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SAHEL DEVELOPMENT PROGRAM TEAM
EVALUATION BRIEFING DATA
AND ISSUES

UPPER VOLTA

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SAHEL DEVELOPMENT PROGRAM TEAM EVALUATION BRIEFING DATA AND ISSUES

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PRODUCTION SECTOR GOALS

Rainfed and Irrigated Crop Production Sectors

Crop Demand Forecasts

Forecasts of rice/wheat and millet/sorghum/maize demand can be separated into forecasts of Upper Volta's population, average cereal demand per capita, and the fraction of cereal demand allocated to rice/wheat:

a. Population. The population in 1975 was estimated to be approximately 6,058,000 people and increasing at 2.7 percent per year. 1/

b. Cereal Demand per Capita. Consumption per capita is estimated to be 177 kilograms per person per year. 2/

c. Rice/Wheat Fraction of Total Cereal Demand. This fraction is estimated to be 4 percent. 3/

Based upon the above data Table U1 presents the cereal consumption forecast.

TABLE U1

HISTORICAL TREND IN UPPER VOLTA CEREAL DEMAND 1/

Thousand Metric Tons

YEAR	TOTAL CEREALS	RICE/WHEAT 2/	MILLET/SORGHUM/MAIZE
1980	1,228	49	1,179
1990	1,610	64	1,546
2000	2,112	84	2,028

1. Based on (a) forecasts for cereal demand per capita of 171 kilograms per person per year and rice/wheat fraction of demand of 5 percent, and (b) forecast of 2.7 percent per year increase in population.
2. Paddy rice.

SOURCE: FAO, Perspective Study on Agricultural Development in the Sahelian Countries, 1975-1990; CRED, Marketing, Price Policy and Storage of Cereals in the Sahel, Upper Volta Study.

Other forecasts of cereal demand are presented in Table U2.

1. FAO, Perspective Study on Agricultural Development in the Sahelian Countries, 1975-1990, Volume I, 1976, p. 58.
2. Center for Research on Economic Development (CRED), Marketing, Price Policy and Storage of Cereals in the Sahel, Upper Volta Study, p. 6.
3. Ibid., p. 1.

TABLE U2

FORECASTS OF UPPER VOLTA CEREAL DEMAND

Thousand Metric Tons

YEAR	CLUB DU SAHEL SYNTHESIS WORKING GROUP TOTAL CEREAL	RICE/ WHEAT 1/	MILLET/SORGHUM /MAIZE	CLUB DU SAHEL IRRIGATED WORKING GROUP RICE/ WHEAT 1/	CLUB DU SAHEL RAINFED WORKING GROUP MILLET/SORGHUM/ MAIZE
1980	1,150	69	1,081	70	1,155
1990	1,499	101	1,398	105	1,417
2000	2,098	141	1,957	145	1,722

1. Milled rice.

SOURCE: Letter to Mr. Shear, AFR/SFWA, from Mr. Stacy, Club du Sahel Secretariate, October, 1976; Club des Amis du Sahel, Equipe des Cultures Seches, Haute-Volta Rapport de Synthese, p. 10; Irrigated Farming Group, Planning Hydro-agricultural Development in the Republic of Upper Volta, p. 21.

The range of the forecasts shown in Tables U1 and U2 is presented in Figure U1.

Millet/Maize/Sorghum Production Trend

It is possible to project a future time trend, using the data in annex C and using econometric techniques, for millet/sorghum/maize production. 1/ This time trend and the range of forecasts for consumption are presented in Figure U2.

Rice Production Trend

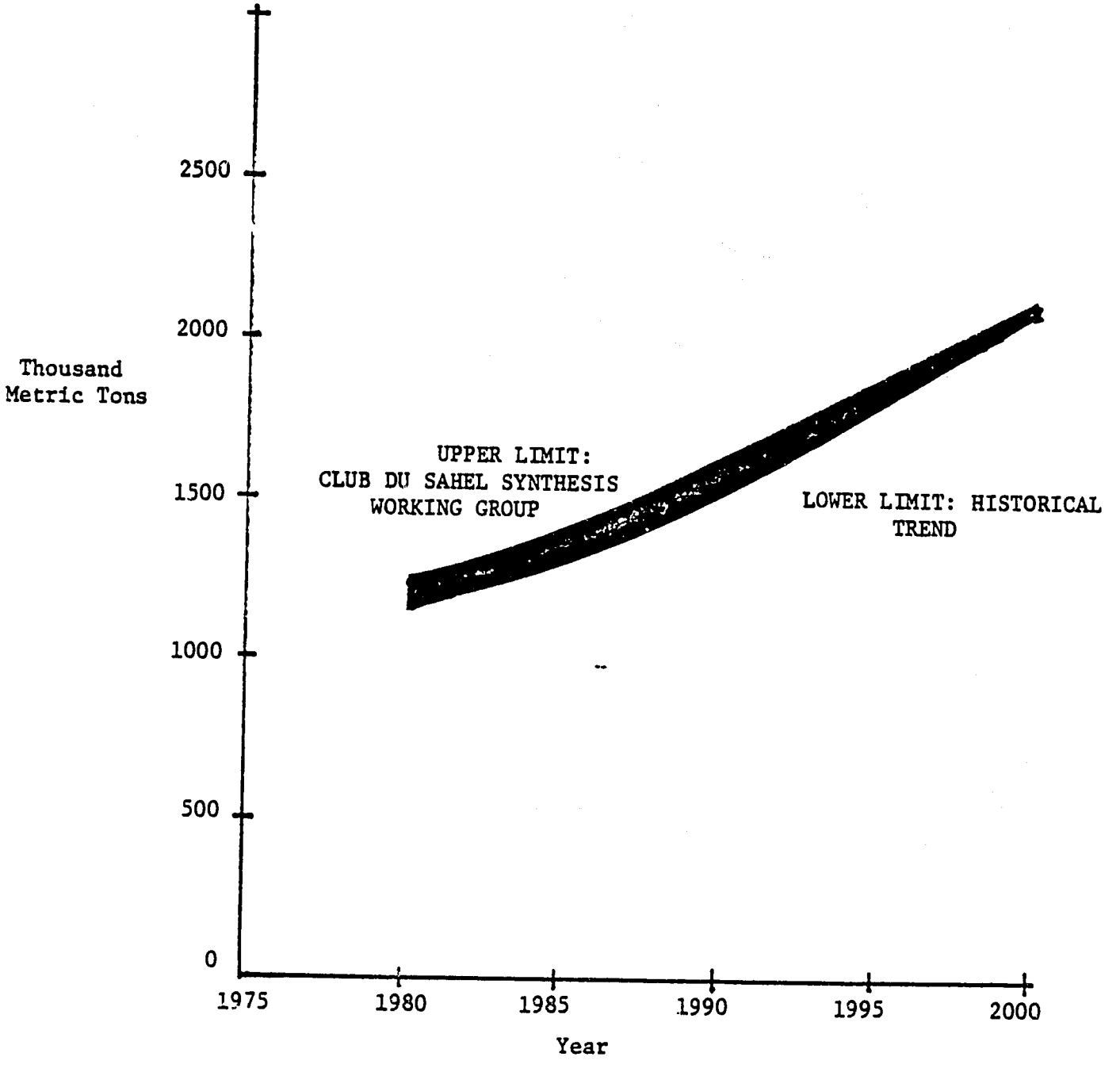
The rice production time trend, using similar data and techniques, is presented in Figure U3. 2/

Comparing Total Cereal Production Trend and Cereal Demand Forecasts

The comparison of total production trend and demand forecasts for cereals is presented in Figure U4.

FIGURE U1

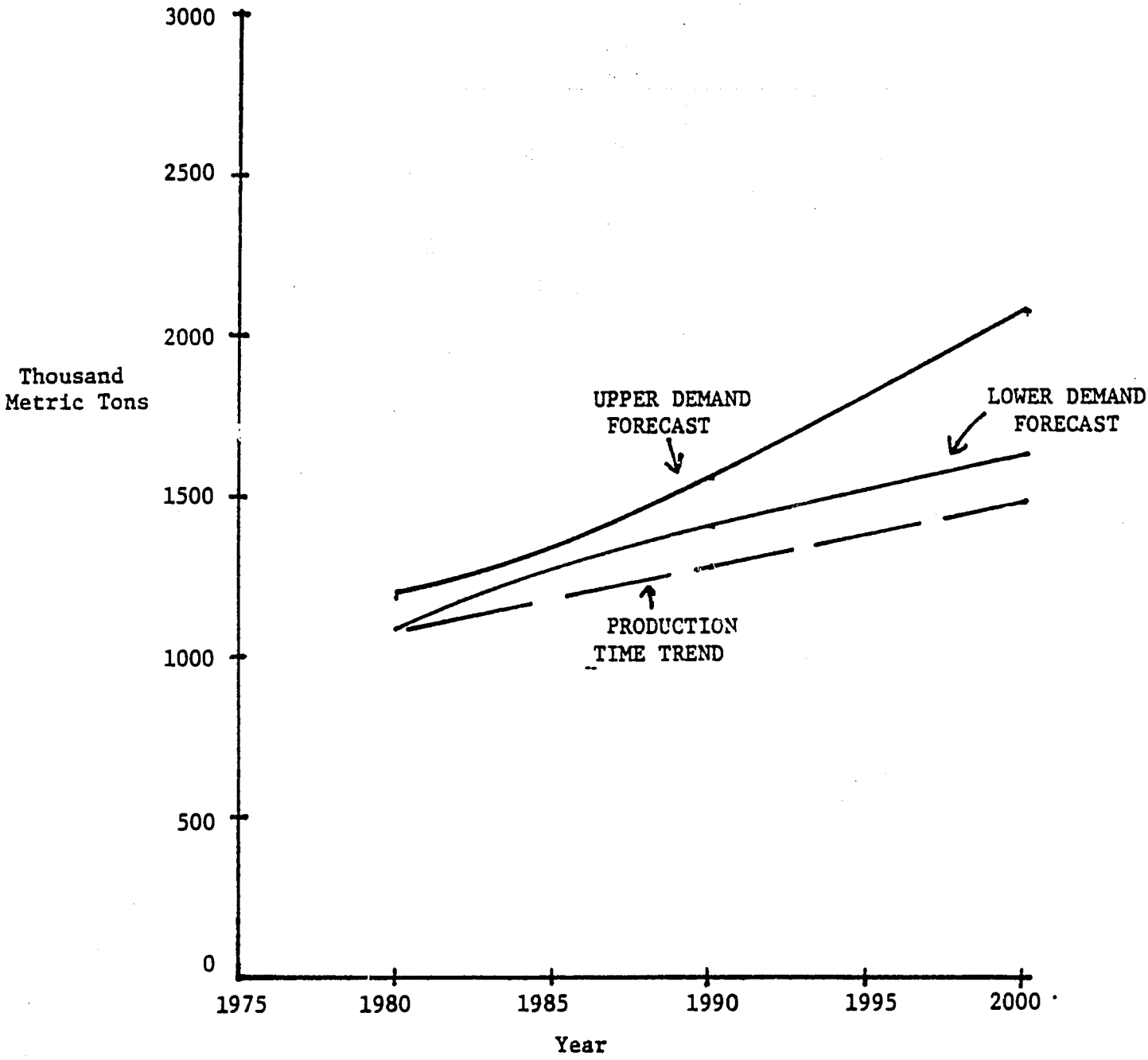
RANGE OF FORECASTS FOR TOTAL CEREAL DEMAND IN UPPER VOLTA



SOURCE: Tables U1 and U2.

FIGURE U2

MILLET/SORGHUM/MAIZE PRODUCTION TIME TREND
RANFE OF FORECASTS FOR DEMAND



SOURCE: Tables U1 and U2.

FIGURE U3

RICE PRODUCTION TIME TREND AND
RICE/WHEAT FORECASTS FOR RICE/WHEAT DEMAND

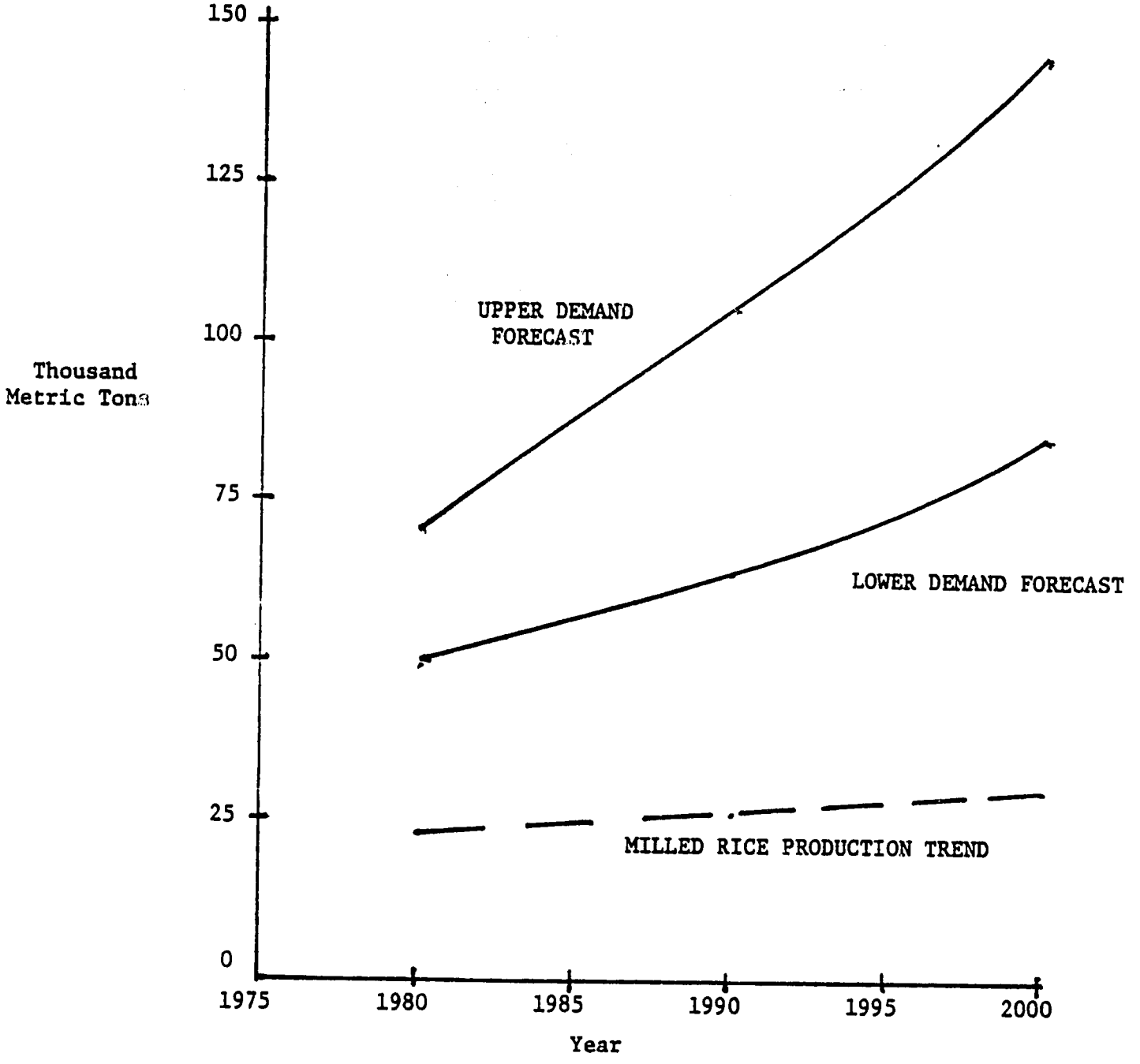
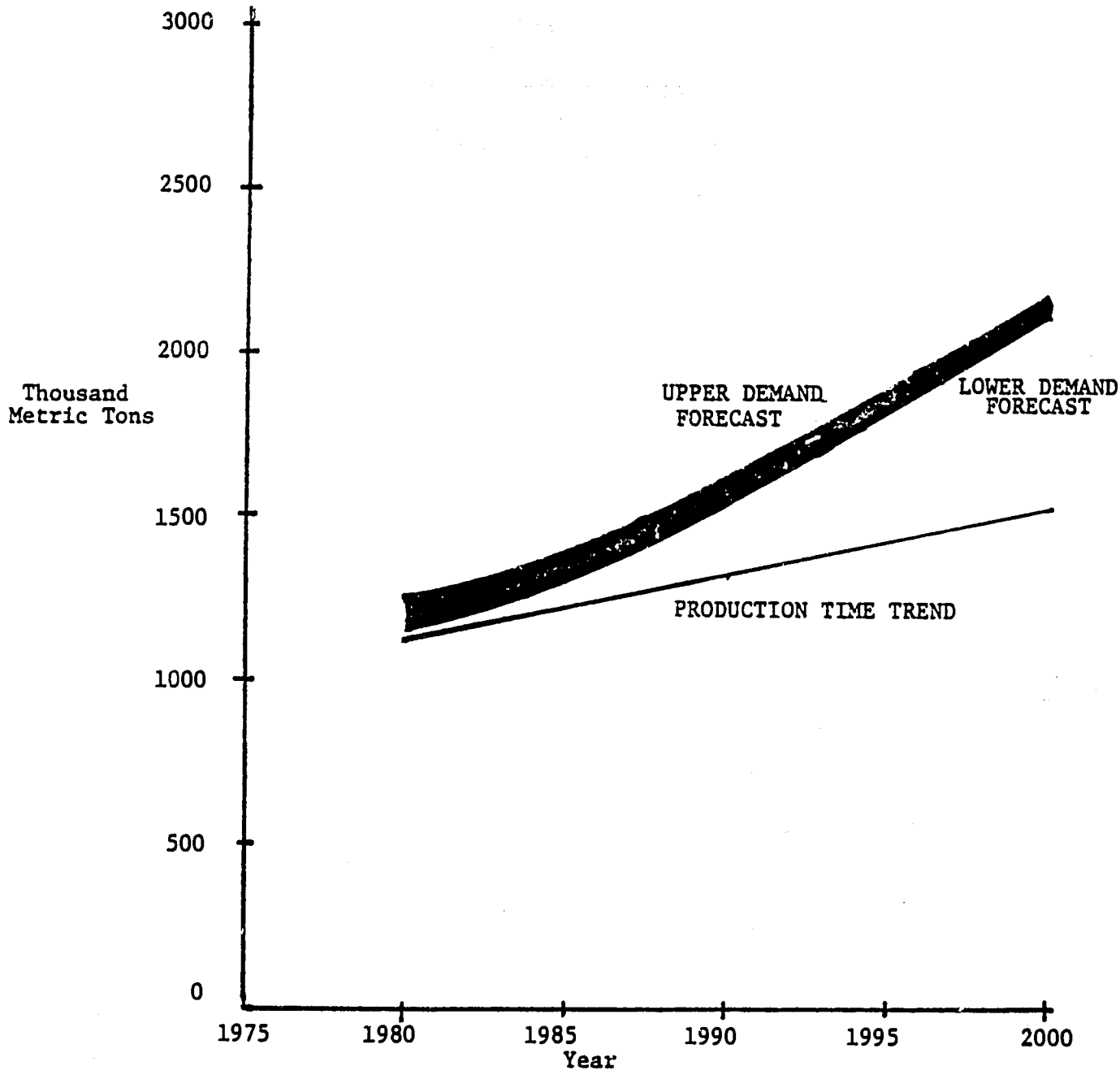


FIGURE U4

RANGE OF FORECASTS FOR TOTAL CEREAL DEMAND
AND TOTAL CEREAL PRODUCTION TIME TREND



Aid Project Goals for Crop Production

There is only one project identified that will directly affect crop production, the Upper Volta Integrated Rural Development Program in the Eastern ORD.

The costs, timing, and quantitative effect of the project is presented in Table U3. The AID contribution to increasing Upper Volta's crop production cannot be presented in Figure U5 due to the lack of statement of quantitative goals.

FIGURE U5

RANGE OF FORECASTS FOR TOTAL CEREAL DEMAND IN UPPER VOLTA
TOTAL CEREAL PRODUCTION TIME TREND, AND
AID AND CLUB PROJECT CONTRIBUTIONS

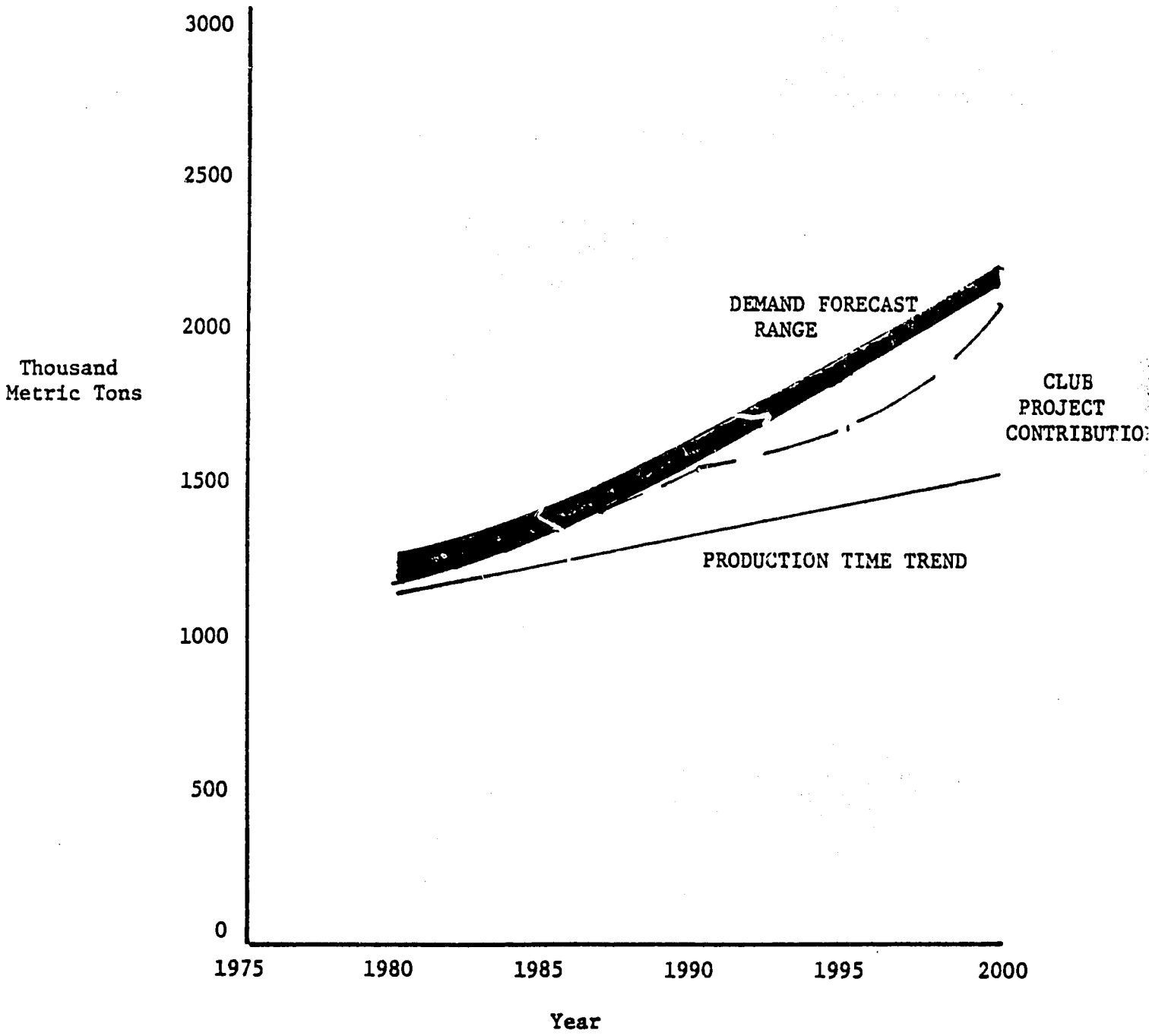


TABLE U3

QUANTITATIVE CROP PRODUCTION GOALS OF AID PROJECTS

NAME	PROJECT INVESTMENT	PERIOD 1/	MILLET/MAIZE/SORGHUM PRODUCTION PRESENT YEAR	MILLET/MAIZE/SORGHUM PRODUCTION PRESENT QUANTITY	MILLET/MAIZE/SORGHUM PRODUCTION GOAL YEAR	MILLET/MAIZE/SORGHUM PRODUCTION GOAL QUANTITY	RICE/WHEAT PRODUCTION PRESENT YEAR	RICE/WHEAT PRODUCTION PRESENT QUANTITY	RICE/WHEAT PRODUCTION GOAL YEAR	RICE/WHEAT PRODUCTION GOAL QUANTITY
Integrated Rural Development 2/	$4,402,000	1975-78	1970/76 3/	369,000 MT 4/	na 5/	na	na	na	na	na

1. U.S. Fiscal Year.
2. AID, Upper Volta Integrated Rural Development, Project Paper, July, 1974.
3. 1970 through 1976 average, excluding 1975 (CRED, Marketing Price Policy and Storage of Cereals in the Sahel, Upper Volta Report, annex, Table 2).
4. Millet and Sorghum.
5. na denotes not available.

Other Donor Project Goals for Crop Production

Table U4 represents the major donors from 1974 to 1976. Assistance by sector is presented in annex G.

TABLE U4

MAJOR DONOR ASSISTANCE COMMITMENTS TO UPPER VOLTA

Millions of Dollars

DONOR	1974	1975	1976 1/
France	31.29	29.68	48.54
Germany	14.74	26.09	9.24
European Economic Community (EEC)	29.24	4	32.14
IBRD	8	16.5	29.4
United States	11.9	10.8	9.58
TOTAL	107.4	123.06	155.36

1. Incomplete.

SOURCE: Club des Amis du Sahel, Sect[illegible]l Breakdown of Official Development Assistance to the Sahel, 1974-1976.

Donor projects which affect crop production can be specified by the Regional Development Organization (ORD) areas. This breakdown by donor is presented in Table F-2 of annex F.

Donor documentation b y ORD has not been identified.

Club des Amis du Sahel Project Goals for Crop Production

Club projects that directly affect production are based on groupings of ORD's:

a. North-Central (Yatenga, Kay, and Sahel).

b. South-West (Bobo-Dioulasso, Banfora, Dedoagou, Boughouriba).

c. Center (Koudougou, Ouagadougou, Koupela).

Support projects proposed for rainfed crop production are:

a. Agricultural Research.

--studies on soil fertility maintenance,
--socio-economic studies on production systems,
--liaison with other research institutes in the Sahel, and
--research on new types of crops and cultivation practices.

Funding is for CFA 1,400 million from 1977 to 2000.

b. Seed Multiplication. The goal is to build on previous AID funded research on seed selection production for production requirements. Funding is for CFA 1,400 million from 1977 to 2000.

c. Agricultural Statistics and Planning. The goal is to improve the quality of statistical information and build national planning structures. Funding is for CFA 645 million from 1977 to 2000.

d. Agricultural Credit. Study and creation of needed credit structures. Cost is estimated at CFA 10 million.

For irrigated crop production the projected added irrigation from 1977 to 1982 is:

--reclaimed lowlands, 5,200 hectares
--irrigated downstream areas, 1,800 hectares
--reclaimed plains: controlled flooding (niena, Kamadena, Loumana, others) 4,850 hectares; irrigated area (Kou, Banzo, Banfora, etc.) 600 hectares.

The goals of those projects for which documentation is available are presented in Table U5. Their contribution to increasing Upper Volta crop production are presented in Figure U5.

TABLE U5

QUANTITATIVE CROP PRODUCTION GOALS OF PROPOSED CLUB DU SAHEL PROJECTS

	PROJECT		MILLET/MAIZE/SORGHUM PRODUCTION				RICE/WHEAT PRODUCTION			
			PRESENT		GOAL		PRESENT		GOAL	
NAME	INVESTMENT 1/	PERIOD	YEAR	QUANTITY	YEAR	QUANTITY	YEAR	QUANTITY	YEAR	QUANTITY
Programme d'Intensification Cerealiere dan les ORD du Centre (Ouagadougou, Koudougou, Koupela)	$ 40,000,000 $116,000,000 $193,000,000	1977-82 1982-90 1990-2000	1986	469,000MT	1982 1990 2000	493,000MT 592,000MT 797,000MT	-	-	-	-
Les ORD Yatenga, Kaya and Sahel	na 2/	1980-2000	1975	264,000MT 3/	1985 1990 1995 2000	275,000MT 280,000MT 286,000MT 300,000MT	-	-	-	-
Le Projet de Developpement Agricole sous l'ORD Bougouriba	na	5 years	1975	82,000MT	na	37,000MT	-	-	-	-
Projet de Developpement Agricole Integre de l'Ouest Volta (Dedougou and Bobo-Dioulasso)	$ 9,500,000	1977-81	1975	238,000MT 3/	na	93,620MT 4/				
Irrigation	na	1976-2000	-	-	-	-	1976	12,700MT	1982 1990 2000	42,050MT 76,850MT 118,700MT

1. Exchange rate of CFA 250 + $1 applied.
2. no denotes not available.
3. From CRED, Marketing, Price Policy and Storage of Cereals in Sahel, Upper Volta Report, annex, table 2.
4. Increment to present year production.

SOURCE: Club des Amis du Sahel, Equipe des Cultures Seches, Haute-Volta Rapport de Synthese, 7702/UPV/P-4, P-7, and P-8, March 1977; Irrigated Farming Group, Planning Hydro-Agricultural Development in the Republic of Upper Volta.

Livestock Production Sector

Livestock Demand and Production Forecasts

Beef demand can be forecast by projecting historical beef consumption at the population growth rate of 2.7 percent per year. Historical production and consumption and projected consumption are presented in Figure U6.

AID Project Goals for Livestock Production

The major areas of AID involvement are:

1. The Upper Volta Integrated Rural Development Project. The project in the Eastern ORD has a livestock component: 1/

   a. An intensive program for sedentarized Gourmanche.

      --health measures against major expizootic diseases; internal and external parasites of cattle and small ruminants; against trypanosomiasis,
      --multiplication and distribution of improves sires,
      --reduction of calf mortality through provision of feed and mineral supplements,
      --assistance with finishing of cattle and sheep including necessary credit,
      --assistance in pig and poultry husbandry,
      --production of cultivated forage, and
      --introduction of range management in nearby grazing areas.

   b. An intensive program for nomadic Peulh.

      --above program,
      --mineral supplement to increase cow fertility,
      --mineral and feed supplement, plus parasite elimination to decrease calf mortality,
      --improvement in pasture/water resource and mineral supplement to improve growing conditions, and
      --small individual and group feed lots to encourage increased sale of surplus young males.

   c. After above programs are introduced, a following program of:

      --self-help in building and equipping lots and water supply,
      --help in buying feed and supplements,
      --measurement of rate of weight gain on young feeders,
      --conservation of manure for use on land, and
      --group transportation of finished cattle to export markets.

   Funding is for $4,402,000 and was scheduled for implementation for FY 1975 through 78. Project is delayed from eight to 12 months and a requested extension will lengthen the project life to 5 years. 2/

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1. AID, Integrated Rural Development, Project Paper, July, 1974, pp. 32-35.
2. AID, Upper Volta FY79 ABS, June, 1977, p. 17.

2. Village Livestock Development Project. The project purpose is to develop the capability of the Central Livestock Service and the three Regional Development Organizations (ORD's) to plan and to implement village livestock management systems which maintain the integrity of the environment. Funding is for $1,613,000 for FY 1976 through 1978.

3. Volta Valley Development Project. One component of this project in the Volta Valley is a set of studies. One study will be on the socio-economic study of the semi-nomadic Fulani (Peul). The object will be to allow the Volta Valley Authority (AVV) to develop resettlement and land use policies. 1/

Other Donor Project Goals for Livestock Production

No specific non-AID donor livestock projects have been identified.

Club du Sahel Projects for Livestock Production

Five themes of actions are recommended by the Club:

a. Improved knowledge of the pastoral area potential. An aid to the existing planning cell could be established and several surveys could be achieved: mapping of the pastoral areas of western areas and evaluation of their potential; hydrogeological study of the ranching zone of Leo; etc.

b. Development of animal health actions: the animal health service of Upper Volta needs indispensable infrastructures and equipement.

c. Establishment of a production scheme:

—development of extensive livestock project in the "ORD du Sahel" (northern Sahelian region of Upper Volta) with emphasis on the improvement of life conditions of pastoral populations,
—development of intensive livestock projects, fattening and diversification of productions in the Sudanian zone (i.e., poultry, pigs) with use of agro-industrial by-products, cultivated forage, and crop residue,
—development of rainfed farming by facilitating procurement of equipment and purchase of animals, and
—creation of a "zone d'accueil" in Fada for sedentarization of Sahelian nomads.

d. Development of the training system by:

—scholarships for specialized study abroad,
—retraining for livestock technicians and monitors specialized in small animals, and
—special training for rainfed farming: rural crafts, maintenance and repairing of agricultural machinery and equipment, training oxen, etc.

e. Improvement of marketing by a financial assistance to Office National d'Exploitation des Resources Animales (ONERA) and new equipment to the leather industry.

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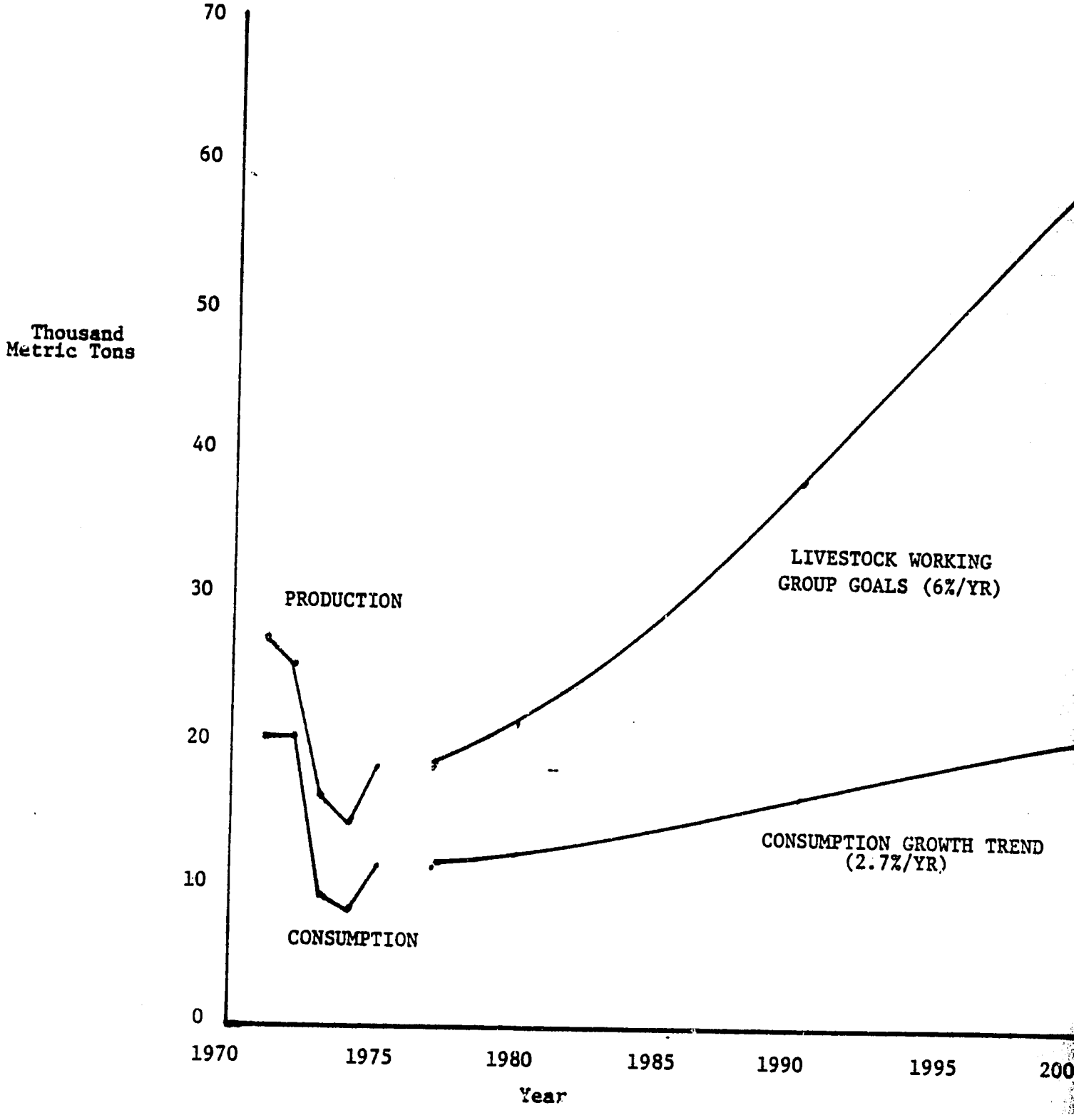
1. AID, Volta Valley Development, Project Review Paper, November 1976, p. 10.

FIGURE U6

PRODUCTION OF BEEF IN UPPER VOLTA
AND CLUB LIVESTOCK GOALS



CONSTRAINTS TO DEVELOPMENT

AID Identified Constraints

The AID mission has highlighted the following constraints: 1/

a. Inadequate rural economic means to purchase agricultural inputs.

b. Limited transport network.

c. Health problems.

d. Limited amounts of pure water.

e. Inadequate numbers of qualified technical personnel.

f. Degraded land resources.

Club Identified Constraints

The Club has indicated one constraint not mentioned in the Upper Volta ABS, population growth.

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1. AID, Upper Volta FY79 ABS, June, 1977, pp. 1-2.

Strategies to Alleviate Constraints

Inadequate Economic Means

1. The U.S. Strategy:

There is no discussion of economic policies in the Upper Volta Chad.

2. The Club Strategy:

Consultants for the Working Group, the Center for Research on Economic Development (CRED), have recommended that the governments encourage private traditional trade rather than state marketing boards. CRED argued that although private and para-state structures have been established, they have not replaced the private sector. Rather they have hindered cereal expansion programs. All the Sahelian representatives strongly opposed this proposal. Their claim was that production has suffered from the private sector's way of operating and their nearly systematically mercantilistic behavior. The majority of the team members recommended: 1/

a. measures be taken to enable producers to organize themselves and manage the organizations which best protect their interests, and

b. that existing parastatal marketing structures and the local development authorities and projects offices be given all possible human, financial, and material means to purchase and market grains. Insofar as possible the private sector should be governed by regulations designed to provide "the best service at the best price".

The Working Group has not yet made a recommendation on price policy. They indicated that several prior studies should be first made, for example:

a. repercussions of a policy of high grain prices on the urban and rural consumers,

b. evaluation of cost prices for various crops, at various technical levels, in order to determine the relationship between the various agricultural crops,

c. effects of a policy of higher producer prices on the economy of the various production units, in terms of their size (knowledge of the distribution of income at each level, typology of the production unit),

d. study of food consumption to assess consumption prospects for each type of product (e.g., rice, sorghum, millet, etc.), and

e. storage at village levels.

Limited Transport Network

1. The U.S. Strategy:

The major AID project in this sector is the Eastern ORD Rural Roads Project. The

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1. Club des Amis du Sahel, Synthesis Working Group, Proposals for Drought Control and Development Programme and Strategy for the Sahel.

objective is to improve the year-round carrying capacity of three rural roads in the Eastern ORD by repair to drainage works and road surfaces and realignment of the roads. The roads are Fada-Bilanga (72 kilometers), Diabo-Comin Yanga (48 kilometers), and Namounou-Logoubou (39 kilometers) for a total of 159 kilometers. The funding is from FY 1977 to 1978 for $2,323,000.

2. The Club Strategy:

The road network of Upper Volta is 16,462 kilometers. The project suggested by the Club Transport and Infrastructure Working Group for 1977 to 1982 is: 1/

a. Rehabilitation. There are 2,989 kilometers in need or rehabilitation. $22,170,000. These routes are as follows:

Immediate needs, 146 kilometers

TOUGOURI/Frontiere Niger	145 kilometers
DIEBOUGOU/LEO	135
ORODARA/GAOUA	233
SEGUENEGA/KAYA	112
FADA N'GOURMA/Frontiere BENIN	138
GARANGO/TENKODOGO	21
BOGANDE/RTE NAT. 3 TARTAKO)	72
DORI/MARKOYE	57
MINISSIA/LATODIN	15
BOROMO/RTE NAT. 14	81
NIANGOLOKO/SINDOU	25
YABA/GOUSSINA	27
TIKARE/SABSE	25

Secondary needs, 1,853 kilometers

KANTCHARI/TINGANDOU	129
NOUNA/MALI	84
YAKO/Frontiere GHANA	242
RTE NAT. 15/TOUGOURI	70
BOULSA/ZORGHO	48
DIAPAGA/KOUDOUGOU (Frontiere BENIN)	76
RTE NAT. 16/PAMA	101
GARANGO/BOUSSOUGOU	59
NOBERE/MANGA	19
KOMBISSIRI/RTE DEP. 6	6
SAPALA/TOMA	24
KOUDOUGOU/POA	18
KOSSO/MANEMBA	106
SOLENZO/BOUDOUKOUY	54
SIBY/BAGASSY	45
LABA/LEO	107
BAMOI/DAPOLA	29
BATIE/VOLTA NOIRE	25
RTE NAT. 12 (LATARA)/RTE DEP. 16 (BATIE)	57
LOROPENI/KAMPTI	21
KOUERE (RTE NAT. 11)/SIRIKARO	45

1. Club des Amis du Sahel, Groupe Transports et Infrastructures, Rapport de Synthese, May, 1977.

SIDERADOUGOU/KELESO	44
BOBO/SAMOROGOUAN	88
KOLOKO/SINDOU	80
RTE RURALE 38/SOUBAKANIE	25
TOUGAN/DOUNGOU	82
OUGAROU/NANSOUGOU	33
RTE DEP. 11 (PK 22)/GOROM-GOROM	34

b. Maintenance. The government now maintains about 42 percent of the road network, or 3,654 kilometers. The goal is to increase this maintenance to 76 percent, or 6,575 kilometers, by 1982. $25,560,000.

c. Purchase of material and equipment. $12,370,000.

d. Training and Technical Assistance. $1,440,000.

e. Amortization. $13,470,000.

Health Problems

1. The U.S. Strategy:

The Upper Volta ABS does not indicate any AID health projects. There is a Nutrition Research Project whose purpose is to enable the government to undertake research to develop local foods and recipes suitable for supplemental feeding and/or weaning of children from six to 36 months. The project will finance a fully equipped nutrition laboratory, operating funds for research, a resident nutrition expert, and training for Voltaic project personnel.

2. The Club Strategy:

The Club Health and Nutrition Working Group has proposed a health care delivery system, Village-Based Health System. 1/ The system is designed for the average Sahalian country or five geographical levels: Village, arrondissement, cercle, regional, and national. The responsibilities for each level are:

a. Village. At the village level basic health services are provided by village health workers (VHW) who are chosen by village residents and live in the village. Basic Health services include nutrition education, simple hygiene, organizations for immunization teams, simple curative measures, etc. They also provide primary data collection sources.

b. Arrondissement. These are the bases for nurse or auxiliary visits to villages. A center for data collation, immunization campaign scheduling, and training of VHW's.

c. Cercle. Center for nurse, midwife, and MD visits to arrondissements and villages. Responsibility for immunization and categorical disease control. Collation of data for transmittal to national level.

d. Region. Coordination of supervision at peripheral levels. Hospitalization referral when possible. Regional health plan development, implementation, and evaluation.

e. National. Development of national treatment guide and formulary. Research on traditional medicine. National manpower policy and planning formulation. Training of MD's, senior nurses, and midwives.

Major components of such a strategy involve:

a. Nutrition. Emphasis must be placed on improvements of nutritional status of population, especially mothers and infants.

b. Village Water. The first priority is to make available an adequate quantity of water for village consumption needs. Second, villagers must be educated as to the importance of making water supplies safe.

c. Environmental Sanitation. There must be village participation in establishment of sanitation systems to insure proper use and adequate maintenance. Simple technologies can be utilized and there is need for further research.

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1. Joseph, S. and Scheyer, S., A Strategy for Health as a Component of the Sahel Development Program, May, 1977.

d. Communicable Disease Control. Health risks to the population can be significantly controlled by regional or area approaches. A CILSS/Club plan should be developed in cooperation with the World Health Organization.

There are no specific Club projects designed yet, although there are Sahel Regional Programs developed for demographic data and rural health for FY 78 and 79 respectively in the PID stage. Current donor projects are presented in annex B.

Inadequate Technical Personnel

1. The U.S. Strategy:

The major AID interventions are:

a. Agriculture and Human Resources Development Project. Objectives are:

—enlarge and strengthen the agricultural secondary school level facility, the Centre Agricole Polyvalent (CAP), at Matoukou in the southern region,
—creation of a new training school at Bogande in the northern region, and
—enchance the capability of the University of Ougadougou for training of qualified, rural development engineers.

Agricultural extension agents trained in the training centers will be: 106 (FY79), 218 (FY80), 334 (FY81), and 500 (FY82). Funding is from FY1978 to 1982 for $2,000,000.

b. Women's Roles in Development. The objectives are to increase the ability of rural women to earn income and the time available for non-subsistence related activities. The number of women extension agents receiving upgraded training: 50 (FY77), 50 (FY78), and 150 (FY79).

c. Non-Formal Education for Women in the Sahel Project.

2. The Club Strategy:

The Club Irrigated Crop Working Group has indicated the following training needs for the short-term (i.e., 1977-1982): 1/

—level A, engineers, 11
—level B, construction engineers, 14
—level C, engineering assistance and assistant accountants, 18
—level D, technical workers and area foreman, 90
—extension agents, 460

The Club Human Resources Working Group gives data on technical personnel in the ORD's which is presented in Table U.

1. Club des Amis du Sahel, Irrigated Farming Group, Planning Hydro-Agricultural Development in the Republic of Upper Volta, p. 51.

TABLE U

PRINCIPLE TECHNICAL PERSONNEL IN UPPER VOLTA ORD'S

TITLE	1971	1973	1975	1976
Ingenieurs et ITA (Level A)	11	21	27	28
Conducteurs de Travaux (Level B)	45	59	72	76
Agents thechniques (Level C)	213	265	313	334
Encadreurs	853	1,002	1,203	1,258
Assistants d'elevage	9	12	18	18
Infirmiers veterinaires	31	38	53	55
Total	1,162	1,397	1,686	1,769

SOURCE: Club des Amis du Sahel, Human Resources Working Group, Project No. 3.

An analysis of the present training system by the Human Resources Working Group emphasizes the following points.

a. insufficiency of the present capacities of the training centers for the agricultural development cadres,

b. inadequate training not sufficiently linked with the real requirements of development,

c. insufficiency of planning and coordination of the training actions, and

d. inadequacy of basic education system to the requirements of development.

Thus, four themes have been proposed:

a. improvement of planning and coordination in training by assistance to the national and regional planning cells; the creation of a fund for training in the Organization for Regional Development (ORD) and the setting up of an evaluation system for the training institutions,

b. the reform of basic education with the long-term objective of creation of a new system call by the Group, "le cite educative":
--introduction of national languages
--new programs and training techniques
--extension of broadcasting
--new training of teachers

c. extension of the capacities of existing institutions: the "Centre agricole poyvalent" in Matourkou and creation of another center in Bogande; development of the training capacity of the Volta Valleys Authority (AVV); and extension of training institution for cadres (i.e., Inter-states School for Rural Equipment, Polytechnic Institute), and

d. the technical training with the creation of regional centers for crafts linked with the development of rainfed farming and mechanization in the irrigated areas and the Sudanian zone in the South.

The Working Group has submitted the following list of projects:

a. Projects for the improvement of planning and coordination of actions and evaluation of training institutions:

--No. 6, enforcement des cellules nationale et regionale de planification $1,300,000,
--No. 3, creation d'un Fonds de Formation des ORD $1,900,000, and
--No. 11, Evaluation des institutions de formation.

b. Projects for rural education:

--No. 1, reforme de l'enseignement de base en vue de concourir, a long term a l'instauration de la Cite educative $31,784,000,
--No. 2, creation d'un centre de formation et financement d'un programme de developpement communautaire $2,000,000,
--No. 5, renforcement de la formation des jeunes agricuteurs $15,388,000, and
--No. 10, renforcement de la radio rurale.

c. Projects for reenforcement of training institutions:

--No. 4, extension du centre agricole polyvalent (CAP) de Matourkou et creation d'un CAP a Boganda $4,150,000,
--No. 8, renforcement de la cellule de formation de l'autorite des amenagements des vallees du Volta (AVU) $1,540,000,
--No. 12, renforcement de l'ecole inter-etats de l'equipement rural, and
--No. 9, renforcement de l'Institut superieur polytechnique.

d. Projects for professional training:

--No. 7, creation d'antennes regionales de formation d'artisans ruraux, $280,000.

Degraded Land Resources

1. The U.S. Strategy:

There is no specific project mentioned in the ABS.

2. The Club Strategy:

The Club's Ecology and Environment Working Group has proposed a forestry strategy. 1/ The objectives of the strategy are:

a. supply population needs for combustible wood and construction timber,

b. forage protection and management,

c. improved agricultural production factors, and

d. protection and appropriate exploitation of wildlife.

The strategies to meet these objectives are based on four subprograms. The subprogram with highest priority is:

a. Wood production.

1. natural regeneration methods,
2. artificial reforestation,
3. management and protection of natural forest stands,
4. village plantations, and
5. green belts around urban areas.

Subprograms with lesser priority are:

b. Integrated Farm-Forest-Forage Operations.

1. preventive measures (pasture management, installation of wind breaks in agriculture areas, gaining popular acceptance on non-erosive methods of working the soil, creation of wood supplies around villages, planting fire belts around the forests, etc.)
2. taking direct measures to control erosion phenomena (control of brush fires, fixation of dunes, flood prevention, etc.)
3. actions to restore the environment, such as reforestation, restoring vegetative cover for temporary protection or by planting.

c. Conservation and Utilization of Wildlife.

1. In the Sahelian zone:
   --restore populations of wildlife and their habitats,
   --inventory and manage desert species, and
   --plan, establish and manage protected zones.
2. In the Sudan zone:
   --preparation of management plans and their execution,

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1. Club des Amis du Sahel, Team for Ecology and Environment, Committee's "Forest Strategy in the Sahel".

—pilot projects for production of meat from game animals,
—improvement of tourism based on wildlife, and
—these projects will satisfy food needs of rural communities.

d. Coordinated Education and Forestry Training.

The working group has proposed projects in each of the subprogram areas.

a. Wood Production and Integrated Operations.

Based on working group projections, the demand for wood, both urban and rural, in 1990 will be 5,618,000 cubic meters (cm). Production in 1975 was 4,847,000 cm leaving a deficit of 771,000 cm in 1990. The first generation wood production projects are presented in Table U7. These projects will result in a total production of 20,000 cm resulting in a deficit of 507,000 cm by 1990.

TABLE U7

PROJECTS PROPOSED IN WOOD PRODUCTION SUBPROGRAM

PROJECT	COST	ANNUAL PLANNED PRODUCTION 1000 Cubic Meters
Plantations Around Urban Areas	$3,191,000	25
Village Plantations	$ 203,000	20
Second Phase of Project UPV/72/029 Development of Forest Resources and Reforestation	$3,500,000	20
Management of Forest of Koulima (Bobo-Dioulasso)	$ 525,000	11
Establishment of a Support Base for Forest Action in Sahel, Center of Djibo 1/	$ 288,000	5

1. Project in Integrated Farm-Forest-Forage Operations subprogram.

SOURCE: Club des Amis du Sahel, Team for Ecology and Environment, Committee's "Forest Strategy in the Sahel", annex 1.

b. Integrated Farm-Forest-Forage Operations. The projects are presented in Table U8.

c. Conservation and Utilization of Wildlife. The projects are presented in Table U8.

d. Coordinated Education and Forestry Training. The projects are presented in Table U8.

TABLE U8

PROJECTS PROPOSED IN INTEGRATED FARM-FOREST-FORAGE OPERATIONS, CONSERVATION AND UTILIZATION OF WILDLIFE, AND COORDINATED EDUCATION AND FORESTRY TRAINING SUBPROGRAMS

PROJECT	COST
Integrated Operations	
Pasture Management	$2,500,000
Conservation and Utilization of Wildlife	
Management of National Parks in Po and d'Arly	$4,818,000
Coordinated Training and Education of Foresters	
Center for Training Foresters at Dinderesso	$2,048,000
Strengthening of the Forestry Section of ISPO	$ 420,000

SOURCE: Club des Amis du Sahel, Team for Ecology and Environment, Committee's "Forest Strategy in the Sahel", annex 1.

Population Growth

1. The U.S. Strategy:

The ABS does not provide a discussion of this issue.

2. The Club Strategy:

The Club views the perceptible reduction of infant mortality as crucial to the acceptance of family planning. The need for demographic data, to improve development planning, is recognized as an important objective.

ISSUES

Candidate issues to be discussed:

a. AID projects generally do not have objectives beyond the early 1980's. Due to the momentum of population growth and the long delays involved in bringing about change, should AID projects be planned over a longer time horizon? How?

b. The AID projects in Table U3 has no quantified goals. Can the Field provide judgemental estimates of quantified goals? If not, how can project reviewers judge whether funding is too little or too high; whether the project will have an effect or not?

c. Figure U5 shows a widening gap between total cereal demand and planned production. Either total cereal supplies will fall or Upper Volta's foreign exchange deficit will widen. Is a disaster on its way? Can the proposed development investment be effective? Are AID projects sufficiently large enough and in the appropriate sector to have a significant effect?

d. Figure U6 shows the relationship between Club livestock goals and consumption trends. Are the club goals for livestock production realistic? What are the constraints which may decrease the chances for achievement of these goals? Have AID and c lub strategies been adequate to alleviate these constraints?

e. Figures U5 and U6 are based on the data presented in annex C. What is the Field's opinion of the accuracy of this data? Is it good enough for such planning purposes? If not, is the effect of current donor efforts unknown? How could better data be collected? Can the Field draw on the Figures their production forecasts?

f. How much and what kind of rural participation is needed in planning a development project? Will a project only be successful if farmers participate in the planning and management of a project?

g. Figure U6 indicated beef production as the major livestock indicator. Are other variables more important (i.e., animal stocks, herder income, milk production, etc.)?

h. The Club gives an estimate of training needs for rainfed irrigated and development. What is the Field estimate of need for trained personnel by level, by decade, for rainfed crop, irrigated crop, and livestock development? Are AID, other donor, and proposed Club training projects adequate to fill this need? If the need is not filled, what will be the quantitative effect on the achievement of project goals, as shown in Figures U5 and U6?

i. Can the Field chart and describe the major institutions for training and education? What is the typical flow of students from elementary schools to jobs, specifically as far as jobs in development activities are concerned? What are the number of students that flow between each institution? Can the donor program to support each institution be described? How do the AID projects affect specific institutions?

j. The Club Ecology Working Group concentrated on wood production projects. Group projections indicate a serious shortfall in wood production. What can AID do now to increase wood production?

k. Given the CRED report on the desirability of promoting private grain traders, how can AID projects either: (1) assist private traders, or (2) not discourage private traders?

l. Given the Club Transport Working Group's discussion of development for road system, can AID assist further?

m. How should AID promote family planning programs to the government (e.g., demographic studies as a means to open doors to family planning programs; inserting family planning components into health projects; etc.)? Considering the delays involved in slowing population growth, shouldn't the Field take a more active role in this field?

n. The maintenance and operating costs, as well as depreciation costs, of irrigated crop hectares are generally high. Can the field give a judgemental quantification of these costs and the ability of irrigated crop farmers to pay them? If costs are higher than farmer's ability to pay, who should pay the difference and how?

o. As far as other donor strategies are concerned, (for example annex G) is the AID strategy similar or different in terms of sectorial funding (i.e., percentage of donor's total investment by Club working group sector)? A judgemental quantification is adequate.

p. What is the Field's judgemental quantification of total recurrent costs per year for their planned projects? How can AID projects include in their initial analysis a projection of the future government and private revenues allocated to pay recurrent costs?

q. Can the Field chart and describe the major Upper Volta institutional structures that are crucial to development? Can the donor program to support each be described? How does each AID program affect specific components of the structure? Is more support needed for other institutional structures or a central planning authority?

r. What are the Field's recommendations for government economic policy on agricultural input subsidies, prices to farmers, import duties, etc.? If these recommendations would cause a change in existing government policy, how can AID influence such a change (e.g., persuasion, increase economic training for government decision makers, etc.)?

ANNEX

ANNEX A

UN PROJECTS IN UPPER VOLTA

Project number and title	Executing Agency	Date approved	Estimated completion date	Estimated project cost (US dollar equivalent) UNDP	Government counterpart contribution
AGRICULTURE, FORESTRY AND FISHERIES (0500)				5,955,690	3,153,8
VULGARISATION AGRICOLE	FAO	11/68	01/79	147,772	
AGRICULTURAL TRAINING CENTRE, MATOURKOU (PHASE III)	FAO	01/68	01/78	1,083,880	1,323,
COOPERATION ET CREDIT AGRICOLE	FAO	08/71	01/77	185,782	
PHYLLODOIE DU COTONNIER	FAO	05/73	01/77	434,906	13,7
ASSISTANCE AU CENTRE AGRICOLE POLYVALENT DE MATOURKOU	FAO	10/73	01/77	1,558,345	1,659,
DEVELOPMENT OF FOREST RESOURCES WILDLIFE AND FISHERIES	FAO	11/73	01/78	1,077,136	
EXPERIMENTAL CENTRE FOR RICE AND OTHER IRRIGATED CULTURES	FAO	08/73	07/77	649,956	157,
CREATION D'UN SERVICE DES SOLS	FAO	05/75	02/76	124,200	
CUIRS ET PEAUX BRUTS	FAO	12/74	01/77	67,400	
ETUDES SUR PEUPLEMENT FORESTIERS	FAO	10/74	01/76	1,097	
CELLULE DE COMMUNICATION A L'APPUI DU DEVELOPPEMENT RURAL	FAO	05/75	01/77	87,484	
APPUI ADMINISTRATIF AUX PROJETS F.A.O. (BOBO-DIOULASSO)	FAO	07/75	02/77	137,692	
CULTURE AND SOCIAL HUMAN SCIENCES (1000)				15,426	5,8
ETUDE DE LITTERATURE AFRICAINE D'EXPRESSION FRANCAISE	UNESCO	10/74	01/77	15,426	5,8
EDUCATION (1500)				1,737,358	937,3
PROGRAMMED INSTRUCTION	UNESCO	11/68	09/75	127,125	
WOMENS TECHNICAL EDUCATION	UNESCO	11/68	01/76	102,630	
ALPHABETISATION	UNESCO	01/71	11/74	69,066	
INDUSTRIAL AND ECONOMIC TECHNICAL HIGH SCHOOL, OUAGADOUGOU	UNESCO	12/70	02/74	10,963	
SECONDARY TECHNICAL EDUCATION	UNESCO	02/72	01/76	223,619	

ANNEX A Continued

Project number and title	Executing Agency	Date approved	Estimated completion date	Estimated project cost (US dollar equivalent) UNDP	Government counterpart contribution
EGALITE D'ACCES DES FEMMES ET DES JEUNES FILLES A L'EDUCATION	UNESCO	01/74	01/78	327,267	
MISE SUR PIED DE LA CELLULE DE PLANIFICATION DE L'EDUCATION	UNESCO	02/74	01/78	65,028	123,7
RENFORCEMENT DES MAITRES DE L'ENSEIGNEMENT SECONDAIRE	UNESCO	03/74	01/78	388,109	449,5
FORMATION ET RENFORCEMENT DES MAITRES DE L'ENSEIGNEMENT TECHNIQUE	UNESCO	07/76	01/76	14,244	
ASSISTANCE PREPARATOIRE A L'INSTITUT NATIONAL D'EDUCATION	UNESCO	12/76	01/78	268,040	321,7
RECHERCHE POUR LA REFORME DE L'EDUCATION ET LA SPECIALISATION DES CADRES CANS CE DOMAINE	UNESCO	08/75	01/77	81,267	42,3
GENERAL ECONOMIC AND SOCIAL POLICY AND PLANNING (2000)				1,549,079	488,7
DEVELOPPEMENT ECONOMIQUE ET SOCIAL	UN	09/72	01/77	28,147	
PROMOTION OF VOLTAIC ENTERPRISES	UNIDO	12/74	01/80	328,263	
ASSISTANCE AU PROGRAMME DE DEVELOPPEMENT RURAL	FAO	06/75	02/76	266,000	97,0
OVERALL REVIEW MISSION OF THE RURAL SECTOR	UNDP	05/72	07/73	3,305	
INTEGRATED RURAL DEVELOPMENT FADA N'GOURMA ORD	FAO	06/74	01/77	104,154	
INTER-DISCIPLINARY MISSION	UNDP	09/72	01/75	40,000	
OVERALL REVIEW MISSION OF THE RURAL SECTOR	UNDP	5/72	06/74	6,695	
ASSISTANCE A L'OFFICE GENERAL DES PROJETS TAMBAO	UN	06/75	01/78	15,660	
BOURSES EN ADMINISTRATION PUBLIQUE	UN	10/74	01/78	53,506	
SOCIO-ECONOMISTES DE L'HABITAT	UN	08/74	01/77	78,894	8,790
MISSION DE CONSULTANT POUR LE FONDS D'EQUIPEMENT	UNDP	01/75	01/76	2,670	
ETUDE DE REORGANISATION DE L'AUTORITE DES AMENAGEMENTS DES VALLEES DES VOLTA	IBRD	09/75	01/77	72,385	6,088
ASSISTANCE A L'AUTORITE DES AMENAGEMENTS DES VALLEES DES VOLTA-PLANIFICATION DU DEVELOPPEMENT	FAO	07/75	10/77	399,400	67,056
ASSISTANCE TECHNIQUE AU FONDS DE DEVELOPPEMENT RURAL	FAO	10/75	07/79	150,000	309,016

Project number and title	Executing Agency	Date approved	Estimated completion date	Estimated project cost (US dollar equivalent) UNDP	Government counterpart contribution
HEALTH (2500)				650,295	
ENSEIGNEMENT INFIRMIER	WHO	03/69	01/79	444,006	
SANTE DE BASE	WHO	03/69	01/79	205,326	
BOURSE EN ORTHOPEDOLEGIE	UNDP	09/74	01/75	963	
INDUSTRY (3500)				4,060,064	1,073,729
INDUSTRIAL DEVELOPMENT	UNIDO	04/69	01/77	180,699	
ORGANIZATION AND PROMOTION OF RURAL SMALL-SCALE ENTERPRISES	ILO	02/72	01/76	69,293	
NATIONAL TRAINING CENTER IN RURAL HANDICRAFTS OUAGADOUGOU	ILO	01/72	01/78	1,275,997	442,070
MINERAL EXPLORATION IN THE NORTH	UN	01/71	01/77	1,300,646	171,975
EXPLORATION AND COMMERCIAL UTILIZATION OF MARBLE	UNIDO	06/71	02/74	18,183	
ASSISTANCE TO THE LEATHER GOODS INDUSTRY	UNIDO	02/73	01/76	66,328	
MINERAL WATER EXPERT	UNIDO	07/72	04/73	7,500	
EXPERT EN COMMERCIALISATION ET CONTROLE DE QUALITE	UNIDO	06/75	01/76	10,500	
CREATION D'UNE USINE DE PRODUITS DESTINES A L'ALIMENTATION DES ANIMAUX	UNIDO	01/74	01/76	23,000	
ASSISTANCE TO THE WOODWORKING INDUSTRY	UNIDO	02/74	01/76	7,600	
FORMULATION ET CONDITIONNEMENT DE PRODUITS PHARMACEUTIQUES ET VETERINAIRES	UNIDO	06/75	01/77	18,500	
NORMALIZATION AND QUALITY CONTROL	UNIDO	06/75	01/78	16,920	
EXPLORATION AND COMMERCIAL UTILIZATION OF MARBLE	UNIDO	06/71	04/74	1,333	
ASSISTANCE IN PESTICIDE FORMULATION AND MARKETING	UNIDO	04/72	02/74	2,250	
RECHERCHES MINIERES DANS LES BANDES BIRRIMIENNES DE BORCMO ET HOUNDE	UN	06/75	01/77	831,300	354,354
ASSISTANCE TECHNIQUE AU MINISTERE DU COMMERCE, DU DEVELOPPEMENT INDUSTRIEL ET DES MINES A OUAGADOUGOU	UNCTAD	07/75	01/78	116,825	51,580
FABRICATION DE MACHINES ET OUTILS AGRICOLES	UNIDO	06/75	03/75	6,500	

Project Number and Title	Executing agency	Date approved	Estimated completion date	Estimated project cost (US dollar equivalent) UNDP	Government counterpart contribution
ASSISTANCE AU FONCTIONEMENT DE LA BRIQUETERIE VOLBICERAM - ETUDE SUR LA PRODUCTION DES MATERIAUX DE CONSTRUCTION	UNIDO	10/75	01/78	51,540	53,790
INDUSTRIAL SURVEY	UNIDO	01/77	01/78	55,150	
LABOUR, MANAGEMENT AND EMPLOYMENT (4500)				508,842	
TRAINING OF OFFICE PERSONNEL	ILO	11/68	01/77	152,532	
EMPLOYMENT AND TRAINING	ILO	08/73	01/78	340,610	
FORMATION EN SECRETARIAT	ILO	12/75	01/77	8,100	
FORMATION ET PROMOTION DU PERSONNEL NATIONAL DU BUREAU DU PNUD, OUAGADOUGOU	UNDP	02/77	01/78	7,600	
NATURAL RESOURCES (5000)				671,942	41,524
EAU ET HYDRAULIQUE	UN	03/74	01/77	401,018	
ETUDES DES EAUX SOUTERRAINES DANS LES BASSINS DE LA BOUGOURIBA ET DU PONT	UN	07/75	01/78	246,097	41,524
ETUDES EN VUE DE L'AMENAGEMENT INTEGRE DU BASSIN DE LA VOLTA NOIRE	UN	04/76	04/76	11,596	
AMENAGEMENT INTEGRE BASSIN DE LA VOLTA NOIRE	UN	08/76	01/77	13,231	
RELIEF ACTIVITIES (6000)				358,335	
SAHEL DROUGHT EMERGENCY AND MID-TERM GROUNDWATER ASSISTANCE	UN	12/73	01/77	358,335	
SCIENCE AND TECHNOLOGY (6500)				323,627	1,673
MINERAL CHEMISTRY	UNESCO	12/72	01/75	9,551	1,673
AERIAL PHOTOGRAPHIC SURVEY OF THE BLACK VOLTA	UNDP	09/74	01/78	286,300	
ARCHITECTE FADA N'GOURMA	UNDP	10/74	01/76	27,776	
SOCIAL SECURITY AND OTHER SOCIAL SERVICES (7000)				124,503	
PUBLIC WORKS	UN	11/68	01/75	124,503	

ANNEX A Continued

Project Number and Title	Executing Agency	Date approved	Estimated completion date	Estimated project cost (US dollar equivalent) UNDP	Government counterpart contribution
TRANSPORT AND COMMUNICATIONS (7500)				566,252	92,338
TELECOMMUNICATIONS	ITU	12/69	01/75	73,054	
DEVELOPPEMENT DE L'ECOLE NATIONALE DES POSTES ET TELECOMMUNICATIONS DE OUAGADOUGOU	ITU	05/71	01/78	116,257	
BOURSE EN AVIATION CIVILE	ICAO	12/73	01/76	3,914	
GEOTECHNICAL STUDY OF THE RAILWAY SECTION KAYA-TAMBAO	UNDP	08/74	01/76	179,734	403
BOURSE ET STAGE DE GESTIONNAIRE DANS LE DOMAINE DE L'AVIATION CIVILE	ICAO	01/75	01/76	7,350	
BOURSE POUR LA FORMATION D'UN PILOTE	ICAO	10/74	01/78	11,903	
ASSISTANCE TECHNIQUE EN MATIERE DE PLANIFICATION DES TRANSPORTS ROUTIERS	IBRD	04/76	07/78	174,440	91,935
TOTAL				16,521,413	5,794,998

ANNEX B

CURRENT HEALTH PROJECTS IN UPPER VOLTA

Project/Activity	Donor Agency or Country	Total Amount ($US)	Other Information
Basic health services development	WHO		1968 - present: Continuing assistance in various aspects of health services development
Equipment, supplies, vehicles, medications	France	455,000	ongoing assistance (annual)
URBAN HEALTH SERVICES/HOSPITAL SERVICES			
Management of Gaoua hospital	R.F.A.	150,000	ongoing assistance
Town water supply	Germany	10,480,000	long-term loan
RURAL HEALTH SERVICES			
Sahel project - equipment, vehicles, medications, vaccines	UNICEF		
Emergency water project	UNDP	12,000	mainly well constructio
Road development and well drilling	Norway	370,000	
Onchocerciasis area village development	USAID	518,000	
Savannah water resources	USAID	365,000	
MANPOWER			
Fellowships	WHO, FED, FAC, UNICEF, RFA, URSS, CEE, AUA, Canada, Roumania, Hungary, Bulgaria, Yugoslavia		
Physicians, social workers	France		annual, permanent
Nursing education	WHO		1968 - present
5 External volunteer programs	various		
DISEASE CONTROL			
Onchocerciasis (Upper Volta portion)	FED	746,988	
Leprosy campaign	Follereau	220,000	annual, permanent program
Smallpox vaccine	USAID		
Measles vaccine	USAID, China		
Equipment, medications: BCG, tuberculosis	UNICEF		
Smallpox eradication	WHO		
Tuberculosis	WHO		

ANNEX C

TABLE C-1

CROP PRODUCTION IN UPPER VOLTA

	1957 57/58	1958 58/59	1959 59/60	1960 60/61	1961 61/62	1962 62/63	1963 63/64	1964 64/65	1965 65/66	1966 66/67	1967 67/68	1968 68/69	1969 69/70	1970 70/71	1971 71/72	1972 72/73	1973 73/74	1974 74/75	1975 75/76	1976 76/77
Millet and Sorghum	600	596	286	849	606	785	1034	861	980	940	876	860	922	833	772	766	750	810	1200	1087
Rice	17	29	29	31	30	27	25	24	33	35	36	38	39	34	37	34	31	39	39	12

Source: CRED, Marketing, Price Policy and Storage of Cereals in the Sahel, Upper Volta Report.

TABLE C-2

BEEF PRODUCTION AND CONSUMPTION IN UPPER VOLTA 1/

Thousand Metric Tons

YEAR	CONSUMPTION 2/	PRODUCTION 3/
1971	20	27
1972	20	25
1973	9	16
1974	8	14
1975	11	18

1. Dressed carcass weight.
2. All meat slaughtered within national boundaries.
3. Includes meat equivalent of exported live animals.

SOURCE: FAO, Production Yearbook, 1973, 1975.

ANNEX D

PRESENT ORGANIZATION OF THE AGENCIES RESPONSIBLE FOR IRRIGATION

The following organizations and agencies are responsible for the design and construction of irrigation projects in Upper Volta:

- La Direction de l'Hydraulique et de l'Amenagement de l'Espace Rural (The Bureau of Water Resources and Rural Development), abbreviated as D.H.A.E.R.

- L'Office National des barrages et des Irrigations (National Office of Dams and Irrigation), abbreviated as O.N.B.I.

- Les Organismes Regionaux de Developpement (O.R.D.) or Regional Development Agencies

- L'Autorite pour l'Amenagement des Volta (Volta Rivers Development Authority), abbreviated as A.V.V.

- The S.O.S.U.H.V., or La Societe Sucriere de Haute Volta (Upper Volta Sugar Company, responsible for operations on the Banfora sugar plantations.

Another important agency is the Comite Inter-Etats d'Etudes Hydrauliques (C.I.E.H.) (Inter-State Committee for Hydrological Study), with headquarters in Ouagadougou.

1. The H.A.E.R. (see enclosed organization chart) and the O.N.B.I.

The principal tasks of these agencies are as follows:

a) to draw up and update the inventory of the country's water resources (measuring station, files on water points, etc.)

b) to issue authorizations for city and industrial water services and to control their respective use (city water supplies are managed by the Office National des Eaux (National Water Bureau)

c) to conduct studies and supervise execution of water engineering projects (dams and irrigation networks) and to supervise the construction of wells and small-scale waterworks (with actual construction in the hands of the O.R.D.'s)

The O.N.B.I., acting under the technical direction and control of the H.A.E.R., is responsible for the execution of projects for construction of dams and large-scale water engineering works.

The H.A.E.R. and the O.N.B.I. have a total of 11 Engineers and 15 high-level indigenous technicians. The nation must, however, resort to the use of technical assistance either directly (20 Engineers) or through the intermediary of a management consultant firm for all major operations.

2. The A.V.V.

A public corporation created in 1974, independently administered and responsible for the design and execution of settlement projects in the Volta River Basins, it is at the present time primarily concerned with development of rain-fed agriculture in the Valley of the White Volta. The A.V.V. has also, however, been contracted to study and design the Bagre project site and the project for reclamation of the flood plains.

There is no clear-cut division of responsibilities regarding future hydro-agricultural development projects for the Volta basins.

3. The O.R.D.'s

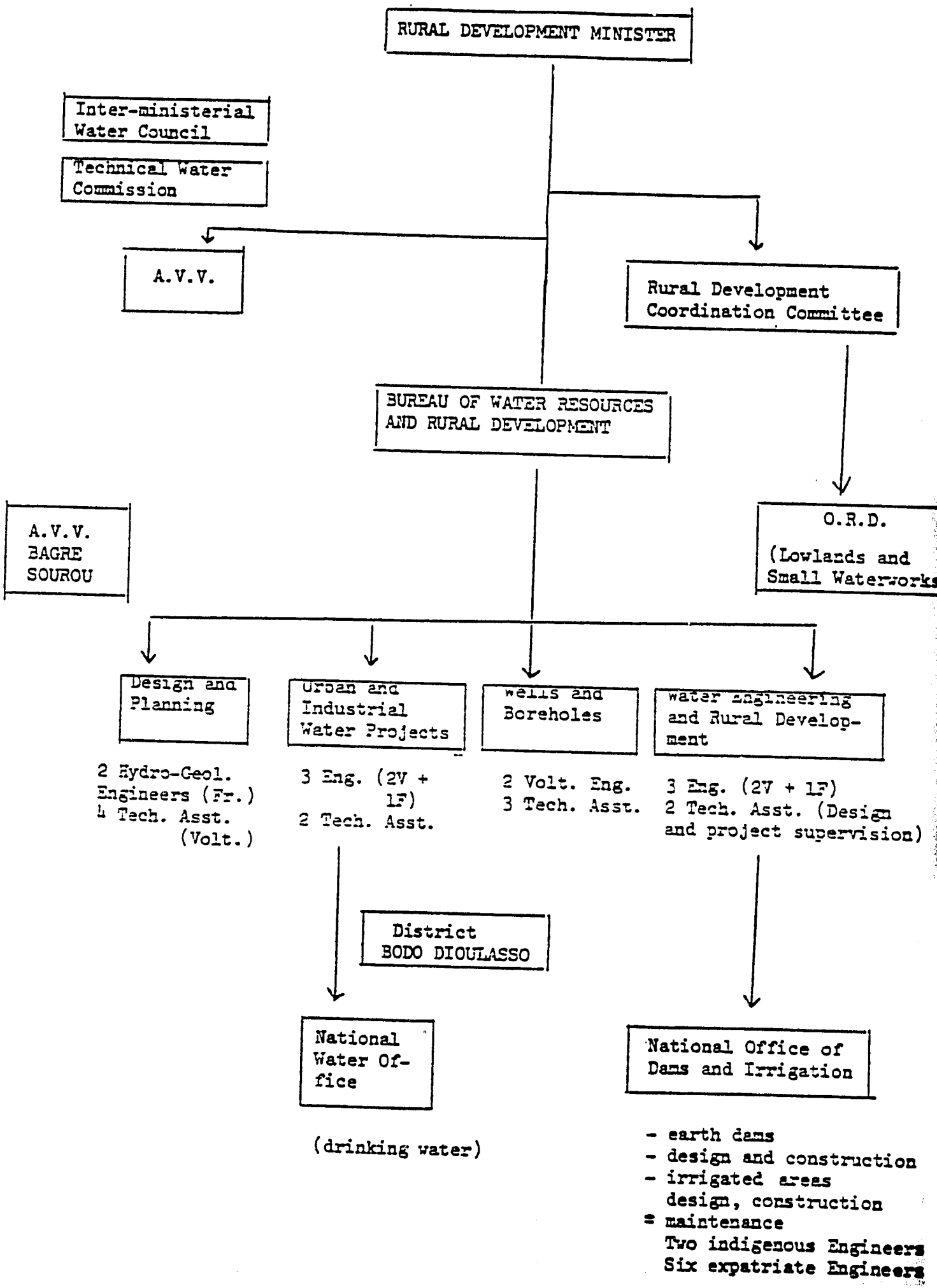
The O.R.D.'s are responsible for using the Rural Development Fund for the execution of development projects for reclamation of lowlands and small-scale water engineering projects.

The O.R.D.'s have been invested with the authority to carry out their reclamation projects in the lowlands with no interference whatsoever from the H.A.E.R. other than for purposes of supervision.

A present, much sought-after objective is the creation of a specialized technical unit within each O.R.D., with the O.N.B.I. still, however, assuming responsibility for the design and construction of irrigated areas downstream from dam sites.

4. The S.O.S.U.H.V.

A semi-public corporation responsible for sugar production in the area of Banfora, this company is expected to continue serving as the agency responsible for the design and execution of all water projects connected with the extension of this area.


RURAL DEVELOPMENT MINISTER
Inter-ministerial Water Council
Technical Water Commission
A.V.V.
Rural Development Coordination Committee
BUREAU OF WATER RESOURCES AND RURAL DEVELOPMENT
A.V.V. BAGRE SOUROU
O.R.D.
(Lowlands and Small Waterworks
Design and Planning
Urban and Industrial Water Projects
Wells and Boreholes
Water Engineering and Rural Development
2 Hydro-Geol. Engineers (Fr.)
4 Tech. Asst. (Volt.)
3 Eng. (2V + 1F)
2 Tech. Asst.
2 Volt. Eng.
3 Tech. Asst.
3 Eng. (2V + 1F)
2 Tech. Asst. (Design and project supervision)
District BODO DIOULASSO
National Water Office
(drinking water)
National Office of Dams and Irrigation
- earth dams
- design and construction
- irrigated areas design, construction
= maintenance
Two indigenous Engineers
Six expatriate Engineers

ANNEX E

FACILITIES IN UPPER VOLTA

DEVOTED TO TRAINING INDIVIDUALS IN IRRIGATION TECHNIQUES

1. INTER-STATE SCHOOL OF AGRICULTURAL ENGINEERS

This school is located in Ouagadougou and was founded in 1968 by thirteen African states with a view towards providing training for future high-level officials responsible for agricultural engineering projects. Candidates for admission must have two years university education in irrigation or must pass a special entrance examination. The school offers a three-year course of instruction in the fields of economics, planning techniques, infrastructure, public health, energy and water resource management. The school presently accommodates 25 students, a figure which is expected to double in the near future. Nine Engineers from Upper Volta are expected to graduate from the school by 1980.

2. KAMBOINSE INTER-STATE SCHOOL OF HIGH-LEVEL TECHNICIANS IN WATER ENGINEERING AND RURAL DEVELOPMENT

Founded in 1965, the purpose of this school is to endow students with practical knowledge of the field of rural development. Candidates for admission must have a high-school diploma or must pass an entrance exam. The school offers a two-year course of study and its curriculum includes subjects such as hydraulics, topography and farming techniques. The Board of Directors of this school is the same as that of the Inter-State School of Agricultural Engineers. This facility is expected to expand to accommodate a total of 80 students (as compared with its present 30-student capacity).

3. MATOURKOU

The College of Matourkou offers:

3.1. Training courses for future agricultural workers (in the form of a four-year course of study)

The College of Matourkou trains agricultural workers. The school offers a four-year course of study leading to an agricultural teaching certificate after the first three years of study. The first four months of the fourth year are devoted to on-the-job training, and the remainder of the last year of study is devoted to general courses in administration, management and community development. The Technical Agricultural Worker Certificate is awarded upon successful completion of the final exams. Candidates for admission must hold a teaching certificate valid for teaching the first stage of secondary education. Students choose their major fields of study at the end of the second year from alternatives such as farming, livestock raising, forestry or hydrology.

3.2. Training courses for agricultural extension agents (1-year program)

A course which can accommodate only about 100 participants per year.

In view of the fact that these programs are highly unsuitable for such specialized instruction, the country intends to regionalize training in four institutes.

4. CESAO

This center, created in 1960, was originally designed to offer a two-year course of instruction in economics and sociology. Beginning in 1970, however, the school began to focus on shorter training courses designed to offer a better knowledge and understanding of the development process, particularly to villagers, and lower-level project managerial staff. The CESAO offers two types of programs:

(a) three-month training programs at the center, accommodating from 15 to 20 participants from various West African nations (approximately one

half from Upper Volta)

(b) one to two-week training sessions conducted either at the center itself or in the field.

ANNEX F

PHYSICAL CHARACTERISTICS OF UPPER VOLTA

1. CLIMATE

Rainfall in Upper Volta decreases steadily from South to North from an average precipitation of 1,300 m/m/yr. in the South-West (in the O.R.D. of Banfora) to a low of 400 m/m in the north-eastern section of the country.

The rainy season is concentrated in one prolonged period from April-May through September-October and is followed by a dry season with almost no precipitation whatsoever. The beginning of the rainy season, which is also the time of the year when farmers prepare their land and sow their fields, varies greatly from one year to the next.

Potential evaporation increases as we move northwards and reaches its peak by the end of the dry season.

The irregular distribution of rainfall, as well as the significant fluctuation in precipitation levels from one year to the next, largely explain why it is so difficult to obtain adequate agricultural output, especially in the North.

2. HYDROLOGY (taken from the Rapport de synthese sur la politique de l'eau en Haute-Volta, March, 1976.)

Despite the relative flatness of its land and its modest precipitation levels, Upper Volta does have an extensive network of waterways, especially in the South. This network of rivers and streams produces three major catchment basins: the Volta, the Comoe and the Niger.

2.1 The Volta Basins

The Black Volta rises on the Northern slope of the cliffs of Banfora in an area where precipitation is over 1,000 mm per year. It begins to flow in a north-eastern direction, running parallel to the Niger and the Bani rivers. North

of Dedougou there is an elbow of capture where the Black Volta vers abruptly towards the South. In what would be an exact prolongation of its upstream course flows the Sourou-a relatively flat river whose current reverses direction, its waters driven back by the floodwaters of the Black Volta. The river channel probably follows the former lower course of the Black Volta before capture was produced. The Volta crosses into Ghana where it receives the waters of the White Volta and the Pendjari. After crossing the Akossombo Dam, it flows into the Gulf of Guinea.

The White Volta rises east of Ouahigouya, in an area with precipitation of from 600 to 700 mm per year. Abreast Kaya, it receives the effluents of the Bam, Dem and Sian Lakes. Its course leads it into Ghana, where it flows into the Black Volta after receiving the waters of the Red Volta-the shortest of the three.

2.2 The Comoe River Basin

The Comoe River rises in the cliffs of Banfora. Its course, which is intersected by a series of rapids and waterfalls, leads to the permanent pools found at the foot of the cliffs of Banfora (Tingrela Lake, for example). Most of the course of the Comoe River is in Ivory Coast, which it crosses in a north-south direction before flowing into the Gulf of Guinea.

2.3 The Niger River Basin

The small temporary streams intersecting the East and northern areas of the country all flow towards the Niger. These streams, with insignificant flows, often form a string of small pools. Examples of this phenomenon include the Sirba in the East and the Beli in the North.

For reference purposes, the flows of the major rivers of Upper Volta are presented in table form on the following page.

3. HYDROGEOLOGY

Speaking purely from the standpoint of harnessing their water resources for farming purposes, certain zones seem capable of supplying sufficient flows of water (sandstone, Cambrian system, and xenolith of the formations of the Continental Terminal on the Gondo Plains). These flows vary from approximately 40 to 200 m^3/hr. Their mobilization for development purposes, however, requires the installation of pumping stations at low depths (of from 15 to 45 meters) and entails seemingly prohibitive operating costs for the agricultural sector.

4. SOILS

A survey of the entire country was conducted by the O.R.S.T.O.M. and charted on a scale of 1/100,000. More detailed charts are also available on a scale of 1/20,000 (Banfora, South-West Plains, Sourou, etc.).

In general, the river valleys and flood plains contain most of the country's irrigated land. These areas do, however, pose certain problems in that they must be protected against flooding and equipped with drainage systems. The mediocre-quality soils of the plateaus are generally unsuitable for irrigation as the irregular contour of the land and the high costs involved in constructing feeder systems (dead structures or pumping stations) make such projects unfeasible.

TABLE F-1

FLOWS OF THE MAJOR RIVERS

River	Station	Catchment Basin (in km^2)	Annual flows (in millions of m^3) average year	decade with above-average precip.	relatively dry decade	Absolute lowest water level (in m^3/s)
Black Volta	Nasso (on the Kou)	400	unknown			2.0
	Banzo	2800	490(1)		300(1)	1.1
	Samandeni	4575	558	640	391	2.1
	Boromo	54000	1616	1919	1194	5.2
	Dapola	81000	4358	4978	3757	4.1
White Volta	Bagre	35000	770	1150	440	none
	Tanema (on Dougoula Mondi)	2500	175	263	88	none
	Bitou (on Nouhao)	3000	210	305	105	none
Red Volta	Kampalaga	9000	295	460	125	none
Comoe	Diarabakoko	2350	500(1)		300(1)	1.7

(1) only an approximate figure

CHARACTERISTICS OF THE ORD'S

ORD	Area Km^2	Population (1970)	Inhab $/Km^2$	Rainfall mm	Sponsor	Management	Potential
Ouagadougou (Center)	24,179	755,000	31	750-1000	FAC	SATEC[1]	Poor
Koudougou (Center West)	26,324	685,950	26	800-1000	FAC	SATEC	Poor to Mediocre
Kaya (Center-North)	21,578	558,000	26	650-800	FAC	CFDT[2]	Poor
Ouahigouya or Yatenga (North)	12,300	504,000	41	600-700	FED	BDPA[3]	Very Poor
Dedoagou (Volta Noite)	27,356	545,900	15	800-1100	IBRD was FAC	CFDT	Fair
Bobo Dioulasso (Upper Basin)	20,500	269,000	13	1100-1200	IBRD	CFDT IRHO[4]	Fairly Good
Banfora (Comoe)	18,393	203,600	11	1200-1400	FED ends 1974	SOIESA[5]	Good
Bougouriba (South-West)	17,448	157,300	11	1000-1200	IBRD ends 1974?	CIDR[6]	Fairly Good
Koupela (Central-East)	15,657	333,300	21	700-1000	CIDA	CIDA CIDR CFDT	Poor
Fada N'Gouima (East)	43,444	202,750	5	700-1000	AID UNDP	AID UNDP	Mediocre
Sahel	36,870	273,000	7.4	400-700	FED	----	Poor

1. Societe d'Assistance Technique et de Cooperation
2. Compagnie Francaise Pour le Developpement des Fibres Textiles
3. Dureau Pour le Developpement de la Production Agricole
4. Institut de Recherches pour les Huiles et Oleagineux
5. Societe Technique pour le Developpement Agricole
6. Compagnie International Developpement Rural

RCE: AID, DAP FY 1975, Section III.

ANNEX G

OFFICIAL DEVELOPMENT ASSISTANCE BY SECTOR

Millions of Dollars

Category of Commitment / Sector of Destination	1974 Grants Dons	1974 TC AT 1/	1974 Loans Prêts	1974 TOTAL	1975 Grants Dons	1975 TC AT 1/	1975 Loans Prêts	1975 TOTAL	Partial 1976 Grants Dons	Partial 1976 TC AT	Partial 1976 Loans Prêts	Partial 1976 TOTAL
1. Multisector Rural Development Activities	3.11	.97	8.00	11.11	12.92	5.03		12.92	8.80	1.57	13.90	22.70
1.1. Large-scale integrated projects			8.00	8.00	3.80			3.80	3.06	.72		3.06
1.2. River development schemes	1.13			1.13	4.17	1.01		4.17	2.69			2.69
1.3. Other (nse)	1.98	.97		1.98	4.95	4.42		4.95	3.05	.85	13.90	12.45
2. Agriculture	4.87	.87		4.87	4.96	1.01	9.23	14.19	7.14	3.83	9.40	16.54
2.1. Crop production - irrigated *	.12	.12		.12	1.42	.32		1.42	.39		5.00	5.39
2.2. Crop production - Dry farming and undefined	1.40	.08		1.40	3.05	.20		3.05	1.72	.48	1.26	2.98
2.3. Livestock	2.12	.03		2.12			9.23	9.23	4.14	3.35		4.14
2.4. Forestry and Reforestation	.45	.06		.45	.45	.45		.45	.89		2.93	3.82
2.5. Fisheries												
2.6. Agricultural institutions, services and training	.58	.58		.58	.04	.04		.04			.21	.21
2.7. Unspecified	.20			.20								
3. Water Resources	3.55			3.55	3.00	.86	10.47	13.47	1.95	.28	1.06	3.01
3.1. Rural Water Supply**	2.79			2.79	1.43	.56		1.43	.21		1.06	1.27
3.2. Urban Water Supply							10.47	10.47	.20	.20		.20
3.3. Large-scale multi-purpose dam projects									.04			.84
3.4. Services, training	.03			.03	1.57	.30		1.57	.70	.08		.70
3.5. Unspecified	.73			.73								

Notes: * See also 3.1
** See also 2.1

1/: Technical Assistance Component of Grants.

Category of Commitment / Sector of Destination	1974				1975				Partial 1976			Partiel
	Grants Dons	TC AC 1/	Loans Prêts	TOTAL	Grants Dons	TC AC 1/	Loans Prêts	TOTAL	Grants Dons	TC AC 1/	Loans Prêts	TOTAL
Transportation and Infrastructure	11.01	1.28	.93	11.94	5.61	1.73	22.53	28.14	17.94	1.58	20.00	37.94
4.1. Rural roads	1.92			1.92	3.11	.50	7.50	10.61	1.21			1.21
4.2. Primary roads	6.62	.49	.44	7.06	.05	.05		.05	14.30		20.00	34.30
4.3. Roads: maintenance, services and training	.93		.12	1.05	.77	.02		.77				
4.4. Rail, Water, Air Transportation	.03	.03	.37	.40	.43	.17	10.69	11.12				
4.5. Communications	.05	.05		.05	.01		3.45	3.46	.96	.96		.96
4.6. Energy												
4.7. Meteorology												
4.8. Unspecified	1.46	.71		1.46	1.24	.99	.89	2.13	1.47	.62		1.47
5. Education and Human Resources	16.28	6.29		16.28	9.31	8.48		9.31	6.45	5.91		6.45
5.1. Primary and secondary	5.13			5.13	.17			.17				
5.2. University and higher technical	1.82	.45		1.82	.76	.76		.76	.13			.13
5.3. Non formal education	2.89	.20		2.89	.48	.43		.43	.02			.02
5.4. Teacher training	.13	.13		.13	.20	.20		.20				
5.5. Vocational and technical	.60	.09		.60	.13	.13		.13	.88	.49		.88
5.6. Cultural activities	.17	.17		.17	.21	.21		.21	.10	.10		.10
5.7. Unspecified	5.54	5.25		5.54	7.36	6.75		6.75	5.32	5.32		5.32
6. Health, Nutrition and Social Infrastructure	2.83	2.20		2.83	3.06	2.57		3.06	2.01	1.35		2.01
6.1. Rural health services	.40	.01		.40	.08	.05		.08	.42			.42
6.2. Urban health services					.03			.03				
6.3. Nutrition									.24			.24
6.4. Demography, family planning	.13	.13		.13	.67	.67		.67				
6.5. Community development, community facilities	.22			.22	.36			.36	.01	.01		.01
6.6. Housing	.20	.20		.20	.14	.14		.14				
6.7. Unspecified	1.88	1.86		1.88	1.78	1.71		1.78	1.34	1.34		1.34

Note 1/: Technical Assistance Component of Grants.

Category of Commitment / Sector of Destination	1974				1975				Partial 1976			Partial
	Grants Dons	TC AC (1)	Loans Prêts	TOTAL	Grants Dons	TC AC (1)	Loans Prêts	TOTAL	Grants Dons	TC AC (1)	Loans Prêts	TOTAL
7. Industry and Tourism	1.30	.42	1.66	2.96	2.76	.82		2.76	2.59	.86	14.79	17.38
7.1. Mining	.28	.28		.28	.18	.09		.18	.91	.70		.91
7.2. Manufacturing	.04	.03	1.66	1.70	.45	.45		.45	.75		.38	1.13
7.3. Agro-industry					1.29	.10		1.29			13.20	13.20
7.4. Construction	.68			.68					.39			.39
7.5. Tourism												
7.6. Unspecified	.30	.11		.30	.84	.18		.84	.54	.16	1.21	1.75
8. Activities non allocable by sector	7.00	1.25	8.01	15.01	6.36	1.72		6.36	7.17	2.76	2.23	9.40
8.1. Planning and administration	.06	.06		.06	.13	.06		.13	.11	.11		.11
8.2. Import financing	2.00		6.51	8.51	2.00			2.00			1.75	1.75
8.3. Balance of payments assistance									.98			.98
8.4. Budget subsidy	3.85			3.85	2.57			2.57	3.35			3.35
8.5. Debt reorganization												
8.6. Research (nse)	1.09	1.09		1.09	1.66	1.66		1.66	2.65	2.65		2.65
8.7. Other			1.50	1.50					.08		.48	.56
9. Emergency Aid	26.85			26.85	12.07			12.07	7.99			7.99
9.1. Food aid	20.93			20.93	7.85			7.85	7.67			7.67
9.2. Transport and storage Cereals	3.29			3.29	1.70			1.70	.32			.32
9.3. Livestock (reconstitution)	.50			.50	.40			.40				
9.4. Non-food aid	.50			.50	.52			.52				
9.5. Multipurpose activities	1.63			1.63	1.60			1.60				
10. Unspecified development assistance	11.99	8.64		11.99	20.78	14.14		20.78	31.94	19.04		31.94
TOTAL	88.79	21.92	18.60	107.40	80.83	36.36	42.23	123.06	93.98	37.18	61.38	155.36

Note 1/: Technical Assistance Component of Grants.
Part de la coopération technique dans les dons.