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SAHEL DEVELOPMENT PROGRAM TEAM
EVALUATION BRIEFING DATA
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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 Senegal's population, average cereal demand per capita, and the fraction of cereal demand allocated to rice/wheat:

a. Population. The population in 1975 is estimated to be approximately 1,283,000 people and increasing at 2.3 percent per year. 1/

b. Cereal Demand per Capita. Consumption per capita is estimated to be 131 kilograms per person. 2/

c. Rice/wheat Fraction of Total Cereal Demand. This fraction is estimated to be 24 percent. 3/

Based upon the above data, Table M1 presents the cereal consumption forecast.

TABLE M1

Historical Trend in Mauritania Cereal Demand 1/

		Thousand Metric Tons	
Year	Total Cereals	Rice/Wheat	Millet/Sorghum/Maize
1980	193	46	147
1990	235	56	179
2000	299	72	227

1. Based on (a) forecasts for cereal demand per capita of 131 kilograms per person and rice/wheat fraction of demand of 24 percent, and (b) forecast of 2.3 percent per year.

SOURCE: Club du Sahel, Equipe des Cultures Seches

Other forecasts of cereal demand are presented in Table M2.

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1. Club des Amis du Sahel, Equipe des Cultures Seches, Republic Islamique de Mauritanie, La Promotion des Cultures Seches, 7702/MAU/R, March, 1977, p 4.
2. Ibid., p 5.
3. Ibid., p 5.

TABLE M2

Forecasts of Mauritania Cereal Demand

Thousand Metric Tons

Year	Club du Sahel Synthesis Working Group: Total Cereals	Rice/Wheat	Millet/Sorghum/Maize	Club du Sahel Irrigated Working Group: Rice/Wheat
1980	241	71	170	54
1990	332	105	227	79
2000	463	146	317	108

SOURCE: Letter to Mr. Shear, AFR/SFWA, from Mr. Stacy, Club du Sahel Secretariate, October, 1976; Club des Amis du Sahel, Irrigated Cultivation Team, Program of Irrigated Cultivation in the Republic of Mauritania, December 1976, p 12.

The range of the forecasts shown in Tables M1 and M2 is presented in Figure M1.

Millet/Maize/Sorghum Production Trend

It is possible to project a future time trend, using the data in annex D and using econometric techniques, for millet/sorghum/maize production. 1/ However this data project a trend which decreases to zero production by 1980. Since this is unlikely, a time trend at the 1965-1975 average production and the range of forecasts for consumption are presented in Figure M2.

Rice/Wheat Production Trend

Paddy rice production has increased at an annual average of .77 metric tons from the 1971 to the 1977 season. 2/ This time trend and the range of forecasts for consumption are presented in Figure M3.

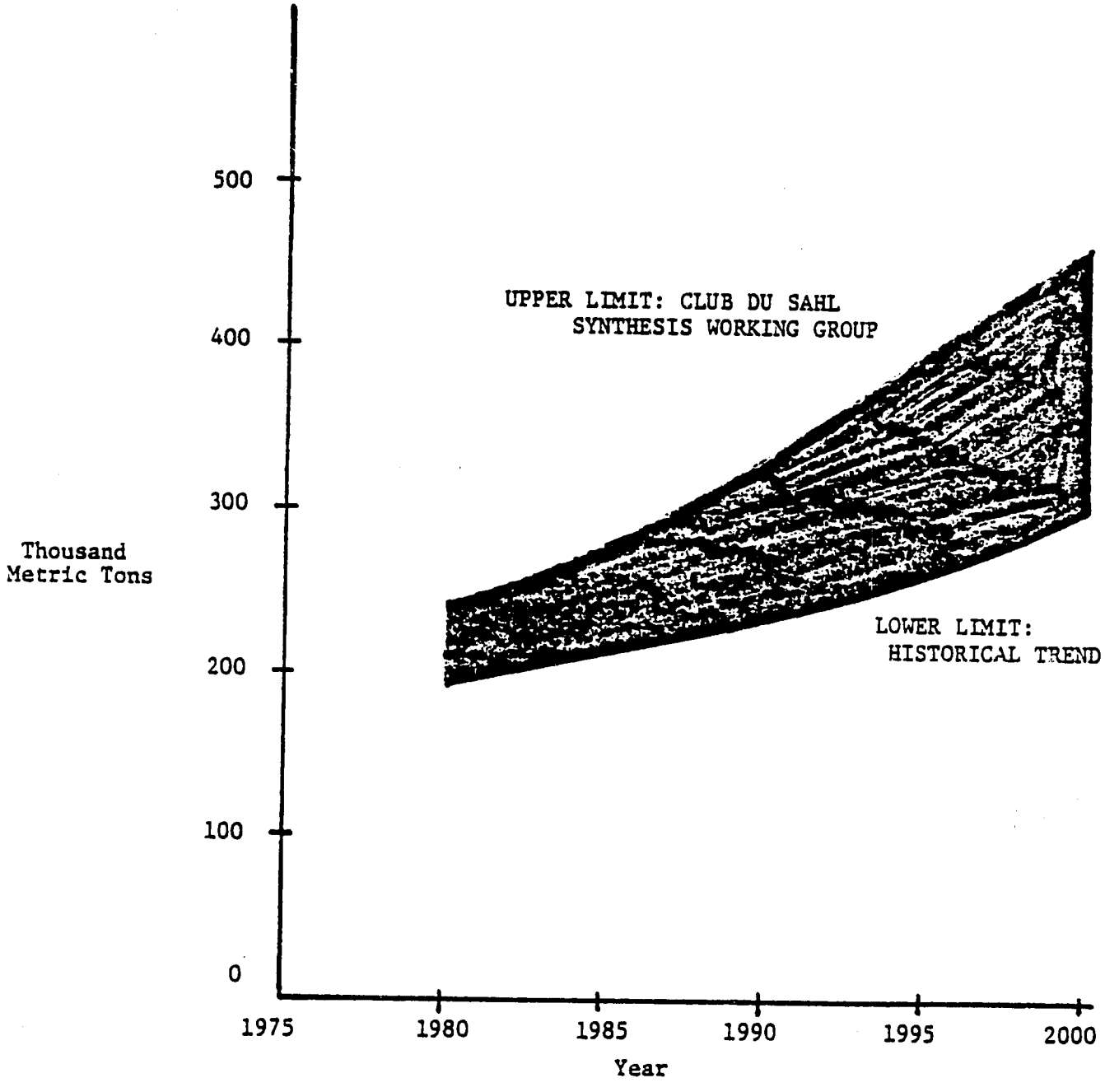
Comparing Total Cereal Production Trend and Cereal Demand Forecasts

The comparison of production trend and demand forecasts for cereals are presented in Figure M4.

1. Data for 1965-1975; University of Michigan, Center for Research on Economic Development (CRED), The Recent Economic Evolution of the Sahel, June, 1975, annex B, Table I; FAO, Production Yearbook, 1975.
2. Club des Amis du Sahel, Equipe des Cultures Seches, Republique Islamique de Mauritanie La promotion des cultures Seches, March, 1977, p 8.

FIGURE M1

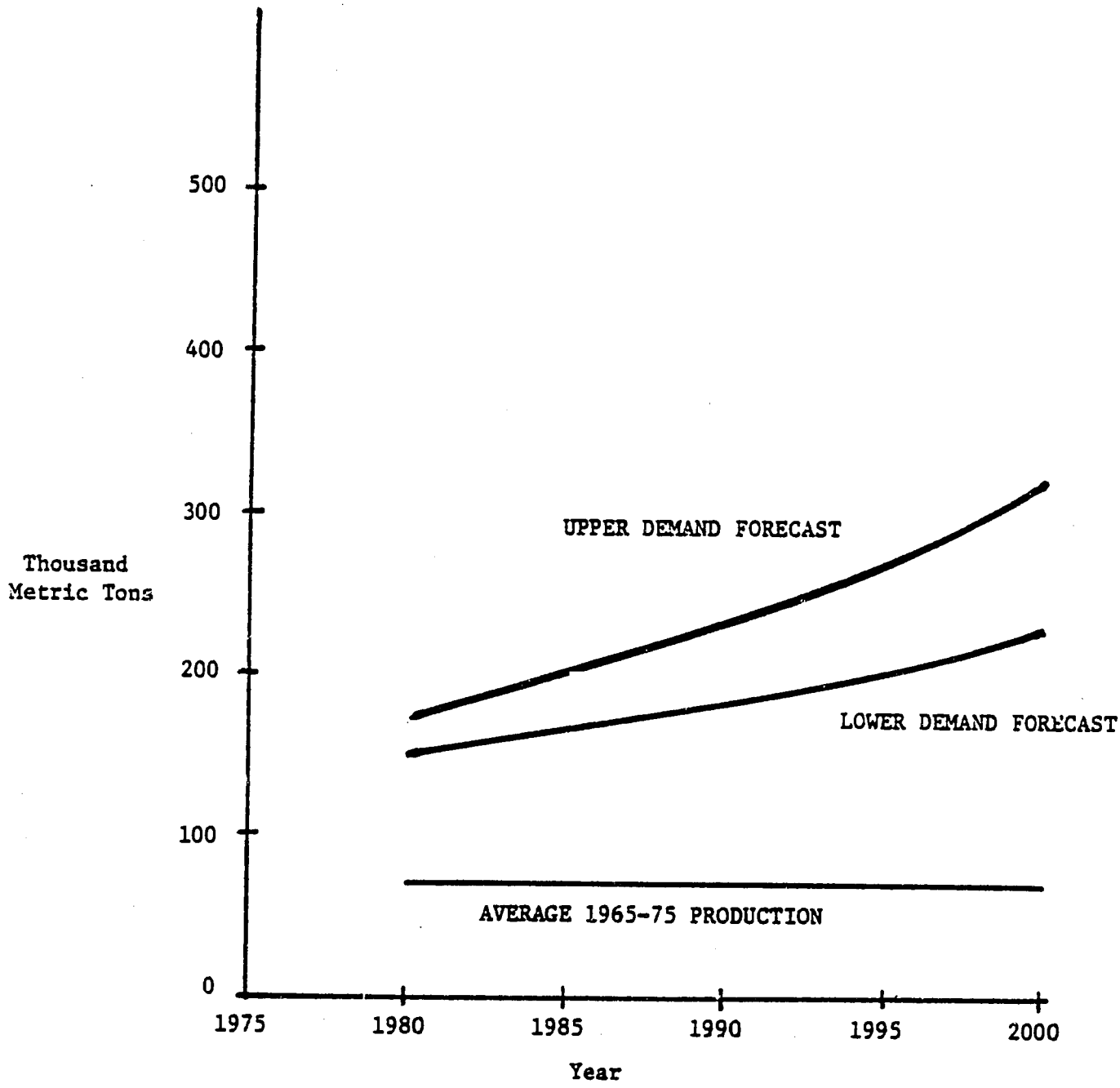
RANGE OF FORECASTS FOR TOTAL CEREAM DEMAND IN MAURITANIA



SOURCE: Tables M1 and M2

FIGURE M2

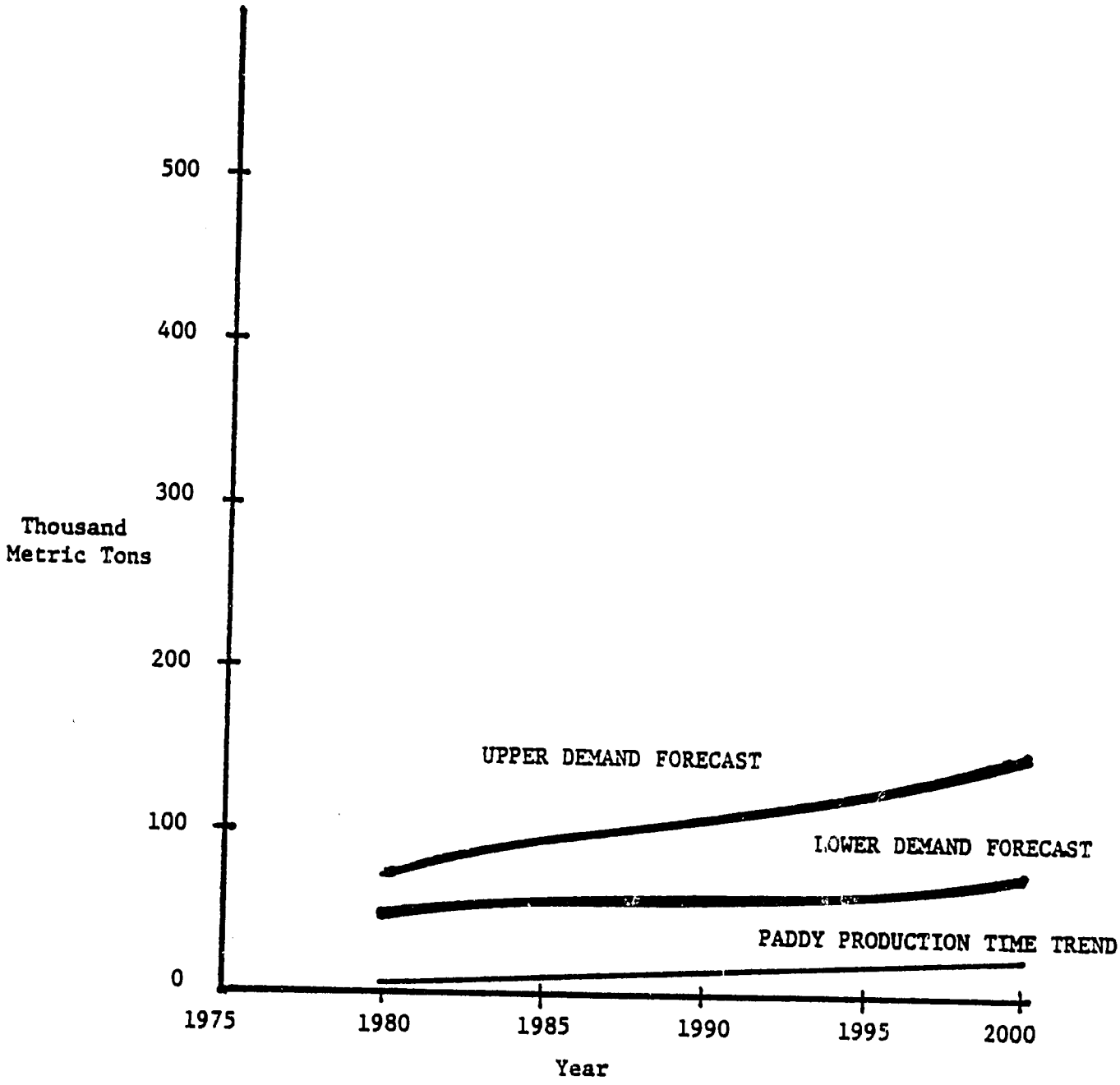
MILLET/SORGHUM/MAIZE PRODUCTION TIME TREND
RANGE OF FORECASTS FOR DEMAND



SOURCE: Tables M1 and M2; Production time trend from historical data in CRED, The Recent Economic Evolution of the Sahel, annex B, Table I; FAO, Production Yearbook.

FIGURE M3

RICE PRODUCTION TIME TREND AND
RANGE OF FORECASTS FOR DEMAND



SOURCE: Tables M1 and M2; Production time trend from historical data in Club des Amis du Sahel, Equipe des Cultures Seches, Republique Islamique de Mauritanie La Promotion des Cultures Seches, p 8.

AID Project Goals for Crop Production

There are two projects which directly affect crop production:

a. Mauritania Integrated Rural Development (Selibaby), and
b. Sahel Food Crop Protection Project.

The goals of these projects are the increase of crop production. The costs, timing, and quantitative effects of the projects are presented in Table M4. The AID contribution to increasing Mauritania crop production, compared to demand, is presented in Figure M5.

Other Donor Project Goals for Crop Production

Table M5 represents the major donors from 1974 to 1976.

TABLE M5

MAJOR DONOR ASSISTANCE COMMITMENTS TO MAURITANIA

	Millions of Dollars		
Donor	1974	1975	1976
France	10.35	16.81	10.25
Germany	6.23	2.90	11.12
European Economic Community (EEC)	24.46	0.76	8.63
United Nations	9.67	10.38	1.41
United States	13.88	3.47	3.40
TOTAL ALL DONORS	132.77	94.48	51.98

SOURCE: Club des Amis du Sahel, Sectoral Breakdown of Official Development Assistance to the Sahel, 1974-1976.

There are no other non-AID projects identified that directly affect crop production.

TABLE M4

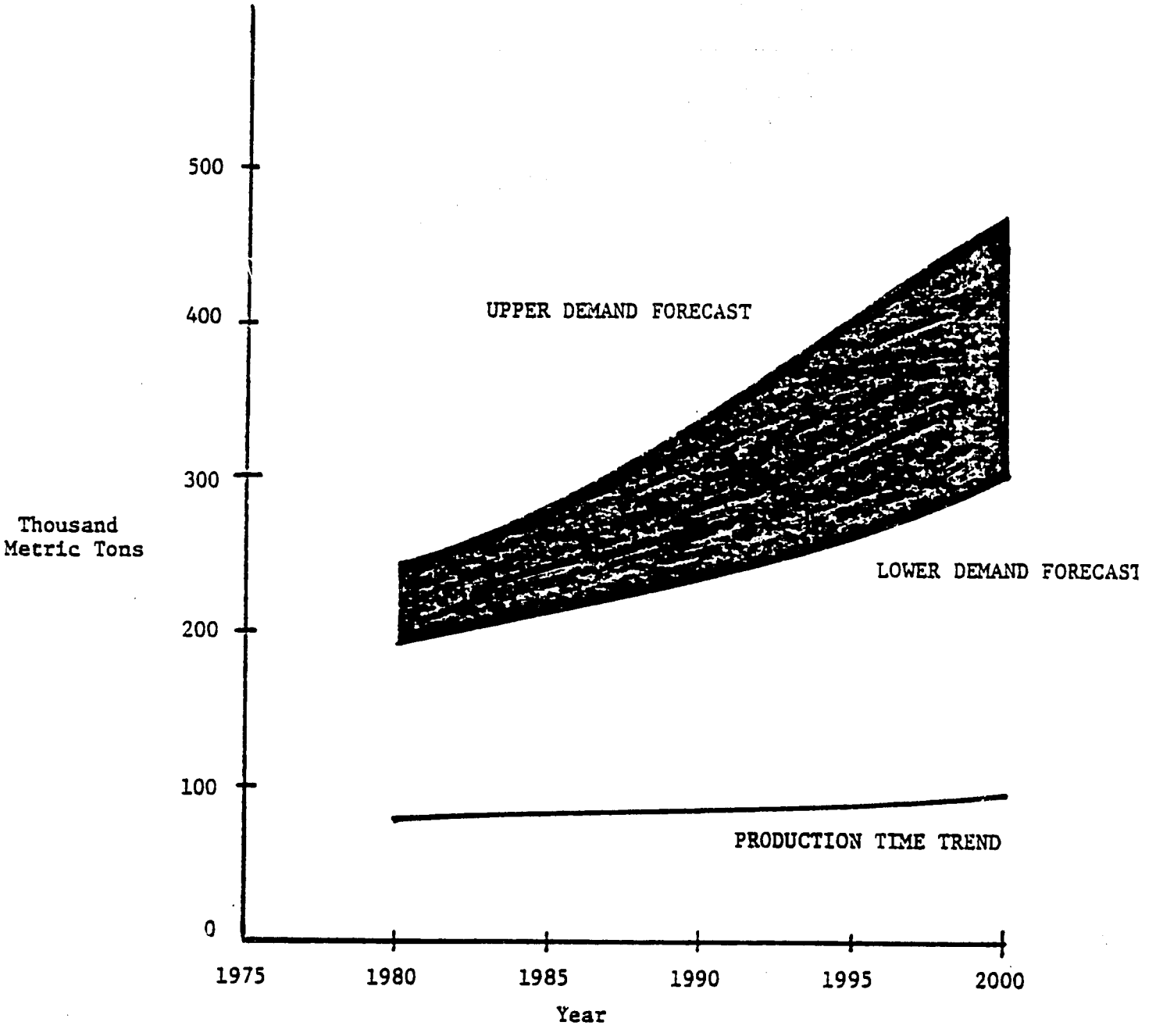
QUANTITATIVE CROP GOALS OF AID PROJECTS

PROJECT			MILLET/MAIZE/SORGHUM PRODUCTION				RICE/WHEAT PRODUCTION			
			PRESENT		GOAL		PRESENT		GOAL	
NAME	INVESTMENT	PERIOD 1/	YEAR	QUANTITY	YEAR	QUANTITY	YEAR	QUANTITY	YEAR	QUANTITY
Mauritania Integrated Rural Development 2/	$1,450,000	1977-79	1976	0	1979	3/	-	-	-	-
Sahel Food Crop Protection 4/	$3,200,000	1975-78	-	-	1979	11,500 MT 5/	-	-	-	-

1. U.S. Fiscal Year.
2. AID, Mauritania Rural Development, Project Paper, June, 1977, p 35.
3. Three parcels of 6-8 hectares each; Ibid., p 35.
4. AID, Sahel Food Crop Protection, Project Paper, June, 1975, p 105, 111.
5. Increment to preceeding production.

FIGURE M4

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



Club des Amis du Sahel Project Goals for Crop Production

The government has decided to follow an integrated development strategy in four, geographically homogenous regions of the country; (1) oasis zone, (2) South-East zone, (3) Senegal River Valley, and (4) South-West zone. For each zone, the goals are:

a. Oasis Zone.

--improvement of date production from 13,000 to 40,000 metric tons,
--improvement of plant yields from 25-30 to 50 kilograms per plant,
--introduction of new crop (e.g., fruits, cereals, etc.), and
--improvement of irrigation techniques.

b. South-East Zone.

--improvement, intensification, and integration of agriculture and livestock production,
--improvement of development infrastructure,
--improvement of rural life conditions (i.e., waterworks, dispensaries, etc.),
--environmental protection, and
--education.

c. Senegal River Valley.

--improvement of recession and flood crop production, and
--development of irrigated crops.

d. South-West Zone (Sylvo-Pastorale).

--improvement of livestock production conditions (i.e., sanitary, commercialization, etc.),
--development and improvement of recession crops to supplement livestock production,
--improvement of rural life conditions, and
--improvement of animal routes.

The goals of those projects for which crop production goals are declared are presented in Table M6. 1/ Their contribution to increasing Mauritania crop production is presented in Figure M5.

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1. Club des Amis du Sahel, Equipe des Cultures Seches, Republique Islamique de Mauritanie la Promotion des Cultures Seches, 7702/MAU/R and related documents, 7702/MAU/P-1 through 12, March 1977; Irrigated Cultivation Team, Program of Irrigated Cultivation in the Republic of Mauritania, December 1976.

TABLE M6

QUANTITATIVE CROP GOALS OF PROPOSED CLUB DU SAHEL PROJECT

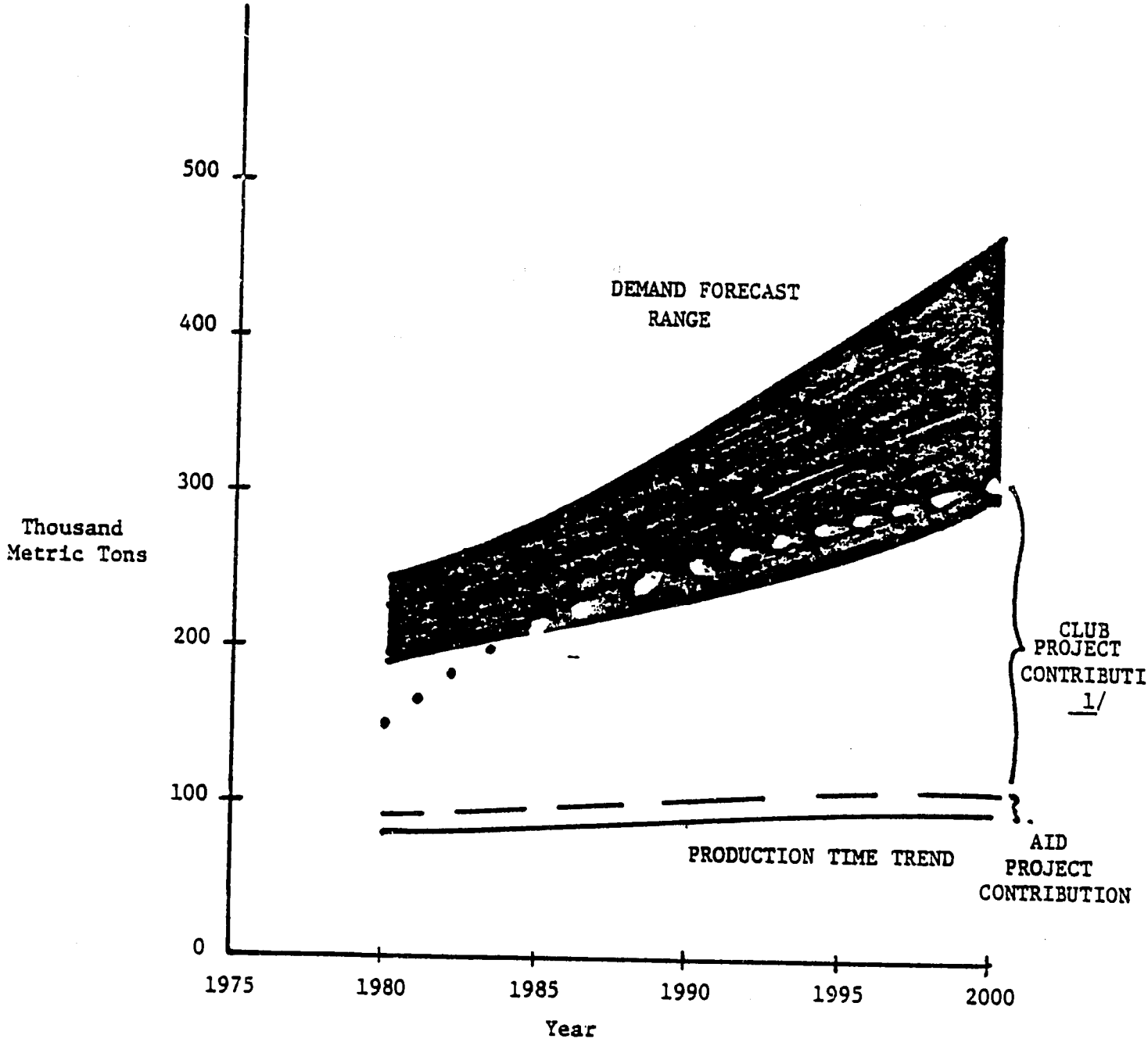
PROJECT			MILLET/MAIZE/SORGHUM PRODUCTION				RICE/WHEAT PRODUCTION			
			PRESENT		GOAL		PRESENT		GOAL	
NAME	INVESTMENT 1/	PERIOD	YEAR	QUANTITY	YEAR	QUANTITY	YEAR	QUANTITY	YEAR	QUANTITY
Programme de Developpement Rural Integre dans le Sud-Est Mauritarien	$25,000,000	NA 2/	NA		NA		NA		NA	
Projet d'Assistance aux Cultures de Decrue dans la Vallee du Senegal	$1,550,000	NA	-		NA	27000 MT 3/	-	-	-	-
Programme de Development Rural Integre Pour la Zone Sylvo-Pastorale	$20,000,000	NA	NA		NA		NA		NA	
Irrigation Projects	$1 billion	1977-1980	-	-	-	15000 MT 3/	-	-	-	64,000 MT 3/
		1980-1990	-	-	-	43,000 MT 3/	-	-	-	31,000 MT 3/
		1990-2000	-	-	-	32,000 MT 3/	-	-	-	38,000 MT 3/

1. Exchange rate of CFA 250 = $1 applied.
2. NA denotes not available.
3. Increment to preceeding production.

SOURCE: Club des Amis du Sahel, Equipe des Cultures Seches, Republique Islamique de Mauritanie la promotion des Cultures Seches, 7702/MAU/P-4,P-5,P-6, March 1977; Irrigated Cultivation Team, Program of Irrigated Cultivation in the Republic of Mauritania, December 1976, p.16.

FIGURE M5

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



SOURCE: Tables M1, M2, M4, and M6.

1/ Rice production goals multiplied by .65; wheat production by .8.

Livestock Production Sector

Livestock Demand and Production Forecasts

Beef demand can be project by projecting historical beef production at the population growth rate of 2.3 percent per year. The FAO trade yearbooks indicate no beef imports for Mauritania. Historical and projected consumption is presented in Figure M6.

AID Project Goals for Livestock Production

The AID project concerned with livestock production is the Mauritania Integrated Rural Development (Selibaby). The project is designed to demonstrate the principles of range management with a 400 hectare range management unit. The area will contain approximately 100 mature cattle and an equivalent number of sheep. There is no estimate of the project's effect on herd off-take or average animal size.

Other Donor Project Goals for Livestock Production

The following projects have been identified:

a. IBRD, Livestock Development Project
b. FAO, Agriculture et de L'Elevage Pastoral.

No documentation has been obtained on the specifics of these projects.

Club des Amis Project Goals for Livestock Production

Production projects can be separated by the four development zones: 1/

a. Oasis Zone.

--Program for integrated rural development of the zone, $5 million.
--Sendenterization of nomads project, $16 million.

b. South-East Zone.

--Program for integrated rural development of the zone, $25 million.
--Creation of a demonstration sheep farm, $240,000.

c. Senegal River Valley.

--Program for rural integrated development of the zone, $15 million.
--Creation of an intensive feeding ranch at Kaedi. The project will be to establish cattle fattening operations of 500 hectares of irrigated fooder in the Senegal River Valley. The goal is to assure a supply of export quality meat. The funding is for $6 million.

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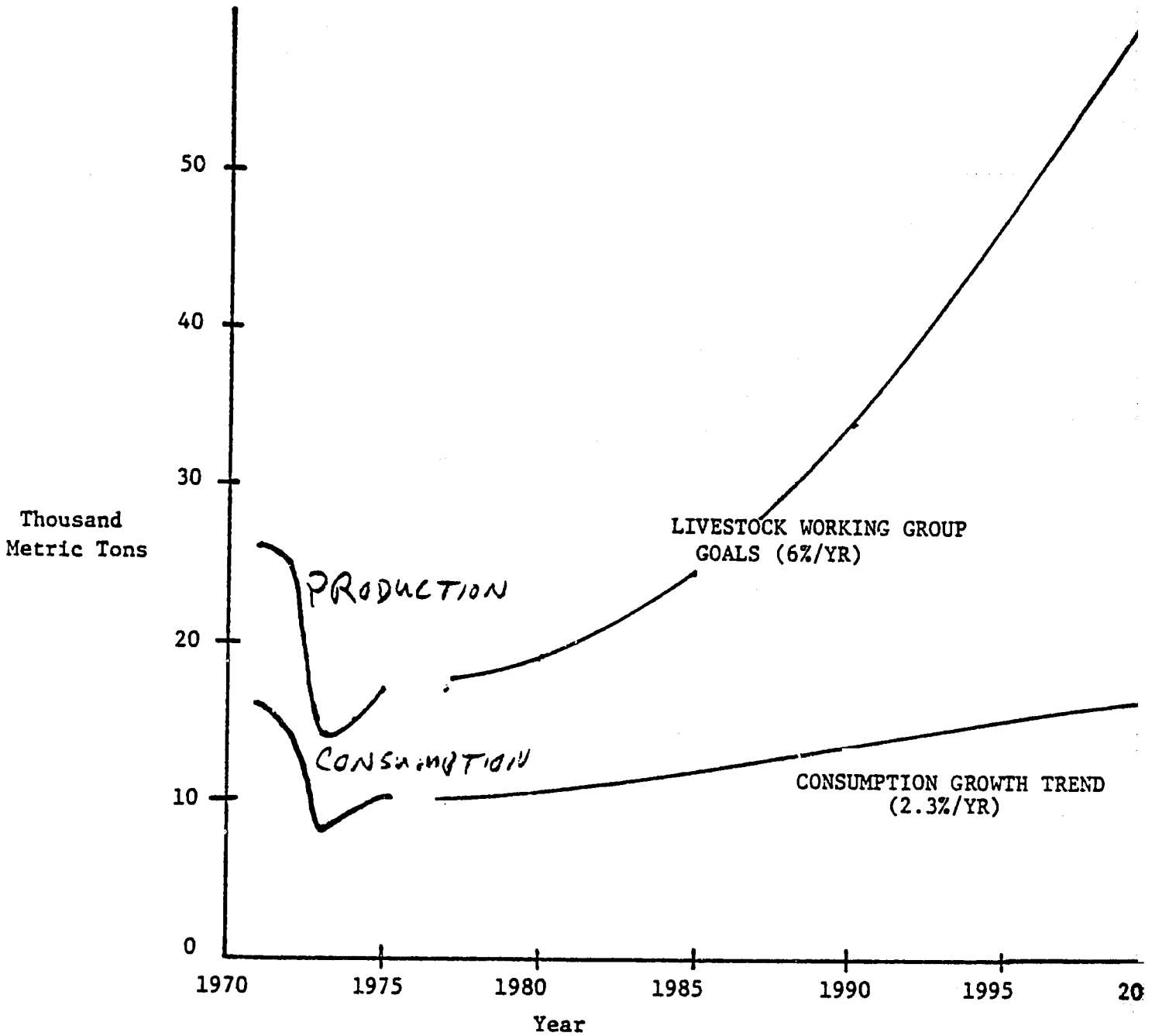
1. Club des Amis du Sahel, Mission Intersectorielle en Mauritanie, Perspectives de Developpement Rural Integre en Mauritanie, June, 1977, p 34.

FIGURE M6

PRODUCTION OF BEEF IN MAURITANIA
CLUB LIVESTOCK GOALS



SOURCE: FAO, Production Yearbooks

—Center for Livestock Production at Rosso. A 200 hectare center for milk production from 4,000 to 5,000 dairy cows and for meat from young cattle. Funding is for $3 million.
—Creation of irrigated perimeters for feedlot operations. To goal is to create feedlots to provide around 500 head of cattle for sale a year. Funding is for $480,000.

d. South-West Zone.

—Program for integrated rural development of the zone, $20 million.
—Reconstitution of cattle stock in zone. To permit a rebuilding of the drought decimated herd, credit will be provided herders for the purchase of additional cattle stock and supplies will be provided. In addition animal health services will be provided. Funding is for $2.4 million.
—Improvement of natural range land. Objectives will be to evaluate natural resources, inventory and mapping of rangeland, and extension of modern techniques to herders. Funding is for $16 million.

The Working Group also plans "upstream" and "downstream" projects: 1/

a. "Upstream" Projects.

—training,
—research,
—central planning, coordination, and control, and
—animal health protection.

b. "Downstream" Projects.

—ecology and environment,
—agricultural credit, and
—commercialization projects.

These projects do not set specific goals for livestock production. The Livestock Working Group synthesis report does give a goal of 6 percent per year growth in meat production. 2/ The comparison of Club goals and trends in beef consumption are presented in Figure M6.

CONSTRAINTS TO DEVELOPMENT

Constraints to Development of AID Projects

The AID mission has determined that AID projects will be concentrated on human resource and health development in areas north of the Senegal River Valley. 3/ The Mauritania ABS does not give a detailed discussion of development constraints in the country. Constraints mentioned are: 4/

a. Land resources are perhaps the most fragil in the world,
b. The existing base for human resource and health development is low (e.g., relatively low literacy and longevity levels),

1. Club des Amis du Sahel, Mission Intersectorielle en Mauritanie, Perspectives de Developpement Rural Integre en Mauritanie, June 1977, p. 33, 35.
2. Club des Amis du Sahel, Livestock Team, Explanation of Approach, Synthesis and Orientation, Livestock Production and Marketing Program, April, 1977, p 11.
3. AID, Mauritania FY'79 ABS, June 1977, p 1-2.
4. Ibid., p 2-6.

c. Accessibility to the nomadic population is difficult,
d. Inadequate base for defining rural development strategies,
e. Deteriorate ecological and economic conditions of oasis zone,
f. Population growth,
g. Technologies to decrease unemployment and under-employment.

Club Identified Constraints

The Club has provided discussion on two constraints not mentioned in the Mauritania ABS:

a. National marketing and pricing policy, and
b. transport.

Strategies to Alleviate Constraints

Land Resources

1. The AID Strategy

There are two projects that will affect land resources:

a. Renewable Resource Management. The project is divided into two parts. The first part will be a nationwide resource survey utilizing satellite imagery and aerial photography. The second part will involve four small pilot activities to demonstrate various levels of management interventions. Major project components are:

—resource survey and planning for resource development,
—training and education (e.g., short courses, technical training abroad, extension education, etc.)
—fixation of the dunes at Mederdra dn Boutilimit,
—natural revegetation,
—range management, and
—development of forest for production of firewood and construction lumber.

The project is from FY'78-82 and for funding in the amount of $4.4 million. 1/

b. Rural Land Reclamation. The project in the 5th Region will involve (a) the construction of earthen dams in southern Mauritania for rainwater retention, and (b) training of personnel in the Ministry of Hydraulics to plan, design and implement similar projects. The project will begin with a technical study to determine dam sites. Funding will be approximately $3 million. 2/

AID is also investigating the possibility of undertaking a national environmental assessment. 3/

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1. AID, Renewable Resource Management, Project Paper, May 1975.
2. AID, Rural Land Reclamation, Project Identification Document, June 1976.
3. AID, Mauritania FY'79 ABS, June 1977, p 6.

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 the following subprograms:

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.

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,
—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.

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

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 1,272,000 cubic meters (cm). Production in 1975 was 1,011,000 cm leaving a deficit of 261,000 cm. There are no wood production projects yet determined. However, projects in the integrated operation subprogram will yield increases in wood production. The projects are presented in Table M7. These projects will result in a total production of 197,000 cm resulting in a deficit of 64,000 cm by 1990.

TABLE M7

PROJECTS PROPOSED IN THE INTEGRATED OPERATIONS SUBPROGRAM

Project	Cost	Annual Planned Production 1000 Cubic Meters
Protection and Improvement of Forest Production	$8,705,000	
—Rural Areas		180
—Industrial Areas		12
—Natural Forests Placed Under Management		5
Fixation of Moving Sand by Mechanical Actions and by Revegetation	$5,700,000	-
Fixation of Dunes at Mederdra and Buitilimit	$358,000	-
Rehabilitation of Vegetative Cover	$69,000	-
Pasture Management	$2,500,000	-

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

b. Conservation and Utilization of Wildlife. The projects are presented in Table M8.

c. Coordinated Education and Forestry Training. The projects are presented in Table M8.

TABLE M8

PROJECTS PROPOSED IN THE CONSERVATION AND UTILIZATION OF WILDLIFE AND COORDINATED EDUCATION AND FORESTRY TRAINING SUBPROGRAMS

PROJECT	COST
Conservation of Wildlife	
Development of Wildlife Resources	$5,378,000
Coordinated Education	
Strengthening of Forestry Training Program	$355,000

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

Base for Human Resource Development

1. The AID Strategy:

AID is funding a national manpower study. The study will take place in three phases: 1/

a. Phase 1 - Data Development.

--manpower aspects (i.e., survey of manpower and employment data, design of field surveys, synthesis of assembled information, analysis of population census, etc.)

--employment aspects (i.e., measure, define and analyze the causes of unemployment and under-employment in Mauritania; identify likely manufacturing and assembly processes that could be labor intensive, could utilize women as labor, could capitalize on locally available materials, and might be economically viable under certain conditions of cost, pricing and demand; etc.)

b. Phase 2 - Analysis and Projection.

--manpower aspect (i.e., projection of net annual manpower requirements and education/training requirements; analyze the appropriateness of the formal and non-formal education/training program; etc.)

--employment aspect (i.e., projections of unemployment and underemployment; analysis of alternative employment generation strategies; etc.)

1. AID, Mauritania Rural Sector Assessment and National Manpower Study, Terms of Reference, August, 1977, pp 30-37.

c. Phase 3 - Project Identification and Pre-feasibility Analysis.

--manpower aspects (i.e., identification of prototype education/ training projects related to preferred development profiles and manpower strategies)

--employment aspects (i.e., analysis of economic feasibility of establishing likely labor intensive enterprises; analysis of the credit, training and organizational requirements to get enterprises established)

The project is from July, 1977 through August, 1979 with funding in the amount of 1.2 million.

2. The Club Strategy:

The Human Resources Working Group has made the following estimates of annual manpower needs for irrigated agriculture only: 1/

--12 ingenieurs agronomes,
--15 ingenieurs des Techniques agricoles et genie rural,
--40 agents techniques d'agriculture, niveau moyen, and
--40 agents techniques d'agriculture, niveau subalterne.

These estimates are made on an estimated 2,500 irrigated hectares added per year till 1985, and 3,500 hectares added from 1985 to 2000. They do not include needs for manpower for forests, livestock, fishing, etc.

The Dryland Grop Working Group has estimated that Mauritania has requirements for 25-40 "ingenieurs agronomes" per year in all specialties in the short term. Later the requirement will decrease to 5-10 ingenieurs per year. The Working Group also recommends that training of "cadres moyen" at Kaedi:

--be more practical and aimed at application to needs of farmers,

--be reoriented to more emphasis on irrigated agriculture,

--that better lines be established between research, extension, and teaching.

The Group also recommends that more emphasis be placed on training farmers rather than increasing the number of "cadres subalternes". More self training should go on through cooperatives. 2/

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1. Club des Amis du Sahel, Equipe des Resources, Rapport de la Commission Operationelle et de Synthese, Part III, March, 1977, p 4.
2. Club des Amis du Sahel, Equipe des Cultures Seches, Republique Islamique de Mauritanie La Promotion des Cultures Seches, March, 1977, pp 26-27.

The Working Group indicates four present levels of education:

--L'enseignement fondamental,

--L'enseignement secondaire (four lycees at Nouackchott, Aroun, Kaedi and Rosso),

--enseignement Technique et Professionnel (a Lycee technique at Nouackchott and a college d'enseignement technique and L'Ecole Nationale de Formation et de Vulgarisation agricoles (ENFVA) at Kaedi),

--enseignement Superieur.

ENFVA is the only institution capable of training "cadres moyens" and "subalternes" for agriculture and livestock. Recruitment is difficult in part because of low salaries and the classes are as follows:

a. Cadres subalternes.

--agriculture section
-1st year, 35 students
-2nd year, 32 students
-3rd year, 0 students

--livestock section
-1st year, 0 students
-2nd year, 0 students
-3rd year, 23 students.

b. Cadres Moyen.

--1st year, 0 students

--2nd year, 29 students.

In foreign institutions there were 753 students in 1976 among which were 35 in agriculture and 6 in veterinary studies.

The Working Group has proposed four projects: 1/

a. Rural Radio Project. The objective of the project will be the promotion of rural development by extension and specific agricultural training. In the first phase the radio programs will address farmers, herders, fishermen, artisans, etc., on information appropriate to their activities. Laker the programs will become more diversified with programs for women, young workers, and students. Transmissions will be from 7.5 to 10 hours per week. Languages for the programs will be in Hassanya (arabic), Toucouleur, Sarakole, Ouolof, and Bambara. The center for transmissions will be in Kaedi. Funding is in the amount of $1,915,000.

b. Societe Nationale de Developpement Rural (SONADER): Financing for construction, equipement, and funding for creation and functioning of a training center. SONADER is the principle institution for development of the rural sector. Needs for training for irrigated land infrastructure are estimated to be:

--8 mechanics,
--8 maintenance personnel for pumps,
--16 engine operators,
--12 surveying personnel, and
--6 laboratory assistants.

The center will be established to provide training for these personnel. Funding is for $1,510,000.

c. Construction of a national center for training of women in rural development. The center will have three objectives:

--training extension agents (training women to "niveau agent technique" and "technicians d'Economie Rurale" and retraining permanent workers),

--applied research (i.e., research concerning adaption of training to needs and realities of different regions, the effectiveness of intervention methods, and feminine organizations), and

--application of new techniques to current projects.

Funding is for #3,100,000.

d. Creation of mobil brigades for rural development. The brigades will be in each zone (9 agricultural sectors and 9 livestock sectors) for 300 days of the year to aid in development, inform and organize the rural population, aid them in identifying their problems. Funding is for $605,359.

Base for Health Development

1. The U.S. Strategy:

The primary U.S. project is the Rural Medical Assistance project. The project is in the 6th Region of Mauritania. In this region there is a hospital at Rosso, a dispensary, maternal and child health center at Boutilimit, three rural despensaries, and 11 one-man rural health posts. The project goals are to develop mobile training teams to train local nomads as village health workers, to conduct health research to identify useful traditional and inexpensive methods of health care, to widen health education, and to improve logistic/administrative operations of the health ministry. U.S. funding is for $567,800. 1/

2. The Club Strategy:

The Club Health and Nutrition Working Group has proposed a health care delivery system, Village-Based Health System. 2/ The system is designed for the average Sahelian 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 auxillary 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 arrondissments and villages. Responsibility for immunization and categorical disease control. Collation of data for transmittal to national level.

d. Region. Coordination of supervision at perpiheral 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.

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1. AID, Mauritania FY 78 ABS, June, 1976, p 30.
2. Joseph, S. and Scheyer, S., A Strategy for Health as a Component of the Sahel Development Program, May, 1977.

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.

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.

Accessibility to Nomadic Population

1. The U.S. Strategy:

The U.S. does not seem to have a strategy which is designed specifically to increase the accessibility of the nomadic population. The above health project does contain a component which emphasises mobile health training teams.

2. The Club Strategy:

The Human Resources Working Group has designed the above Rural Radio Project and the Mobil Brigades for Rural Development Project.

Inadequate Base for Defining Rural Development Strategies

1. The U.S. Strategy:

AID is funding a rural sector assessment. The assessment is seperated into four activities: 1/

a. Aggregate Study.

-- provide a framework for developing sub-sector and functional studies,

--analyze macro-implications of alternative strategies, and

--quantification of employment and manpower implications of alternative rural development strategies.

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1. Mauritania Rural Sector Assessment and National Manpower Study, Terms of Reference, op cit., pp 7-28.

b. Production Sub-sector Studies.

--Analysis of development potential of irrigated and dryland agriculture, and livestock.

c. Functional Studies.

--food consumption demand,
--social systems and change, and
--rural employment.

d. Program and Policies Study.

--development of specific program and policy packages based on strategies adopted from other studies, and

--identification of specific investment and institution building projects.

The project is for 2 years and funding is for $2.9 million.

2. The Club Strategy:

The Club has published three studies for agriculture and livestock in Mauritania:

a. Republique Islamique de Mauritanie La Promotion des Cultures Seches. This is the synthesis report by the Dryland Crop Working Group. The report discusses the following topics:

--general data on geographic and economic conditions,
--food consumption patterns, present and future,
--assessment of agriculture and prespectives for development,
--the importance of livestock and its association with crop production,
--a development strategy based on integrated rural development of four regions (south-east, South-west,-oasis, and Senegal River Valley).

b. Perspectives de Developpement Rural Integre en Mauritanie. This is the synthesis report by the Livestock Working Group. The report discusses the following topics:

--problems, constraints,
--overview of projects (integrated rural development strategy),
--problems and projects for commercialization, and
--suggested strategy.

c. Program of Irrigated Cultivation in the Republic of Mauritania. This is the synthesis report by the Irrigated Crop Working Group. The report discusses the following topics:

--natural regions for irrigation,
--potential of irrigation regions,
--present crop production,
--identification of new irrigation projects planned to 2000, and
--estimate of costs of projects.

Oasis Zone

1. The U.S. Strategy:

The AID project is the Integrated Development of Oasis Project. The objective of the project is to assist the government to define the potential development of its network of oasis and assist with the development of that potential. The project has two phases: 1/

a. Phase I.

-- sociological study,
--hydro-geological inventory, and
--inventory of palm groves.

b. Phase II.

--interventions to control and eradicate two principal date palm diseases,
--creation of model oasis, and
--training of Mauritanians in advanced production methods, extension techniques, etc.

Funding is for $6 million.

2. The Club Strategy:

The Dryland Crop Working Group has included as one of their projects a program for integrated rural development of oasis. The objectives of the strategy are detailed in the preceding section of Club projects for crop production. 2/

Population Growth

1. The U.S. Strategy:

The Mauritania ABS indicates a need to work with the government closer on the factor of population growth. 3/

2. The Club Strategy:

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

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1. AID, Mauritania FY 79 ABS, June, 1977, pp 35-42.
2. Club des Amis du Sahel, Equipe des Cultures Seches, Programme Pour le Developpement Rural Integre de la Zone des Oasis, March, 1977.
3. AID, Mauritania FY 79 ABS, June, 1977, p 6.

Technology

1. The U.S. Strategy:

The AID Project, Intermediate Technology, has the objective of assisting the government to create a self-sustaining system for employment generation through the introduction of intermediate technology in the manufactured goods industry, primarily the rural sector. Examples are construction of methane gas units, manufacture of fertilizer from compost, manufacture of jewelery, weaving of small cotton goods, manufacture of tea pots, manufacture of knives, manufacture of leather goods, etc. The project would involve:

--an analysis of each commodity or service to ascertain its feasibility,
--training in technical aspects and entrepreneurship,
--assistance for establishing credit facilities.

The funding for the project is $3.2 million. 1/

2. The Club Strategy:

The Club Technology Working Group has only suggested two types of actions in this regard: 2/

--an inventory of under-exploited traditional technologies (e.g., blacksmiths, rural craftsmen, etc.), and

--use of traditional drying, smoking and other techniques to improve conservation and storage of local products. Priority to be given to studying salt production and commercialization.

National Marketing and Pricing Policy

1. The U.S. Strategy:

The ABS provides no discussion of this issue.

2. The Club Strategy:

The Club Marketing, Price, and Storage Working Group has not yet established a storage 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:

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1. Ibid., pp 43-49.
2. Club des Amis du Sahel, Synthesis Working Group, Proposals for Drought Control and Development Programme and Strategy for the Sahel, p 86.

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. 1/

CRED has recommended the following strategies and actions in the short term of Mauritania: 2/

a. Strategies.

--increase cereal and animal production,
--organize the marketing of agricultural products and stabilize their prices at profitable levels, -
--improve the distribution of income from agricultural activity, and
--progressively substitute local products for imports.

b. Actions.

--increase yields per unit of cultivated land and the area cultivated,
--reinforce cooperative organizations to resolve the problems of credit, delivery of inputs, storage, and marketing of production,
--creation of a national marketing agency for agricultural products, and
--improve infrastructure and the system of transporting agricultural products.

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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.
2. CRED, Marketing, Price Policy and Storage of Cereals in the Sahel, Mauritania Study, Annex 1.

Transport

1. The U.S. Strategy:

The Mauritania ABS provides no discussion of this issue.

2. The Club Strategy:

The road network of Mauritania is 5,085 kilometers. The project suggested by the Club Transport Working Group is: 1/

a. Rehabilitation. There are 1,030 kilometers in special need of rehabilitation. IDA-Kuwait-Canada are funding presently the rehabilitation of 365 kilometers. There is therefore a need to rehabilitate a further 665 kilometers.

b. Maintenance. The Ministry of Construction now maintains about 50 percent of the road network, or 2,529 kilometers. The foal is to increase this maintenance to 70 percent, or 3,500 kilometers.

c. Purchase of related material.

d. Training and Technical Assistance.

Funding is for 1977 through 1982 for $64.26 million.

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

ANNEX

ANNEX A

UN PROJECTS IN MAURITANIA

	Executing Agency	Date Approved	Estimated Completion Date	Estimated project cost (US dollar equivalent) UNDP	Government counterpart contribution
AGRICULTURE, FORESTRY AND FISHERIES (0500)				2,323,642	388,859
Agricultural Production Survey	FAO	11/68	01/76	99,295	
Nutrition	FAO	11/68	01/80	216,243	
Preformation Rurale	ILO	08/70	07/75	67,725	
Assistance A L'Ecole Nationale De Formation Et Vulgarisation Agricoles Kaedi (Phase II)	FAO	06/71	04/78	1,526,348	
Fisheries Development	FAO	03/72	03/74	15,283	
National D'Experimentation Agronomique	FAO	02/73	07/76	106,800	136,088
Etudes D'Amenagement	FAO	01/73	03/75	93,048	192,288
Developpement Des Peches Maritimes	FAO	12/74	01/77	198,900	60,483
CULTURE AND SOCIAL AND HUMAN SCIENCES (1000)				56,725	22,983
Renforcement De La Bibliotheque Nationale	UNESCO	01/75	01/77	56,725	22,983
EDUCATION (1500)				315,895	———
Womens Technical Education	UNESCO	04/70	01/79	235,599	
Planification Et Organization De L'Education	UNESCO	02/75	12/76	80,296	
GENERAL ECONOMIC AND SOCIAL POLICY AND PLANNING (2000)				907,578	560,483
Assistance in Economic Planning	UN	01/71	01/78	536,462	560,483
Labor Administration	ILO	08/73	01/78	257,264	
Formation De Statisticiens	UN	10/75	01/80	96,565	
Preparation of IDA Technical Assistance Credit for a Policy and Project Advisory Team	IBRD	04/77	06/76	17,287	

ANNEX A

UN PROJECTS IN MAURITANIA (CONTINUED)

	Executing Agency	Date Approved	Estimated Completion Date	Estimated project cos (US dollar equivalent) UNDP	Government counterpart contributio
INDUSTRY (3500)				862,874	380,459
Strengthening of the Geological Service and Mineral Exploration	UN	01/69	01/78	408,921	333,322
Carpet Weaving Development	ILO	04/71	01/77	247,893	
Formation Des Dirigeants Syndicaux	ILO	04/74	01/77	84,959	47,137
Textile Industry	UNIDO	10/74	01/76	10,801	
Planification Et Programmation De L'Industrie	UNIDO	11/74	01/76	83,300	
Fabrication De Platre Et D'Elements Prefabriques En Platre	UNIDO	02/75	10/75	27,000	
LABOUR, MANAGEMENT AND EMPLOYMENT (4500)				206,933	42,782
Reenforcement De La Direction De L'Industrialisation	UNIDO	10/74	01/77	7,200	
Project D'Assistance Technique En Matiere De Securite Sociale	ILO	09/75	02/79	78,733	42,782
Bourses En Gestion Hoteliere	ILO	10/75	10/77	121,000	
NATURAL RESOURCES (5000)				2,421,686	———
Strengthening of the Groundwater Service	UN	06/67	01/80	1,838,037	
Programme De Travaux Hydrauliques D' D'Urgence Et Moyen Terme En Mauritanie	UN	12/73	12/76	500,000	
Assistance Complementaire Au Programme Des Travaux Hydraulics D'Urgence	UN	02/77	01/78	83,649	
SOCIAL SECURITY AND OTHER SOCIAL SERVICES				2,121	———
Assistance A La Societe Mauritanienne D'Assurance Et De Reassurance (SMAR)	UNCTAD	12/75	1/76	2,121	
TRANSPORT AND COMMUNICATIONS					
Flying Training	ICAO	12/71	01/78	389,509	
Exploitation Des Telecommunications	ITU	03/74	07/79	170,849	
Ecole Nationale Des Telecommunications Naualclott	ITU	02/75	01/79	186,214	
Assistance Pour La Planification Du Recean De Radiodiffusion	ITU	12/75	05/75	2,800	
TOTAL				7,846,826	1,407,662

ANNEX B

CURRENT HEALTH PROJECTS IN MAURITANIA

Project/Activity	Donor Agency or Country	Total Amount ($US)	Other Information
Basic health services development	WHO		Continuing assist. in various aspects of health services development since 1968.
Aid to health	France		
NATIONAL HEALTH PLANNING/LEGISLATION			
Integration of services	UNICEF		1968 - present
Statistics	UNICEF		1968 - present
Census	FNUAP		1976
URBAN HEALTH SERVICES			
Construction medical center, Nouakchott	FAC		
Surgical equipment, vehicles, Kaedi	FAC		
RURAL HEALTH SERVICES			
Rural development & school feeding	PAM	1,700,000	
Community development	UNICEF	98,000	1976 - 1980
Rural health infrastructure	Kuwait	1,000,000	
Personnel, equipment, medications	China		
Equipment, medications	UNICEF	318,000	1976 - 1980
Water development, food assistance	CILSS		
Water development	UNICEF	382,000	1976 - 1980
Nutrition survey - Boutilimit	ORANA		
Nutrition program	UNICEF	10,000	
PMI construction - Ksar	FAC		
PMI development	WHO, UNICEF		1973 - present
Maternity construction - Atar	FAC		
3 Regional health centers	China		1974 - present
Rural medical assistance	USAID	570,00	1976 - 1980
HOSPITAL SERVICES			
Tuberculosis clinic	Kuwait		
Regional hospitals & dispensaries	Kuwait	1,000,000	
Hospital expansion - Nouakchott	FED		
Expansion of l'ENISF	FED		
Hospital construction - Aleg	Algeria		
MANPOWER			
Nursing care - education, recyclage	WHO, UNICEF		1963 - present
Education	UNICEF	70,700	1976 - 1980
Long-term training program (under discussion)	USAID		
25 Physicians, 3 pharmacists, 2 midwives	FAC		
3 Physicians	USSR		
1 Physician	Spain		
6 Physicians	Algeria		
Fellowships	WHO		
Training	IADB		

ANNEX B

CURRENT HEALTH PROJECTS IN MAURITANIA
(CONTINUED)

Project/Activity	Donor Agency or Country	Total Amount ($US)	Other Information
DISEASE CONTROL			
Smallpox eradication	WHO		1963 - present
Malaria eradication	WHO		1962 - present
Tuberculosis survey, equipment, medications	OCCGE		

STATISTICS

TABLE C-1

CROP PRODUCTION IN MAURITANIA

Thousand Metric Tons

YEAR	MILLET/ MAIZE	PADDY RICE
1965	100	-
1966	90	-
1967	110	-
1968	50	-
1969	110	-
1970	81	1.365
1971	80	-
1972	50	2.5
1973	30	3.0
1974	32	4.0
1975	42	4.43
1976	-	5.2

SOURCE: Center for Research and Economic Development, Recent Economic Evolution of the Sahel; Club des Amis du Sahel, Equipe des Cultures Seches, Republique Islamique de Mauritanie la Promotion des Cultures Seches.

TABLE C-2

Beef Production in Mauritania 1/

Thousand Metric Tons

YEAR	CONSUMPTION 2/	PRODUCTION 3/
1971	16	26
1972	14	25
1973	8	14
1974	9	15
1975	10	16

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.

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. Figure M5 shows a widening gap between total cereal demand and planned production if demand is high and/or all proposed projects do not reach their planned goals. Either total cereal supplies will fall or Mauritania'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?

c. Figure M6 shows the relationship between Club 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 Club strategies been adequate to alleviate these constraints?

d. Has AID given consideration to funding the club's integrated development strategies for the South-east and South-west regions? If not, why not? If so, what might be the AID intervention? Is more support needed for a more central planning authority within the government? What would be the benefits and drawbacks of such support?

e. Figures M5 and M6 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?

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 M6 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 irrigated 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 effect on the achievement of project goals, as shown in Figures M5 and M6?

i. The Club Ecology Working Group concentrated on wood production projects. Should this be of more concern to AID?

j. 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? What does the Field think of the CRED suggested action of reinforcing cooperative organizations?

k. Given the Club Transport Working Group's concern over the deterioration of Mauritania's road system, how can AID assist?

l. 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.)?

m. 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?

n. As far as other donor strategies are concerned, 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.

o. What is the Field's judgemental quantification of recurrent cost 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?

p. Should the Club Technology Working Group's suggestions for actions be considered in the AID project, Intermediate Technology? If not, why?

q. Can the synthesis reports of the Club's Rainfed Crop, Irrigated Crop, and Livestock Working Groups be used as initial inputs by the AID Rural Sector Assessment Team? Can the team provide preliminary evaluations of the reports as soon as possible?