents a new departure for the Ouagadougou-based PAID office. An important feature of the program is that not only is it based in Upper Volta, but close contact will be maintained by students with their home country affiliation. For example, work/study periods are planned in one's previous (and future) organization (i.e. ORD). During the initial years of this program which is open to francophone trainees in West Africa, it is important to have representation from the ORDs. It is highly recommended that one trainee for the three-year program come from Eastern ORD and one from the central Ministry of Rural Development. The two trainees would ideally begin the course simultaneously, during the second year of the project.

Sub-Component 7. Four Eastern ORD trainees to University of Pittsburgh 10-week management program in French. This course is relatively new (two annual seminars have been given to date), but it is being exceptionally well received by Francophone African civil servant managers or managers -to-be. In Upper Volta, two Eastern ORD officials plus one USAID FSN have attended. Although the program is offered in the U.S., it would not be feasible to include it within the contractor's package. Recruitment is handled directly with the sponsoring institution in Africa, often involving the USAID mission, and the University of Pittsburgh's Graduate School of Public Administration. An advantage of the seminar is that management case studies from African countries are presented by participants and discussed by fellow trainees. One Eastern ORD senior staff member would go during each of the last four project years.

Sub-Component 8. Four Eastern ORD trainees to African universities for 2-year programs. African universities in Mali, Senegal, Niger, Ivory Coast, Togo and North Africa have programs that Upper Volta students have profitably pursued in agriculturally-related fields. This sub-component will allow for academic betterment in technical fields, as opposed to predominantly management training, which constitutes a new and strong focus of the AID sponsored training. Two candidates would be recruited in project year two and two in project year three. The Ministry of

Higher Education and Scientific Research's Service for short-term training and scholarships and the Accra-based Association of African Universities may be consulted in the selection of appropriate training institutions.

Sub-Component 9. Three Eastern ORD trainees to U.S. for Master's Program (3 years each). This is the fourth and last component that could make up the contractor's responsibility. Alternatively, direct AID arrangements with a Ministry could be used, following the advice of the training advisors. The three students should be enrolled in the same university and their U.S. stays would correspond to the second through fourth years of the project. During the first year and after an early selection process, the candidates would spend several weeks in the Eastern ORD becoming familiar with the staff, the region, the rural development strategies employed. The beginning of the second year would include approximately six months of English language instruction, ideally in the U.S. host institution. Return to Upper Volta between the two academic years would be planned and budgeted. During this stay (3-4 months), in addition to a month's vacation, a work/study program will be planned in the Eastern ORD. The three candidates will be recruited from either a priority technical field or management field (to be selected from the disciplines included in the section "determining priority areas for advanced training.")

ANNEX F

RISK/BENEFIT ANALYSIS
and
GUIDELINES FOR USE OF PESTICIDES

CONTENTS

INTRODUCTION

RISK/BENEFIT CONSIDERATIONS

1. EPA Registration Status of Pesticides
2. Basis for Selection of Pesticides
3. Extent to which Pesticides Use is Part of an Integrated Pest Management Program
4. Methods of Pesticide Application
5. Any Acute or Long-term Toxicological Hazards Associated with Use and Measures to Minimize Such Hazards
6. Effectiveness of Recommended Pesticides for Proposed Use
7. Compatibility of Proposed Pesticides with Target and Non-target Ecosystems
8. The Availability and Effectiveness of Other Pesticides and Non-Chemical Control Methods
9. The Country's Ability to Control the Distribution, Use, and Disposal of Pesticides
10. Provisions Made for Monitoring and Use of Pesticides

PESTICIDES TO BE USED FOR PROTECTING SEED AND GRAIN IN STORAGE

RECOMMENDATIONS

CONCLUSION

- Table 1. Pesticides Recommended for Use in Program
Table 2. Pesticides Recommended for Program by Crop

APPENDICES

- I - Major Pests--Preharvest
- II - Stored Product Pests--Postharvest
- III - List of Manufacturers of Recommended Pesticides (Basic Producers)

INTRODUCTION

The Environmental Analysis (Section II of the Project Paper) briefly reviews the environmental impact concerns related to the project activities regarding pesticides. This Annex provides a detailed analysis of the risk and benefit in use of pesticides, the threshold levels of pest population dynamics and guidelines for use of the least environmentally damaging materials.

The ultimate beneficiaries of the IFAD-led program will be predominantly small farmers and therefore the pest management practices utilized must be safe, effective and at the lowest possible cost.

A discussion of the integrated pest management (IPM) concept as the technology develops in Upper Volta is presented here to provide an understanding of the overall goals of IPM and minimization of potential adverse impacts on the environment. Simply stated, IPM utilizes a package of technologies in an integrated manner to achieve maximum crop yields, at minimum cost, and at the same time avoids ecological damage.

The more desirable IPM components include the use of crop plants that genetically resist or tolerate pest populations; the use of naturally-occurring biological organisms such

as predators, disease agents, pathogens, and parasites; and the use of cultural or habitat management practices such as crop rotation, destruction of post harvest crop residues, selection of planting time and selection of appropriate crop mixes. Some of these techniques are as effective as chemical use and are as old as traditional agriculture itself.

An objective of IPM is to identify and maximize the use of natural, biological, environmental, and traditional control methods known to be effective. Pesticides may prove to be effective in IPM schemes, but only when definitive data demonstrate their economic advantages over other methods; their use should be based upon economic threshold levels determined by the population dynamics of the target species. It is also a goal to encourage and seed those pesticides which pose a minimum risk to humans, other non-target organisms, and the environment.

Pesticides which should be recommended for use in the IFAD-led program are listed in Table 1. The criteria used in selecting these pesticides are specified in amended Regulation 16 of the Code of Federal Regulations, Part 216, Environmental Procedures (effective date June 26, 1976 as amended May 3, 1978), which establishes guidelines for the use of pesticides in AID projects. Paragraph 216.3(b)(1)(i) of Environmental Procedures' establishes procedures for evaluating the risks

and benefits of pesticides proposed for AID projects, and these were used in the preparation of this paper.

RISK/BENEFIT CONSIDERATIONS

1. EPA Registration Status of Pesticides. All chemicals which AID will recommend for use in the overall IFAD-led program are registered by the United States Environmental Protection Agency (EPA) for the same or similar use and have an EPA recommended tolerance or alternatively have had an acceptable daily intake (ADI) established by the joint FAO/WHO Expert Committee on Pesticide Residues. In the latter cases, additional criteria indicate that they are not under the Rebuttable Presumption Against Registration (RPAR) process, and have not been cancelled, withdrawn, suspended or restricted in the United States. In the case of those pesticides not currently registered by EPA but possessing an ADI as recommended by FAO/WHO, permissible use patterns must be established on a case-by-case basis, and may require the collection and analysis of samples for pesticide residues under proposed patterns of use if the data supporting the FAO/WHO maximum residue levels (MRLs) are considered to be inadequate. It should be noted that MRLs are roughly equivalent to U.S. "tolerances" as covered under Section 180 of CFR 40.

Small quantities of other pesticides may be used for trial evaluations to obtain data, but the above criteria

should be met before recommendations for broader use are made.

2. Basis for the Selection of Pesticides. The AID project does not include the procurement of pesticides nor their storage or application. However, through AID's contribution to the Monitoring and Evaluation Unit (MEU) the AID-provided technical assistance team can strongly recommend those products listed here and wherever possible assist in the supervision of their appropriate handling and application.

Also, in this context, discussions have been held with the IITA entomologist working on the SAFGRAD program at Kamboinse Research Station and with the entomologist at Farako-bâ where numerous trials are conducted with respect to pest management systems. Both scientists recognize the advantages of IPM technology and are relying principally upon varietal resistance to pests and diseases, biological controls and cultural techniques.

Especially important is the fact that similar trials are underway in some 25 cooperating countries and in the other research stations and field trial sites in Upper Volta. A list of the recommended pesticides has been provided to the entomologists and will be borne in mind and monitored when applied research is taken to the field trials and the extension stations for utilization by the small farmer.

3. Extent to Which Pesticides Use is Part of an Integrated Pest Management Program. Another boon to the IPM program is

the AID/CILSS/FAO research project on IPM that focuses particularly on sorghum and millet. The overall program will greatly benefit and adverse environmental impacts will be minimized as a result of these parallel efforts.

A thrust of SAFGRAD entomologists relates particularly to the introduction of parasites and predators of as many of the major pests as possible. Once a parasite or predator is established, an added measure of control is usually available which involves no cost to the farmers, and at the same time presents no environmental hazard.

In any pest management program the judicious use of pesticides is required and those listed in Table 1 are considered the safest for use in Upper Volta. Table 2 provides use information on the pesticides by crop.

4. Methods of Pesticide Application. The pesticides used will be under the supervision of agronomists within the Eastern ORD and their extension agents. In this manner careless handling can be avoided and applicators can be made to wash thoroughly with soap and water after applications and change clothing daily. Those persons in charge of pesticide usage should provide and enforce the use of appropriate safety equipment as needed. And this and other necessary procedures will be monitored by the MEU.

Pesticides and application equipment should be stored in locked storerooms to prevent the entry of anyone but designated personnel. They should not be stored near human food, animal feed, or drinking water. Pesticide containers

and left-over pesticides should be disposed of in areas designated for that purpose according to label instructions, and properly buried assuring there is no danger of run-off or contamination of nearby water sources.

All pesticides purchased should have appropriate labels with recommendations and warnings including rates, frequency of application, time of field reentry into treated fields, observance of minimum number of days between last application and harvest, container disposal methods, poisoning symptoms, etc. In the event of human pesticide poisoning, responsible personnel should determine in advance the locations of the nearest treatment center and should also be aware of the proper antidote in order to effect the correct treatment.

The consultant entomologist observed personally storage facilities at several locations in Upper Volta and observed proper storage methods including locked storerooms.

5. Acute or Long-term Toxicological Hazards Associated with Use, and Measures to Minimize Such Hazards. All pesticides by their nature are potentially hazardous to humans and the environment, and should be treated accordingly regardless of their relative toxicity.

The pesticides recommended for use in Table 1 are available without restriction according to EPA regulations, except for Carbofuran and Phostoxin. All are relatively non-toxic to warm-blooded animals, as evident by the acute oral toxicity values (LD 50) as shown in Table 1, and as explained in Footnote 2 of the table. They are all biodegradable and do

not persist for long periods. Cypermethrin is not registered in the U.S., but has an established acceptable daily intake (ADI) set by the FAO/WHO.

Certain uses of carbofuran are inevitable as a termiticide because of its particular effectiveness against the several species of African termites. As utilized currently at the research stations, the danger of bird kills is minimal, as the granules are applied at the time of seeding and/or fertilizing in the rows and are therefore covered with soil. Likewise, termite mounds are treated by removing the top and introducing the granules into the galleries and covering with earth. Land cleared and mounds treated for termites are generally left fallow until the next growing season. Therefore, any excessive concentration of toxic material would have been biodegraded. In view of the cancellation by EPA of the "hard pesticides", carbofuran is a good alternative for termite control and the risk is minimal to the environment. Another product which is registered by EPA for use in maize as a soil insecticide is Chlorpyrifos (Lorsban), which has been found to be particularly effective against termites.

A potential problem associated with the use of pesticides is the development of genetically resistant insect strains that can no longer be controlled by previously effective materials. The repeated use of the same pesticide in the same area may result in the development of resistant strains. This problem can be lessened by applying pesticides selectively and judiciously, based on actual need in conjunction with

an appropriate IPM system.

6. Effectiveness of Recommended Pesticides for Proposed Use. The pesticides will be used in accordance with manufacturers instructions, following pre-harvest intervals, including rates of frequency of application indicated on the label. All pesticides recommended are expected to be efficacious for the use intended.

7. Compatibility of Recommended Pesticides with Target and Non-target Ecosystems. The very action of pesticides through contact or ingestion makes them also incompatible with non-target species. The honey bee in particular is easily killed by most pesticides, and insect parasites may often be affected. Careless use and contamination of water will naturally affect aquatic life. Problems of affecting non-target species can be minimized by adopting appropriate safety precautions, selectively using pesticides in a timely fashion, and monitoring this process.

8. The Availability and Effectiveness of Other Pesticides and Non-Chemical Control Methods. There is a general lack of quantitative data on pesticide efficacy in Upper Volta. Therefore prior to initiation of the program it will not be possible to compare the effectiveness of the proposed pesticides with alternative chemicals. Additionally, it will not be possible to compare the effectiveness of methods

such as biological control, traditional cultural practices, and use of new genetic materials, as these are only now being tested (by the SAFGRAD project). Nevertheless, such other alternatives are recognized as providing the best long-term assurance in an integrated system. It is the goal of SAFGRAD to capitalize on maximization of other methods and to minimize the use of chemical methods. The results of this work will benefit the program in the Eastern Region.

9. The Country's Ability to Control The Distribution, Use, and Disposal of Pesticides. At present, the GOUV has no effective regulatory controls on pesticide use which makes it imperative to utilize those chemicals which are the safest and at the same time most effective for use by small farmers. Unfortunately, the largest consumer of pesticides in the country is the cotton cooperative SOFITEX, which utilizes pesticides such as endrin, DDT, and parathion; however pesticides which are less hazardous to humans and the environment are being introduced and adopted. This project is not concerned primarily with cotton, but the Eastern ORD should be aware that a cotton farmer can also be a cowpea farmer or be producing other crops including vegetables. It therefore behooves this project's MEU to encourage the acceptable environmentally safe methods of pest control.

10. Provisions Made for Monitoring and Use of Pesticides. Monitoring is being carried out on a continuous basis by

the research stations and the ORDs on the use and effectiveness of pesticides. See also discussion in Section 4 above.

PESTICIDES TO BE USED FOR PROTECTING
SEED AND GRAIN IN STORAGE

Climatic conditions in Upper Volta are generally favorable for grain storage despite the fact that temperatures range between 20°C and 40°C. The southwest region has an average relative humidity of 65% for 7 months of the year and for over 9 months of the year in the rest of the country. The molds die off rapidly below a relative humidity of 70%, and will not survive if grain is stored with a moisture content below 12% which is in equilibrium with a relative humidity of 60% and a temperature of 32°C. Insects cannot breed successfully below a relative humidity of 40%, which is in equilibrium with grain at a moisture content of 8%. This is the climatic condition only during four months--December to March. Therefore, before and after this period a program of pesticide usage is indispensable.

The government storage depots observed by the consultant are well-maintained, free of weeds and debris which are conducive to ideal rat habitats. Occasional trapping will indicate the extent of any rodent problem. A safe product to use in the event of rat infestation is warfarin, which is administered in a bait form. It is harmless to humans and is listed in Table I.

Products are listed for grain protectants. Thiram is registered in the U.S. without restriction for use in seed

grain. However FDA requires that a red dye be used because this prevents seed grain being used for human consumption, which frequently occurs in Upper Volta with seed supplied by the National Seeds Service (NSS) at subsidized prices.

The national grain storage organization (OFNACER) is using two products not registered for use in the United States: Nexion (bromophos), which is safe to handle and probably should be a registered product in the U.S.; and Actellic (pirimiphos methyl) which although not registered is not banned in the U.S. Its safety for use is reflected in the high oral LD 50 of 2000 mg/kg, the same for dermal. Its use is approved only for groundnuts, but should be acceptable on grain products.

An alternative product for grain storage use which the Eastern ORD should consider and the MEU recommend is Malathion ULV concentrate (Cythion) which can be used in lieu of Nexion and Actellic. It can be used for spraying walls, pallettes and bags. Its safety is demonstrated by the fact that it can be used in homes and on humans for control of body lice. The added advantage of malathion is its suitability to be admixed directly with grain at the rate of 60 grams of premium grade 1% dust per 50 kilogram sack of grain. It should be used with dry grain only.

Phostoxin is recommended for grain fumigation and presents no environmental problem. It is used throughout the world and is registered in the U.S. for use with grain, groundnuts, soybeans and as a space fumigant in warehouses. To date

no pest resistance to phostoxin has been noted. This product should be used by trained personnel. Both the NSS and OFNACER conduct training in the use of stored grain protectants.

RECOMMENDATIONS

It is recommended that those products listed in Table 1 be given the highest priority, not only because of their EPA registered status and/or their acceptance by FAO/WHO, but also due to their relative degree of safety for the small farmer.

Follow-up to any program having a pesticide component is highly desirable. Although residue monitoring in food, feed and humans frequently represents the best and most direct approach to deletion of misuse, such methodology is cost prohibitive for routine surveillance. However, program movement toward conformity to the spirit of AID Regulation 16 should be checked during the normal intended monitoring and evaluation cycles. Thus, one MEU team member should be knowledgeable of pesticides and pesticide use practices (and this is provided for in the AID-supported technical assistance to the MEU). Also, under the DS/AGR centrally-funded CICP/AID Pest Management and Related Environmental Protection Project, technical experts in pesticides will frequently be traveling the African continent. These project personnel could be diverted at minimal expense to assist in a quick updating of Regulation 16 conformity.

Finally, it is essential that feedback be obtained with regard to the efficacy of the chemicals being used.

Eastern ORD and MEU personnel should cooperate closely with the research stations and other ORDs to develop data on the cost/benefit ratios of the various pesticides and other known chemical and non-chemical means of pest management.

Because of the complexity of the use of pesticides, questions regarding use may arise and project personnel may contact:

Dr. Frederick W. Whittmore
Environmental Coordinator
Agricultural Production Division
Office of Agriculture, Development Support
Bureau
Agency for International Development
Washington, D.C. 20523

When submitting questions, the exact generic chemical name, formulation to be utilized, method of application, pest or pest complex to be controlled (scientific names, if known), and crops to be treated or other proposed uses should be specified.

CONCLUSION

Pesticide use will undoubtedly destroy some beneficial species within the target area, especially natural enemies and pollinators in the crop habitat. Insecticides with continued use may also unleash some non-target species which may cause them to increase and thereby develop a new pest problem. These ecological upsets are commonly associated with heavy and indiscriminate use. The use of pesticides based upon actual need, and integrated with other techniques, is the surest way to avoid disruptions of the ecology.

-F 14-

The training to be recommended by the MEU to the Eastern ORD should help to mitigate the human health hazards and to assure the chemicals are utilized properly. It should be noted that safety training is mandatory when a restricted pesticide such as phostoxin is used.

PESTICIDES RECOMMENDED FOR USE IN THE EASTERN ORD CROP
PRODUCTION PROGRAM

(Toxicity in terms of Acute Oral LD/50)

<u>Generic and Trade Names of Pesticides¹</u>	<u>Acute Oral LD/50 MG/KG²</u>
Malathion (I)(Cythion)	1375
Carbaryl (Sevin) (I)	850
Diazinon (I)	300-400
Permethrin (a pyrethroid) (I)	1030
Fenvalerate (a pyrethroid) (I)	451
Cypermethrin (a pyrethroid) (I)	82-485
Orthene (Acephate) (I)	945
Bacillus thuringiensis (I) (Dipel, Thuricide)	See Footnote 3
Trichlorfon (Dylox) (I)	450-630
Sulfur (F)	See Footnote 4
Mancozeb (Dithane M-45) (F)	8000
Chlorpyrifos (Lorsban) (I)	97-276
Phostoxin (G)	2.8 mg/liter of air (2000 ppm)
Thiram (G)	780
Furadan (Carbofuran) (I) (2% granular)	490
Warfarin (rodenticide)	Safe to humans

¹I = Insecticide; F = Fungicide; G = Grain Protectants.

²An oral LD/50 value is a statistical estimate of the dosage in milligrams of active toxicant per kilogram of body weight (mg/kg) necessary to kill 50% of

TABLE I (continued)

white rats or other test animals to which the pesticide is administered. LD/50 values are based on a single dose orally given to test animals (usually rats) followed by observation of the treated animals for a definite period. They are useful in comparing the relative toxicity of different pesticides. The oral LD/50 may be rated as to oral toxicities by the following table:

<u>Rating</u>	<u>LD/50</u>
highly toxic	50 and below
moderately toxic	50 - 500
mildly toxic	500 - 5000
non-toxic	above 5000

These ratings do not indicate the possible hazards that may arise from skin contact or inhalation of the substances nor the precise toxicity of pesticide formulations of different composition.

³LD/50 is not established, but *Bacillus thuringiensis* is considered harmless to humans, animals and most useful insects.

⁴LD/50 not established, but sulphur is considered non-toxic to humans although it may slightly irritate the skin.

TABLE 2 - PESTICIDES RECOMMENDED BY CROP

	Millet	Sorghum	Maize	Cowpeas	Soybeans	Peanuts	Rice
Malathion	x	x	x	x	x	x	x
Carbaryl	x	x	x	x	x	x	x
Diazinon	x	x	x	x		x	
Acephate					x		
Bacillus thuringiensis	x	x	x	x	x	x	x
Trichlorfon			x	x	x	x	
Permethrin			x	x	x		
Fenvalerate		x	x	x	x	x	
Cypermethrin			x	x			
Sulfur	x	x	x	x	x	x	x
Phostoxin	x	x	x	x	x	x	x
Thiram	x ²						
Carbofuran	x	x	x		x	x	x
Dithane M-45	x ²	x ²	x			x ²	x ²
Chlorpyrifos			x				x
Warfarin	x	x	x	x	x	x	x
Pyrethrums	x	x	x	x		x	x

x = recommended; x² = as a seed protectant.

¹All chemicals proposed for use are either registered by the U.S. EPA for the same or similar use, or have an acceptable daily intake (ADI) and maximum residue (MRL) established by the Joint FAO/WHO Expert Committee on Pesticide Residues (JMPR). In the latter event, a further criterion is that they are not under the Rebuttable Presumption Against Registration (RPAR) process, and have not been cancelled, withdrawn, suspended, or restricted in the U.S.

APPENDIX I: Major Pests - pre-harvest

The Eastern ORD will be concerned with the control of pests in their program. The major pests are identified by crop as follows:

Millet

Spike head borer	<i>Raghuva albipunctella</i>
Sudan Millet Bug	<i>Agonoscellis versicolor</i>
Stem borers	<i>Acigona ignefusalis</i> <i>Sesamia calamistis</i>
Army worm	<i>Spodoptera (sp)</i>

Sorghum:

Sorghum shoot fly	<i>Atherigona soccata</i>
Sorghum midge	<i>Contarina sorghicola</i>
Stem Borers	<i>Eldana saccharina</i> <i>Sesamia calamistis</i> <i>Busseola Fusca</i>
Army Worm	<i>Spodoptera (sp)</i>

Maize:

Army worm	<i>Spodoptera littoralis</i>
Termites	Several species
Stem borers	<i>Sesamia (sp)</i>
Corn Ear worm	<i>Heliothis (sp)</i>

Cowpeas:

Legume pod borer	<i>Maruca testalelas</i>
Leafhoppers	<i>Empoasca (sp)</i>
Thrips	<i>Megalurothrips sjastedti</i>

APPENDIX III : List of Manufacturers of recommended pesticides (basic producers)

Malathion	American Cyanamid Co, Agricultural Division P.O. Box 400 Princeton, New Jersey 08540
Carbaryl	Union Carbide Corp, Agricultural Products Division 7825 Baymeadow Way Jacksonville, Florida 32216
Fenitrothion	Bayer AG Pflanzenschutz 509 Leverkusen Bayerwerk Federal Republik of Germany
	Mobay Chemical Corp, Agricultural Chemicals Div. P.O. Box 4913 Hawthorn Road Kansas City, Missouri 64120
Diazinon	FMC Corporation Agricultural Chemicals Division 100 Niagara St. Middleport, New York 14105
	Ciba-Geigy Corp, Agricultural Division P.O. Box 11422 Greensboro, North Carolina 27409
Pyrethroids	ICI Americas, Inc, Speciality Chemicals Div Wilmington, Delaware 19797
	FMC Corp. Agricultural Chemicals Division 100 Niagara St. Middleport, New York 14105
Orthene	Chevron Chemical Co, Ortho Division 575 Market Street San Francisco, California 94105

APPENDIX III (con't)

Bacillus thuringiensis
(Thuricide)

W.R. Grace and Co.
Agricultural Chemicals Group
100 North Main St.
Memphis, Tennessee 38101

Sandoz Ltd.
Agro Department
CH-4002 Basle, Switzerland

Trichlorfon

Mobay Chemical Corp.
Agricultural Chemicals Div.
P.O. Box 4913
Hawthorn Road
Kansas Coty, Missouri 64120

Bayer AG

Sulphur

Stauffer Chemical Co.
Agricultural Chemicals Div.
Westport, Connecticut 06880

Chevron Chemical
W.R. Grace
FMC Corporation

Mancozeb (Dithane)

Rohm and Haas Co.
Independence Mall West
Philadelphia; PA 19105

Cythion

American Cynamid Co.
Agricultural Division
P.O. Box 400
Princeton, New Jersey 08540

Phostoxin

Phostoxin Sales Inc.
P.O. Box 469
Alhambra, California 91802

Degesch Gmbh
6 Frankfurt (Main) 1
Post Box 3993
West Germany

Furadan (Carbofuran)

FMC Corporation

APPENDIX III: (con't)

Thiram /)

E.I. du Pont de Nemours and Co.
Biochemicals Dept.
1007 Market St.
Wilmington, Delaware 19898

Warfarin

Prentiss Drug and Chemical Co.
363 Seventh Avenue
New York, New York 10001

ANNEX G

The Context of the Project and the Scope of the IFAD-led program.

PROJECT CONTEXT

The context in which the project will be situated has four main elements: physical, human, economic and administrative.

A. Physical Situation :

1. Geographic position: The project zone, the Eastern ORD, is situated in the Southeastern part of Upper Volta, sharing frontiers with Niger, Benin and Togo (see map, ANNEX B). Its borders coincide with those of the Fada N'Gourma department, the largest of the country. It has a surface area of 50,000 km², or 18% of the country.

Due to the size of the ORD, the main activities of the project will be concentrated in the sectors and sub-sectors which are most favorable from the point of view of their soils, population and existing infrastructure. The sectors chosen are those of Bogande, Kantchari, Diapaga, and the two sub-sectors of Matiakoali and Ougarou in the Matiakoali Sector. The priority zones have a total surface area of about 27,000 km², representing more than half the territory of the ORD.

2. Climate : The region has two ecoclimatic conditions defined according to the annual rainfall which varies from 600 mm in the north (sahelian type) to some 1,000 mm in the south (sudanian type). There is considerable variation around rainfall averages and droughts lasting for long periods are historically quite common, as was the case from 1970 to 1974. The rainy season stretches from May-June to September in the north, and from April to October in the south. The greater part of the rains fall in July and August, frequently with heavy downpours. On the other hand, during the dry season humidity is very low with the Harmattan, a dry hot wind, blowing from the Sahara. The dry season is therefore a period of aridity.

The average and extreme temperatures are similar throughout the zone with two maxima at the beginning and end of the dry season and two minima in January and August. The average temperatures vary between 25°C in January and August and 31°C in April.

The relative humidity is low during the dry season, below 50% from November to April at Fada N'Gourma. The intensity of evaporation increases considerably towards the north. Potential evapotranspiration is about 1,886 mm at Fada N'Gourma.

The comparison between the evapotranspiration and the rainfall determines vegetative periods that go from 125 days in the Bogande region in the north to 155 days in the Gobnangou region in the south. The climate is therefore favorable for annual rainy season crops.

3. Vegetation : The vegetation of the Eastern ORD is characterized in the north by typical acacia savanna, that stretches towards the south into the tall grass savanna zone in areas with an annual rainfall which is 900 mm. or more.

The most common species of trees found in the north are : the Shea-butter tree (Butyrospermum paradoxum, subsp. paradii); the nere (dawa-dawa) (Parikia biglobosa); the African mahogany (Khaya senegalensis); the kapok (Bombax costatum); the tamarind (Tamarindus indica); Lannea microcarpa; Ancroissus leiocarpus and Sterculia setigera. In the south, the dominant species are the shea-butter tree, the African mahogany, Daniella oliveri, Terminalia spp, Pterocarpus erinaceus and Ancroissus spp.

The nere provides a nutritious seed and the shea an oil seed. The African mahogany gives sawn timber. Consequently, these trees are preserved during new land clearings.

Several kinds of acacia are found in the shrubby undergrowth as well as other species that are good for feeding cattle.

The grass cover is dominated by species of Andropogon, mainly the perennial Andropogon savanus, but it also includes the following species: Euparthenia rufa, Pennisetum pedicellatum, Andropogon savanus, and Imperata cylindrica.

4. Geology, Soils Topography : The precambrian base forms the bulk of the sub-stratum. It is covered, in the south, in the Gbongou region, by voltaique greso-schistose formations. The birinian formations of precambrian base show basic or neutral rocks, generally with fine particles, and gives rise to eutropic brown soils or vertisols. Granite and syntectonic magnetites constitute the most represented geologic formation and when they are not hardened, they give rise to brown soils. The voltaique sedimentary formations consist of sandstones and quartz rocks forming the Gbongou cliff and of schists forming the Pendjari Valley. The sandstone and quartz formations give rise to lithosols, schistose formations with hydromorphic ferruginous soils. This stratigraphic series contains the Kodjari phosphate deposit. Several layers of hardened formations fossilize the layers of granitic and basic rocks under kaolinic weathering. All the solid and eroding layers can be observed.

Surfaces covered by soils with sufficient potential for agricultural uses (gravel and deep ferruginous soils, eutropic brown soils, vertisols, deep hydromorphic soils) are greater than the surface areas currently being used. For instance, the area of arabic lands in the ORD was estimated by the Ministry of Plan and Cooperation in 1977 at 1,500,000 hectares. Extrapolation of the results of the MSU farm survey 1/

1/ Document n° 10, p. 6.

to the entire ORD indicates cultivated land of about 250,000 hectares or 16% of the ORD's arable lands. The overall availability of arable land does not therefore appear to be a constraint.

In the Eastern ORD, the problem of erosion is quite serious due to the extremely heavy rainfall in July and August and the nature of the soil. Layer erosion is constantly taking place on dune soils and even gullying layer erosion is frequent on washed ferruginous soils, gravel soils and eutropic and hydromorphic brown soils.

The Eastern ORD territory is a vast peneplain with a very attenuated general relief, except in the South (Gobnangou range).

5. Water Resources : The network of watercourses is very dense. These watercourses become torrential during the rains but stop flowing entirely in the dry season, leaving temporary water holes in the form of ponds in the lowlands.

Water is supplied by means of shallow rural wells and from the ponds in the lowlands. These sources of water dry up towards the end of the dry season when there occurs a general shortage of water for both humans and animals. In certain places, small dams on the lowlands permit rice cultivation and market-garden crops, but the water is never sufficient to permit two harvests in a year.

There is no definite information on underground water resources, but it is almost certain that they are insufficient for large scale irrigated crops.

6. Infrastructure : One of the major constraints to the agricultural development of the region is the lack of infrastructure (roads and feeder-roads).

The only year-round useable roads (unpaved), are : National Road 4, linking Upper Volta with Niger, and cutting across the ORD from west to east for 200 kms, and National Road 19, linking Kantchari, Diapaga and Mamounou. The other roads, although found on the map, often become completely impassable during rainy season. With regard to the Fada N'Gouma-Bogande road, for example, it lacks a bridge over the Sirba and concrete fords in some lowlands, and certain sections of the road have been eroded away or covered by bush for want of maintenance.

The road situation ought to be much improved on a short term basis by projects being currently carried out or studied.

- (1) FED plans to finance the paving of Major Road 4 from the west to Fada N'Gouma and this should be finished by the end of 1982. A study for the extension of the paving from Fada to the Niger frontier has been submitted to FED for approval;
- (2) USAID has approved the funding of 159 kms of rural feeder road (Mamounou-Logobou, Diabo-Komin Yanga and Fada-Bilanga);
- (3) CCCE plans to finance 144 kms of access roads on the main Ougarou-Nadjabon-Diapaga roads;
- (4) The African Development Fund has financed a study for the Bilinga-Bogande-Daparco road;
- (5) UNSO has conducted a study for the Bogande-Boulsa road;
- (6) IDA has granted a loan of US \$7.5 million spread over 3 years for the maintenance of Upper Volta's secondary roads of which the Komin Yanga-Fada portion lies in the Eastern ORD.
- (7) The West African Development Bank is financing a feasibility study for the Fada-Benin border road.

Due to the absence of a network of feeder roads, the interior of the ORD is often completely cut off which helps explain its low level of development.

7. Constraints : The chief physical constraints to development of the Eastern ORD therefore are the erratic rainfall pattern, erosion of good soil, a lack of dependable and abundant water resources, and an inadequate road network. The overall availability of arable land does not appear to be a constraint.

B. Human Situation : Based on the 1975 census, the current resident population of the ORD is 447,937 inhabitants. ^{1/} Thus, the ORD has 18% of the surface area but only 7% of the total population of the country. With a population density of 9.0 inhabitants/Km², the Eastern ORD is the largest but least densely populated of the 11 ORDs of the country. The distribution of the population is also very unequal and some 16,000 Km² in the mid-south of the ORD are almost uninhabited.

The population of the selected priority zones of the project amounts to 251,570 inhabitants, or just above half the total population of the

^{1/} Obtained by adding 10% to 1975 census figures.

ORD. It can be broken down as follows :

	Population	Area (Km ²)	Density (inhab./Km ²)
Bogande	135,080	6,500	20.5
Kantchari	27,720	6,100	4.5
Diapaga	73,590	8,700	8.5
Matiakoali (only Matiakoali and Ougarou sub-sectors)	15,180	6,100	2.5
Total of Priority Zones	251,570	27,400	9.2
Total of ORD	447,937	50,000	9.0

Although the ORD as a whole is lightly populated, one of the priority zones, Bogande, is relatively densely populated (20.8/Km²). Even though this figure is far below the 40/Km² often found on the Mossi plateau, it is high enough to suggest that limited availability of good additional land in the Bogande area may be a constraint to increased agricultural production.

The population of the selected sectors in the ORD is detailed among 273 administrative villages:

Sector	No. of Villages	Size of Villages (habit.)		
		0-500	500-1000	more than 1000
Bogande	176	111	33	32
Kantchari	38	19	9	10
Diapag	37	6	8	21
Katinkoali/ Ougarou	22	13	5	4
TOTAL	273	151	55	67

The structure of the ORD's population is characterized by youth (45% are under 15 years of age) and a preponderance of women in the 20-29 years group (45% men against 55% women), apparently due to the emigration of young men. The active population (15-59 years) represents 49% of the total population. The rural population represents 96% of the total population of the ORD. The annual growth rate of the population of the ORD is estimated at 2.0%.

The population of the ORD is composed of 3 major ethnic groups: Gourmantche (64%), Nossi (28%) and Fulani (or Peul) (7%). The Gourmantche and the Fulani constitute the indigenous population, the former being essentially farmers, and the latter herdsmen. Apart from a few Fulani, mainly in the Bogande sector, the population of the priority zones is composed almost exclusively of Gourmantche.

C. Economic Situation : The dominant economic feature of the Eastern ORD is subsistence farming and herding. Sale of surplus production does take place, and cash crops are being introduced into the area, but the chief economic activity is subsistence oriented.

1. **Crops Production :** In Gourmantche agriculture, the right to use land can be obtained in two ways. First an individual can establish rights to land simply by putting it under cultivation for the first time. The second way is by borrowing the land from the owner. The right to use this borrowed land may be revoked at the owner's discretion.

Crop production in the Eastern ORD is

all nuclear families or individuals who farm together and eat from a common granary. Based on this definition, the average household size in the Eastern ORD is 7.3 persons among whom 3.5 are active workers. The average household cultivates 4.2 ha, or 1.21 hectares per active member. 2/

... (11.7 per cent), ... (15 per cent) ... (15 in 100 households), ... (1.76 per cent) ... (1.76 per cent).

The farming techniques are those of shifting cultivation. Maintenance of soil fertility is promoted through fallowing, the duration of which varies from 4 to 20 years, according to the zones, population pressure and the environment near the village.

Most of the farming is done by hand, using different types of hoes according to the nature of the work, a calabash attached to the wrist for sowing, the axe and machete for felling trees.

The level of the use of inputs remains very low on the whole. The ORD has however succeeded in promoting among some farmers the use of fertilizers on rice and cotton, the disinfection of seeds and stored harvests, and the carrying out of plant protection treatments on cotton or cowpeas. The response of farmers to this type of operation is generally good, but their impact is still very limited due to access difficulties and the low level of extension services.

- 1/ MSU Farm Survey, Document n°10.
- 2/ Unfortunately, this information was not available when the FAO team prepared its report. Their figures are therefore based on an assumed household size of 10, of whom 5 are active).

Since 1974, the establishment of medium-term loans has enabled 1,200 farms to have access to animal traction while 600 farms came by it without relying on credit. Equipment has been limited mostly to the plough. The scarcity of weeding tools or sowing machines impedes the achievement of all the anticipated benefits that the introduction of animal traction could bring.

The basic crops of the project zone are sorghum and millet. They are meant almost exclusively for home consumption. A small marketable surplus is however set aside each year.

According to the MSU survey more than 80% of cultivated land is devoted to millet and sorghum among traditional farmers. Animal traction farmers devote a greater percentage of their land to crops other than millet and sorghum.

Cowpeas are cultivated as a cover crop in fields of sorghum and maize. Lands to be devoted to this crop are, however, difficult to ascertain. Production remains vulnerable to parasitic infestations.

Maize is cultivated around houses; production is low (about 3% of the cultivated surface areas). In the rainy season, early maize together with millet at the same stage constitute a source of food before the real harvest.

Groundnuts form the major cash-crop of the ORD. Its cultivation is concentrated in the Bogande sector where it occupies 9% of the cultivated area. It also has some importance in the Diapaga-Gobnargou sector.

Until now, cotton was cultivated in the ORD on negligible areas only for family use with very low yields. A CCCE-funded project aims at introducing its cultivation in the Diapaga region. Access problems have to date limited the expansion of this crop.

Rice cultivation was introduced some years ago through both private and official initiatives. Its importance remains relatively insignificant. It is cultivated in sites capable of receiving extra water supply, with or without development (lowlands, ear sites).

Very diversified crops are cultivated around the houses. The only ones covering a significant surface and suitable for marketing are sesame in the north and tubers (cassava, yam) in the south (Logobou region, Para).

In general yields obtained per hectare remain low, 765 kg/ha for sorghum and millet, and 442 kg/ha for groundnuts. The overall production of the ORD is estimated to be as follows : 1/

<u>Production of Major Crops</u> <u>in the E.ORD</u>			
	<u>Area (ha)</u>	<u>Yield (kg/ha)</u>	<u>Production (1000kg)</u>
Sorghum/millet	211,203.8	765.6	161,698
Maize	10,593.1	1,239.2	13,127
Groundnuts	16,193.8	442.2	7,161
Rice	3,421.2	1,380.3	4,722
Soybeans	912.3	886.6	809
Cotton	1,900.7	245.4	466
Okra	1,495.2	580.5	868
TOTAL			188,851

1/ Figures obtained by extrapolation yields/person obtained by NSU (report n°10) to entire population of ORD.

The role of women in this production system is not highly differentiated from that of men. Both men and women are involved in all aspects of the production cycle (land clearing, plowing, planting, cultivating and harvesting). Processing however is primarily a women's task.

Men are responsible for 86% of the fields, women for 14%. This understates the role of women, however, since women work on the men's fields as well as on their own. Both men and women devote the vast majority of their fields to millet and sorghum (86% for men, 65% for women). Women, however, devote 21% of their fields to groundnuts which are produced in almost equal quantities on men's and women's fields. Roles do not appear to differ significantly in animal traction households.

2. Livestock Production ^{1/}: A significant stock (350-400,000 cows, 500,000 sheep and goats), swelled by "refugees" from the Sahel drought zones, gives the Eastern ORD the highest stock/population ratio in Upper Volta after the Sahel ORD. The range zones, estimated at 2,500,000 ha (50% of the ORD) corresponds to 6 ha per cow equivalent, which could be improved with the creation of dry season reserves.

Livestock raising is of the traditional pastoral type. Quite a high proportion (25-30% of the Gourmantche own cows (25-30% of the herd) which they entrust to the Fulani to look after or raise themselves, the children being responsible for their surveillance near the villages. Cattle raising involves 30-40% of the population.

^{1/} Figures from FAO report, p. 19.

Small livestock breeding (sheep, goats, poultry) is developing fast, involving almost all the rural families.

The whole stock of the ORD is estimated at a value of about 75 million, despite the individual low productivity. Total annual production is 6,700 tons of meat and 11,000 tons of milk at a value of 18.5 million. Milk is not marketed outside the ORD, but the region has a meat surplus of about 3,700 tons (the highest after the Sahel), and therefore contributes greatly to national requirements and to exports vital to the national economy.

3. Trade Patterns: Trading of agricultural commodities in the Eastern ORD is relatively limited given the high percentage of crops which are consumed by the producers themselves. In the ESU survey ^{1/} it was found that traditional farmers market less than 10% of their cereal crops by the end of the sixth month after harvest. Greater percentages of cotton, groundnuts, rice and sesame are marketed, but the overall level of their production is so low that the amounts marketed are relatively small. Marketed output after six months as a percentage of production for the major crops is shown below:

ANNEX G 11

Crop	1976 (%)	1977 (%)	1978 (%)
Sorghum	8.2	49.5	47.3
Millet	6.5	51.1	42.1
Maize	9.7	49.5	20.8
Groundnuts	48.1	21.7	30.2
Rice	35.0	31.6	33.4
Soybeans	16.0	3.6	49.4
Cotton	34.0	60.6	5.3
All Crops	16.2	50.2	33.7

1/ ISU Farm Survey, Document n°9, p.3.

The bulk of marketed production in the ORD is through private individuals and merchants, although the National Cereals Office (ONACOR) and the ORD did market a small proportion (6.3%) of marketed grain in 1978. The major poles of private grain trade are in Mamourou in the southern section of the ORD, and just west of the ORD's western boundary in Foytenga. It is likely that the bulk of production marketed in Mamourou is headed for Niamey while the ultimate destination of crops marketed in Foytenga is Ouagadougou. Cotton and groundnuts are marketed largely for export.

Livestock marketed in the Eastern ORD is about 3,700 tons per annum ^{1/}. This is largely headed for coastal countries, particularly Nigeria.

3. Natural Resources : The only significant natural resources in the Eastern ORD are phosphate deposits in Kodjari. These are now being developed for fertilizer production. There are also smaller, but as yet non-economic, deposits of manganese, copper and gold in the ORD.

4. Constraints : With the exception of the Bogande area, availability of additional arable land for expanded agricultural production does not appear to be a problem. Even in the Bogande area the problem is not an immediate one although with a rate of population growth of 2.0% it could become one in the future.

Although additional arable land is generally available in the ORD, much of it can not presently be exploited either as cropland or for pasture because of the lack of suitable water points for human and animal consumption.

1/ FAO report, p.19.

Other significant constraints are an unreliable system for delivery of agricultural inputs, an unsure market for surplus agricultural production, and an unwillingness on the part of herders to market more livestock than is absolutely necessary for immediate needs.

D. The IFAD-led Program

Detailed description: The major objectives of the program are two: increased agricultural production by the 8,000 target agricultural households in the priority zones, and increased capacity of the ORD to deliver agricultural support services to the farmers of the Eastern ORD.

The major project activities which will lead to the attainment of these objectives and as set out in the FAO's Mission report* are as follows:

- development of agricultural production (plant and animal) through: short-term farming loans for financing animal traction equipment and other agricultural inputs;
- the development of 1,000 ha of lowlands;
- introduction of anti-erosion measures for 5,000 ha of land; as well as the improvement of livestock health.

* on which the ADB Appraisal Report was based:
Rapport de la Mission du Projet de Développement Rural
dans l'ORD de l'Est, Haute-Volta.
Rome: No. 24/80. DDC. UPV.5, 1980, Passim

The second major element of the dry land agriculture program is expanded use of animal traction which should permit both increased area under cultivation and increased yield per hectare. The animal traction package proposed is a complete one including plow, seeder, cultivator, and cart as well as the draft animal or animals.

The project inputs which will be provided to achieve these improvements in the farming system are primarily credit and extension support. Short-term credit will be provided to all 8,000 target households for purchase of seed, fertilizer and pesticides. Medium-term credit will be provided to 2,720 households for the purchase of animal traction equipment and draft animals (both oxen and donkeys). The extension system will be responsible for providing the requisite technical advice to farmers (both cropping techniques and animal training and care) and for ensuring the supply of the necessary inputs in a timely fashion.

Lowland improvement :

In many areas of the Eastern OED, land which regularly receives sufficient rainfall to permit intensive cultivation is underutilized because of excessive run-off. The project will address this problem by leveling the land and constructing small earthen water-catchment devices to increase infiltration of water into the soil. 1,000 hectares will be improved in this fashion and will be used primarily for the cultivation of rice. 500 hectares of these improved lands will be provided with a small reservoir to permit irrigation during dry-spells. A further 5,000 hectares will be improved with simple anti-erosion devices consisting primarily of long, low mounds traversing a gentle incline. These anti-erosion installations will slow run-off, but not retain water completely.

All these lowland improvements will be undertaken following study by a topographical team whose operations will be financed by the project and which will be supervised by an agricultural engineer to be provided by the project.

- creation of new and reinforcement of existing agricultural institutions by : funding additional extension agents; creating an agricultural support center within the ORD (composed of a seed farm, an experimental station, a training center and an animal trainer training program); and establishing a fund for financing grain collection in order to improve the marketing of agricultural products.
- creation and improvement of infrastructure by funding 108 kms of secondary roads and 100 kms of tertiary roads, by constructing 16 warehouses for agricultural inputs and by financing 60 village grain mills in order to facilitate processing (primarily a woman's task).
- institutional support to the ORD for project implementation by providing necessary personnel (including technical assistance), operating expenses, funding the construction of offices and the purchase of vehicles. This element will also include funding for project monitoring and evaluation as well as administration of a village development fund designed to respond to small development activities proposed by village groups.

A summary of each of the proposed interventions as well as a description of the inputs which will be provided to achieve them is given below. Additional details on each component are available in the FAO report which is available in AFR/SWA.

a) Agricultural production : agricultural interventions fall into three categories : dry land agriculture, lowland agriculture and livestock production.

Dry land agriculture :

Dry land agriculture interventions will be based first on improvement of existing practices and second on expanded use of animal traction in the region. Improvement of the existing system will concentrate on improved methods of preparing the soil, crop rotation, introduction of improved seed varieties, fertilizer, and protection of crops and stored products from destruction by pests.

b) Development of agricultural institutions : The second major area of project intervention will be the development of the agricultural institutions needed to make the agricultural production program described above work. Project activities in this area include support for the extension system, development of a regional support center, a livestock trainer training program, and cereals bank financing.

The Extension System :

As stated above, a necessary input for the planned increases in agricultural production is an effective extension system. The primary function of the extension system is to disseminate the agricultural innovations proposed by the project. To do this successfully the extension agent must have a comprehensive understanding of the proposed program, he must understand the realities and constraints of the farmer's situation, and he must be able to adapt the program to local conditions. Adequate training of agents is therefore essential and will be discussed below, but first the system must exist.

Although an extension system was created under Phase I and other projects of the last years, operations will be reduced to an ineffective minimum without outside assistance. The ORD simply does not receive sufficient funds from the central government to maintain an effective extension system. ^{1/} The project will therefore provide funds for the salaries and operations of 53 extension agents (one per 150 households) in the priority zones. It will also fund the salaries of two assistants to each sector chief to assist in credit administration, input supply, and marketing. M'bylettes will be provided for all field personnel and housing for sector and sub-sector chiefs in the priority areas.

^{1/} Further discussion of the recurrent cost problem and proposed responses is in Parts V.E. and VI.B.

Construction of the land improvements will be undertaken by the Rural Development Fund (RDF) which has considerable experience doing similar work over the last several years throughout Upper Volta.

Livestock production : Livestock interventions are at three levels : cattle production associated with animal traction, cattle production by transhumants, and poultry production. Production associated with animal traction involves chiefly improved health care for the animals and production of forage crops for fattening prior to sale of animals nearing the end of their usefulness for cultivation purposes. Forage crop production will be part of the recommended crop rotation for animal traction households. Improved health care will be part of the program to improve the health of the entire herd of the Eastern ORD, described below.

Cattle production by transhumants will be increased by improved health care and through opening new pastures to grazing. The health care program will concentrate on a vaccination and anti-parasite campaign. The project will assist this effort through the construction of the necessary facilities (laboratories, offices, vaccination parks), purchase of vehicles and necessary equipment, and by providing salaries and other operating costs for the program. The project will also provide a revolving fund for the purchase of vaccines and anti-parasite products to be sold to farmers. New areas will be opened up to grazing by the construction of 500 wells in the Eastern ORD by the German aid program.

Increased poultry production will be assisted through a village poultry vaccination program.

Agricultural Support Center :

A regional support center will be developed in Diapaga to produce improved seed, to experiment with new crops and agricultural techniques, and to upgrade the skills of extension agents. The CCCB is already financing the construction of a seed farm in Diapaga in order to produce improved varieties of maize, rice, sorghum and millet.

The project will expand these facilities to perform experimentation and training functions as well. The seed farm will multiply varieties of foundation seed purchased from the National Seed Service (NSS) under the quality control by the NSS which is supported by the Foundation Seed Production Project (686-0245).

The experimental activities will be conducted in close collaboration with the major research centers in Upper Volta in an effort to better adapt the package of recommended farming systems innovations to farming conditions in the Eastern ORD. A small experimental sub-station will be in Bogande due to the different agronomic and climatic conditions of that area.

Probably the most important activity of the agricultural support center will be the training and re-training of extension agents. Although the level of academic training of extension agents is often quite good, their practical experience is usually minimal, with the result that many of them cannot themselves properly perform the activities they are supposed to be recommending to farmers. It is clear, therefore, that practical extension agent training is an essential element of any rural development effort in the ORD. The training of the agricultural support center will emphasize practical, hands-on experience under conditions similar to those confronted by farmers in the area.

Project support for the activities of the center include construction and equipment of offices, laboratories, a lecture room, warehouses, a garage, a workshop, and housing for center staff and trainees. Vehicles, their operating expenses, and general operating expenses of

the center will also be provided. Technical assistance to the center will include an agronomist responsible for the seed farm and agricultural experiments, and a training specialist. Salaries of the Voltaic seed farm director and assistants are also included in the project budget.

Animal Trainer Training :

One of the innovations of the Phase I animal traction specialist was to begin a program of training experienced animal traction farmers in the techniques of animal training and care. These animal trainers can then themselves train other draft animals in their own and neighboring villages. The advantages of this system are several. First, it is extremely cost effective. Second, as experienced and successful animal traction farmers they have good credibility amongst other farmers. Third, unlike many extension agents, they are readily available in rural areas when needs arise for their services. This animal trainer program is considered one of the more successful innovations of the Phase I effort and will be expanded under this project.

Cereals Banks :

A common complaint among farmers in the Eastern OKD is that it is of little use to increase production beyond their subsistence needs since it is difficult to market surplus production. Worse, when they do market their production to private merchants, prices are low. When they need to buy later in the year, prices often have increased dramatically. Under the Phase I effort, a system of cereals banks was introduced to help resolve these problems. Under this program, credit is provided to a village group at the time of harvest. With this credit, the group buys the produce of its members. It stores the produce and sells it back to members later in the year if additional food is needed. In this way farmers can get a better price for their production, buy what they need at a lower price than would be available from merchants, and the profits go to the group rather than an outside merchant. In the event that the village produces a surplus, the cereals bank serves as a point of collection for sale to other villages, private merchants, or OFNACER.

The system has proved to be a popular one, and

demand for this sort of credit exceeds supply. Therefore the project will provide a revolving fund for the creation of 30 additional cereal banks in the project area.

c) **Infrastructural Development** : Improvements to the infrastructure of the ORD involve transportation, storage, and processing.

Transportation :

An essential element of the agricultural production program is the ability to get extension agents and agricultural inputs into the project area, and production out. Yet this is now a difficult proposition for much of the year and impossible for some of it. The project will therefore upgrade 48 kms of roads in two sections in the Diapaga area, and 60 kms in the Bogande area. In addition, about 100 kms of tertiary roads will be opened along these roads. Given other roads in these areas already financed by USAID and other donors (see map, Annex D), the completion of these roads will allow adequate year round access to, and travel within, the project areas.

This road improvement and construction will be undertaken by a new Secondary Roads Maintenance Service (SERS) road brigade. The equipment and operations of this brigade will be financed entirely by the project under technical direction by SERS. This is the arrangement currently being used in the Eastern ORD Rural Roads Project (686-0215) to the satisfaction of all concerned. The project will also upgrade the road equipment maintenance workshop in Fada N'Gourma. Technical assistance will include a civil engineer and mechanic. The roads will also be maintained by this brigade during the life of the project.

Storage facilities :

A major constraint to effective dissemination of new agricultural techniques in the past few years has been the late arrival of needed inputs. These delays have been caused by the long distance over which inputs must be transported to get them to users. To overcome this transportation problem, the project will finance a warehouse for storage of agricultural inputs in each of the sectors and sub-sectors in the project area.

Processing :

One of the most time consuming activities in the food production process is the pounding of grain by hand. This arduous task is performed by women and can take from 15 to 20 hours a week. The use of such a substantial portion of women's time for this purpose is an impediment to other productive uses of that time, such as development of cottage industries, petty commerce, more intensive cultivation of fields, or small livestock production activities. Food processing is also an impediment to socially desirable uses of women's time such as adult education or increased leisure time. Therefore, in order to free women's time for these other socially and economically desirable uses, the project will finance the purchase of 60 village grain mills.

d) Project Management : Given the administrative and financial capabilities of the Eastern ORD as it is presently constituted, the ORD cannot effectively administer and monitor an activity of the size of the proposed project, nor can it effectively respond to even a portion of the development demands placed on it by the population of the region. The project will therefore provide significant administrative and financial support to the central operations of the ORD.

Direct ORD support :

In order to allow the ORD to manage the Project without prejudicing other activities, the Project will pay 25% of the salaries of central ORD staff and will contribute to the general operating expenditures of the ORD. The project will also finance construction of an additional office building at ORD headquarters.

Three technical assistance personnel will directly assist in the management of ORD activities : a credit

specialist, a financial controller, and a planning and budget specialist. The project will also provide vehicles and lodging for all project technical assistance personnel.

Ten person years of long-term training are planned for ORD personnel in order for them to be able to undertake the functions of the technical assistance personnel by the end of the project. Although it will still be difficult for the ORD to spare personnel for training purposes, the staffing levels now are sufficiently greater than they were in 1974 to suggest that candidates will be available.

Monitoring and Evaluation :

In order for the ORD to be able to adapt its agricultural program in light of experience, it is necessary to regularly monitor the impact of the project activities. In this way, given the data base established under Phase I, it will be possible to evaluate the impact project interventions are having on the target population. The project will therefore finance the salaries and operations of an evaluation unit, independent of the ORD, which will consist of an agricultural economist to be provided through technical assistance, and five Voltaic staff plus AID inputs.

Village Development Fund :

Finally, in spite of the best intentions of the ORD and donors, they will inevitably fail to predict and respond to many of the development needs felt most keenly by the target population. In order to provide a mechanism and the resources through which the ORD will be able to respond directly to the expressed needs of the people of the project area, a Village Development Fund will be created by the Project. This fund will be used to finance small-scale village development activities initiated and managed by village groups. This will enable people to participate directly in the decisions leading to allocation of development resources.

2. Equipment and Supplies : The major equipment items to be purchased under the project are vehicles (trucks, 4-wheel drive, and mopylettes), a complete road construction brigade, office equipment, grain mills, and the various elements of animal traction equipment (plow, seeder, cultivator, cart). The major supplies are improved seed, fertilizer, pesticides, and livestock vaccines. A comprehensive list of the supplies and equipment to be financed directly by the project (as opposed to on credit) is included in Annex F - Detailed budget.

3. Implementation Techniques : The implementation techniques employed by the project vary according to the activity. The lowland development, road construction, building construction, procurement, and training activities will be carried out directly by the appropriate GOUV agencies. The credit and grant activities (cereal banks, agricultural inputs, village development fund), on the other hand, which form a critical element of the project, will depend on the initiative and commitment of the intended beneficiary. For these components, then, the project is one of adhesion in which the individual or village group chooses to become involved in the management of project activities.

E. Human Resources Requirements : Implementation of the project will require a significant personnel commitment from the GOUV. It is estimated that 25% of the time of the ORD headquarters staff will be involved in the activities of the project. Concerning field personnel, 4 sector chiefs, 8 assistants and 12 sub-sector chiefs, will spend a major portion of their time on project activities. 53 extension agents will work with the 8,000 target households.

The quality of Voltaic personnel available to fill the positions cited above is mixed. The most serious gaps are in the pool of adequately trained extension agents and high level administrative and technical specialists. To an increasing degree the mid-level personnel needs are being met, in both quantity and quality, by graduates of the Agricultural Training Center at Matourkou, part of which was constructed with Phase I funds and which is now assisted by the Agricultural Human Resources Development Project (686-0221). The problem of underqualified extension agents will be addressed through the creation of a training branch at the agricultural support center which will do both initial training and re-training of agents.

The lack of administrative and technical specialists will be addressed in the short term through the provision of technical assistance personnel and in the long term through training. Eight technical assistance personnel are foreseen for the project. These are a financial controller, a planning and budget specialist, and a credit administrator to assist central ORD operations; a training specialist and an agronomist for the agricultural support center; a civil-agricultural engineer for the lowland developments and road construction; a mechanic for the road brigade and an agricultural economist for the monitoring/evaluation unit. Ten persons years of long-term training are planned to provide Voltaics to fill these positions by the end of the project. This, along with the agricultural training being provided at the University of Ouagadougou under the Agricultural Human Resources Project, should provide the high-level personnel needed for long-term project success.

ORGANIZATION AND CHANGE OF THE E.ORD

I. Present Situation

The E. ORD has currently a very flat organizational structure with many divisions (a total of 9) and a huge number of persons (at least 25) reporting directly to the Director. This situation is worsened because of the nature of some responsibilities of the Director which take him out of the ORD headquarters very often.

The present organizational chart of the E.ORD (see Appendix) leaves no room for efficient working conditions of the different heads of divisions. The overwhelming number of people reporting directly to the Director impairs greatly the flow of information and the understanding between the Director and those who report to him. Another problem which is relevant to the present situation is the imprecise role of some divisions because of the lack of clear objectives and of adequate staffing. That is the case for divisions and sections like the "Bureau de Production Agricole" (B.P.A.); the "Service Commercial", and the Applied Research section.

The specific functions of each division are not well defined and some functions (e.g., applied research, low-lands development, and data collection) are not performed at a minimum level. Some reasons for this latter insufficiency are: as said above, the understaffing of the divisions which are responsible of these functions, insufficient financial

support, ill-defined tasks, and an overall lack of coordination of the ORD's activities.

The actual organizational chart is a long way from both the one proposed by Touche Ross & Co in "Eastern ORD of Upper Volta - Management and Accounting Study, 1980" and the proposals made in the ADB appraisal report 1/. Both proposals tend to restrict the ORD's divisional structure and to limit the number of people reporting directly to the ORD Director. Both documents have not unfortunately taken in account the new governmental directives which dictate the concentration of the ORD's activities around rural production.

The E. ORD program has plans for activities difficult to manage, clearly some components such as village wells under the Village Development Fund (VDF) and rural tracks. In the Appraisal Report, the section on Project Organization and Management attempts a description of the different divisions and their services. Under the Operations Division appears a technical service called Civil Engineering which would be responsible for "the opening-up and development of low-lands, as well as the construction of the buildings planned in the framework of the project (living quarters, offices, warehouses, etc.)". Then, it seems that no technical service would be in charge of construction of village wells and

1/ ADB, Upper Volta - Rural Development Project in the Eastern ORD, Appraisal Report, January 20, 1981.
See Appendix for the proposed organizational chart.

rural tracks. Therefore the proposed organizational set could be unresponsive to all the goals of the E.ORD project as defined by the donors' meeting in March in Rome.

How could this be rectified to take also into account the new trend towards limiting the ORD's activities around rural production? The following section takes a close look at these aspects. Actually, in the organizational structure of the E.ORD there is a "Bureau de l'Aménagement de l'Espace Rural" which does civil engineering works, mostly construction of village wells, dams, rural tracks, and low-lands. Since the proposal in the Appraisal Report suggests a technical service - civil Engineering - there could be a possibility to add the village wells and rural tracks components to the proposed scope of work of this service. The reasons behind this proposal is the need to satisfy the work requirements of the E.ORD currently and in the future. This cannot be overlooked because to do so would prevent meeting the basic goals of rural development in the Eastern Region and in the country as a whole. Village wells are definitely the most feasible solution to the problem of consumption of potable water in the villages. Water is a source of life in Upper Volta and these wells will serve household purposes the importance of which is immeasurable. Rural tracks are the first step towards

better access ("desenclavement") in the region. This must be done diligently if excess crop and animal production of the region is to be exported to other regions of the country or to neighboring countries.

A new approach to the organizational arrangements of the E.ORD follows. This approach slightly differs from the one proposed in the Appraisal Report of the AfDB and tends to respond to the inclinations of the GOUV (MRD) in restricting the activities of the ORDs. The number and names of the divisions under this approach will still be the same as those of both the Touche Ross & Co. study and the AfDB Appraisal Report. One difference between this approach and the two proposals is that the personnel manager would report directly to the Division head of MRD's administration and not directly to the ORD Director. This aspect is important to clarify in light of the numerous problems involving personnel management in an environment like the ORD. Usually such problems are of minor nature and would take too much time from the Director's own schedule if he had to manage himself the work of the personnel manager. Key decisions regarding personnel management such as recruitment and training of mid- and high-level staff members (e.g. chiefs of sectors, heads of departments of the different divisions, and of course the divisions heads) would be handled primarily by the ORD Director himself and the Division head of administration.

II. The revised E.OPD Organizational chart

In the Appendix appears the revised E.ORD organizational chart. A few comments are needed at this point to explain the proposed changes in the ORD's structure. First, the new governmental guidelines which focus ORDs' activities on rural production will not be entirely respected because of the inclusion of a credit department inside the operations division. Credit is a major tool without which it would be impossible to carry out efficient and effective programs of crop and animal production as well as commercialization of these productions. Rural credit has been a determinant to improve cotton production in this country over the years and could be used too for other rural activities. Since the CNCA cannot manage and control fully all credit operations in rural areas, there are formal agreements with each ORD to use their credit bureaux. This type of arrangement is likely to continue as such for the next three to five years before CNCA can "take over" all the credit operations from the ORDs. CNCA has a pronounced lack of experience and of personnel (credit bureau chiefs, credit agents, and credit accountants) at this moment, which obliges the CNCA effectively to use the administrative structures (from the ORD headquarters to the sub-sectors, extension units, and village groups) and services of the ORDs. So until the actual credit bureaux become CNCA's field agencies, it should be noted

that there is a need to keep them in the ORDs' structures.

The second aspect which may be modified is to move the civil engineering department from the operations division and locate it in the planning division. The nature, responsibilities, scope of work, and functional relationships of the civil engineering department are all compatible with the location of this department inside the planning division. The Touche Ross & Co. study points out clearly and correctly the same organizational setting, which outlines the major responsibilities of this department as being the estimation of costs of civil works (rural water schemes, development of low lands, roads, dams, and buildings) and the supervision of their execution. Precisely, the Civil Engineering department would be divided into two sections: one is for rural water services and the other is for topographical tasks. The major duties of the head of the department would be:

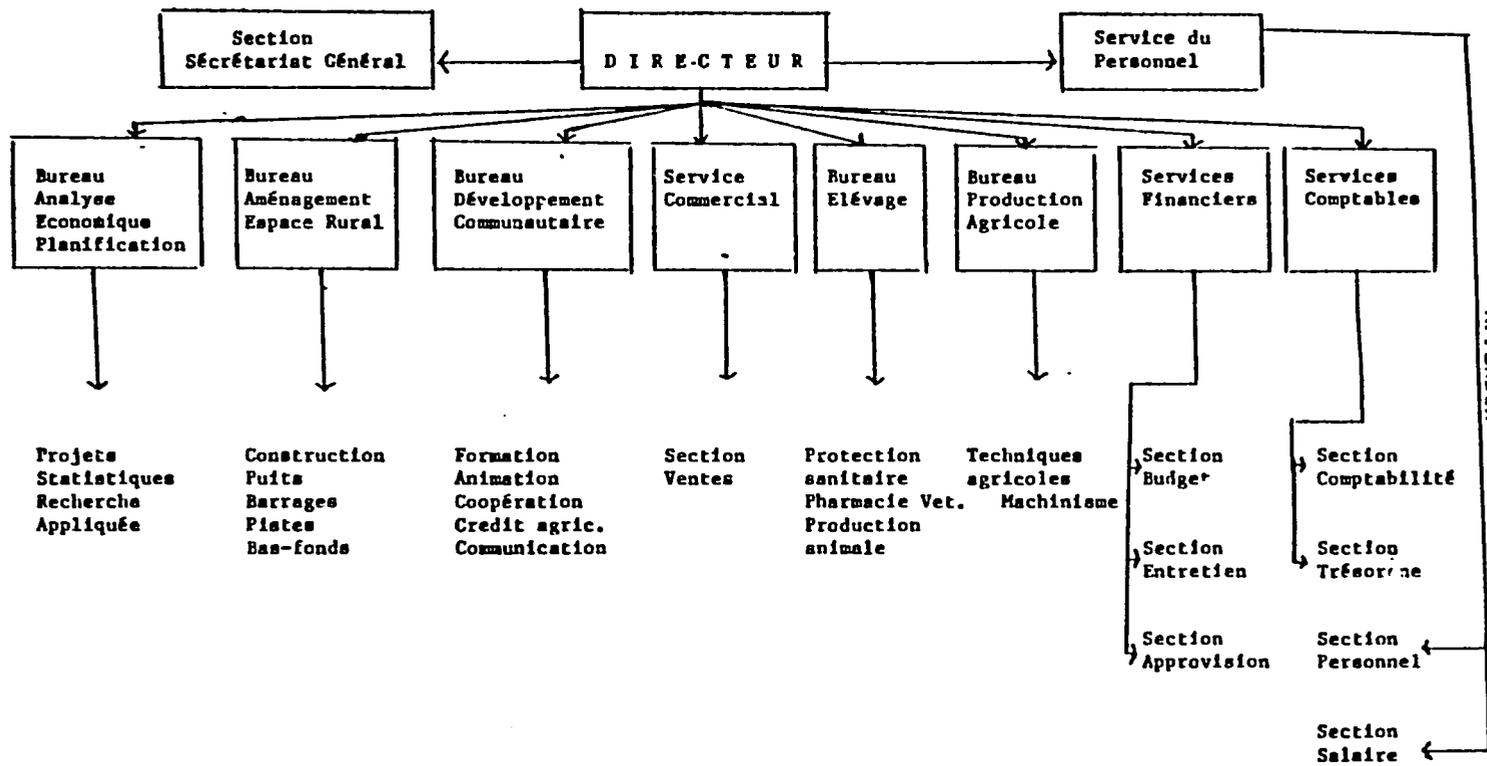
- a. to prepare a program of civil engineering works in accordance with the project funding available;
- b. to prepare estimates for all civil engineering works;
- c. to supervise the execution of civil engineering works carried out by outside contractors;
- d. to direct and supervise all engineering works being carried out by the department staff members.

The inclusion of the civil engineering department inside the planning division would permit two things: 1)

there would be more decentralization of authority since the head of operations division would have less span of control; ii) it might ensure a much greater degree of coordination of the ORD's different activities into an integrated technical package. It is much needed to think about the reorganization of the ORD in such a manner to allow a better chance of success implementing new projects in the region.

A third organizational change would be to remove the marketing department from the administration division. This is to comply with the GOUV decision to restrict as much as possible the ORD's activities mostly to rural production. Marketing activities in the E.ORD are actually limited to purchasing of some crop produce from farmers and to retroceding it to OFNACER. This latter institution can take full responsibility for these marketing activities as spelled out in its statutes. The administration division could not in any case perform efficiently the marketing activities because it does not have regular relations with the personnel working on the field (e.g. sub-sectors heads and extension agents). Therefore it would be preferable to have the marketing department completely removed from the division.

ORGANIGRAMME DU SIEGE DE L'ORD DE L'EST - FADA N'GOURMA¹



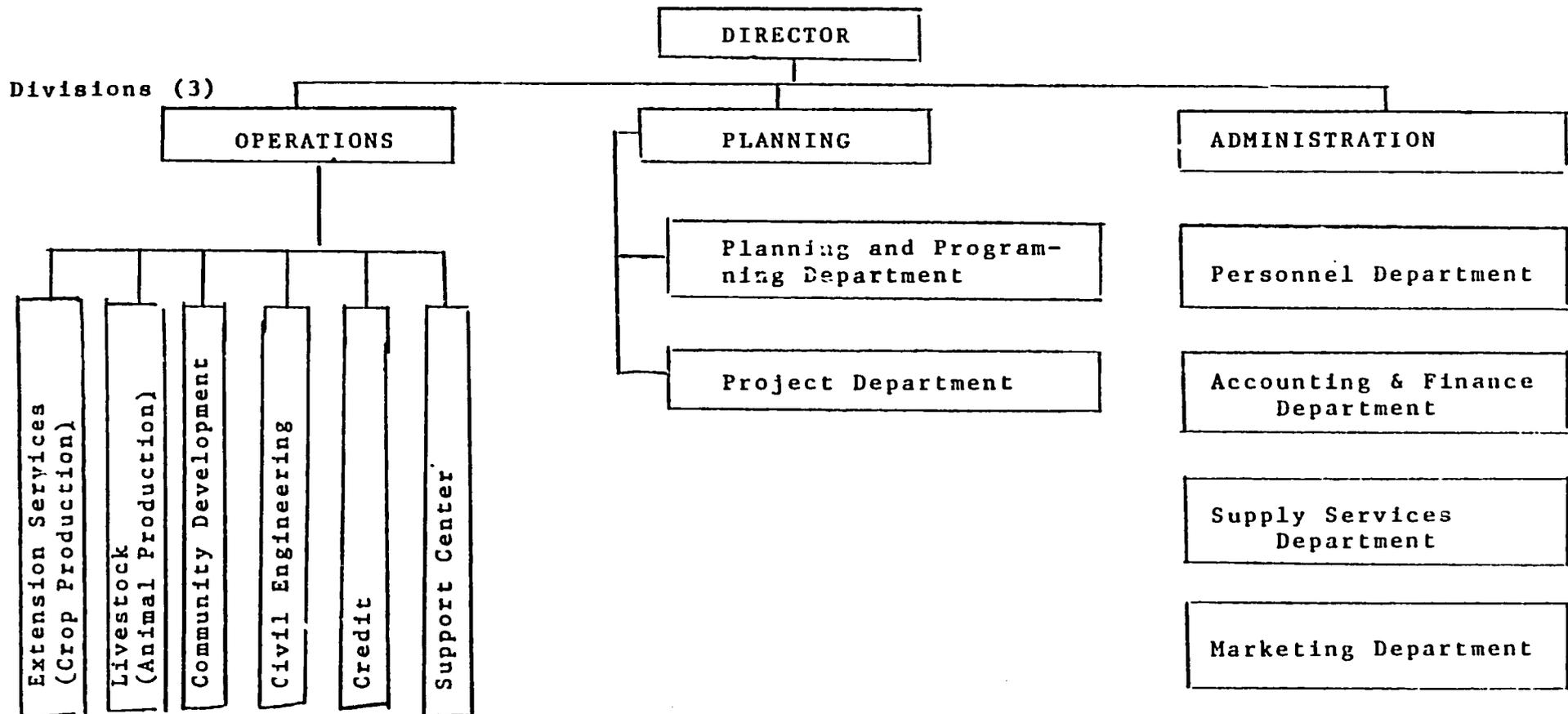
¹Au 22 Avril 1981

APPENDIX

A-1
Appendix

H-8

EASTERN ORD ORGANIZATIONAL CHART 1/

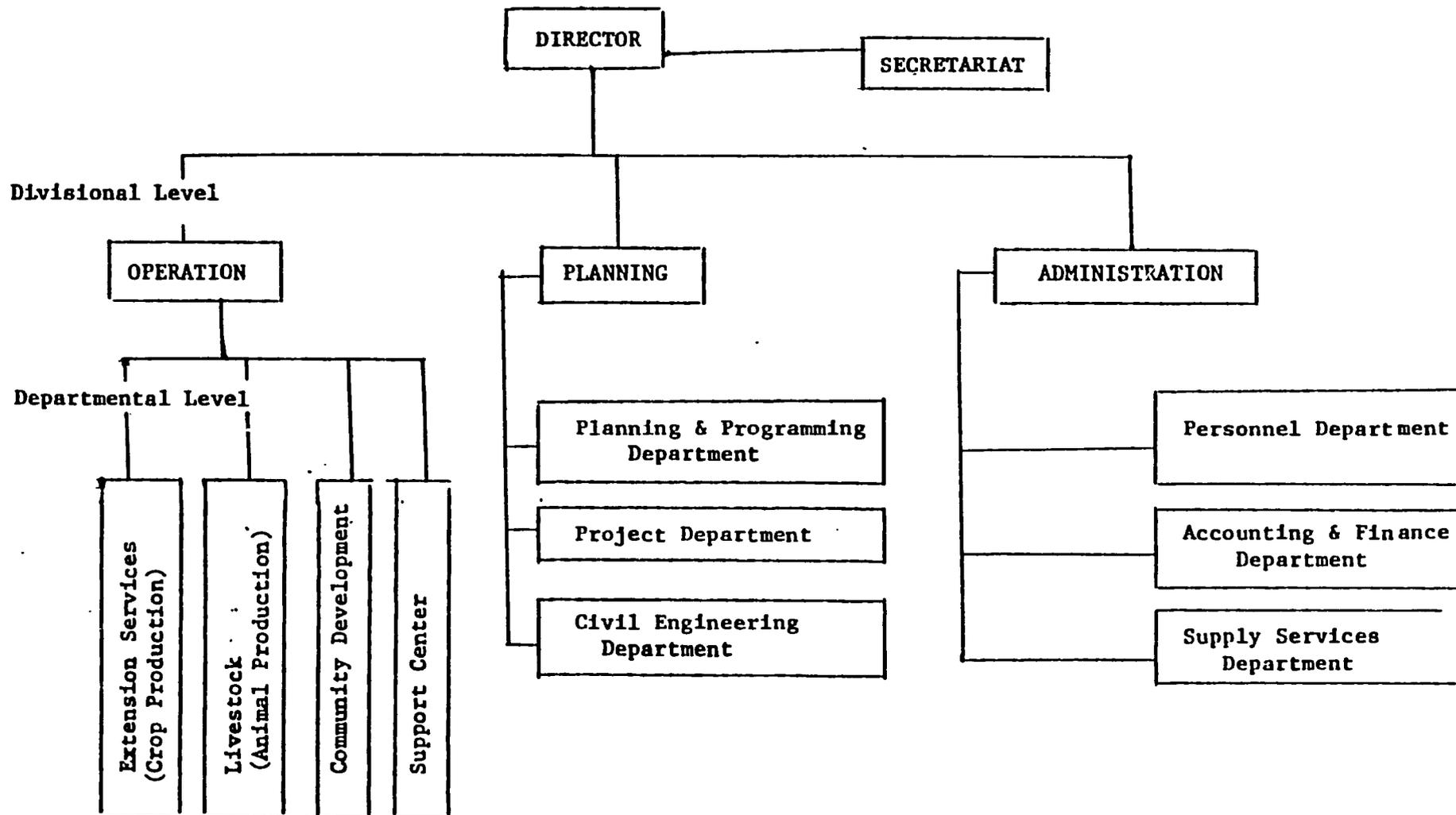


1/ As proposed by the AFDB Appraisal Report

H-9

1

EASTERN ORD (FADA N'GOURMA) ORGANIZATIONAL CHART



¹As suggested by I. Djibo, based on the Touche Ross & Co. study, the AFDB appraisal report, the new GOUV guidelines for ORD's reorganization, and other considerations.

H-10

SOCIAL SOUNDNESS ANALYSIS - EASTERN ORD

In 1974, the social analysis for the Eastern ORD Integrated Rural Development Project (Horowitz 1974:89) had very little information to draw on concerning the major ethnic groups of the Eastern ORD, the farming systems practiced in the region, and the production constraints of small-scale farmers. The project assumed that there existed (or would soon exist) a technical package capable of increasing productivity on small farms of the Eastern ORD, and that the basic problem would lie in making the package available to the farmer. However, the project knew very little about the costs and returns of the innovations being proposed for the zone: animal traction, improved cultural practices, improved seed or bas-fonds. The project therefore funded an extensive farm systems research program in the ORD, and USAID separately funded a sociological study of traditional farming practices in the area. As a result of these investigations, we now know the major outlines of the traditional systems, and their capacity for change.

One of the major lessons learned from AID's work in the Eastern ORD has been that it is not easy to raise productivity of small farms in an enclaved region with weak administrative capacity. In cases where innovations are available that are genuinely cheap, low in risk, and easily integrated into existing farming systems, farmers usually adopt them rapidly and extension work is unnecessary. One classic example is Thioral, a powdered fungicide treatment for seeds

-2-

that was introduced by SOTESA in 1968-69, and was quickly adopted by a large majority of farmers in Northern Gourma (Senechal 1973:110). Farmers made considerable changes in agricultural practices without governmental intervention. Efforts to raise the productivity of land under traditional farming systems are often associated with increasing population pressure on land (Boserup 1965, Netting, et al. 1980), and with improvements in transport to market.

Traditional farming systems are usually well-adapted to local environments: it is often difficult for improved cultivars to surpass local crop varieties, and animal traction requires several sorts of changes in the traditional system and the techniques cannot be mastered in a single year.

However, the research by MSU showed that animal traction can raise productivity on some sorts of farms. It identified several of the important problems encountered in the adoption of animal traction, and has suggested ways to overcome these difficulties. The Farm Systems Unit in SAFGRAD has also begun field trials of several promising techniques.

The results of this research have only recently become available to AID. The design team from the FAO Investment Center did not have access to this information while preparing a second phase Rural Development project for the Eastern ORD that served as the basis for the staff appraisal of the project by the African Development Bank on behalf of IFAD. It has been agreed that USAID's role within the program will be part of the staffing of a Monitoring and Evaluation Unit and furnishing of training external to the ORD itself. The recent

work by MSU has given AID an unusually good set of baseline data and a tested system for on-going data collection and that these instruments conform closely to the Monitoring and Evaluation guidelines issued by IFAD, discussed below.

This analysis is not meant to comprise a social analysis of the IFAD-led program as a whole; however, in order to discuss in detail the monitoring and evaluation needs of the program, it is necessary to sketch out the program itself, to discuss previous AID-funded research that bears on selected aspects of the program, to point out places in the IFAD-led project plans where AID's experience has suggested there may be problems, and to elaborate on the sorts of additional studies that may be necessary to identify solutions to these problems.

Project strategy is to concentrate on three zones, shown on Figure 1: Bogande, Kanchari/Matiakoali, and Diapaga. The IFAD-led program as a whole comprises (African Development Bank 1981:12):

1. The provision of credit (i) to farmers and to buy production inputs, draft animals and equipment; (ii) to village and womens' groups to establish cereal banks and other enterprises.
2. The establishment of a Village Development Fund to finance community facilities such as small maternity hospitals, dispensaries, village wells, and grain warehouses on a grant basis, and to provide credit funds for the stimulation of village enterprises, cottage industry and local crafts.
3. The improvement of animal health facilities through the rehabilitation and construction of vaccination units and the supply of vaccines for draft animals.
4. The extension of erosion control (5,000 ha) of land development for rice cultivation on 1,000 ha swampland.
5. The improvement and construction of 208 km. rural tracks.

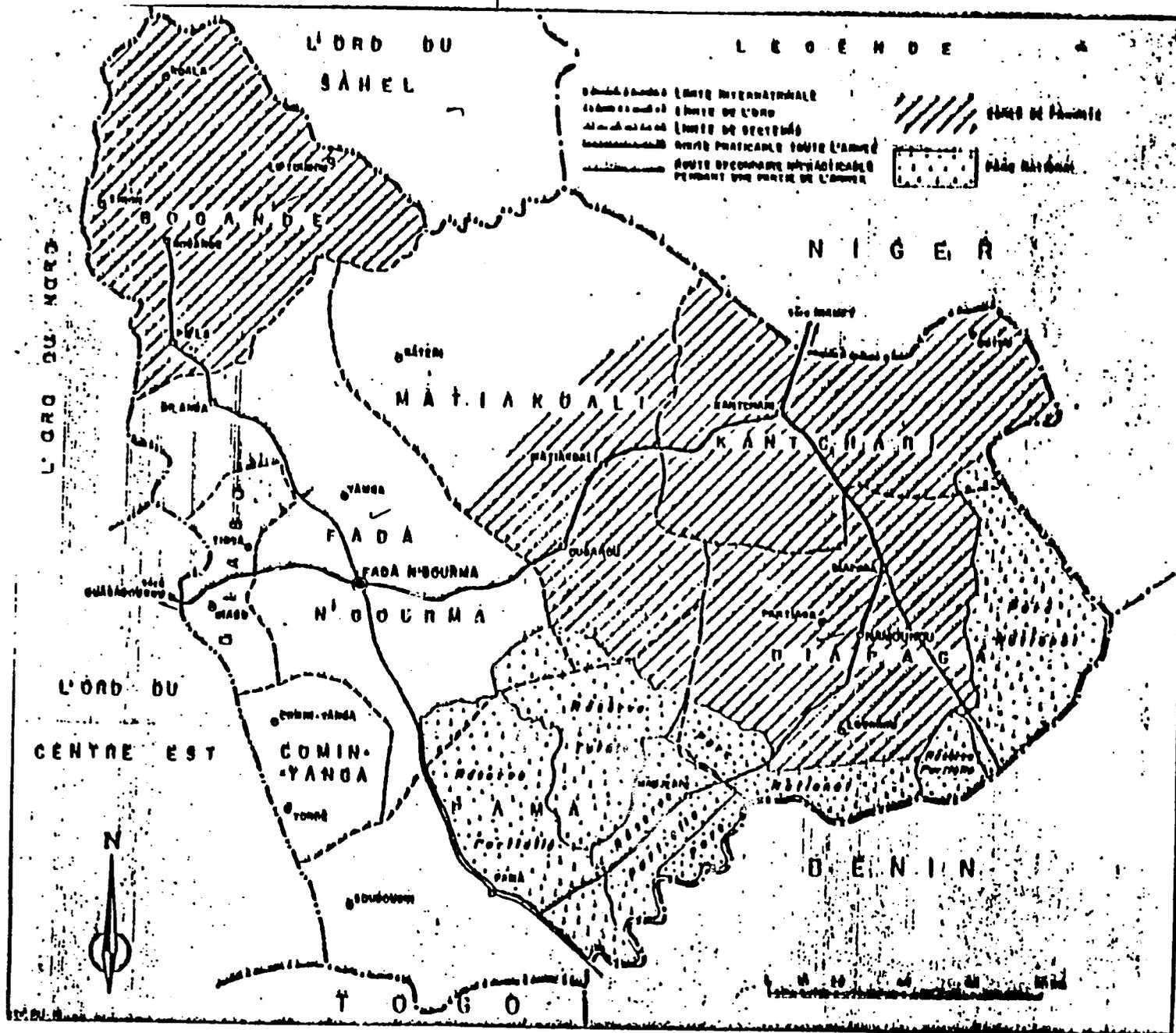


FIGURE 1: PRIORITY AREAS FOR IFAD-LED PROJECT

6. The strengthening of an agricultural production support center, including a seed farm and applied research and training.
7. The strengthening of the ORD through a training program for supervisors and managers and through provision of technical assistance.
8. Monitoring and evaluation.

This analysis will concentrate on socio-economic factors influencing the adoption rate of elements of the technical packages to be disseminated on the effectiveness of the various production groups used by the Eastern ORD (village groups, womens' groups and cereal banks), and on the structural role of extension.

Background Information on the Eastern ORD

Table 1 gives the resident population of the Eastern ORD as of 1975. Recent comprehensive data on fertility and mortality are not available; but public health data (cited in Meheretu and Wilcock 1979:46) show that preventable diseases -- malaria, measles, diarrhea, meningitis, and whooping cough -- are major causes of death for children under five years of age. Access to health care is poor; existing facilities are few and concentrated around Bogande, Fada, and Namounou.

For the community of Komboassi in the sector of Bogande, Senechal (1973:227-8) noted the following vital rates: crude birth rate of 52 per 1,000; crude death rate of 36 per 1,000; and natural rate of increase of 16 per 1,000. Infant mortality was 227 per 1,000. Estimates of the rate of population increase (taking into account births, deaths, and migration) range from 1.6% to 4.3% annually (Reyna 1979:4). The Eastern ORD is less densely populated than the nation as a whole: although it

Table I 1975 Resident Population of the Department de l'Est

	Total	0 - 9	10 - 14	15 - 19	20 - 29	30 - 39	40 - 49	50 - 59	60 +	Indeter minate
Total	349,062	141,300	37,037	37,360	61,528	43,811	27,412	17,656	22,337	621
Male	199,883	74,410	29,939	18,017	26,831	22,058	14,127	9,986	13,163	289
Female	189,179	66,832	16,098	19,343	34,697	21,753	13,285	7,670	9,149	332

SOURCE: (GOUV 1978:II, and
Reyna 1979:5)

-5-

contains roughly 18% of the total area of Upper Volta, it has only 7% of the population (Meheretu and Wilcock 1979:17). Figure 2 shows population, total area, and cultivated area for cantons of the Eastern ORD and derives a density quotient* (DQ) Where the density quotient is greater than one, the canton has a relatively high share of cultivated area relative to its total area. Districts where cultivated land is concentrated are interesting for planners because these tend to be the districts where populations are already making efforts to intensify agricultural production through manuring and more careful tillage. Piela, Coala, Thion, and (to a lesser extent) Bogande are all districts that have relatively high cultivated area and fall within the priority zones of the IFAD-led project.

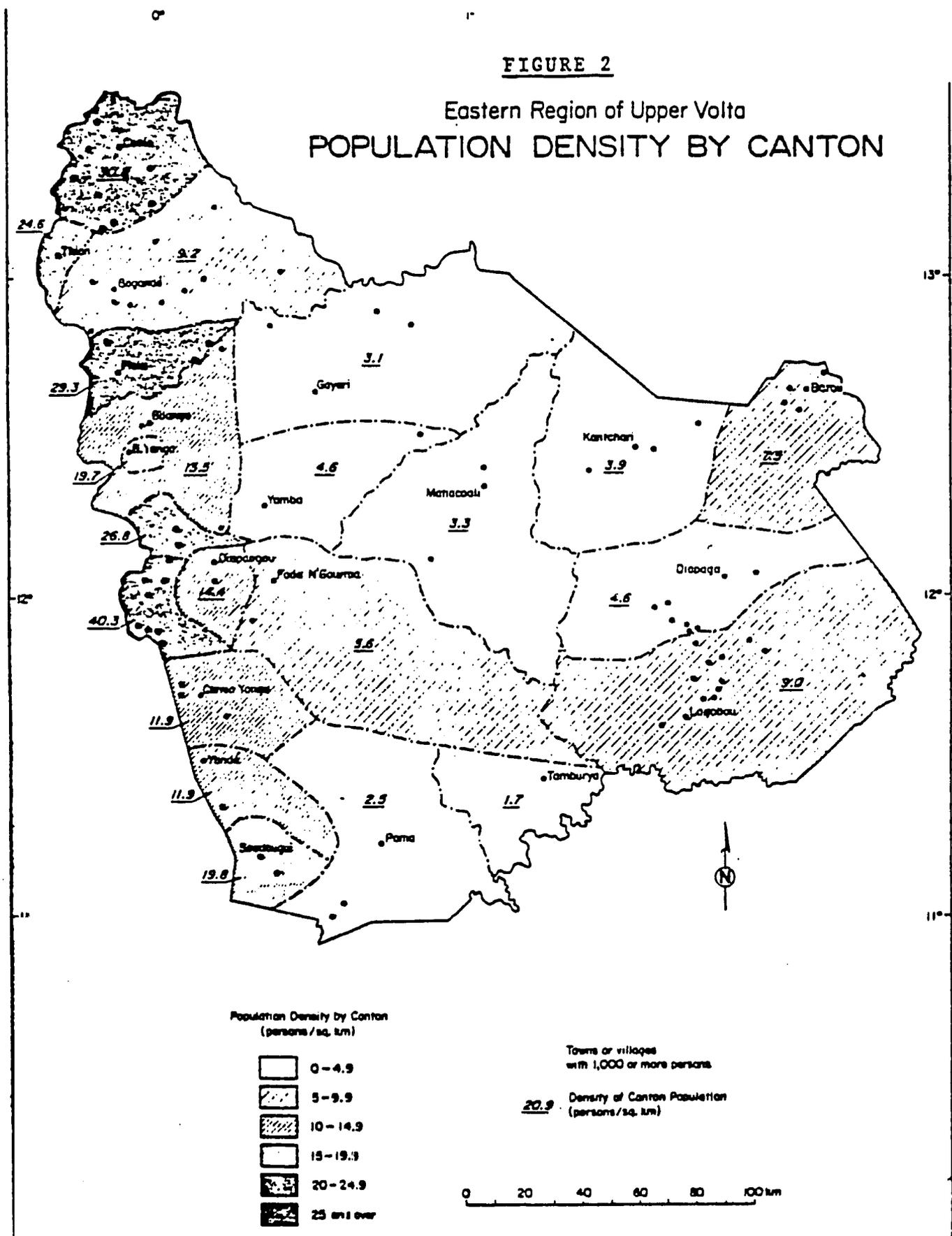
The Gourmantché (or Gurma) comprise about 72% of the population of the Eastern ORD; Peuhl (or Fulani) and Mossi make up most of the rest (Reyna 1979:6). The Gourmantché are usually grouped under the heading "Voltaic peoples", along with the Senufo, Dogon Tallensi, and Mossi. Among most of these groups, traditional political authority was relatively limited; the Gourmantché and the Mossi are relatively unusual in having developed a true state system.

The only area in which we have detailed information on the traditional Gourmantché political system is for an area called the Fortin, which comprised Komboassi, Kossougoudou, Dionfiriga, Ditanga, Dapili and Ouapassi, in the northwest. Before conquest by the French, the region had comprised four sovereign princi-

*
$$DQ = \frac{(\% \text{ cultivated area } \div (\% \text{ cultivated E. ORD}))}{(\% \text{ total area}) \div (\% \text{ total area E. ORD})}$$

FIGURE 2

Eastern Region of Upper Volta
POPULATION DENSITY BY CANTON



palties that had been founded during the period roughly 1600-1750, by conquerers from what is now Fada N'Gourma. Defense from Mossi and Peuhl raids may have been an important factor in centralizing political authority. At the head of each traditional village (often a cluster of several hamlets) stood a chief who held -- in principle -- absolute power over the community, and who depended directly on the head of state. Each residential grouping within the traditional village had a headman with very limited authority (Senechal 1973:48-56). Traditional society was highly stratified -- with a nobility that was, in principal, privileged and exploited at the bottom of the social scale.

The most important limit on the power of traditional chiefs and nobles was probably the availability of empty land: when the local nobles seemed more exacting than Peuhl raiders, the population would pick itself up and move elsewhere. With French conquest, the principalities remained as cantons, and heads of state were transmogrified into chefs de canton, retaining some customary rights and access to some labor. Conquest levelled much of the social differentiation that had prevailed, and the availability of land has meant that few or no families completely lacked land, although we will see that in some situations rights to land are not equally distributed.

The French were directly or indirectly responsible for several sorts of changes in local subsistence systems: for example, before conquest, the Fortin area had relied almost exclusively on millet and maize for subsistence and sorghum was grown in small amounts exclusively for beer. Requisitioning of millet had begun around 1920; the French took roughly a quintal (100 kg) from each household to feed children attending school and to feed laborers.

TABLE 2: Population, Total Area and Cultivated Area for Cantons of the Eastern ORD

	Pop. 78/79 SAED, Est	Pop. %	Total Area Ha	Area %	Cultivted Area	Cultivated Area %	DQ(*)
Coala & Thion	67,403	15.9	213,900	4.3	23,152	16.1	3.74
Bogande	35,269	8.3	363,900	7.3	11,318	7.9	1.08
Piala	23,825	5.6	77,000	1.5	10,342	7.2	4.80
Bilanga & B. Yanga	30,225	7.1	204,800	4.1	9,961	6.9	1.68
Gayeri - Yamba	25,869	6.1	698,700	13.9	8,129	5.6	0.40
Botou, Karitch, Matia	41,909	9.9	922,500	18.4	14,686	10.2	0.55
Diapangou, Tibga	22,710	5.4	108,500	2.1	9,601	6.7	3.19
Fada N' Gourna	22,696	5.4	447,200	8.9	8,068	5.6	0.63
Diabo	26,742	6.3	61,600	1.2	8,857	6.1	5.08
Comin Yanga & Yonde	25,887	6.1	205,400	4.1	8,370	5.8	1.41
Pama, Soud, Madj.	30,999	7.3	719,300	14.4	10,928	7.6	0.53
Gobnangou	46,732	11.0	496,700	9.9	10,920	7.6	0.77
Bizoukou	23,419	5.5	480,000	9.6	9,758	6.8	0.71
	423,683	100.-	4,999,200	100.-	144,090	100.-	

* : DQ = Quotient de repartition.

From Mehretu and Wilcock, 1979

Villagers could ill-afford to give up this much grain, and turned to sorghum, which has higher yields in spite of preferring the taste of millet, and in spite of sorghum's being more difficult to thresh and grind than millet (Senechal 1973:237). The variety they first adopted was woubiri, but people did not like the color (mauve), and the variety yielded little when rainfall was below normal. Later, most cultivators switched to a more drought-tolerant variety, belco, with whiter grain.

The present day level of geographical mobility within the department is high; for example, Senechal (1973:144) noted that 40% of the compounds in the cluster of villages called the Fortin had moved between 1966 and 1969. With the drought, during the years 1969-71, mobility was far higher, almost a fourth of the population left during that time, while in-migration was roughly an eighth of the total average population. However, the level of migration to locations outside Upper Volta is considerably lower than for Upper Volta as a whole. The 1975 census enumerated roughly 8% of males in the Eastern ORD away from their legal place of residence at census, compared with roughly 17% for the nation as a whole (GOUV 1978:I). *

Table 3 shows the ethnic composition of several survey samples within the Eastern ORD. We know very little about relations among ethnic groups in the Eastern ORD as a whole. Our ignorance is unfortunate because these relationships can be important influences on the success or failure of village cooperative groups.

* Roughly 2% of the male population was known to be outside of the country, but this count underestimates the number of emigrants. Other absentees are classified as "demenages" if absent more than 6 months and "residents absents" if absent for less than 6 months.

In the northwest, Moslem Peuhl moved in during the colonial period or before. Most recognize the authority of Gourmantché village chiefs, grouping themselves around villages during the rainy season to cultivate crops, and moving south with their herds during the dry season. Many are gradually sedentarizing themselves. In the central and south in parts of the Eastern ORD, they often herd cattle belonging to the Gourmantché and enter into contracts with the Gourmantché during the dry season to pasture cattle on empty fields in order to manure the land. Around Bogandé, the Gourmantché prefer to herd their own cattle, and the Peuhl form self-sufficient settlements. (Senechal 1973:35).

TABLE #3: Ethnic Groups within the Eastern ORD

	<u>Cercle de Bogandé</u>	<u>Traditional Farms</u>	<u>Animal Traction Farms</u>	<u>Small Scale Enterprises</u>
	(a)	(b)	(b)	(c)
Gourmantché	87.5%	77.9%	54.4%	72%
Peuhl	7.5%	2.0%	—	1%
Mossi	5.0%	20.1%	45.6%	16%
Hausa	—	—	—	5%
Other				6%

(a) Senechal , estimate (1973:33-4)

(b) Lassiter (1980:9)

(c) Wilcock (1981:35)

The Peuhl remain unassimilated to the Gourmantché majority. Although most speak Gourmantché when necessary, they continue to speak Peuhlar among themselves and there is little or no intermarriage between the groups.

Mossi immigrants, in contrast, have tended to integrate themselves into existing Gourmantché villages, to intermarry with the Gourmantché, and to gradually adopt Gourmantché as their language (Senechal 1973:36). Rather than dispersing themselves throughout the Eastern ORD, the Mossi tend to be concentrated on the western edge of the region. There is some evidence that as the number of Mossi immigrants increases, there is increasing inter-ethnic friction.

Religion can be a second factor that structures the interaction among households. In Komboassi (Senechal 1973:144) there were few Moslems before about 1955, and as households converted, they formed a new quarter in the village, partly because rules of modesty make it difficult to live in compounds grouping an entire patrilineal extended family, partly because of a sense that Moslem women should not participate in agricultural work and partly because of the strong sense that Moslems should pray together and work together.

Thus, by the 1960's, the village of Koambassi had formed three distinct clusters of households that exchanged work assistance: one of Moslems, one Gourmantché cluster that excluded Mossi, and one non-Moslem cluster of Gourmantché and Mossi. These sorts of clusters are interesting because in some cases they would seem a better base for mutualist groups than the village as a whole. Unfortunately, we have no information on the composition of village groups and the

factors that influence their efficiency. Although researchers on the project proposed such a study, they were unable to complete it (Swanson, pers. comm.).

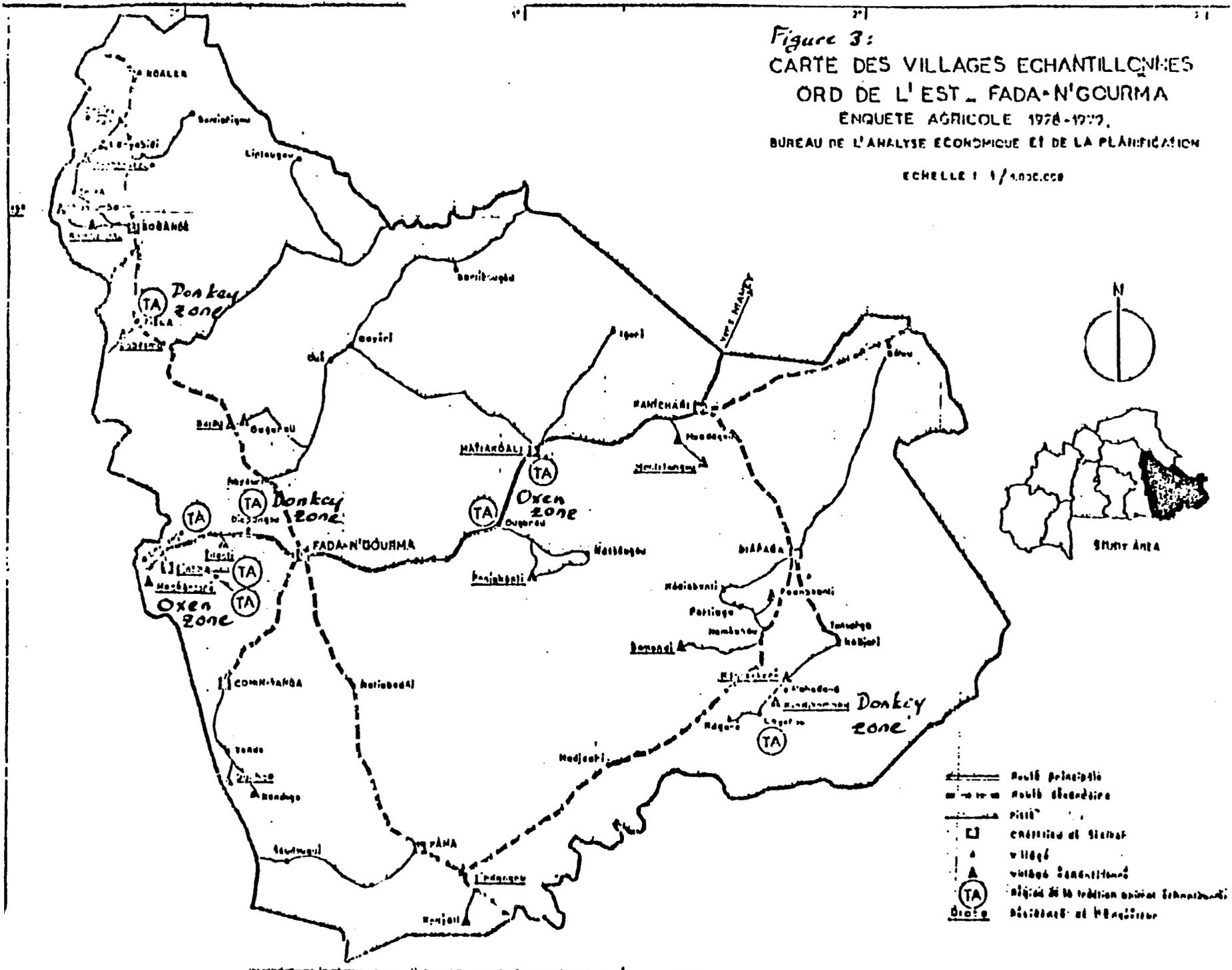
There is some evidence that ethnic and religious affiliation can influence adoption rates of innovations. Senechal (1973:311ff) found in 1968 for Komboassi that Moslem farms had a smaller workforce than the farms of non-Moslems and a smaller average cultivated area, but that they devoted more time and area to labor-intensive cash crops, particularly to rice cultivation. In the MSU study of farming on the Eastern ORD, Mossi formed a disproportionately large number of households in the animal traction sample -- a purposively chosen sample of unusually successful farmers (Lassiter 1980:9). Similarly, a survey of small-scale enterprises found that, while Gourmantché owners of enterprises were evenly divided between traditional enterprises (like blacksmithing, carpentry, pottery, and weaving) and newer enterprises (tailoring, grain milling, baking, etc.), Mossi, Hausa, Peuhl and other non-Gourmantché were far more likely to be owners of the newer enterprises than traditional enterprises (Wilcock, 1981:37).

Small Farms in the Eastern ORD

The basic subsistence unit of the Gourmantché is the household (dansanu). The criteria for distinguishing a household are that members live in one compound (diegu), eat from the same cooking pot, and share the responsibility of living together (Swanson 1979a:32-34). A single compound -- a set of huts enclosed by a wall -- may contain one household

Figure 3:
 CARTE DES VILLAGES ECHANTILLONNES
 ORD DE L'EST - FADA-N'GOURMA
 ENQUETE AGRICOLE 1978-1979.
 BUREAU DE L'ANALYSE ECONOMIQUE ET DE LA PLANIFICATION

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ANNEX I

-11-

or several.

The most complete data we have on farm households in the Eastern ORD come from the survey carried out in 1978-79 by Michigan State University as part of AID's project. The total sample originally included 355 traditional households randomly drawn from randomly selected villages in 12 agro-ecological zones, and 125 households purposively selected to show the most successful farmers using donkey traction and oxen traction equipment. Figure 3 shows the locations of sample villages. It is clear that the households of animal traction adopters differ from the general population; they are larger and more likely to be polygamous than average households, and include on the average, one more worker-equivalent.

Almost all households have one or more large fields planted mostly to sorghum and millet, that are owned by the head of household and farmed by all household workers for a fixed part of the day -- usually from 7 A.M. until 1-2 P.M. The grain harvested from these fields is controlled by the head of household, who is responsible for a grain reserve that will last the household through the next year's harvest. In addition to the house fields, most members of the household have one or more individual fields, which they are free to cultivate during the afternoon. On the average, the head of household controls 67% of total cultivated area, while women of the household control 17% and other males of the household control 15%.

TABLE #4: Demographic Characteristics of MSU Household Sample

	<u>Traditional</u>	<u>Animal Traction All Zones</u>
Average number of members during agricultural season	7.27	11.17
Number of nuclear families per household	1.29	1.35
Average Age of household head	45.8	43.5
Average number of wives	1.45	2.13
Proportion of men 15-54 doing agricultural work	97.7 %	92.4 %
Proportion of women 15-54 who work in fields	87.5 %	93.0 %
Number of worker units (average)*	3.28	4.39

*Worker Equivalents by Age and Sex (Lassiter 1980:9)

Age	Sex	
	<u>M</u>	<u>F</u>
10-14	.680	.525
15-54	1.00	.760
55 +	.525	.360

Source: Lassiter 1980:9

It is possible to distinguish among fields on the basis of ownership, and cultivated land can also be classified on the basis of location: * characteristically, the land

* For the full taxonomy, See Swanson 1979a. Senechal (1973) reports somewhat different terms from the region around Bogandé. Population density is higher around Bogandé than elsewhere in the Eastern ORD, and it is likely that labor-intensive practices like manuring are more common there than elsewhere.

-13-

within and around the compound and nearest to the village receives heavy doses of manure and household waste that often permit almost permanent cultivation. The manure comes from many sources: animals stabled within the compound, herds pastured on the land during the dry season, or droppings from the main trails that owners without livestock gather to carry back to their land (Senechal 1973:289). The crops grown on such plots are those that require exceptionally rich soils -- maize, for example -- or require careful protection from birds or animals -- for example early millets. Bush fields outside the village seldom receive manure in amounts that permit permanent cultivation, and after a period of cultivation, (Swanson 1979a:48 reports an average of 5.4 years cultivation) are left fallow.

Land Tenure

Land that is not under cultivation and that is not claimed by any owner can be cleared by any person. The cultivator is not obliged to ask any village chief for permission, and in clearing and planting the land, he or she establishes personal permanent rights over it (Swanson 1979a:4).*

Land that was cultivated within living memory (kuawaagu) can be claimed by the individual who first established a field on free land. A man can also claim cultivation rights on land that his father or his father's father first cleared,

* Women do not own land (Swanson 1979a:8), but (if they have no brothers) transmit rights to land to their sons.

and, more generally, on land that was first cleared by any man referred to as "father" or "father's father" (that is, any known patrilineal kinsman). Where kinsmen come into conflict over a piece of land, the oldest male of the kin group arbitrates. Women also have use rights to land first cleared by patrilineal kinsmen, but more commonly receive plots from their husbands.

If an individual wishes to cultivate a piece of land first cultivated by someone outside, he or she must ask the owner's permission. Therefore, if a newcomer to a village sees a likely plot of ground, he will ascertain the owner, and ask permission to use the land, with the understanding that the owner can at any time reclaim the land. However, disputes sometimes arise; indeed, borrowing land is the most common cause for disputes over land. Since any crop -- trees included -- belongs to the planter, owners are extremely reluctant to allow persons borrowing their land to plant trees there (Swanson 1979a:40).

In many villages, the earliest settlers own much of the surrounding land, and latecomers to a village are obliged to borrow fields if they cannot find unclaimed land to cultivate. Of all the fields belonging to households included in MSU's survey, about 12% were established on unclaimed land, 60% were on borrowed fields. For comparison, a 1977 survey of the "best farmers" in the Eastern ORD (some of whom used animal traction, others of whom did not) showed that the proportion of borrowed fields was slightly over half (15%) than for the more general sample: the explanation

seems to be that these successful farmers come from families that were generally among early settlers in communities. Indeed, a large number of the successful farmers were also village chiefs (Swanson 1979b:94).

In choosing locations for fields, farmers take into consideration the topography and the state of the fallow vegetation, as well as soil type. Farmers gauge the rate of recovery of fallow land by the state of the vegetation: once it has completely "leafed out", the field is useable. For a subsample of MSU survey households, 25% of principal fields were on land that had not been cultivated within memory, 64% of fields were on fallow land that had "leafed out" and 11% of principal fields were on land that farmers considered had not had enough time to recover (Swanson 1979a:50). In some areas -- for example, around Bogandé -- the proportion of fields cleared on land with a shortened fallow period is much higher, and this probably means that the population pressure on land is increasing.

Table 4 compares household size, cultivated area, and per capita cultivated area among traditional households, households using ox-drawn traction, and households using donkey-drawn equipment. Although animal traction households as a group have a larger total cultivated area, there are only very small differences among groups in total area cultivated per person and cultivated area per worker.

Farms rely almost exclusively on family labor; the role of the salaried labor in agricultural production is extremely

TABLE #4: CHARACTERISTICS OF FARM HOUSEHOLDS IN MSU SAMPLE
IN THE OXEN AND DONKEY ZONES, 1978-79

	All ANTRAC Zones		Oxen Zones		Donkey Zones	
	TRAD	ANTRAC	TRAD	ANTRAC	TRAD	ANTRAC
Number of Households Evaluated ^a	108	110	36	72	72	53
Persons per Household	7.75	11.21	6.67	11.14	8.83	11.27
"Actifs" per Household	3.50	4.71	3.04	5.27	3.96	4.14
Total Area Cultivated (ha)	4.30	6.59	3.96	7.13	4.64	6.04
Proportion of Area in:						
Millet and Sorghum (%)	80.1	74.7	79.1	77.5	81.0	71.8
Groundnuts	9.6	9.6	10.3	6.8	8.8	12.4
Maize	3.0	3.4	3.3	3.6	2.7	2.9
Cotton	0.2	1.9	0.1	2.1	0.3	1.7
Rice	2.2	2.8	1.9	3.5	2.4	2.0
Soybeans	0.5	3.8	0.5	3.9	0.4	3.6
Other Crops	4.6	4.0	4.8	2.4	4.4	5.6
Total Area Cultivated per Person (ha)	0.560	0.588	0.593	0.640	0.526	0.536
Total Area Cultivated per Actif (ha)	1.26	1.39	1.29	1.33	1.22	1.45

^aBecause of time and resource constraints, complete area data was collected for only two-thirds of these households. In a random one-third sub-sample only sorghum and millet fields were measured. While harvest data was collected on all crops for all households, yield and area data presented in this table are based only on the two-thirds sub-sample. Fifteen ANTRAC households are excluded from the financial analysis presented in Chapter 5. Of these 15 households, 7 are donkey farmers residing in oxen zones (3 at Dugarou and 4 at Diabo) and 8 are oxen farmers residing in donkey zones (3 at Piela, 1 at Logobou, and 4 at Diapangou).

Source: Barrett et al. 1981:15

-16-

small -- less than 0.5% of all labor used (Lassiter 1981:21), and reciprocal labor furnishes about 10% of all labor used.

To sum up this brief background sketch, populations in the Eastern ORD have a fairly complex farming system that strongly emphasizes production of staple grains and that is beginning to be moderately well understood. Farmers in this region have shown themselves to be ready to adopt innovations that can be integrated into existing farming systems -- for example, new crop varieties. However, some of the innovations proposed in the IFAD-led program are extensive, and it seems a good idea to review them in light of MSU's research.

By far the most complex component of the project is the component dealing with agricultural production, which proposes to introduce improved production methods to a target population of 8,000 farms, distributed as follows: 4,200 farms in Bogandé, 2,400 farms in the Diapaga region, and 1,400 farms in the Kantchari/Matiakoali. If we set aside for a minute the components dealing with the cultivation of bas-fonds, the changes proposed include: use of contour plowing, improved seed varieties (most of which require more fertile soils and more water than local varieties (FAO 1980: annex 1:21)); use of chemical fertilizer exclusively on corn and cash crops (peanuts, cotton, rice), insecticide treatment for cotton and cowpeas (niebé), fungicide seed dressings, introduction of animal traction, and a set of crop rotations for use on fields nearest the village. Of these, animal traction and the rotations are the most basic and affect the largest areas.

On the Costs and Benefits of Animal Traction

The program proposes to equip 2,230 farms for animal traction, of which 30% will be donkey-drawn and 70% will be ox-drawn. This will bring to 3,200 the number of farms practicing animal traction in the target areas (ADB 1981:Annex 6). The project feels that introducing animal traction will increase the area cultivated per worker from roughly 1.20 ha to 1.50 ha (25%), that plowing will increase yields by improving the soil's capacity to take up water, and that animal traction will permit sowing and weeding to be completed more quickly. While these predictions may ultimately be borne out, AID's experience showed that a number of problems arise during the years where farmers are mastering a new technology, even among the most successful adopters.

The AID project advocated keeping draft animals on the farm, stabled inside the compound, in order to lower the risk of contagious disease and accidents, and in order to see that they are well enough fed at the start of the agricultural season to withstand heavy work. This means that the farmer must be able to provide forage throughout the year. The FAO (also advocating that oxen be kept on the farm) recommended that each farm cultivate 0.4 ha of Stylosantes guinensis for forage through most of the year and store crop residues and either bran or cottonseed to carry the animal through the dry season.

-18-

Farmers in the animal traction sample of the MSU survey (Barrett et al. 1981:53-57) did not find it easy to keep oxen on the farm throughout the year; about a quarter of the farmers had to entrust their oxen to Peuhl herders for half the year or more. About a third of the farmers said they lacked the labor and forage to feed and water oxen. Donkeys were almost always kept on the farm throughout the year -- in part because they are used for carting during the dry season -- and 47% of respondents said they had too few workers to feed and water the animals.

Most farmers did not produce enough crop residues to feed their animals, and the average expenses for feed were 3,804 CFA for oxen and 938 CFA for donkeys. About half these expenses fell between May and July -- the period when farm work is the heaviest and when the household's resources are lowest. Many animals were not adequately/nourished during the agricultural season: 22% of ox teams were lost an average of 10 days due to illness during the plowing season (11 weeks), and during the weeding and ridging period 22% of ox teams lost 30 days on the average. Donkeys stayed in much better health, as a group. Mortality during 1978-79 was 4.5% for oxen and 1.2% for donkeys (Barrett et al. 1981:60-63

The FAO estimated that feeding expenses for a pair of oxen would cost 3,000 CFA per year; it is likely that they are too optimistic and are not taking into account the labor costs of caring for draft animals. There are

some measures that can lessen the problem: more widespread use of donkey traction where soils permit, or use of one ox instead of a team. Since inexperienced farmers had the most difficulty in caring for animals, follow-up of farmers may identify the coping mechanisms that work best for them and their farms, and show how to teach the techniques to new adopters.

The effects of animal traction on yield and on the area that can be cultivated per worker are complex. To start with field preparation and sowing, field trials conducted in 1979-80 showed that plowing alone increased the yield of millet and sorghum by 16.7% on the average and raised yields of peanuts by 18.2%. However, Table 5 shows that the millet and sorghum yields actually achieved by farmers using animal traction differed little from those of traditional farmers (Barrett et al. 1981:93-96).

One reason for the lack of improvement on the farm may be difficulties in planting. Traditional farmers sow millet and sorghum as soon as possible after the first rains that come in late May. They make enormous efforts to sow as much as possible within the two days or so when the soil is moist enough to work -- Senechal (1973:275-76) noted that sowing was the only work he saw that continued into the night. The same is true for farmers elsewhere in Upper Volta. Swanson (1981) noted in Nedogo (a village near Ouagadougou) that by far the largest part of millet planting took place within three days after the first substantial rain. There are several advantages to early planting: it takes advantage

TABLE #5: Yields^(a) for Major Crops Under Hoe, Oxen and Donkey Cultivation in Antrac Study Zones, 1978-79 (kgs/hectare)

Crops	All ANTRAC Zones		Oxen Zones		Donkey Zones	
	Hoe	ANTRAC	Hoe	ANTRAC	Hoe	ANTRAC
Millet and Sorghum	466	468	555	554	377	381
Groundnuts	213	238	59	179	366	296
Maize	425	686	500	746	349	585
Cotton	108 ^b	171	118 ^b	253	97 ^b	88
Rice	442	465	329	630	554	300
Soybeans	283 ^b	197	241 ^b	294	324 ^b	99

^aYields presented here are weighted averages based on estimates of total household production in 1978-79.

^bThese estimates are based on a small number of observations representing less than one hectare of cropland per zone.

Source: Barrett et al. 1981:93

-20-

of an increase in available soil nitrates that follows the first rains, it gives the grain a maximum head start on weeds, and it lessens the risk of crop failure due to early termination of the rains.

Animal traction households working heavy soils cannot start plowing until the soil has been somewhat softened. To sow rows by hand (none have seeders) is slow work, and households generally finish their cereals planting two or three weeks later than other farmers (Baker and Lassiter 1980:37). While this means that animal traction households are less likely than other farmers to have to replant, it also means that they stand a greater risk of losing their crop during a shorter than usual rainy season. One way to ameliorate this problem might be to provide seeders to farmers, and to scarify and seed in one operation (Swanson pers. comm.). The FAO plan allows for one seeder per three households: given the time constraints, it may be necessary that each household own a seeder.

Weeding and cultivating of millet and sorghum require a very large part of the total labor input for those crops, and are usually thought to be the operations that most limit the area a single worker can cultivate. However, although all farmers with draft animals owned plows, relatively few (32%) owned weeders and fewer (24%) owned ridgers (Barrett et al. 1981:66); in general, because weeders and ridgers were not available for purchase or because farmers were unable to afford them.

Traditionally, farmers hoe and weed newly cleared

millet/sorghum fields twice, and on the third hoeing and weeding ridge soil up against the plants' roots to conserve moisture (Swanson 1979b:48ff). Some farmers omit the third hoeing, but this often means that weeds have a chance to seed, which makes it necessary to hoe the field the next year before planting. In older fields, farmers may be required to hoe a fourth or fifth time.

Twenty-five percent of farmers actually weeded some or all of their fields using animal traction equipment*, and 21% of farmers ridged some or all of their fields with animal traction equipment. One reason for the low proportions of farmers weeding or ridging was that seeding has to have been done in straight rows with a lower planting density than is traditional; another reason is the fact that incompletely trained animals will damage the crops (Barrett et al. 1981:70). It is also very rare for farmers to use their equipment to weed or ridge neighbors' fields, since the fields have to have been planted in straight lines.

Estimating the effect of animal traction on cultivated area per worker is complicated by the effect of environmental zone. Overall, animal traction users cultivated about 10% more area per active worker than traditional farmers in the same zone (Barrett et al. 1981:82). For households using donkey traction, whether or not the farmer weeded with the traction equipment had little effect on the increase in area

*Many farmers who owned weeders or ridgers did not use them, and some who did not own weeders or ridgers used their plows. Donkey-traction farmers often tried to weed using a plow, but this meant making three to five passes for each row.

-22-

cultivated per worker. For households using ox-traction, those that weeded with traction equipment cultivated 22% more area per worker than those who did not (Barrett et al. 1981:85).

The ADB projected a 25% increase in cultivated area due to animal traction over three years (1981: Annex 17:3): this may ultimately be possible, if all traction users are provided with weeding equipment and learn to use it effectively. Since a very large proportion of ox-traction users received their equipment less than two years ago, one task of the MEU should be to estimate what proportion of them ultimately master the skills needed for weeding and what is the change over time in their cultivated area per worker. However, if we take into account that the MSU sample farmers were the relatively successful ones in their districts, it seems likely that the ADB predictions are overly optimistic.

Farms using animal traction show increased plantings of cotton, peanuts, soybeans, and rice, when compared with traditional farms in the same district. These crops are more labor-intensive than millet and sorghum: the increases in area per worker ranged from 60% (peanuts) to 970% (soybeans) * (Barrett et al. 1981:91).

In terms of total labor input (weighted for age and sex of worker as in Table 6) to field activities for all crops, animal traction households spend 132 hours less per hectare than do traditional households, a reduction of 18.2%. The decrease in ox-traction households (26%) is

* Remember, though, that these are calculated from extremely small base areas.

considerably larger than in donkey-traction farms, and most of the savings in time come from reduction in time necessary for tillage (Barrett et al. 1981:100).

Discussing how animal traction affects the allocation of household labor is difficult because the effects of the new technology cannot be separated from demographic effects. In terms of average total hours worked, men in ox-drawn traction households spent slightly more time working each day than men in traditional households, and men in donkey-drawn traction households spent slightly less. Women in both sorts of animal-traction households work fewer total hours per day than women in hoe-cultivating households, but this reduction is mostly because they spend less time on household chores than in traditional households, because households using animal traction are larger and have more women to share the chores (Barrett 1981:104-106). There is no evidence that women in animal traction households become significantly more involved in the transformation and trading of agricultural products or in livestock raising than other women; rather, they spend most of the time gained "resting, walking or ill".

One gauge of the productivity of labor in field work is the net marginal revenue to labor, that is: the revenue that results from another hour of labor on a particular crop, after variable costs (seed, fertilizer, salaried labor) and fixed costs (depreciation and repairs on equipment) have been deducted. If we make comparisons within zones between animal traction households and traditional households, we see that the effect of the traction

equipment is not constant and that the variation among zones due to the drought in Piela and Diapangou is far greater than the effect of the traction equipment.

Table 7 shows the average for all zones of the net marginal revenue per worker-equivalent hour for millet/sorghum and for cash crops and maize. Because crop areas are very small, because there is so much variation among zones, and because many sampled zones did not include animal traction farmers, the figures don't give a very accurate idea of the effect of animal traction on productivity; however, they give a rough idea of the overall level of productivity in the zone. The average wage rate for agricultural work is 31.6 CFA/hour, but, as noted, salaried labor is very seldom used in the region.

TABLE #6: Net Marginal Revenue per Worker-Equivalent Hour, by Zone, for Sorghum/Millet (a)

	<u>Traditional Households</u>	<u>Animal Traction Households</u>
<u>Ox Zones</u>		
Diabo	22.2	27.6
Ougarou	90.9	87.4
<u>Donkey Zones</u>		
Piela (drought)	7.8	8.2
Diapangou (drought)	12.3	28.5
Logobou	45.7	46.3

NOTE: (a)

<u>Worker Equivalent (WE) Conversion Coefficients</u>			
<u>Worker Category</u>	<u>Tillage</u>	<u>Harvest</u>	<u>Other</u>
Males age 0-14	0.81	0.66	0.96
Females age 0-14	0.71	0.91	0.88
Males age 15-54	1.00	1.00	1.00
Females age 15-54	0.86	1.04	0.97
Males age 55+	0.58	0.59	0.59
Females age 55+	0.46	0.61	0.59

Price is weighted average selling price per threshed kg: 45.5 F CFA.

TABLE #7: Net Marginal Revenue per Worker-Equivalent Hour
for Hoe-Zone and Animal-Traction Zones (a)

<u>CROP</u>	<u>Hoe Zones</u>	<u>Animal Traction Zones</u>
Millet/sorghum	39.4	36.0
Maize	30.0	72.1
Groundnuts	15.6	15.7
Soybeans	23.8	68.4
Cotton	7.8	10.5
Rice	67.3	76.6

(a) Prices used are weighted average selling price per kg. threshed, shelled, or hulled crop equivalent

<u>Crop</u>	<u>Price/Kg</u>
Sorghum	45.5
Millet	45.5
Niadi	45.5
Maize	39.6
Groundnuts	68.9
Bamera Nuts	59.0
Cowpeas	73.2
Soybeans	72.4
Sesame	57.6
Cotton	67.4
Rice	90.2

Source: Lassiter 1981

TABLE #8: Estimated and Projected Yields for Eastern OPD Crops (Kg/ha)

	<u>L E V E L I</u>		<u>L E V E L II</u>		<u>L E V E L III</u>	
	<u>Manual</u>	<u>Animal Traction</u>	<u>Manual</u>	<u>Animal Traction</u>	<u>Manual</u>	<u>Animal Traction</u>
Sorghum	700	800	900	1,100	1,100	1,300
Millet	600	700	800	1,000	1,000	1,200
Groundnuts	500	600	800	900	1,000	1,200
Maize	1,000	1,200	1,400	1,700	2,000	2,400
Cotton	--	--	--	900	900	1,000
Cowpeas	200	200	400	400	700	700
Rice	--	--	--	--	1,500	1,500
Present Number of Target Farms	7,480	520				
Target Farms at EOP (year 7)			1,904	648	2,856	2,176

Cotton and groundnuts have the lowest productivity of any crops and have lower productivity than elsewhere in West Africa. In part, this is probably because farmers were getting little extension advice and few inputs for these crops: only 15-25 percent of peanut seed was being treated (Lassiter 1981: 34ff) and no chemical fertilizer was being used, and because cotton was being late-seeded and probably getting no insecticide treatment (as sample farmers participated in CDFT programs).

Maize and soybeans have somewhat higher productivity, and rice (grown in bas-fonds) is quite productive. But maize is almost entirely consumed by the household during the soudure, and markets for soybeans and for rice are limited. Cowpeas are seldom grown in pure stands, and so are not analyzed as a separate enterprise.

The observed yields for crops in the Eastern Region (shown on Table 5) are considerably lower than FAO's estimates, shown on Table 8. Level I on the table represents present-day farms. Level II represents projected yields on farms with plowing, use of selected seed, seed dressings, line seeding and altered density, fertilizer use (on cash crops), pest control, and protection of stored crops. Level III represents protected yields under crop rotation (discussed below). The table also shows the present status

of target farms, and the projected status at the end of the project.

The low observed productivities for cash crops are troubling because the main increases in production under IFAD's project are supposed to come from a new set of rotations that will greatly increase the amount of land under peanuts, cowpeas, and cotton. These three crops yield very little if not protected against insects, and it seems the present extension system and plant protection services reach very few farmers indeed during the growing season. The amounts of inputs the Eastern ORD now handles and distributes are very small, and (for animal traction equipment at least) deliveries are often late. Under the project, procurement and distribution of inputs for agriculture are to be handled, as in the past, by the Bureau de Production Agricole. But the AfDB staff appraisal does not discuss whether BPA now has the capacity to handle more production inputs, or how specifically to strengthen the Bureau. Assessing the input procurement and delivery system of the Eastern ORD should be one of the early tasks of the MEU.

AfDB estimates that over an eight year LOP, the project would increase annual household income in target households from an estimated \$500 (110,000 F CFA) to \$1,100 in households

using animal traction (242,000 F CFA) and to \$900 (198,000 F CFA) in households cultivating by hand (1981 : 8,33). These benefits are a little hard to compare with the ORD data, because they assume an average of five persons in the household (instead of the 7 - 11 observed for the MSU sample); however, one can concentrate on household income rather than per capita income.

Table 9 compares farming and household revenues and expenses for traditional and animal-traction households in the oxen zones and in the donkey zones. By far the largest share of revenues for households in all categories comes from crop production. Traction households have larger total crop production than traditional households, but this is due to their larger size: on a per capita basis, ox-traction households have only slightly more revenue than traditional, and donkey traction households have somewhat less (in part, due to the drought in Piela and Diapangou. Barrett et al. 1981 : 113). The costs of draft animals and traction equipment are considerable and will rise as farmers begin to feed their animals more adequately and to acquire more equipment. However, the appreciation in value of draft oxen more than offsets maintenance costs and depreciation. Transport revenues for donkeys are far smaller, but are underestimated somewhat here, as only cash payments are included in revenues.

Animal-traction households involve themselves far more heavily in livestock than do traditional households. Changes in the value of herds have not yet been taken into account, and so analyses incomplete. Revenues from agricultural trading and agricultural transformation and gathered crops are quite small. Non-agricultural income contributes a surprizingly large share to the total net household income of traditional oxen-zone farmers (32 percent) and traction-using donkey-zone farmers (22 %).

Leaving aside non-agricultural income, table 10 shows that net farm income in households using ox-drawn traction was 12 % higher per hectare, 16% higher per active worker, and 20% higher per capita than in traditional households in the same zones. Although these results are encouraging, they come nowhere near AfDB's goals. For traction-using households in the donkey-zones, all efficiency measures (shown in Table 10) were lower, due to the drought. Disposable income is very small for households: per capita net farm income less subsistence was 6,389 F CFA in the ox-traction zones and 646 F CFA in the donkey-traction zones.

Animal traction seems also to bring on problems in cash flow. Table 11 shows that ox-traction greatly increases the cash expenses of production, but that the increased expenses in donkey-traction were at least partly offset by revenues for transport. In addition, traction-using households bought far larger amounts of food than traditional households; these purchases were only partly defrayed by larger sales. Indeed, Table 11 somewhat underestimates the problem for the average animal-traction user, since it treats more successful farmers, and since collection efforts by the Eastern ORD were delayed that year and most farmers did not make lone

TABLE 9: FARM HOUSEHOLD ANNUAL INCOME STATEMENT, 1978-79

	Oxen Zones		Donkey Zones	
	TRAD	ANTRAC	TRAD	ANTRAC
Number of Households	36	64	72	46
I. Crop Production Enterprise				
<u>Revenue</u>				
Value of Crop Production ^a	35,591	149,356	83,501	94,012
of which, Value Sold	6,561	9,680	9,569	13,798
Contract Plowing Revenues ^d	0	+ 524	0	+ 70
Contract Transport Revenues ^d	0	+ 136	0	+ 1,635
<u>Variable Costs</u>				
Purchased Seed	- 484	- 583	- 784	- 1,273
Value of Household Seed ^a	- 4,175	- 7,930	- 4,444	- 6,931
Fertilizer and Insecticides	- 28	- 402	- 153	- 788
Wage Labor	- 250	- 490	- 217	- 315
Grain Purchased for "Initiation" Field Labor ^b	0	- 31	0	- 48
ANTRAC Feed Grain (Purchased)	0	- 640	0	- 328
ANTRAC Feed Grain (Value of Household Grain) ^a	0	- 1,672	0	- 2,826
Other ANTRAC Maintenance Costs ^c	0	- 3,232	0	- 930
<u>Fixed Costs</u>				
Repairs to ANTRAC Equipment	0	- 68	0	- 26
Replacement Parts for ANTRAC Equipment	0	- 1,012	0	- 1,075
Interest Payments for ANTRAC Credit	0	- 1,915	0	- 47
Depreciation on ANTRAC Equipment ^a	0	- 5,229	0	- 5,095
Depreciation on ANTRAC Animals ^a	0	+22,645	0	- 2,081
Repairs of Other Tools and Equipment	- 36	- 67	- 61	- 77
Depreciation on Other Tools and Equipment	- 1,996	- 3,170	- 2,324	- 2,678
<u>Net Revenue</u>				
Net Revenue from Crop Production	78,622	146,220	75,572	71,099
II. Livestock Enterprise				
<u>Revenue</u>				
Sales of Animals	3,652	27,693	17,337	33,281
Sales of Animal Products	345	5,434	1,684	680
<u>Costs</u>				
Animal Purchases	- 5,556	-26,961	-10,127	-30,924
Feed and Maintenance Expenses	- 441	- 1,031	- 3,076	- 1,641
<u>Net Revenue</u>				
Sub-total	- 1,970	5,135	5,818	1,396
III. Agricultural Trading				
<u>Revenue</u>				
Value of Sales (Net of Transport Costs)	1,594	2,877	7,367	17,913
<u>Costs</u>				
Value of Purchases (Net of Transport Costs)	- 1,358	- 3,406	- 6,682	-19,402
Depreciation	- 61	- 599	- 234	- 215
Change in Value of Inventories ^a	0	+ 2,058	- 9	+ 3,626
<u>Net Revenue</u>				
Sub-total	175	930	942	1,922
IV. Agricultural Transformation & Gathered Crops				
<u>Revenue</u>				
Sales of Transformed Crops	1,052	2,744	1,994	8,185
Sales of Gathered Crops	513	3,406	994	631
<u>Costs</u>				
Purchases of Variable Inputs	- 797	- 2,718	- 1,489	- 9,897
Depreciation on Equipment	- 240	- 254	- 797	- 339
<u>Net Revenue</u>				
Sub-total	528	3,178	702	- 1,420
NET FARM INCOME	77,355	155,463	83,026	72,997
V. Other Sources of Income				
<u>Revenue</u>				
Gross Returns to Non-Ag. Trading & Artisanal Activities	38,422	14,822	8,858	34,385
Salaries	11	484	0	4,817
Pensions	0	5,807	9	860
Inheritance & Net Cash Gifts	- 382	14	- 2,673	5,972
<u>Costs</u>				
Variable Costs of Non-Ag. Trading & Artisanal Activities	- 1,120	- 7,943	- 5,156	-24,457
Depreciation	- 572	- 641	- 527	- 1,535
<u>Net Revenue</u>				
Sub-total	36,359	12,543	511	20,042
TOTAL NET HOUSEHOLD INCOME	113,714	168,006	83,537	93,039

ANNEX I

TABLE #10: SUMMARY FARM HOUSEHOLD INCOME CHARACTERISTICS

	Oxen Zones		Donkey Zones	
	Hoe	ANTRAC	Hoe	ANTRAC
<u>Value of Major Income Components</u>	<u>FCFA</u>	<u>FCFA</u>	<u>FCFA</u>	<u>FCFA</u>
I. Crop Production	78,622	146,220	75,572	71,099
II. Livestock Raising	1,970	5,135	5,818	1,396
III. Crop Trading	175	930	942	1,922
IV. Agricultural Transformation	528	3,178	702	- 1,420
V. Other Sources of Income	36,359	12,543	511	20,042
NET FARM INCOME*	77,355	155,463	83,026	72,997
NET HOUSEHOLD INCOME	113,714	168,006	83,537	93,039
<u>Relative Importance of Income Components</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
I. Crop Production (% of Total)	69.1	87.0	90.5	76.4
II. Livestock Raising	1.7	3.1	7.0	1.5
III. Agricultural Trading	0.2	0.6	1.1	2.1
IV. Agricultural Transformation	0.5	1.9	0.8	- 1.5
V. Other Sources of Income	2.9	7.5	0.6	21.5
<u>Efficiency Measures</u>	<u>FCFA</u>	<u>FCFA</u>	<u>FCFA</u>	<u>FCFA</u>
Net Crop Production Revenue per Person	11,787	13,126	8,559	6,309
Net Crop Production Revenue per Actif	25,863	27,745	19,084	17,171
Net Crop Production Revenue per Hectare	19,854	20,508	16,287	11,771
Net Farm Income per Person	11,597	13,955	9,403	6,477
Net Farm Income per Actif	25,446	29,450	20,968	17,632
Net Farm Income Hectare	19,534	21,804	17,894	12,085
Net Household Income per Person	17,049	15,081	9,461	8,256
Net Household Income per Actif	37,406	31,879	21,095	22,473
Net Household Income per Hectare	28,716	23,563	18,003	15,401

*Net Farm Income in the sum of major income components I through IV.

ANNEX I

TABLE #11: ANNUAL CASH FLOW STATEMENT, 1978-79

Cash Flow Item	Oxen Zones		Donkey Zones	
	TRAD	ANTRAC	TRAD	ANTRAC
<u>Crop Production</u>				
			<u>FCFA</u>	
1. Value of Sales	6,661	9,680	9,569	13,798
2. Non-ANTRAC Inputs	- 1,752	- 2,682	- 2,879	- 2,621
3. ANTRAC Related Current Cash Expenses	0	- 4,502	9	- 2,409
4. ANTRAC Related Revenues	0	+ 660	0	+ 1,705
5. <u>Net Cropping Cash Revenue</u>	4,909	3,156	6,681	10,473
6. Major Food Purchases	- 4,966	-11,617	- 9,505	-20,782
7. <u>Net Cropping Cash Surplus</u>	- 57	- 8,461	- 2,824	-10,309
<u>Livestock Production</u>				
8. Revenues	3,997	33,127	19,021	33,961
9. Expenditures	- 5,967	-27,992	-13,203	-32,565
<u>Agricultural Trading</u>				
10. Revenues	1,594	2,877	7,867	17,913
11. Expenditures	- 1,358	- 3,406	- 6,682	-19,402
<u>Agricultural Processing and Gathering</u>				
12. Revenues	1,565	6,150	2,988	8,816
13. Expenditures	- 1,037	- 2,972	- 2,286	-10,236
<u>Other Sources of Income</u>				
14. Revenues	38,051	21,127	6,194	46,034
15. Expenditures	- 1,120	- 7,943	- 5,156	-24,457
<u>Capital Expenditures</u>				
16. Non-ANTRAC Equipment Purchased	- 183	- 126	- 504	- 276
17. ANTRAC Equipment Purchased	- 333	- 640	- 0	- 2,399
<u>Credit</u>				
18. Borrowing and Reimbursements Received	1,155	6,853	2,854	9,169
19. Loans and Repayments	- 1,870	-19,237	- 3,138	- 7,724
20. <u>Net Cash Flow</u>	34,437	- 643	5,131	8,525

Table 12: Estimated Internal Rates of Return for Different Degrees of Use of Animal Traction Equipment (c)

	Donkey Traction	Ox Traction
Plowing - no yield or area increase		2%
Plowing with area and yield increase (a)	4%	14%
Plowing and Weeding (b)	28%	24%
Plowing, weeding, and phosphate fertilizer	35%	34%

- (a) Yield and area benefits realized year 2 for donkey traction, year 4 for ox traction
- (b) Assumes donkey traction farmers start to weed in year 3 and realizes full benefit in year 4; ox traction farmers start to weed in year 5 and realize full benefit in year 6.
- (c) Area and yield increases as follows:

A month-by-month summary of cash flow shows that the deficits are less easily covered by animal traction households than by traditional households, and that this problem is particularly acute during the period May to August. The authors suggest that it is the need for easily liquidated resources that may make larger and more prosperous households more able to adopt animal traction than smaller and more marginal households (1981 : 126).

Table 12 shows estimated internal rates of return over a ten year period for different degrees of adoption of animal traction: plowing without yields or area effects (a worst case analysis), plowing, plowing and weeding, and plowing, weeding and fertilizer use. The assumed increases in cultivated area and yields are shown in the notes to Table 12. Although the production increases due to oxen-traction are larger than the production increases due to donkey-traction, the time necessary to master the techniques and to realize full benefits is also longer. The lower costs and shorter learning period for donkey traction account for the consistently higher rates of return.

Crop Varieties and Rotation

The interventions in the agricultural production component that affect staple grain production are animal traction, crop rotation, improved seed varieties, and use of seed dressing. Gourmantché farmers routinely collect new seed varieties and plant them on small parts of their fields, and varieties that perform well are quickly disseminated as neighbors request small amounts of a new variety to try on fields (Swanson 1979b : 40ff). However, it is likely that the characteristics farmers are looking for do not always match the criteria used by project agronomists. The

seed varieties listed in the project recommendations (FAO 1980 : Annex 1:21) have been chosen for their ability to give high yields, and most of these varieties require more water and more fertile soils than Varieties currently used.

Farmers in many parts of the Eastern ORD have been encountering a series of years in which the rains have been ending early, giving them rainy seasons of 3 1/2 - 4 months instead of 4 - 5 months. Late maturing varieties do not yield well under the decreased rainfall, and one technique has been to select field locations where runoff collects, permitting the late-maturing varieties to develop normally. A whole classification system for land types is based on the drainage patterns to be expected (Swanson 1979b : 3-7). However, areas that collect water are scarce, and farmers have been searching for crop varieties that can bear reasonably well in 3 1/2 - 4 months.

The soil fertility requirements of the new cereal varieties are to be met in part by residual nutrients left from (fertilized) cash crops and maize and from legumes -- particularly peanuts and cowpeas. Revenue from the cash crops is also needed to pay off loans for traction equipment. As a result, the three rotations recommended have a larger area planted to cotton (see table 13 columns b and c) or, where cotton is not grown, to groundnuts. Where farmers do plant 70 to 80 % of their land in millet and sorghum, the proposed crop rotations reduce the amount of land to 40 to 60 %.

FAO's estimates and projections of yields were probably over-optimistic, and it is likely that reducing the areas farmers

FOOTNOTE TO TABLE 12:

	Plowing only		Plowing plus weeding		Plowing +weeding +phosphates	
	Oxen	Donkey	Oxen	Donkey	Oxen	Donkey
Percent Increase Over Hoe Farming						
<u>Sorghum and Millet:</u>						
Area	3.0	2.0	18.8	9.4	18.8	9.4
Yield	-		6.0	3.0	34.8	17.4
Net Change in Production	3.0	2.0	25.9	13.0	60.0	30.0
<u>Other Crops:</u>						
Area	37.5	25.0	100.0	50.0	100.0	50.0
Yield	10.4	6.9	14.4	7.2	40.0	20.0
Net Change in Production	51.8	34.5	128.8	64.4	180.0	90.0
<u>All Crops:^c</u>						
Area	9.9	6.6	35.0	17.5	35.0	17.5
Yield	2.0	0.7	7.7	3.9	35.8	17.9
Net Change in Production	12.1	8.1	45.4	22.7	83.3	41.7
<u>Net Increase in Value of Production:^d</u>						
	15.7	10.5	52.6	26.3	91.2	45.6
<u>Number of Years Required to Achieve This Level</u>						
	4	2	6	4	6	6

^aCase 1 is minimum adoption of animal traction with no increases in area cultivated or in yields per hectare.

^bBased on 150 kg./ha. at 20 FCFA used only on the 5.03 hectares assumed to be both plowed and weeded.

^cSorghum and millet represent 80 percent of area in traditional agriculture.

^dSorghum and millet represent 74 percent of value of production in traditional agriculture.

Source: 1978/79 Survey Data.

plant to grain would increase the dependence of animal traction households on purchased grain. The other problem with the rotations proposed is that they make farmers more dependent on extension services for fertilizer and for pest management, and it is not yet clear that extension services have the capacity to deliver. The fact that 30 % of principal fields are located outside commuting distance of the villages increases the problem of providing services during the rainy seasons.

Pre-Cooperative Organizations

Both the extension service and the credit activities of the Eastern ORD are oriented toward collective groups rather than to individuals. These groups, classified as pre-cooperatives, comprise: groupements villageois (GV, voluntary farmers' groups), groupement feminins (GF), cereal banks, and 4C clubs (largely defunct) aimed at youth. There is considerable disagreement among project staff concerning the effectiveness of these groups.

The Eastern ORD classified GVs as strong or weak based on the age of the group, its stability and cohesion, and its repayment record. Members of a GV are collectively responsible for loans made to any member of the GV, and they are expected collectively to cultivate a field of one or more cash crops as evidence of their cohesiveness and commitment. Most of the members of GVs are fairly young, and Swanson (1979b) has noted that heads of households tend not to participate in them because they find group work under the direction of an encadreur degrading. Younger men tend to be more comfortable in such groups (Reyna 1979 : 21). Horowitz (1974) thought that individual mobility might be too high for the groups to be stable, and Poulin et al. (1978 : 25) felt that GVs were

primarily a convenience for ORD extension workers which grouped farmers in one place for demonstrations and reduced the amount of paperwork in administering credit.

TABLE No. 13: Proportion of Cultivated Area Devoted to Diverse Crops under Proposed Rotations

<u>CROP</u>	(a) <u>650-750 mm</u>	(b) <u>750-800 mm</u>	(c) <u>900+ mm</u>
Sorghum	61%	42.4%	40%
Millet	10%	7.6%	6.8%
Groundnuts	24%	18%	9%
Cowpeas	10%	10%	10%
Cotton	--	18%	18%
Maize	--	9%	9%
Garden crops	5%	5%	5%
Yams	--	--	9%
Manioc	--	--	4%

AFLB discussed some of the problems of GVs, and suggests that those groups now classified as strong receive continued assistance, and those groups now classified as weak be restructured along other membership lines.

The GFs include far fewer members than the GVs, and were founded more recently. So far membership has been growing, and the groups seem to function with fewer problems than the GVs. A large part of the membership is in Bogande. The strategy for these groups has generally been to cultivate cash crops as a group,

and to use revenues from those activities and credit for small-scale commercial and food-processing ventures.

The first cereal banks were established in the Eastern Region in 1977, with AID financing. The program planned to make loans to GVs at harvest time so they could buy cereal from farmers, store it until the next rainy season, when grain prices rise, and resell the cereal to GV members at lower-than-market prices. The number of banks grew from three in 1977 to 16 in 1978 with AID and other donor financing. In addition, 30 villages started banks in 1978 without using external credit.

Of loans due in March 31, 1980, 60.6 % had been paid. Most of the arrears were because credit/extension agents failed to bill village groups. But computerizing the records of credit payments should have helped reduce the non-payment rate. The main problems during the first years of operations were transporting grain from surplus to deficit areas in the Eastern ORD, and occasional loans that were too late to permit purchasing cereal at harvest-time prices (Stickley 1980b)

Because credit repayment rates can be good indicators of the viability of enterprises, the MEU should work closely with CNCA representatives at the ORD level to see that data records are complete. The MSU computer system for loan data seems to have worked fairly well, and there is hope that it will be retained, at least within the Eastern ORD, and possibly nationwide.

On the Function of the MEU.

Animal traction equipment is a large investment for farmers, and both the timely delivery of the equipment and animals. The continued availability of repair services and extension advice are crucial in determining whether farmers are ultimately able

to make the investment pay. The Eastern ORD's strategy has been to put enough traction units in place to justify a dense network supplying support services to the farmer.

The proposed extension system would be based on the unite d'encadrement -- six to eight villages to be served by each encadreur at least every two weeks. At present, encadreurs are faced with a bewildering number of responsibilities including running demonstrations, forming GVs, credit, and distributing inputs for production. Cutting back some of these responsibilities ^{is recommended} in order to concentrate on the distribution of inputs. The most important monitoring function of the MEU should be to see that the system for ordering materials accurately reflects farmers' needs, that inputs are delivered on time, and that farmers are correctly instructed in the use of the new inputs.

We noted earlier that the rotations advocated by the project make farmers more dependent than before on support services -- particularly in pest management. Extension workers will have to devise ways to reach those farmers who work in farm hamlets during the rainy season. Similarly, it is crucial that farmers be able to get their equipment repaired during the rainy season, which means having blacksmiths relatively evenly distributed within the project zones. Part of this monitoring could be done through cooperation with BPA. Another method would be periodic surveys of target households that measure consumer satisfaction with extension services.

Since the project aims to strengthen the training of extension workers through short-term training, the MEU should make efforts to work with training people to devise later retests on subject

matter covered in short-term training courses, in order to diagnose strengths and weaknesses in the training materials being used. Similarly, the MEU should be checking on how well farmers understand their equipment, how well they can estimate areas and weights for fertilizer doses, and whether they understand the planting densities (it may often be the case that there are reasons for farmers' not adhering to recommended densities, and there may be a need to adapt the densities for local soils and terrains).

Since the ~~IFAD-Led~~ program has a large component developing bas-fonds, there will have to be periodic checks on the prevalence and incidence of water-linked diseases, especially malaria and intestinal and vesicle schistosomiasis.

For the evaluation of project impact, there are very strong arguments in favor of continuing to collect production and income data for all or part of the MSU sample households, rather than engaging in a new baseline survey with new and heavy start-up costs. E. ORD BAEP staff worked closely with the MSU team and are familiar with the methodology, and the enqueteurs that participated in the 1978-79 survey are still employed by the Eastern ORD (many have been retrained as encadreurs).

The one basic problem with the 1978-79 survey stems from having only a single year's production data: where one ought to be able to follow households in time as they adopt animal traction and master the techniques, one is only able to make comparisons between traction households and traditional households (assuming, implicitly, that traditional households resemble traction households before adopting the technology). Having several years of data for a single group of households would make it possible to follow

increases in yields and cultivated area, to assess changes in labor allocation and in land tenure, and would greatly deepen our understanding of how these changes work.

Evaluation of equity impacts of the project's production and credit interventions is best handled through a panel survey which observes the same set of households over time. Since some of the MSU sample villages are within the corridor affected by the AID-funded rural roads, the same set of data, with some supplementary material, may be able to serve for two evaluations.

In the course of examining the planned IFAD program, several subjects emerged that will require study in the course of the program: the problems of the care and feeding of draft animals, the question of whether the GVs are an effective base for extension and credit work, the problem of reducing arrears in the repayment of credit (57% arrears as of 31 March 1981), and a whole set of crop production difficulties, starting with the planting dates. Some of these problems will require a period of study under farm conditions. Although it has been proposed that CCCE handle all on-farm testing, it is unclear at this point what, if any, supplementation of their work will be desirable.

If over time it becomes evident that there are gaps in the on-farm research program, it may be possible for the MEU to contract with the FSU in SAFGRAD for additional work.

SELECTED BIBLIOGRAPHY

- African Development Bank, Upper Volta Rural Development Project in the Easter ORD, Appraisal Report (January 1981)
- Baker, Doyle and Lassiter, Gregory. 1980. "Crop Production in the Eastern ORD : Preliminary Results from the 1978-79 Micro-Economic Survey," Fada N'Gourma : BAEP, ORD.
- Barret, Vincent. 1979. "Essais d'Observation sur les Cultures Fourragères Pendant la Campagne 1978-79, "Fada N'Gourma : BPA, ORD de l'Est.
- _____. 1980. "Animal Traction in the Eastern ORD," Fada N'Gourma : ORD.
- Barret, Vincent ; Lassiter, Gregory ; Mayabouti, Desire ; and Stickley, Thomas. 1978. "Animal Traction in Six Intensive Zones of the Eastern ORD of Upper Volta," Fada N'Gourma : ORD.
- Barret, V. ; Lassiter, G. ; Wilcock, D. ; Crawford, E. ; 1981. "Animal Traction in Eastern Upper Volta : A Technical, Economic, and Institutional Analysis."
- Bikienga, Martin ; Sedogo, Michel ; and Ouattara, Dominique. 1980. "Utilisation Agricole des Phosphates Naturels de Haute Volta," Ouagadougou, Haute Volta : Gouvernement de Haute Volta Ministère de Développement Rural.
- Dahany, Amidou and Stickley, Thomas. 1979a. "Fiche Technique sur le Crédit Rural, " Fada N'Gourma : BDC, ORD.
- Dupont de Dinechin, B. 1967. "Observations sur l'Intérêt des Phosphates Naturel pour le Fumure des Céréales en Haute Volta," Ouagadougou Haute Volta ; IRAT.
- Dupont de Dinechin, B. and Dumont, C. n.d. "La Fumure Phosphatée des Cultures Vivrières en Haute Volta," mimeograph.
- Eicher, Carl ; Sargent, Merrit ; Tapsoba, Edouard ; and Wilcock, David. 1976. "An Analysis of the Eastern ORD Rural Development Project in Upper Volta : Report of the MSU Mission," African Rural Economy Program Working Paper N° 9. East Lansing, Michigan : Department of Agricultural Economics, Michigan State University.
- Food and Agriculture Organization, Centre d'Investissement. 1980. Rapport de la Mission de Préparation du Projet de Développement Rural dans l'ORD de l'Est, Haute Volta. N° 24/80. DDC UPV.5.
- Gouvernement de Haute Volta, Ministère de Développement Rural. 1979. "Enquête sur l'Impact de la Culture Attelée sur la Production Agricole et le Revenu de l'Exploitant." Ouagadougou, Haute Volta : MDR, GHV.
- Jones, M.J. 1973. "A Review of the Use of Rock Phosphates as Fertilizers

in Francophone West Africa," Samarou Miscellaneous Paper N° 43. Zaria, Nigeria ; Ahmed Bello University, Institute for Agricultural Research, Samarou.

- Lassiter, Gregory. 1980. "Caractéristiques Sommaires des Ménages Agricoles dans l'ORD de l'Est ; Résultats Préliminaires de l'Enquête Micro-Economique 1978-1979," Fada N'Gourma ; BAEP, ORD.
- _____. 1981. "Cropping Enterprises in Eastern Upper Volta. MSU.
- Mehretu, Assefa and Wilcock, David. 1979. "Regional Planning Working Paper N° 1 ; Eastern Region of Upper Volta," East Lansing, Michigan : Department of Agricultural Economics, Michigan State University.
- MSU Contract Team. 1978. "Six-Month Report : December 1977-May 1978," Fada N'Gourma : ORD.
- Netting, R. ; Clevelard, D.; Stier, F. 1980. "The Conditions of Agricultural Intensification in the West African Savannah", in S. Reyner, ed. Sahelian Social Development. Abidjan : AID/REDSO/WA.
- Nordlinger, C.W. 1980. "Regional Organization of Rural Development Administration in Upper Volta." Ouagadougou : USAID.
- Norman David, 1980. "The Farming Systems Approach ; Relevancy for the Small Farmer," MSU Rural Development Paper N° 5. East Lansing, Michigan : Department of Agricultural Economics, Michigan State University.
- Norman, David ; Pryor, David H. ; and Gibbs, Christopher J.N. 1979. "Technical Change and the Small Farmer in Hausaland, Northern Nigeria," African Rural Economy Paper N° 21. East Lansing, Michigan : Department of Agricultural Economics, Michigan State University.
- ORD de l'Est. 1977. "Projet d'Appui à la Nutrition des Animaux de Trait dans l'ORD de l'Est ; Projet "Mini-Ranch", Fada N'Gourma : ORD.
- ORD de l'Est, BDC; 1979A. "Inventaire du Crédit Rural pour la Traction Animale," Fada N'Gourma ; ORD.
- ORD de l'Est, BDC. 1979b. "Fiche Technique sur le Crédit Rural," Fada N'Gourma : BDC, ORD.
- ORD de l'Est, BPA. 1980. "Rapport Annuel de la Sous Section Culture Attelée," Fada N'Gourma : BPA, ORD.
- Ouedraogo, Ismael and Wilcock, David. 1980. "Les Activités de Commercialisation des Produits Agricoles et Animaux par les Menages Paysans de l'ORD de l'Est (Fada) : Résultats Préliminaires de l'Enquête Micro -Economique," Fada N'Gourma : BAEP, ORD.
- Ouedraogo, Ismael and Wilcock, David. 1981. "Market Places, Traders and Grain Marketing in Eastern Upper Volta," East Lansing, Michigan : Department of Agricultural Economics, Michigan State University.
- Poulin, R. ; Morton, A. ; Mckee, A. 1978. "Evaluation of the Eastern ORD Integrated Rural Development Project". Ouagadougou : USAID.

- République de Haute Volta, Ministère de Développement Rural, 1979. "Enquête sur l'Impact de la Culture Attelée sur la Production Agricole et le Revenus de l'Exploitant," Ouagadougou : RHV, MDR.
- Reyner, S. 1979. "Social Analysis ; Eastern Region Food Production Project (686-0244)". Abidjan : AID/REDSO/WA.
- Shulman, Robert. 1979. "Strategy for the Advancement of Animal Traction in Mali," Bamako, Mali : USAID.
- Stickley Thomas. 1980a. "An Analysis of the Agricultural Credit Systems of the Eastern ORD of Upper Volta - Final Report - June 1977 through July 1980," East Lansing, Michigan : Department of Agricultural Economics, Michigan State University.
- Stickley, Thomas. 1980b. "The Computer - An Appropriate Technology for Managing a Viable Agricultural Credit System in a Low Income Country- Upper Volta." Paper presented at AAEA Annual Meetings, Champaign, Illinois.
- Stickley, Thomas. 1980c. "The Cereal Bank Experience of the Eastern ORD of Upper Volta," MSU.
- Stickley, Thomas. 1980d. "Rural Credit Account of the Eastern ORD of Upper Volta, April 1, 1974 through March 31, 1980," East Lansing, Michigan : Department of Agricultural Economics, Michigan State University.
- Stickley, Thomas and Tapsoba, Edouard. 1979. "Loan Repayment Delinquency in the Eastern ORD of Upper Volta." Paper presented at the Workshop on Rural Financial Markets and Institutions, Wye, England.
- Stoop, W.A., and Pattanayack, C.M. 1980. "The ICRISAT Cooperative Program Upper Volta" in Proceedings of the International Symposium on Development and Transfer of Technology for Rainfed Agriculture and the SAT Farmer, Vrinda Kumble Editor. Andhra Pradesh, India : ICRISAT.
- Swanson, Richard. 1979. "Gourmantche Agricultural," Parts I and II, Fada N'Gourma : ORD de l'Est.
- Swanson, Richard. 1981. "Household Composition, Rainfall, and Household Labor Time Allocation for Planting and Weeding : some Observations and Recommendations." Ouagadougou : FSU/SAFGRAD.
- Tapsoba, Edouard K. 1980a. "Analyse Descriptive Préliminaire de l'Etude sur le Système Traditionnel de Crédit," Fada N'Gourma : ORD.
- Tapsoba, Edouard K. 1980b. "Analyse Descriptive Préliminaire de l'Etude sur les Attitudes des Paysans envers le Crédit et l'Épargne," Fada N'Gourma : ORD.
- Tapsoba Edouard. 1981a. "An Economic and Institutional Analysis of Formal Credit in Eastern Upper Volta : Empirical Evidence and Policy Implications." PhD Dissertation, Michigan State University, (forthcoming).

- Tapsoba, Edouard. 1981b. "Formal and Informal Credit in the Subsistence Rural Economy of Eastern Upper Volta : An Institutional Appraisal," African Rural Economy Paper. East Lansing, Michigan : Department of Agricultural Economics, Michigan State University, (forthcoming).
- Touche Ross Co. 1980. "Eastern ORD of Upper Volta : Management and Accounting Study," Abidjan : for AID/REDSO/WA.
- USAID. 1974. "Upper Volta Integrated Rural Development Project", Washington, D.C. : USAID
- Van Dyck, David, 1980. "Development of the Audio-Visual Capacity of the Eastern ORD, Fada N'Gourma, Upper Volta," MSU.
- Wilcock, David. 1981. "Rural Small Scale Enterprises in Eastern Upper Volta : Survey Results," African Rural Economy Program Working Paper. East Lansing, Michigan : Department of Agricultural Economics, Michigan State University, (forthcoming).

SOURCES

- African Development Bank: 1981 Upper Volta Rural Development Project in the Eastern ORD: Draft Appraisal Report.
- Baker, D. and G. Lassiter: 1980 Crop Production in the Eastern ORD. Preliminary Results from the 1978-1979 Micro-Economic Survey. MSU Dept. Ag. Ec. AID/AFR-c-1314.
- Barrett, V., G. Lassiter, D. Wilcock, D. Baker, E. Crawford. 1981 Animal Traction in Eastern Upper Volta, a Technical, Economic, and Institutional Analysis. MSU, Dept. Ag. Ec. AID/AFR-c-1314.
- Food and Agriculture Organization. Centre d'Investissement. 1980 Rapport de la Mission de Preparation du Projet de Developpement Rural dans l'ORD de l'Est, Haute-Volta, No. 24/80, DDC UPV 05.
- Horowitz, H. 1974 Social Anthropological Feasibility of Project and Need for Additional Inquiry. Project Paper, Integrated Rural Development (686-110-170).
- Lassiter, G. 1981 Cropping Enterprises in Eastern Upper Volta. AID/AFR-c-1314. MSU Dept. Ag. Ec.
- Mehretu, A. and D. Wilcock. 1979 Planification Regionale: Document de Travail No.1. Aspects Geographiques de la Region de l'Est. MSU Ag. Ec. AID/AFR-c-1314.
- Netting, R., D. Cleveland, and F. Stier. 1980 The Conditions of Agricultural Intensification in the West African Savannah. in S. Reyna, ed. Sahelian Social Development, AID/REDSO/WA, Abidjan.
- Poulin, R., A. Mortion, A. Mackie. 1978 Evaluation of the Eastern ORD Integrated Rural Development Project. USAID/Ouagadougou.
- Reyna, S., Stephen. 1979 Social Analysis Eastern Region Food Production Project 686-0244. AID/REDSO/WA.
- Senechal, J. 1973 Espace and Mobilite Rurale en Milieu Soudano-Sahelien: le Changement dans l'Isolement (Gourma du Nord - Haute-Volta) These de 3^e cycle, Ecole Pratique des Hautes Etudes.
- Stickley, T. 1980 An Analysis of the Agricultural Credit System of the Eastern ORD of Upper Volta -- Final Report -- June 1977 through July 1980. MSU Dept. Ag. Ec. AID/AFR-c-1314.
- Stickley, T. 1980b The Cereal Bank Experience of the Eastern ORD of Upper Volta. MSU Department of Agricultural Economics, AID/AFR-c-1314.

- Swanson, R. 1981 Household Composition, Rainfall, and Household Labor Time Allocation for Planting and Weeding: some Observations and Recommendations. FSU/SAFGRAD B.P. 1783, Ouagadougou, Upper Volta.
- Swanson, R. 1979a Gourmantché Agriculture Part I: Land Tenure and Field Cultivation. E. ORD, BAEP, Fada N'Gourma. (mimeo)
- 1979b Gourmantché Agriculture Part II: Cultivated Plant Resources and Field
- Wilcock, D. 1981 Rural Small-Scale Enterprises in Eastern Upper Volta: Survey Results. MSU Dept. Ag. Ec. AID/AFR-c-1314.