

UNCLASSIFIED

Annual Budget Submission

FY 1984



SAHEL REGIONAL

June 1982

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Washington, D.C. 20523

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ANNUAL BUDGET SUBMISSION

FY 84

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THE SAHEL DEVELOPMENT PROGRAM STRATEGY OVERVIEW

The goals of the Sahel Development Program are (a) to improve the productivity of traditional agricultural areas, (b) to open up higher rainfall land by control of disease, (c) to increase rainfall-independent irrigation, (d) to restore and protect the environment from desertification and, on the basis of these measures, (e) to develop agricultural capability to assure food requirements and the means for self-generated economic growth.

A.I.D.'s Sahel regional strategy is based on the goals and priorities of the Permanent Interstate Committee for Drought Control in the Sahel (CILSS) and Club du Sahel (Club). Sensitive interrelationships in the Sahel among the factors of food production make mandatory a comprehensive system approach to planning for the area. Interdependence among the inland countries (Mali, Upper Volta and Niger) and their coastal Sahelian neighbors re the use of the major drainage systems, the development of regional food self-reliance and the protection of the Sahel's fragile ecology, make a transnational approach to planning essential.

While most of A.I.D.'s assistance to the Sahel follows the normal practice of designing and implementing specific bilateral projects which address area concerns, the regional projects are generally those whose magnitude of the effort, e.g., river basin development, require a pooling of resources among various donors or those whose common problems link all Sahelian countries and it makes more sense to approach the problem on a regional basis through common management. Additionally, the regional approach permits A.I.D.: (1) to strengthen regional Sahelian organizations; (2) to direct development assistance toward specific regional interests as well as avoid costly duplication; (3) to introduce policy change, new concepts, technology and approaches in selective issues which are not readily accepted by the individual Sahel nations; (4) to foster intra-African cooperation; and (5) to serve as a catalyst for donor collaboration and to exert an influence on Sahelian development greater than the amount of our contribution would imply.

The Sahel program is a balanced mix of regional and bilateral projects which are selected on the basis of anticipated returns to our development investment. The unique flexibility and range of choices which the regional program provides gives the donors and Sahelians greater possibilities for getting the most out of assistance resources. We believe that a mix of country programs and regional projects is the best possible modality. We are continuously expanding our experience and adding to the data which we can use to improve our projects and the program. If, on the basis of our analyses and evaluations, it becomes advisable to change course, e.g., to move more resources into rainfed agriculture from irrigation (or vice versa) this will be done. We expect to generate valuable economic data from the Senegal Valley irrigation projects and concurrently from research in rainfed production. These, along with information flowing from other donor experiences and Club and CILSS analyses will afford the opportunity to reassess progress and the strategy so that the program objectives can be attained most expeditiously. It is well within the Sahel's physical resource possibilities for it to achieve the goals of the program. In addition, because of its climate, land and water resources, the Sahel has the potential for becoming a source of agricultural surplus to supply greater West Africa and world markets.

The Sahel population in the year 2000 will be 50 million and will require 11.5 million tons of cereal food annually for adequate nutrition. If beginning

in 1980, rainfed cereals production can be increased on presently cultivated land at an average rate of 2% per year through 2000 and the area of rainfed land in use can be expanded by one-fifth or two-million hectares, the rise in rainfed production by 2000 will provide about 80% of the food consumption requirement. The balance must come from irrigated land or imports. The required quantity could be produced on 500,000 hectares of irrigated production, 250,000 more than presently available. If this can be done the minimal targets of food self-sufficiency in normal rainfall years will have been achieved but there will be lingering insecurity resulting from inevitable seasons of inadequate rain and the likelihood of as much as 25% shortfall of food output in those years. A drought-proof production system would be one that could meet consumption requirements in such years. This would require either very high productivity on the better rainfed lands or, if rainfed development can only proceed at the 2% growth rate, the equivalent of at least one million hectares of irrigated production. Hence, to achieve the food production goals, additional irrigation must be developed, between 250,000 ha. (to achieve normal year self-sufficiency) and 750,000 ha. (for full drought-proof self-sufficiency). Over the twenty year period irrigated production must be brought on stream at an average rate between 12,500 ha. and 37,500 ha. per year depending upon the degree of drought-proofing sought and the rate of increase of rainfed productivity. This contrasts with the current rate of 5,000 ha. annually.

Both improved rainfed and irrigation development are necessary for food sufficiency because neither can realistically be adequately developed to do the job alone. The rainfed target to increase rainfed productivity by an average of 2% per year and to expand the cultivated area by 100,000 hectares annually for the next twenty years has, historically in some places, been exceeded. But in the Sahel progress has been significantly slower. Not enough is known as yet about Sahelian food production. The 2% growth target is felt to be achievable because it is modest, but more and better directed research will be the pathway to rainfed agriculture improvement. Improving and increasing agricultural research will receive priority attention of the missions and the SDPT.

Irrigation development can proceed forthwith. Many sites of irrigable land throughout the Sahel have been identified as developable independently of big dam-type water control and storage infrastructure. There is opportunity to implement economically, technically and socially sound projects now so that the rate of irrigation development can be increased quickly. This is desirable since even the minimal annual average requirement (i.e., development of 12,500 ha./year) will be substantial achievement.

While the opportunities for irrigation development independent of large water control systems are ample, in the aggregate they are not sufficient to meet the region's needs. At least some large-dam construction is necessary. This is already underway with the Manantali and Diama dams on the Senegal River. A.I.D.'s OMVS project will benefit from the river regulation which results from operation of Manantali.

Agriculture development efforts in the Sahel must proceed with both rainfed and irrigation projects. Whether these projects should be bilateral or multi-lateral projects depend on the most economic opportunities. During the years just

ahead A.I.D. and other donors will be developing irrigation. Meanwhile the river basin organizations are being assisted to improve their institutional effectiveness as a means of assuring equitable and coordinated international river basin development. These efforts will be undertaken within the jurisdictions of the river basin organizations (but obviously impacting within specific Sahelian countries to the benefit of those countries). Analysis of the cumulative benefits of both bilateral and regional projects which will accrue to each Sahel country in the next years is being made and will be provided as soon as available.

AGRICULTURE

A.I.D.'s regional agricultural development strategy is to support the CILSS's food self-sufficiency and food security goals for the Sahel. The food production sector engages the largest proportion of the population and holds the potential for making a significant impact on rural incomes and living standards. Current average rain-fed crop yields are only about half of what they could be with the use of improved cultural practices by farmers. However, the implementation of appropriate cereals policies, inter alia, will be required to stimulate the adoption of improved practices.

Increasing agriculture productivity is the highest regional priority. Two complementary regional activities are currently underway which are directed at improving crop protection practices of Sahel farmers. Successful adoption of the techniques introduced by these projects will increase the availability of domestically produced cereals for local consumption. One of these activities provides the technical guidance for establishing and strengthening national plant protection agencies. These agencies make available, through extension services, information that assist farmers protect their crops. The other is an adaptive research activity aimed at strengthening pest management research programs of national research agencies. Crop protection techniques will be developed that integrate the use of physical, biological and chemical controls.

Another on-going activity designed to enhance agricultural production is a long-term institution building project that will upgrade the scope, quality and timeliness of hydrological and agrometeorological data. Under this project the regional meteorological center, AGRHYMET, has been built, equipped and staffed. The center will receive the data collected by the national meteorological services for analysis, interpretation and dissemination. It will also provide training for the staffs of the national services so that the type and quality of data collected can be improved and standardized. This water data when collected over time will assist planners, agricultural researchers, farmers and herders to develop programs and techniques or take actions that take account of weather variations.

Food security based on regional self-reliance is considered by the CILSS to be an important regional need. An important aspect of the food security program will be rationalization of internal cereals production, pricing and trade policies. These reforms will require fundamental and costly internal adjustments for which food guarantees and financial assistance will be provided by donor participation in the program. A.I.D. proposes to provide some of the technical assistance for designing the food security program in FY 1983 as well as financial, commodity and technical assistance for project implementation later in FY 1983.

RIVER BASIN DEVELOPMENT

Multi-purpose river basin development is an essential component of the regional program. Even though it is not presently a constraint on the necessary rate of irrigation development, river basin water management will be essential to the achievement of irrigation goals well before completion of the 20 year CILSS/Club Sahel Development Program. River basin development is a reliable path toward insuring future regional food self-reliance and can yield substantial and broadly-based benefits. The U.S. technology available for transfer to developing nations is highly respected by Sahelian technicians and officials.

River basin projects transcend national borders and are within the jurisdictions of four multilateral river basin organizations. They are by definition regional projects even though many of the benefits accrue exclusively to individual member nation economies. These projects are fully-integrated portions of the regional program. They are coordinated with A.I.D.'s respective country programs to assure the best use of limited Sahel Development Program (SDP) resources.

A.I.D. river basin strategy is to support the establishment of effective basin coordination organizations and then, building on this firm institutional base, to support downstream irrigated agriculture development. A.I.D. planning assistance is directed toward the systematic development of the management and analytical capabilities of river basin organizations, with emphasis on the collection and maintenance of the data required for comprehensive planning. As these organizations mature and their planning efforts identify specific production-oriented projects for implementation, A.I.D. will provide funding for irrigated agriculture production projects.

The regional planning approach used by each basin organization is a function of the member states' national objectives as well as the unique geo-physical characteristics and the economic and political factors of each basin. A long-range, computerized agriculture development plan was developed by the OMVG, with full participation of the national governments. The Senegal River Development Organization (OMVS) initially identified major infrastructure works required to meet long-term objectives, and is currently completing the complementary detailed planning. The Niger River countries, recognizing the ecologic, geographic and political sensitivities of the use of the river resources, have emphasized detailed physical as well as socio-economic planning.

The target beneficiaries of river basin development planning activities over the long-term are the total populations of the basins. The more immediate beneficiaries, those benefiting directly from the planning efforts, will be the government services and the regional organizations which receive training and experience in managing and coordinating water use activities. A.I.D. is interested particularly in the extension services, the private agro-industry sector, the national government policy-makers, and the regional river basin planning offices.

A.I.D. Programs

A.I.D. is currently participating in river basin multi-purpose planning studies in three Sahel river basins: the OMVS, the OMVG and the NBA. A.I.D. has financed environmental and socio-economic studies for all three, and aerial photography/mapping studies for OMVS and OMVG. Small perimeter irrigated agriculture projects have been funded in the Senegal and Niger river areas. A river systems analysis program is being developed for the Niger river. These activities are providing the Sahel river

basin organizations with the experience and data needed to mount major infrastructure projects.

Sahel regional funding programmed for the support of the Sahel river basin organization and for downstream development activities coordinated by these organizations will begin to level off in FY 1986. As these efforts mature and policy development, institution-building and technical planning objectives are reached, A.I.D. support to river basin development will shift to specific production activities and complement the bilateral programs.

For the next five years development of irrigation through regionally funded projects which we now foresee will be limited to that under project 625-0621, OMVS Integrated Development. The other river basin projects are those for development of the basin institutions and the provision of essential research, analysis and coordinated planning. These will provide a sound basis for future efficient development of the river basin resources and identification of the best investment alternatives and resettlement programs for other donors as well as A.I.D. Although A.I.D. has neither commitments nor plans for further investments with the river basin organizations beyond those already engaged, these investments are desirable. We will urge other donors to undertake development of irrigation production and feel that A.I.D. should be prepared to make these commitments as well if resources become available and economically attractive projects are identified.

Below we have projected the bilateral and regional components of the program assuming a constant level of funding: (illustrative only)

Sahel Development Program, Constant Level, 1983-1987
(\$ millions)

	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
Total	<u>93.8</u>	<u>93.8</u>	<u>93.8</u>	<u>93.8</u>	<u>93.8</u>
of which					
Bilateral	66.1	60.8	61.1	62.0	65.1
Regional Projects	27.7	33.0	32.7	29.8	28.7
of which River Basins	13.8	16.0	17.3	21.3	17.6

If the total SDP budget remains stable, any adjustments which become necessary will have to be made within the overall program. The flexibility to undertake new-starts or to expand particular components will obviously be limited, most severely in FY 1986 and decreasingly so in ensuing years. In such constrained circumstances we would expect that the river basin projects would be sustained and that adjustments would be selectively made, inter alia, at the expense of some other regional projects. These would be difficult choices requiring deferral of aspects of what we feel is an increasingly effective and trim regional program.

Senegal River Basin

The OMVS has established a long-range goal for developing 300,000 hectares of total water-control irrigation by the year 2025. The rate of development during the

late 1980's is projected at 4,000 hectares/year. The first significant A.I.D. contribution to Sahel river basin production projects will be a \$62 million project with OMVS which will include developing 3,800 hectares of small irrigated perimeters, conducting feasibility studies for other donor financing of production projects, as well as studies of the more complex and long-term basin development problems affecting agriculture development.

A commitment of this magnitude from A.I.D. is expected to facilitate the evolution of national and regional agriculture development policies to overcome constraints to production. The choice of irrigated perimeter size, the provision of secure land tenure to farmers, the encouragement of the private entrepreneur in providing agriculture inputs and in marketing, and the institution of measures which encourage government technical services to be responsive to needs of the farmers, are all examples of policies which will be developed during project planning and implementation. OMVS studies being considered to develop these policies include the following: integration of livestock husbandry with irrigated agriculture production; reforestation to meet social/physical needs around irrigated perimeters; energy conservation in production and marketing; water and land rights connected with irrigated agriculture; commercial cropping and marketing patterns; and methods to encourage the private sector. The potential for A.I.D. influence on national agriculture policies is increased by the fact that other donors, when approached for assistance in Sahel river basin projects, inquire about the U.S. position before making commitments. Thus a U.S. contribution can serve as catalyst for drawing significant funding from other donors.

Gambia River Basin

Approximately 53,000 hectares have been identified for eventual irrigation in the Gambia basin. The Yelitenda antisalinity barrage will permit the irrigation of 24,000 hectares by the year 2010. The Kekreti Dam to be constructed by 1990 will permit the irrigation of 29,000 additional hectares by the year 2020. The current A.I.D. institution-building project will provide the OMVG with much of the necessary data and planning capability to design irrigation production projects.

Niger River Basin

The Niger River brings significant water resources to Mali and Niger. In Niger, 120,000 hectares are included in the agriculture plan connected with the Kandadji Dam, to be developed at the rate of 2,000 to 3,000 hectares/year. Mali is currently managing over 40,000 hectares of irrigated land under the large-scale Office du Niger program which covers a total of 960,000 hectares. While this program has encountered significant problems, the Government of Mali, based on past experience, is beginning to revise its agriculture policies to make irrigated agriculture projects more attractive. A.I.D. support to planning and coordination efforts of the Niger Basin Authority (NBA) is expected to assist the NBA to develop a draft Niger Basin Development Master Plan by FY 1985, at which time A.I.D. will have identified production opportunities in the basin.

Lake Chad Basin

The conflict in Chad has disrupted the Lake Chad Basin Commission (LCBC) activities, resulting in the displacement of the LCBC headquarters from N'Djamena, Chad.

to the small provincial town of Maroua in North Cameroon. There are two A.I.D. residual activities continuing under prior-year funding, the LCBC Livestock and Mixed Agriculture Project and the LCBC Telecommunications Link. The livestock project has been considerably reduced in scope and is now monitored by USAID/Cameroon. A.I.D. support is in abeyance because of the apparent lack of full participation of the member countries. The telecommunications project is virtually complete.

Institution Building

The core of the regional program's institution effort is our support to the Permanent Inter-State Committee for Drought Control in the Sahel, known by its French acronym, CILSS. The CILSS has been mandated by the eight Sahelian states to mobilize donor resources, to coordinate development projects and to design and implement certain regional projects as well as to develop and refine medium and long-term regional sector strategies. Our objective is to assist the Sahelian states and their regional organization to take increased responsibility for identifying their development objectives, policies and constraints on achieving development of the Sahel. The Club du Sahel (Club), an informal consortium of some 23 donors and CILSS member states working through a secretariat, form an effective collaborative mechanism.

A.I.D. provides direct support to the OECD based Club Secretariat in Paris. It provides the Secretariat with full-time services of a senior direct-hire A.I.D. officer. The Club Secretariat assists the Sahelian countries in the design of projects in the coordination of donor efforts through working groups on livestock, forestry and ecology, human resources, health, rainfed agriculture, irrigated agriculture and transportation. A.I.D. participates directly in these working groups. The Secretariat brings together the donors and the Sahelian governments in a low-key, informal, efficient manner to achieve constructive coordination of planning and implementation of development activities. Also, the Club arranges for technical analyses which address sensitive development policy issues such as donor and Sahel responsibilities for recurrent costs.

Human Resources

U.S. assistance in human resources is aimed at: (1) increasing the skills and management capabilities of rural producers in order to increase food production; (2) encouraging higher level managerial and technical training directed at breaking bottlenecks to greater agricultural production. Appropriately trained manpower plays a fundamental role in the overall development of the economy of the Sahel. The goals of food self-sufficiency and sustained economic growth are dependent on the ability of Sahelians to furnish managers and planners to administer their economic activities as well as on their ability to absorb external assistance.

The Sahel Manpower Development Project (SMDP) is an on-going and a necessary supplement to the discrete training provided under bilateral projects. The purpose of this regional training activity is to build the capacity of the Sahelians to effectively utilize innovative technical inputs and to reduce critical manpower constraints in key development sectors. The project encourages increased in-country training over the lifetime of the project. Five year training plans required by the project for each mission assure that this training is consistent with the bilateral program CDSS and complementary to the other bilateral projects.

Health and Population

Health is an A.I.D. concern in the Sahel as elsewhere not only because it is a fundamental measure of development achievement (by which the Sahel ranks markedly low) but also because adequate health helps productivity. The A.I.D.

regional strategy is to link health initiatives with multi-sectoral development activities, such as control of vector-transmitted diseases accompanying irrigation development, and, above all, with increased food production.

The lack of adequate demographic and health data is a deficiency which seriously affects development planning. The close interrelationship between population and natural resources has not been sufficiently recognized by the Sahelian governments. A.I.D. is currently working with the CILSS's Sahel Institute in a regional demographic data collection and analysis project. This project provides information which will permit the Sahelian states to do their own demographic planning. Given the methodology and training, the Sahelians will have the capability to compile and interpret demographic data to provide information for development planning and evaluation; and to assist in formulating appropriate family planning programs.

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TABLE I - LONG RANGE PLAN BY APPROPRIATION ACCOUNT (\$ Thousands)

Country/Office Sahel Regional

<u>DEVELOPMENT ASSISTANCE</u>	<u>FY 1982 EST</u>	<u>FY 1983 EST</u>	<u>FY 1984 REQUEST</u>	<u>PLANNING PERIOD</u>		
				<u>1985</u>	<u>1986</u>	<u>1987</u>
Sahel Appropriation	29,948	27,600	33,000	35,000	34,274	31,830
TOTAL	<u>29,948</u>	<u>27,600</u>	<u>33,000</u>	<u>35,000</u>	<u>34,274</u>	<u>31,830</u>

FY 1984 ANNUAL BUDGET SUBMISSION

TABLE III - PROJECT OBLIGATIONS BY APPROPRIATION ACCOUNT
 FY 1982 to FY 1984
 (\$ thousands)

Country/Office Sahel Regional

APPROPRIATION ACCOUNT	FY 1982	FY 1983	FISCAL YEAR 1984
<u>SAHEL DEVELOPMENT</u>			
625-0012 Gambia River Basin Dev.	4,611	-	2,000
625-0621 OMVS Integrated Dev.	-	7,6000	7,600
625-0911 Sahel Reg. AID Coord. & Planning	1,250	1,900	1,490
625-0927 Demogr, Data Collect. & Analysis	1,225	2,000	1,775
625-0928 Regional Food Crop Protection	3,050	1,450	3,480
RFCP	(2,300)	-	-
IPM	(750)	(1,450)	(3,480)
625-0929 Planning Mgmt. & Resea.	4,250	2,750	3,000
625-0936 Sahel Manpower Develop.	1,979	-	-
625-0940 Sahel Water Data Net. & Management	1,300	1,250	1,483
625-0942 Environmental Train. & Management	100	-	565
625-0944 Niger River Dev. II	4,267	700	1,144
625-0950 Reg. Financial Mgmt.	2,466	700	1,534
625-0955 Manantali Resettlement	-	1,900	1,900
625-0957 Agricultural Research	1,000	2,700	2,340
625-0958 Groundwater Monitoring	1,250	900	1,000
625-0959 African Dev. Fund.	2,500	-	-
625-0960 Sahel Manpower Dev. II	-	2,000	2,000
625-9061 Regional Food Crop III	-	1,100	1,039
625-9801 Human Rights	50	50	50
625-9901 Special Self-Help	630	600	600
TOTAL	29,928	27,600	33,000

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TABLE IV PROJECT BUDGET DATA

MEMBER	PROJECT TITLE	OBLIGATION DATE		LIFE OF PROJECT COST APRN PLAN	CER PIPELINE AS OF 9/30/81	FY 1982		FY 1983		FY OBLIGATIONS				ITEM #		
		INITIAL	FINAL			OBL	EXP	OBL	EXP	1984 APPL	1985	1986	1987		FUTURE YEAR	
		80	81			80	81	80	81	82	83	84	85		86	87
	SAHEL DEVELOPMENT PROGRAM															
625-0010	LCBC Livestock & Mixed Agric.	G	80	.5	399		300		99							
625-0012	Cambia River Basin Development Gambia Senegal Regional	G	85	13.4	4,000	4,611	2,000	4,611	4,000	2,000	12/85	2,780	(1,480) (800) (500)			
625-0605	OMVS Agronomic Research	G	76	873	27											
625-0617	OMVS Environmental Assessment	G	76	3.7	50		50									
625-0620	OMVS Data & Institutional Dev.	G	76	13.9	584		584									
625-0621	OMVS Integrated Dev. Regional Senegal Mali Mauritania	G	83	62.0				7,600	2,000	7,600	8/85	10,073	(3,573) (2,400) (1,500) (2,600)	14,480	14,480	7,767
625-0911	Sahel Reg. AID. Coord. & Plann. Club du Sahel FAO CILSS Sahel Institute	G	78	12.7	1,782	1,250	1,175	1,900	1,750	1,490	8/85	1,000	(375) (365) (260)			
625-0915	Niger River Basin Development	G	77	1.9	500		500									
625-0916	Sahel Crop Protection	G	75	1.6	107											
625-0917	Sahel Water Data Network	G	76	6.3	1,337		1,337									

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Country/Office
Sahel Regional

TABLE IV PROJECT BUDGET DATA

NUMBER	PROJECT TITLE	GL	OBLIGATION DATE		LIFE OF PROJECT COST		CIN PIPELINE AS OF 9/30/81	FY 1982		FY 1983		FY OBLIGATIONS		ITEM #		
			INITIAL	FINAL	AUTO	PLAN		OBL	EXP	OBL	EXP	1984 AACL TO MO/YR	1985		1986	1987
625-0927	SAHEL DEVELOPMENT PROGRAM Demogr. Data Collec. & Anal. Regional Mali Mauritania Gambia Senegal Upper Volta Cape Verde Niger	G	80	85	6.9	6.9	896	1,225	1,000	2,000	2,500	1,175	1,175			
								(444) (92) (49) (72) (229) (212) (72) (55)		(724) (150) (80) (118) (374) (346) (118) (90)		(642) (133) (71) (105) (332) (307) (105) (80)		(426) (88) (47) (69) (220) (203) (69) (53)		
625-0928	Regional Food Crop Protection RECP Senegal Mauritania Mali Gambia Cape Verde Cameroon Regional IPM Senegal Mali Gambia Mauritania Cape Verde Upper Volta Niger Regional	G	78	85	25.325	25.325	(11523)	3,050	2,000	1,450	5,000	3,480	4,200	5,000	5,000	
								(2,300) (330) (410) (120) (240) (220) (230) (750) (750) (500) (150) (100)		(1,450) (500) (200) (30) (100) (170) (135) (140) (175)		(3,480)	(4,200)	(5,000)	(5,000)	

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TABLE IV PROJECT BUDGET DATA

NUMBER	PROJECT TITLE	OBL	INITIAL	FINAL	LIFE OF PROJECT COST	PIPELINE AS OF 9/30/81	FY 1982		FY 1983		FY OBLIGATIONS			ITEM #		
							OBL	EXP	OBL	EXP	1984 APL	FUNDED TO DATE	1985		1986	1987
625-0929	SAHEL DEVELOPMENT PROGRAM Planning, Management & Research Senegal Mali Mauritania Upper Volta Regional Niger Gambia Cape Verde	G	77	C	14.020.0	2,506	4,250 (1,909) (97) (130) (150) (871) (1,003) (25) (65)	3,000 (830) (225) (400) (400) (400) (600) (95) (100)	3,000 (870) (170) (325) (400) (500) (400) (135) (200)	3,000 (900) (90) (250) (300) (300) (230) (80) (100)	2,250 (800) (90) (275) (300) (400) (435) (100) (100)	2,250 (800) (90) (275) (300) (400) (435) (100) (100)	3,000 (900) (100) (300) (400) (500) (500) (200) (100)			
625-0930	Institu. Build. & Soc. Econo. Dev. (PVO)	G	78	81	3.0 3.0	1,500	1,500									
625-0936	Sahel Manpower Development Chad Senegal Gambia Mauritania Upper Volta Mali Niger Cape Verde	G	79	82	9.7 9.7	4,996	1,979 (217) (258) (85) (507) (75) (83) (53) (608)	4,000 (273) (206) (126) (126) (126)	4,000 (217) (258) (85) (507) (75) (83) (53) (608)	4,000 (273) (206) (126) (126)	4,000 (273) (206) (126) (126)	4,000 (273) (206) (126) (126)				
625-0937	Accelerated Impact Prog. (Sahel)	G	79	81	5.0 5.0	2,772	1,500	1,272								
625-0940	Sahel Water Data Network & Mgmt Regional Cape Verde Gambia Senegal Mali	G	82	86	7.0 7.0	-	1,300 (281) (213) (132) (132) (132)	200 (273) (206) (126) (126)	1,500 (323) (243) (150) (150)	1,483 (323) (243) (150) (150)	4/85 (323) (243) (150) (150)	1,484 (323) (243) (150) (150)				

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Country/Office
Sahel, Regional

TABLE IV PROJECT BUDGET DATA

MEMBER	PROJECT TITLE	OBLIGATION DATE	LIFE OF PROJECT COST	CIN PIPELINE AS OF 9/30/81	FY 1982		FY 1983		FY OBLIGATIONS				ITEM #				
					OBL	EXP	OBL	EXP	1984 AAPL	FUNDED TO MOYR	1985	1986		1987	FUTURE YEAR		
					INITIAL	FINAL	INITIAL	FINAL									
625-0940	SAHEL DEVELOPMENT PROGRAM Sahel Water Data Network & Management (cont'd)																
	Mauritania				(137)		(132)		(156)		(157)						
	Upper Volta				(132)		(126)		(150)		(150)						
	Niger				(141)		(135)		(161)		(160)						
625-0942	Environmental Training & Mgmt.	C	.3	180	100	100	180	565									
625-0944	Niger River Basin Dev. II	G	10.0	10.0	4,267	100	700	1,144	3/85	3,889							
	Upper Volta				(70)		(70)	(120)		(300)							
	Niger				(1,667)		(210)	(340)		(1,300)							
	Mali				(2,200)		(280)	(454)		(1,600)							
	Regional				(500)		(140)	(230)		(689)							
625-0947	Sahel Food Security	C	8.0		2,466	500	600	1,480	8/85	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480
	Chad						(100)	(200)		(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
	Cape Verde						(50)	(150)		(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)
	Senegal						(100)	(200)		(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
	Gambia						(50)	(150)		(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)
	Mauritania						(100)	(200)		(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
	Upper Volta						(100)	(200)		(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
	Mali						(50)	(190)		(190)	(190)	(190)	(190)	(190)	(190)	(190)	(190)
	Niger						(50)	(190)		(190)	(190)	(190)	(190)	(190)	(190)	(190)	(190)
625-0950	Reg. Financial Management	G	4.7	-	2,466	500	700	1,534	8/85	2,000							
	Mali				(520)		(100)	(300)		(300)							
	Upper Volta				(480)		(100)	(300)		(300)							
	Niger				(406)		(200)	(434)		(434)							

FY 1984 ANNUAL BUDGET SUBMISSION

		Country/Office Sahel Regional																				
MEMBER	PROJECT TITLE	ESTIMATED U.S. DOLLAR COST (\$000)										ITEM #										
		OBLIGATION DATE		LIFE OF PROJECT COST	CEN PIPELINE AS OF 9/30/81	FY 1982		FY 1983		FY OBLIGATIONS			FUNDING YEAR									
		INITIAL	FINAL			APPR PLAN	OBL	EXP	OBL	EXP	1984 AAPP			FUNDED TO DATE	1985	1986	1987					
625-0950	SAHEL DEVELOPMENT PROGRAM Reg. Financial Management (cont.)																					
	Senegal																					
	Gambia																					
	Mauritania																					
	Cape Verde																					
625-0955	Manantali Resettlement	G	83	87																		
625-0957	OMVS Agricultural Research	G	82	87																		
	Regional																					
	Senegal																					
	Mali																					
	Mauritania																					
625-0958	Groundwater Monitoring	G	82	86																		
	Regional																					
	Senegal																					
	Mali																					
	Mauritania																					
625-0959	African Development Fund	G	82	82																		
625-0960	Sahel Manpower Development II	G	83	87																		
	Chad																					
	Senegal																					
	Gambia																					
	Mauritania																					
	Upper Volta																					
	Mali																					
	Niger																					

FY 1984 ANNUAL BUDGET SUBMISSION

Country/Office
Sahel Regional

TABLE IV PROJECT BUDGET DATA

NUMBER	PROJECT TITLE	OBLIGATION DATE		LIFE OF PROJECT COST	CUM PIPELINE AS OF 9/30/81	FY 1982		FY 1983		1984 AACL TO MO/YR	FY OBLIGATIONS			ITEM #	
		INITIAL	FINAL			OBL	EXP	OBL	EXP		1985	1986	1987		FUTURE YEAR
		GA													
SAHEL DEVELOPMENT PROGRAM															
625-0961	Regional Food Crop III	G	83	88	10.0	-	-	1,100	500	1,039	8/85	1,500	2,000	2,000	2,240
	RFCP														
	Senegal							(120)		(120)		(180)	(240)	(240)	
	Mauritania							(200)		(189)		(220)	(350)	(350)	
	Mali							(80)		(50)		(75)	(100)	(100)	
	Gambia							(100)		(110)		(165)	(220)	(220)	
	Cape Verde							(100)		(100)		(160)	(200)	(200)	
	Cameroon							(100)		(120)		(160)	(210)	(210)	
	Regional							(400)		(340)		(490)	(650)	(650)	
625-9801	Human Rights	G	80	C	50	180	50	50	50	50		50	50	50	50
625-9901	Special Self-Help	G	80	C	5	16	630	550	600	600		600	650	700	700
	Chad						(30)		(30)	(30)		(30)	(30)	(50)	(50)
	Senegal						(125)		(100)	(100)		(100)	(125)	(125)	(125)
	Upper Volta						(140)		(220)	(220)		(220)	(245)	(225)	(225)
	Gambia						(106)		(50)	(50)		(50)	(50)	(80)	(80)
	Mauritania						(87)		(80)	(80)		(80)	(80)	(100)	(100)
	Cape Verde						(17)		(20)	(20)		(20)	(20)	(20)	(20)
	Mali						(75)		(50)	(50)		(50)	(50)	(50)	(50)
	Niger						(50)		(50)	(50)		(50)	(50)	(50)	(50)
	TOTAL				33,401		29,948	21,130	27,600	33,000		35,000	34,274	31,830	

Project Title : Sahel Manpower Development Phase II
Project Number : 625-0960
Appropriation : Sahel Development Program
Proposed Obligation: FY 83: 2,000,000
FY 84: 2,000,000
LOP: 10,000,000 (5 years)

Purpose: To provide training in the United States and Africa for Africans from the eight Sahelian countries of Cape Verde, Chad, The Gambia, Mali, Senegal, Mauritania, Niger and Upper Volta in skills which will reduce critical manpower constraints in key development sectors.

Background: Phase I of the Sahel Manpower Development Project was authorized in FY 79 at \$8.5 million to provide training for 400-500 Sahelians to increase the number of skilled personnel needed for the development of rural areas. Training of this type was begun in FY 76 under the African Manpower Development Project (AMDP). The SMDP, while constructed along the broad outlines of the AMDP in terms of participant selection, courses of training, and designation of training sites, was designed to provide training opportunities for Sahelians tailored to fit the special concerns and requirements of the region.

By FY 82, the \$8.5 million was entirely obligated, and an additional \$1,225,000 was added to the project to enable some 135 participants currently in training to complete their studies, bringing the total to approximately 315 Sahelians who will have completed training under SMDP. Phase I of SMDP underwent an evaluation in April-May of 1982 by a six person team that gathered baseline data in Washington and in the field to assess project impact, achievements, cost, and constraints. Principal findings indicated that the SMDP is a versatile development tool which USAID missions find useful for the provision of training outside of the project context and that country training plans have been consistent with USAID Country Development Strategies (CDSS) and host country needs. The report recommendations stated that: (a) The SMDP should seek to provide training that will alleviate critical development constraints in institutions that impact upon the success of AID projects, i.e., encouraging a higher level of private sector candidates, particularly through non-formal, short-term, in-country training; (b) for planning purposes, a 30-month cost projection should be made for participants entering U.S. masters programs; (c) USAID mission staffs need to be strengthened in the area of participant training management; (d) allotment of SMDP funds should be based upon 5-year general country training plans which would indicate the mix of U.S. training, third country training, in-country training, and relevance of such training to Country Development Strategy; and (e) AID/W should investigate whether the placement and maintenance of third country training can be effectively contracted out.

The Project: Under Phase II of this project, each participating mission will prepare a five year training plan upon which allocations will be made. The apportionment process will consider the availability of participant training funds through non-SMDP resources; availability of other donor funds for participant training; the coherency of the country training plan with its CDSS and agency policy; the status of national educational development; and the size of

the population. While SMDP will not fund undergraduate degree training, it will fund U.S. graduate degree training (and if appropriate, a few candidates to the Ph.D level); U.S. short-term technical training; third country degree and non-degree training; regional seminars and workshops; and in-country seminars and workshops. No more than 50% of the total mission authorization may be used for U.S. training, and missions will be required to play active roles in the candidate recruitment, identification and selection process in collaboration with participant training committees. SMDP funds will not be allocated to those countries where national regulations prohibit the active participation of USAID missions in this process.

Beneficiaries: The immediate beneficiaries of this project will be those individuals selected to receive the direct benefits of training funded from the project. The long-term beneficiaries are the various Sahelian populations who will realize benefits from more effectively designed and managed development projects staffed by these returned participants.

Project Title : Regional Food Crop Protection - Phase III
Project Number : 625-0961
Appropriation : Sahel Development Program
Proposed Obligation: FY 83: \$1,100,000
LOP: \$10,000,000 (6 years)

Project Purpose: To encourage and facilitate the extension of Integrated Pest Management (IPM) concepts and techniques to small food crop farmers in the West Africa region.

Project Description: The third and final phase of the RFCP project will build on achievements under Phases I and II. From 1975 to 1982, a total of \$11.7 million has been programmed to finance commodities, participant training, construction and long-term technical assistance under a PASA agreement with the U.S. Department of Agriculture (USDA). These resources were used to mobilize and strengthen participating National Crop Protection Services to carry out effective crop surveillance, protection and crisis intervention programs. An additional \$25 million in SH funds was authorized in 1977 for an Integrated Pest Management (IPM) component of project 625-0928. Through an agreement with the Grantee, CILSS, the UN's Food and Agriculture Organization (FAO) is serving as technical implementing agent to carry our priority IPM research in participating Sahelian countries. The IPM component was substantially delayed by unanticipated implementation and administrative difficulties. However, the component is to be redesigned and extended on the basis of a PP amendment due for submission to AID/Washington in September 1982.

The Project: In accordance with a major evaluation of both the RFCP II and IPM components (July - September, 1981), RFCP II is being extended by one year to synchronize the design and implementation of this project (RFCP III) with the objectives of the redesigned IPM project.

A project Paper for Phase III is scheduled for submission to AID/Washington in March 1983. The design will provide specific country plans to develop and strengthen the extension of IPM concepts and techniques to small farmers, to train host country extension agents and agricultural managers, to assure active collaboration between the personnel implementing the RFCP III and IPM projects, and to establish formal channels for dissemination and adaptation of IPM research results (as well as findings of other Sahelian crop protection research programs) to all levels of extension activities in participating countries.

In FY 1983, A.I.D. will fund technical assistance to National Crop Protection Services and other national extension services, long-term U.S. and third country training, short-term courses at the Regional Training Centers constructed under previous RFCP phases, participation in regional technical seminars, and commodity assistance needed for extension and dissemination of information. Host governments will continue to contribute varying shares of operating costs and personnel, with an eye toward transferring all recurrent costs to the host governments by the end of Phase III.

FY 1984 ANNUAL BUDGET SUBMISSION

Country/Office SAHEL REGIONAL

TABLE V - FY 1984 PROPOSED PROGRAM RANKING

RANK	PROGRAM ACTIVITY		FINANCIAL/NO	LOAN/GRANT	APPROP. ACCT.	PROGRAM FUNDING (\$000)	
	DESCRIPTION					INCR	CUM
1	625-0911	Sahel Reg. AID Coordination	0	G	SH	1,490	1,490
2	625-0950	Regional Financial Management	0	G	SH	1,534	3,024
3	625-0928	Regional Food Crop Protection - IPM	0	G	SH	3,480	6,504
4	625-0961	Regional Food Crop Protection III	0	G	SH	1,039	7,543
5	625-0621	OMVS Integrated Development	0	G	SH	7,600	15,143
6	625-0944	Niger River Basin Development II	0	G	SH	1,144	16,287
7	625-0012	Gambia River Development	0	G	SH	2,000	18,287
8	625-0958	OMVS Groundwater Monitoring	0	G	SH	1,000	19,287
9	625-0957	OMVS Agricultural Research	0	G	SH	2,340	21,627
10	625-0955	Manantali Resettlement	0	G	SH	1,900	23,527
11	625-0940	Sahel Water Data Network Mgmt.	0	G	SH	1,483	25,010
12	625-0960	Sahel Manpower Development II	0	G	SH	2,000	27,010
13	625-0927	Demographic Data Collection	0	G	SH	1,775	28,785
14	625-0929	Planning, Management and Research	0	G	SH	3,000	31,785
15	625-0942	Environmental Training & Mgmt.	0	G	SH	565	32,350
16	625-9901	Self-help	0	G	SH	600	32,950
17	625-9801	Human Rights	0	G	SH	50	33,000

PROGRAM PRIORITY AND PROJECT RANKING NARRATIVE

The FY 1984 program is designed to meet A.I.D.'s long-term commitments to such key regional organizations as the Club du Sahel and CILSS, the Sahel Institute and AGRHYMET whose purposes are to find Sahelian solutions to critical Sahelian problems. Continued support to these regional institutions will allow the Sahelians to address more effectively the regions' problems by avoiding unnecessary duplication of effort thereby saving scarce financial and personnel resources as well as fostering intra-African development cooperation. The program will also continue A.I.D.'s support to river basin multi-purpose planning studies in three Sahel river basins; (1) the Sahel River Development Organization - OMVS, the Gambia River Development Organization - OMVG, and (3) the Niger Basin Authority - NBA.

We have accorded first priority to the Sahel Regional Aid Coordination Project as it is the heart of our regional program. Through this project A.I.D., jointly with other donors, provides assistance to the CILSS/Club coordinating, planning and policy formulation process. This project is followed by the Regional Financial Management Project which aims to improve financial and project management in Sahelian institutions.

The next priority is accorded to projects attacking critical constraints to increased agricultural productivity which are more effectively addressed regionally, such as the multi-donor Regional Food Crop Protection and Integrated Pest Management activities. Both of these activities are directed toward improving crop protection practices of Sahelian farmers. The data gained by and the technology to be transferred as a result of these activities apply to both rain-fed and irrigated agriculture.

Nearly equal priority is given to the Sahel river basin activities. These activities are aimed at assisting Sahelian governments to plan and to develop cost effective irrigated agriculture production which is a key component in helping the Sahelians reach regional food self-sufficiency before the year 2000.

Our fourth priority grouping contains those projects which support regional population and human resources objectives, such as the Sahel Manpower Development project, which provides funding to train Africans in the U.S. and Africa in skills which will reduce critical manpower constraints in key development sectors. Under this grouping are also a number of projects which have particular concern to A.I.D., such as the Self-Help and Human Rights activities.

**U.S. DEVELOPMENT OBJECTIVES
IN THE SENEGAL RIVER BASIN**

**USAID/SENEGAL
RIVER BASIN DEVELOPMENT OFFICE
JUNE, 1982**

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INTRODUCTION

For the Sahel, three river systems- the Senegal, the Niger and the Gambia- represent major development resources. The harnessing of these waters holds the key to protection from the ravages of cyclical droughts, to long-term food self-sufficiency, and to production of agricultural surpluses for export in good years.

The nations of Senegal, Mauritania and Mali, and fourteen OECD and OPEC donor organizations have forged the political will and mobilized the resources necessary to develop the Senegal River Basin (SRB). Over \$750 million will be spent in the next eight years to construct the infrastructure that will control the river's regime.

The main objective of what is one of Africa's largest public works project, is to assure a dependable supply of water for agriculture. This will secure food production in a region where people's lives are regularly threatened by climatic vagaries. The two dams now under construction- at Diama in the river Delta, and at Manantali in the Upper Basin- will also ultimately generate electric power, provide land-locked Mali with access to the sea, and furnish water supplies to urban populations.

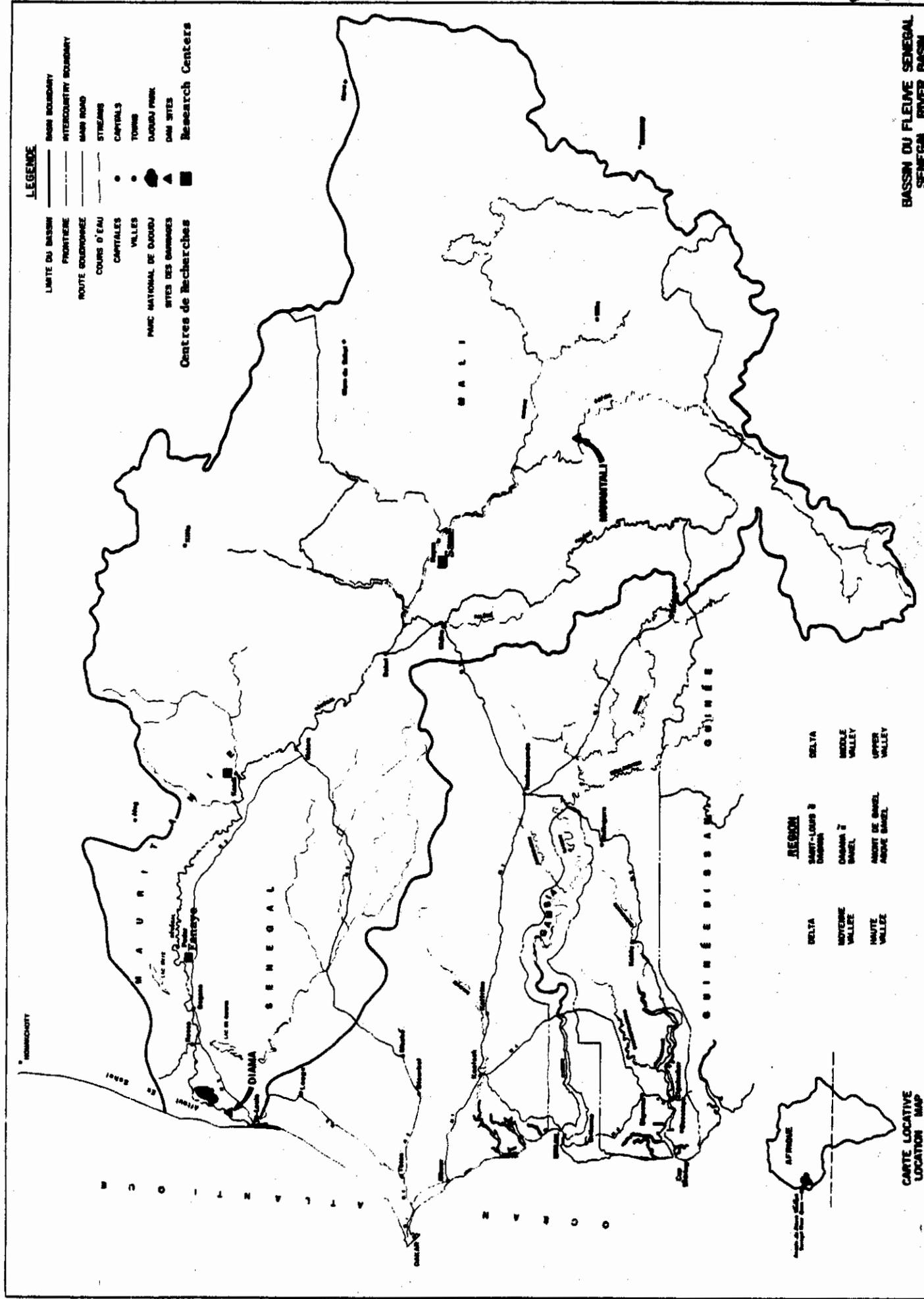
Whether or not the large investments being made to build the infrastructure will be fully productive is an open question. The United States, which is not involved in infrastructure financing, can play a determinant role in assuring that the answer is yes.

American experience in river basin development, in technology transfer, in mobilization of private initiative, can provide the broadness of vision needed to assure the success of the undertaking. It is the objective of this paper to set forth the rationale for U.S. participation in the development of the Senegal Basin and to propose the manner in which it can be done.

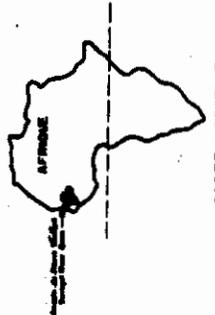
BASSIN DU FLEUVE SENEGAL
SENEGAL RIVER BASIN

LEGENDE

- LIMITE DU BASSIN
- FRONTIERE
- ROUTE GOUVERNEMENTALE
- COURS D'EAU
- CAPITALES
- VILLES
- PARC NATIONAL DE DIARRA
- SITES DES BARRAGES
- Centres de Recherches
- WATERCOUNTRY BOUNDARY
- MAIN ROAD
- STREAMS
- CAPITALS
- TOWNS
- DIARRA PARK
- DAM SITES
- Research Centers



- | | |
|----------------|----------------|
| DELTA | DELTA |
| Moyenne Vallée | Moyenne Vallée |
| Haute Vallée | Haute Vallée |
| DELTA | DELTA |
| Moyenne Vallée | Moyenne Vallée |
| Haute Vallée | Haute Vallée |



CARTE LOCATIVE
LOCATION MAP

I. ANALYSIS

A. Sahelian River Basins and Food Production

In its 1976 report to the Congress proposing a long-term Sahel Development Program, AID stated that "the economic viability and independence of the Sahelian states depend ultimately on the development of these basins for irrigated agriculture, reliable river transport, and hydroelectric power available for mining and industry." ^{1/}

The Club du Sahel/CILSS have calculated that the Sahelian population will increase from 30 million in 1980 to over 50 million in 2000. The Sahel countries' annual cereals production in 1970-79 averaged 4.6 million metric tons which were supplemented by annual imports of 1.1 million tons ^{2/} in order to meet the basic food requirements of the region. By the year 2000 the Sahel will need 11.5 million ^{3/} tons of grain annually to feed its increased population. Rainfed agriculture can be expected to produce seventy-five to eighty percent of this grain, assuming adequate rainfall patterns. The balance will need to be secured through irrigated agriculture and imports.

^{1/} AID, Report to the Congress: Proposal for a Long-Term Comprehensive Development Program for the Sahel, Oct. 1976, Part II, p. 29

^{2/} FAO, National and Regional Security Grain Stocks in the Sahel, Rome 1980, Annex VI, Appendix 613

^{3/} Club/CILSS, Strategy for Drought Control and Development in the Sahel, Revised Draft, Sept. 1980, pp. 11-12.

As the drought of 1968-73 demonstrated, almost total reliance on rainfed agriculture is in the Sahel too great a political and socioeconomic risk. For that reason, the governments of the region concluded that irrigated agriculture must be introduced on a much wider scale than is currently the case, while recognizing that the Sahel will continue to rely primarily on rainfed production for the foreseeable future.

The region contains approximately one million hectares of land that are irrigable under total water control, 300,000 of which lie in the Senegal River Basin (SRB). To date 75,000 hectares have been brought under production in the Sahel, 28,000 of which are in the SRB.

If by the year 2000 twenty to twenty-five percent of grain production must come from irrigation, a minimum 225,000 hectares will need to be developed and brought under intensive double-cropping cultivation with average yields of 10 tons/hectare. This would require a rate of development of 8,500 ^{1/} hectares per year.

The rhythm of development proposed for the SRB is on the order of 3,000 hectares ^{2/} of newly constructed perimeters per year. USAID's analysis of past trends and current constraints indicates that a rate of 2,000 hectares

^{1/} Calculated as follows: 225,000 total needed, minus 75,000 existing, equal 150,000 new construction divided by 18 years (1982-2000).

^{2/} OMVS, Hydroagricultural Indicative Program, October 1980.

per year is more realistic. This would provide over the next eighteen years, 36,000 hectares of land cultivated in double and triple cropping, in addition to what is currently farmed.

Irrigated agriculture is the Sahel's hope for a secure future.

Investment costs in irrigation will be high but so too can be the returns if proper care is taken in the design of projects.

The 1976 report to the Congress concluded on the subject of the river basins that "a greatly enlarged program over the next fifteen years is essential to acquire additional data, to experiment with different crop varieties and techniques of irrigated agriculture, and to plan carefully for the ultimate full realization of the region's potential." ^{1/} In the case of the Senegal River Basin, progress has been made on all three fronts since 1976. The three Sahelian countries involved are poised to move forward into a new phase.

The Basin presents an opportunity for the three nations to make advances on several fronts: mastery of water control, transition from traditional to more modern agriculture, construction of economically viable irrigated perimeters, and protection of river basin environments. The process

^{1/} OP-CIT, Part II, p. 30.

has already begun, but success is not yet assured. The SRB may be the Sahel's first, best chance to achieve it, because the resources that have been mobilized are of sufficient magnitude to promote physical transformation of the land, training of people, strengthening of institutions and reform of policies. These are the four basic ingredients of development.

B. The Senegal River Basin

The Senegal River draws its source from Guinea's Fouta Djallon highlands and is fed by several tributaries (the Falémé, the Bafing, the Bakoye, and the Gorgol) in Mali, Mauritania and Senegal, the three riparian nations. Each year, between eight and thirty-four billion cubic feet of water flow through the river basin and out into the Atlantic Ocean.

The river, 1,800 kilometers long, drains an area of 289,000 square kilometers. Its annual flood gathers in the South Eastern plateau and empties at Bakel (see map) into a wide plain in the Middle Valley. The flood recedes gradually from October to February, allowing recession agriculture on 15,000 to 300,000 hectares, depending on the size of the flood. In the hot, dry season (March - June) river flows decrease to an average 10 cubic meters/second from the 10,000 cubic meters/second at flood levels, and occasionally stop entirely.

In the Upper Basin rainfall isohyetes range from 600 to 1,500 mm/year, whereas in the Middle Valley and Delta the range is 200 to 350 mm. Thus, while the Upper Valley, lying largely within the borders of Mali, has considerable

potential for rainfed agriculture, the rest of the basin is suitable principally for irrigated cultivation.

The Basin has been extensively studied. The U.S. Government helped lay a rational basis for its development through AID assistance in key areas. With an investment of \$17 million between 1971 and 1981, AID analyzed the hydro-agricultural potential of the Basin, contributed to a major socio-economic study, mapped the Basin from aerial surveys, and determined the environmental effects of proposed developments, including the dams.

These activities, carried out under the direction of the OMVS-Organisation pour la Mise en Valeur du fleuve Sénégal or Senegal River Basin Organization- were influential in the decisions of other donors to contribute to the SRB program. Debated for several years, the program has now been approved and funded with regard to its major items of infrastructure. It entails:

1. Construction of a dam near the mouth of the River at Diama in Senegal, whose purpose is to act as a salt-intrusion barrier, to provide water for irrigation of 45,000 hectares, and to feed two lakes (Guiers and R'Kiz) which provide water to major urban centers in Mauritania and Senegal.

2. Construction of an upstream impoundment dam at Manantali in Mali to serve as the principal controller of river flow. It will eventually allow irrigation of 255,000 hectares and produce 800 million KWh of electric power per year to be used mainly for exploitation of the Basin's mineral resources.

3. Construction of river ports and a navigable channel between St. Louis, Senegal, and Kayes, Mali providing landlocked Mali access to the sea.

4. Construction and development of up to 300,000 hectares of irrigated farms. This is the combined potential of the two dams and a major segment of the Sahel's requirements for irrigated land.

C. The Donors

In a rare confluence of political and economic interests, fourteen countries and international financing organizations had by June 1982 signed grant and loan agreements providing \$773 million to finance the construction of the dams. Work on Diama began in September 1981. Manantali construction is beginning in June 1982. Both are expected to be completed by 1988.

The Arab nations of the Gulf constitute the largest block of donors with a contribution of \$380 million. This investment is more than a demonstration of Islamic solidarity. It also reveals the Arab countries' desire to promote greater food self-sufficiency in the Third World and less dependency on the West. Value can be realized from this investment, however, largely from agricultural and industrial development. The Arab donors recognize this fully; have been in the vanguard of those who have promoted OMVS downstream planning efforts; and are financing support to agricultural institutions in the SRB.

The European members of the SRB consortium, both individually (France, Italy, West Germany), and collectively (through the European Economic Community) are motivated by historical, economic and foreign policy interests. France, which maintains strong political ties to the region, has for many years been involved in the conceptualization and design of Diama dam, and a French firm was awarded the contract for constructing it. A German firm is constructing Manantali.

In the medium-term, the potential for exploitation of SRB mineral resources is substantial. These resources include over a billion tons of iron ore, 800 million tons of bauxite and at least fifty million tons of high grade phosphates. European firms are expected to play a substantial role in the development of these minerals.

D. United States Interests

The U.S. interests in contributing to the SRB program are political, economic, and humanitarian. On one political level, the program provides the U.S. with a context for collaboration with OECD and OPEC states and with the African Development Bank, in a major endeavor for the benefit of the Third World. The partnership created around the SRB demonstrates that if the issue is specific and if an imaginative consensus is reached that permits each nation to act according to its means and its interests, then extraordinary resources can be mobilized. The SRB program is in fact one of the largest multilateral endeavors to-date in sub-Saharan Africa.

On another level, the political stability of the three SRB nations is important to the U.S. Senegal has since its independence played a constructive role in international crises affecting U.S. interests. It contributed to peace-keeping forces in Chad, Lebanon, Zaire, and the Gambia. Its capital, Dakar, is a vital transfer point for aviation between Europe and South America, as demonstrated most recently in the Falkland crisis, and a valuable site for Space Shuttle emergency landings. Senegal's foreign policy is moderate in nature and congruent with that of the U.S. on major issues. Its future as an independent and democratic nation free of foreign domination will depend upon the soundness of its economy. In this respect the success or failure of the SRB program will be of prime importance.

Mauritania, the second SRB nation, lies between the two pro-Western, pro-American countries of Senegal and Morocco. A significant contribution to Mauritania's economic development will enhance its political stability and by extension that of North West Africa. Since 1979, when it withdrew from the Sahara war, Mauritania has made serious attempts at economic development. Its efforts have been complicated by historical dichotomies between the ethnic groups that inhabit it, and aggravated by war and drought. The importance for Mauritania of the OMVS plan lies in the fact that SRB development efforts are aimed at the agricultural areas having the highest productive potential. Valorization of these areas offers the only possibility for Mauritania to achieve food self-sufficiency.

1/ AID, Mauritania CDSS, FY 83, January 1981.

U.S. interests in Mali, the third SRB nation, are less compelling. The U.S. objective is that Mali's non-aligned status in world affairs be truly neutral. ^{1/} The nation's commitment to SRB development is linked to the hydroelectric potential of the Manantali dam, the opening up of a remote area of its territory, and the river transport facilities to the sea that the regulated river will afford. Although Mali's agricultural production will come mainly from the Niger basin, the potential exists for cultivating, via rain-fed means, substantial areas of the Kayes region and exporting the output to Mauritania and Senegal.

U.S. economic interests in the SRB are two-fold. The first relates to the question of food aid, the second to the potential for private investment. The U.S. will be progressively less able to supply the food needs of the rest of the world because it will be increasingly more costly to do so, and because food aid tends to act as a disincentive to local production. Instead, those deficit areas that are capable of becoming viable producers should be aided in doing so.

SRB countries will continue to be subject to severe droughts, similar to or worse than the one experienced in the 1970's, which required an investment of \$950 million in emergency aid. According to FAO estimates, it would cost \$3 to \$9 billion to deliver similar amounts of emergency assistance and save lives on an equal scale in the event of another drought in the 1990's.

^{1/} AID, Mali CDSS, FY 84, January 1982.

To diminish the probability of needing to do so, it is in our interest to encourage investment in agricultural systems that are resistant to drought. There has been long-standing Congressional interest in such an approach, and to the development of Sahelian river basins in particular.

A second U.S. economic interest in the Basin concerns the potential for joint American/African ventures in mining, energy, forestry, agroindustry, and manufacturing. ^{1/} With regard to agriculture, the South-Western U.S. faces many of the same agro-climatic conditions found in the Basin, requiring innovative irrigation and soil conservation techniques. The transfer of U.S. technology, suitably adapted to local conditions, would significantly advance SRB development. U.S. participation in mining and manufacturing will come later. Competition between U.S., European, and other outside private interests can only benefit the African nations involved.

E. The Recent History of the Basin

The Senegal River was the avenue by which colonial powers established themselves in the Basin in the 19th century. From the River's delta city of Saint-Louis, France administered its protectorates of Senegal and Mauritania until 1958.

^{1/} See annexed Tables II and III for proposed industrial development and mining activities in the SRB.

With independence in 1960 the river became an international frontier for three nations with distinct national characteristics, policies, currencies and political structures. The frontier cut through the interdependent social and economic system of the seven ethnic groups living on both banks of the river.

As the newly independent governments turned their attention primarily to other areas of their respective countries, the SRB in the 1960's and 1970's became a fringe area in all three. Senegal concentrated on developing its Peanut Basin, Mali its southern cotton zone, and Mauritania the minerals in its northern sector. The SRB, which had been a self-sufficient economic zone in the colonial period, became an area from which labor migrated to France and to West African urban centers.

It was the drought of the 1970's that once again focused attention on the Valley, as it did on all other Sahelian areas which contained reliable sources of water. It was the drought experience, as well, which provided the impetus to the three SRB national governments to agree on fundamental development objectives and to forge common institutions to carry them out.

F. The People of the Basin

The peoples of the river valley have complex socio-economic systems and mercantile experience dating from the medieval period when they built three major empires in the area, Tekrur, Ghana and Jolof. Even under the century of colonial rule they demonstrated the entrepreneurial and political

capacity to choose their own paths to improvement and to resist imposed schemes.

As far back as 1819 they defeated a French attempt at plantation agriculture in Richard Toll by refusing to give up their land to work as laborers. In the years immediately before and after independence when the first state development corporation tried to organize large, highly mechanized rice production schemes, the participants were quickly disillusioned with the rigid production calendar and tiny plots allocated. With little work to do, absence of land-ownership incentives, no subsistence crops to sustain them, and sudden heavy debts, farmers left the Delta in increasing numbers after a disastrous harvest in 1968. ^{1/}

In recent years they have found better ways to adapt irrigation to their needs, through small village perimeters. Motivation and technical capacity have been spreading at a rate that augurs continued rapid growth in irrigation.

Two social issues that could constrain this growth have been identified, labor supply and land tenure. Outmigration of adult men has swelled in the last two decades to the point where in the up-river Soninke area an average of 30% are absent at any given time. ^{2/} Researchers have

^{1/} Adrian Adams, "The Senegal River Valley: What Kind of Change?"

^{2/} Colvin et al, "The Uprooted of the Western Sahel", 1981; Lericollais, 1975a, 1975b.

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in the past considered this to be a net loss for the region even though the migrants send home sizeable cash remittances. There are growing indications, however, that migrants do return to the Valley and bring back skills, experience and a motivation necessary to develop the Basin. ^{1/}

The successful creation of small irrigated perimeters near Matam, Senegal, at the height of the drought in 1972 sparked over three hundred similar efforts within a decade, demonstrating the capacity of returned migrants for self-motivation and for absorption of modern technology. The locally organized and labor-intensive efforts they pioneered soon became a model for other villagers, and even for the State sponsored Regional Development Agencies (RDAs).

Despite continuing out-migration, human resources in the Basin appear adequate to permit the spread of irrigated agriculture. The migration experience itself has generated a relatively skilled managerial group, and in-migration from nearby isolated provinces, along with population growth, assure a supplementary agricultural labor supply. Outmigration is now so culturally rooted that it will not be eradicated solely by higher incomes and increased economic activity, but it may be reduced and should not be considered a major constraint to further development.

^{1/} Lucie G. Colvin, "Outmigration and Rural Development in the Senegal River Basin", 1982.

Land tenure will require continuing attention, as the traditional systems are not adapted to the land transfers and intense land use irrigation requires. USAID/Mauritania considers that "problems involving land ownership are indeed a major stumbling block to rural development in Mauritania" ^{1/} though this concern is not limited to the SRB. In all three countries rights for access to land generally and to flood recession (walo) lands specifically are part of a highly complex socioeconomic system. The changes to be introduced by altering the regime of the Senegal River will have a large impact on land distribution, ownership and, consequently, on production incentives.

G. The Basin's Institutions

1. Village and Rural Councils

The basic, though far from most powerful, institution in the Basin is the village. It is the village, acting through administrative or traditional councils, that determines whether or not social commitments are made to development processes. Since independence, the villagers of the SRB have found themselves unable to seize development initiatives. They have instead reacted to outside forces beyond their control and to initiatives rarely of their own choosing. In the Senegalese part of the Basin, the government is attempting to decentralize some power to the local level by

^{1/} AID/Mauritania CDSS, 1981.

creating rural councils that cover groups of villages. The councils have authority to spend a portion of local tax revenues, but the amounts are insignificant. The true power of the village resides in nearly exclusive local control of land tenure and labor mobilization.

2. The Regional Development Agencies

Since independence, the architects of SRB development have been national governments acting through Regional Development Agencies (RDAs). ^{1/} The RDAs are state and or parastatal entities authorized to oversee most aspects of development planning and execution in the SRB. They have focused their attention on large perimeters where village structures are generally not included in project conceptualization, design and management. Village perimeters receive little help beyond construction guidance and credit for pumps and inputs.

The RDAs have been, nevertheless, instruments for dissemination of irrigation techniques at local levels. On the larger, more mechanized perimeters, the villagers who contract for plots have no choice in the factors of production. On the smaller ones in the Middle and Upper Valley, they run their own operations. In most cases, all agricultural inputs -- pumps, seeds, fertilizers, fuel, spare parts-- are provided (albeit inconsistently) by the RDAs on credit repayable after each harvest. Marketing

^{1/} SAED in Senegal (Société d'Aménagement et d'Exploitation des Terres du Delta du fleuve Sénégal et des Vallées du fleuve Sénégal et de la Falémé); SONADER in Mauritania (Société Nationale de Développement Rural); and OVSTM in Mali (Opération Vallée du Sénégal, Térékolé, Magui).

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of agricultural products at controlled prices has been the responsibility of RDAs, as well.

The results of the RDA efforts have been disappointing. Recent World Bank and AID analyses ^{1/} indicate that in 1981 only 66% of the perimeters that had been constructed were cultivated and less than 50% were harvested. For the small, privately run perimeters the figures are better, with 73% cultivated and 61% harvested.

Rice yields on large perimeters have averaged between 2.5 and 4 metric tons per hectare, while on small perimeters they have been between 4 and 5 tons/hectare. Fifteen percent of all perimeters in the SRB have produced in excess of 6 tons/hectare, and these have been mostly the private ones. ^{2/} In order to provide a farmer an income roughly equivalent to the local wage, it is calculated, using the example of the current situation in Mauritania, that a yield of 3 tons of rice per hectare would be adequate if it is sold on the parallel market, while 4 tons would be necessary if it is sold at the official price. ^{3/}

^{1/} -Design of the Integrated Development Project (AID)-1981/1982
-Design of the Irrigation IV Project (IBRD)-1981/1982

^{2/} OMVS Socioeconomic Study, Vol. E.II.

^{3/} Geoffrey Metzger, AID/OMVS PP design Team, data and calculations, June 1982.

Both RDAs and farmers have moved into increasingly heavy debt as a result of price structures and the organizational problems of the early years of irrigation. By 1980 farmers in the SRB owed the Government of Senegal over \$1 million. With no possibility of repayment, the government forgave the debt. Performance was slightly better in Mauritania because SONADER's presence at farm level was less pervasive than SAED's, and because farm management remained mostly in farmers' hands. OVSTM in Mali, for lack of an operating budget, performed best by doing least. It provided extension services only, on an as-requested-basis, to privately organized farmer cooperatives.

SAED is being reformed in the wake of large losses in its productive operations and of a substantial overhead. In 1981 the agency signed a three-year "lettre de mission" ^{1/} with the Government, redefining its objectives, and becoming autonomous, with greater control over budget and personnel. Most significantly under this agreement, SAED is expected to disengage, progressively but carefully, from its direct farm management responsibilities. In short, SAED plans to reinforce its capacities to:

- (a) manage the primary irrigation infrastructure of large perimeters;
- (b) guarantee to the farmers the delivery of water for irrigation; and
- (c) provide advisory extension services. It is to reduce its role in provisioning, credit, and marketing.

1/ Contract Operating Plan.

What these operating principles imply is that farmers will henceforth be the managers of new perimeters; that the private sector will assume increasing responsibility for delivery to the farmers of agricultural inputs; that the farmers will have a choice as to what they produce and when and how they market their production; and that agricultural credit will be made available directly to the farmer.

These principles represent a drastic change in the approach that Senegal has taken since independence. They are still a subject of intense debate within the Government. But the costly performance of the parastatals and the unwillingness of the donor community to continue underwriting the system's shortcomings have led the GOS to test them seriously. For the new approach to succeed, there must be strong donor coordination, and both donors and governments must be prepared to insist on a far less interventionist state role in the design of agricultural development projects in the SRB.

Such winds of change are less noticeable in the Mauritanian and Malian sectors of the Basin. Mauritania's SONADER has a significant structural deficit of its own and an organizational structure which requires much reform. With the help of its three major donors, the World Bank, USAID and the Kuwaiti Fund, it has begun the process of re-examining the efficiency of its system and of redefining its relationship with farmers. Internal reorganization, strong donor coordination and consistent government support are the keys to SONADER's future success.

Mali's OVSTM was recently created with a broad mandate but no resources to carry it out. New investments by donor countries will provide an opportunity to define OVSTM's most appropriate role. The donor community is in general agreement that OVSTM should not be given means consonant with its sweeping mandate. Instead its scope of work should be narrowly defined and its level of intervention limited. The Government of Mali is quite willing to restrict OVSTM's role if farmer and private initiatives can assume the organizational, provisioning, credit and marketing functions.

3. Agricultural Research Stations

Three agricultural experiment stations are found in the SRB: one for each member country and one for each part of the Basin. They are: Lower Basin --Guédé/Fanaye, Senegal; Middle Basin --Kaédi, Mauritania; and Upper Basin --Samé, Mali.

Agricultural research has been conducted in the Basin since 1967, initially under the aegis of IRAT, the French research institute for tropical agronomy, and since 1970 under that of FAO, funded by UNDP. Beginning with FAO's involvement the emphasis was placed on irrigated agriculture.

After OMVS, described in the following section, came on the scene ten years ago, it assumed responsibility for overseeing research coordination in the Basin. An interstate committee for agronomic research and development (CIERDA) was created in 1976 as an organ to the OMVS Council of Ministers.

CIERDA establishes the Basin's research priorities, allocates funds, and evaluates programs. Actual research is carried out at stations under the supervision of national research institutes. The OMVS role is thus one of harmonization and guidance rather than of implementation. At the station level, help is provided by international organizations such as the West African Rice Development Association (WARDA) and the International Center for Maize and Wheat Improvement (CIMMYT).

The short-term objectives of the OMVS research program, as defined in the UNDP/FAO project document, are summarized as follows: ^{1/}

(a) Rational choice of cropping and farming systems stressing the intensification of, and positive returns from, irrigated cereal and forage crop production.

(b) Selection, choice and introduction of varieties and cultural practices to improve productivity and make crop diversification profitable.

(c) Improvement of techniques for establishing and farming small village perimeters, harmonizing manual labor and mechanization.

(d) Improvement of techniques for integrating livestock production, intensive fish culture and reforestation with irrigated agriculture in order to stabilize the region's fragile environment.

^{1/} UNDP/FAO, Interim Report, p.3.

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There is little disagreement with these objectives. Investments in the SRB research centers are well coordinated at both donor and beneficiary levels. The principal areas of weakness are the still tenuous linkages existing between research and extension system, and the absence of direct contact between farmer and researcher. Plans are, however, well underway to strengthen these functional relationships.

4. The OMVS - Organisation pour la Mise en Valeur du fleuve Sénégal

The Chiefs of State of Mali, Mauritania and Senegal created the OMVS in March 1972 as a successor to the OERS ^{1/} and charged it with the development of the hydro-agricultural potential of the Senegal River. Table III shows its organizational structure. To date the OMVS has concentrated its efforts on the mobilization of resources needed for dam construction. That task only recently accomplished, the organization must now prepare itself to handle the long-term requirements of program implementation.

By 1981 the OMVS executive branch, the High Commission, had successfully commissioned engineering, environmental, mapping and socioeconomic studies of the SRB. It did so by means of a variety of external contracts. As a consequence, the Commission is endowed with limited managerial and technical capabilities of its own. With construction of the Diama and Manantali dams underway, the organization is turning its attention to its own institutional development.

^{1/} The Organisation des Etats Riverains du Sénégal, established in 1968, included Guinea as a member.

The OMVS is supported in this effort by the donors who contribute to SRB development and who are formally represented ^{1/} in the OMVS Consultative (Donor Coordination) Committee. The Committee recommended, and OMVS agreed, in December 1981 that an institutional development plan be developed by the High Commissioner. The plan will aim at strengthening OMVS internal capabilities to operate the two dams, manage the ports and waterway, and oversee the integrated development of the Basin.

The institutional reform of OMVS must eventually include resolution of the following issues:

(a) Adoption of a clear division of authority between the OMVS policy-making structure --Conference of Heads of State and Council of Ministers-- and its executive branch, the High Commission.

(b) Establishment of a functional office of Legal Counsel to advise the organization on rights and obligations established by the Convention linking the three member states, and on the multiplicity of contracts which bind the OMVS to governmental and private institutions.

(c) Development of professional staffs to assist the three ^{2/} OMVS consultative bodies in their deliberations.

1/ Development Agencies of France, Germany, Canada, USA, Kuwait, Abu Dhabi, Saudi Arabia, Irak, Iran, Italy, The European Economic Community; and multilateral organizations: Islamic Development Bank, African Development Bank, and UNDP.

2/ The Consultative Committee; the Agricultural Research Committee (CIERDA) previously described; and the Permanent Water Commission.

(d) Formulation of new personnel policies that are consonant with the needs of a permanent operational organization. These policies will need to eliminate the practice of appointments to OMVS managerial staff on the basis of member state quotas, subject to recall at any time to national civil services.

(e) Development of a capability to evaluate the impact of development actions on the SRB environment. This implies a corollary ability to stop projects that are injurious to the natural resource base.

The donor community has already expressed its commitment to strengthening the OMVS. Germany, the Arab Funds and France will concentrate their resources on developing the engineering competence of the organization; the United Nations will assist in socio-economic planning; and AID will concentrate its efforts in the rural development offices.

II. STRATEGY

A. Planning and Programming

The ambitious effort to transform the Senegal River Basin into a highly productive plain is underway. The United States, which to date has contributed constructively to the planning for this undertaking, can now help to ensure that maximum value is derived from the development process to come.

U.S. development assistance will be concentrated on supporting self-sustaining agricultural growth, and having as a goal a measurable contribution to the achievement of food self-sufficiency for the SRB's riparian states.

To help achieve that goal, and in concert with the three USAID Missions and other major donors working in the region, three objectives are proposed:

1. Increase food production in the SRB to keep pace with population growth.
2. Promote policy reforms that remove constraints to agricultural production.
3. Improve the capability of private and public institutions in the SRB to manage the transition from traditional to irrigated agriculture.

For each of the three objectives cited, the current situation, obstacles, and proposed solutions are discussed below:

a. Increase Food Production

Current situation/obstacles

National food deficits, increasing with rapid urbanization in OMVS countries, make the move to irrigated agriculture urgent. In the 1970-1979 decade the three countries' total annual cereals production averaged 677,000 metric tons. To meet basic food requirements of their populations, the countries purchased an additional 572,000 tons per year and received an average 161,000 tons in grain aid. (See Tables V and VI). The food needs of the SRB population alone are estimated at 302,000 tons of cereals now and at 435,000 tons in 1995 (See Table VII).

The traditional system of double cropping on rainfed and flood recession plots became inadequate for the growing population about two decades ago, even in average years, and imports have had to fill the gap. Moreover, both rainfed and flood recession harvests are susceptible to dramatic fluctuations due to erratic rainfall. Averaging harvests both geographically and over time, the two types of traditional cultivation produce about equal portions of the Basin's cereals, perhaps 25 to 100,000 tons/year. ^{1/}

^{1/} Basin-specific production figures are not kept. This is a rough estimate based on known variations in flooded hectareage plus consumption and trade flows.

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Irrigation, even with only 13,400 hectares (1980) ^{1/}, produces nearly as much ^{2/} as either of the traditional cultivation methods, and does it more reliably.

There is room for growth in rainfed agriculture in the upper basin, but none in flood recession where lands have been fully utilized since the 1930's. The real room for expansion, intensification and crop diversification is in irrigation.

With a conservative estimate of 50,000 hectares under irrigation by the year 2000, yielding 9 tons/hectare of grain --without mechanization-- from two crops, irrigated agriculture in the SRB would provide 450,000 tons of cereals each year. With animal traction and some triple cropping the yields can be reasonably expected to rise to 11 tons/hectare. At that horizon, and factoring in rainfed production, the SRB can anticipate a surplus.

The slower-than-hoped rates of growth of irrigation hectarage and yields thus far are due to three main constraints: insufficient capital, organizational and technological inexperience, and policies which have tended to minimize production incentives.

1/ OMVS, Results of the 1980-1981 SRB Agricultural Camping, May 1982, page 6. This is hectarage actually cultivated, excluding agro-industrial irrigation and about 6,000 hectares developed but not producing due to salinity problems in Delta perimeters, pump and dike breakdowns, improper land preparation, problems of input deliveries, and pests.

2/ IBID, p. 3.

Proposed Solutions

The mobilization of capital investments will be pursued via the OMVS Consultative Committee --a new and effective donor financing and coordination mechanism in the SRB. Among the members of the Committee, there are organizations who possess financial resources but no technical capacity to allocate them. Among these are the Arab and OPEC funds and the African and Islamic Banks.

USAID/REDO intends to (a) strengthen the capabilities of OMVS to manage the preparation of project feasibility studies and (b) to directly finance such studies for up to 15,000 hectares of new perimeters, by 1987. The completed dossiers will be presented to donors at regularly scheduled, bi-annual Consultative Committee meetings.

Inexperience with irrigation technology and organizational requirements can be overcome by (a) increasing participation of farmers in project conceptualization; (b) provision of extensive organizational advice prior to the start of perimeter construction and during early development phase; (c) dissemination of results from successful small perimeter experience; and (d) strong linkages between researchers, extension agents and farmers.

Proposed USAID projects in the SRB, described in the next section of this paper, will be aimed at these constraints. The three Basin agricultural research stations are being strengthened by the combined interventions of USAID and the World Bank. Institutional cooperative agreements

between research and extension agencies, based on Senegal's Casamance experience, have been accepted by all three Basin countries and will be carried out as part of projects implementation.

The production incentives will be the most difficult to achieve, especially in the area of price policy where political considerations have usually greater weight than economic ones. At the farmer level, the minimum acceptable crop yield to maintain motivation is 3,5 tons of cereals per hectare. ^{1/} Model yields already exceed that level and dissemination of basic irrigation technology will generalize it. Every improvement in producer price, input delivery, farming technique and marketing efficiency increases the success rate. Each of these issues is treated in the proposed Integrated Development Project.

Over the long term, however, land tenure issues which are only now beginning to receive attention in the SRB, will be an important factor of production. At present tenure on irrigated plots is collective and not legally secure. To secure farmers commitments to their lands, to soil conservation and works maintenance, and to assure their vested interest in irrigated lands, USAID will fund OMVS and national governments initiatives to elaborate necessary land tenure laws in the next five years.

^{1/} OMVS Socioeconomic Study, Vol. II.

Finally, diversification of production is planned by both donors and RDAs --notably the U.S., Canada, France, and SAED-- in the context of the generation of projects to be implemented in the next decade. Fruit and vegetable production (and consumption) has been stimulated by the proliferation of irrigation and is being expanded in the Middle Valley. Fish farming has been introduced and will continue to be supported by USAID.

b. Promotion of Policy Reforms

Obstacles/Current Situation

To become a cohesive development unit, the SRB will need to reduce barriers to the free movement of goods and services. The barriers due to three distinct national systems include lack of a common currency, exchange controls, restrictions on the movement of agricultural inputs and produce, livestock, and people, banking regulations, and price controls. National circuits are used to deliver agricultural inputs from each capital to remoter parts of the SRB and to bring out produce. These routes are often inefficient and hence costly. Distortions caused by government price controls and subsidies also lead to uneconomic allocation of resources. In Mali, for example, low producer prices for rice that existed until recently contributed to a decline in production despite relatively low costs. Restrictions on rice imports into Mali in turn raised free market retail prices to the highest level among the three countries. Artificially low retail prices in Senegal, in turn, led to illegal flows of imported rice from Senegal into Mali. If free market prices prevailed, Mali as a basically low cost producer would probably export to Senegal.

For the most part the existing barriers can be removed by the national governments, but the advantages of doing so must first be demonstrated. The governments have to some extent recognized the need to apply market-oriented agricultural policies at the national level. This is particularly true with regard to prices for food grains. Mauritania's new development plan states that a liberalization of price controls must be envisaged. ^{1/} Senegal has made similar commitments to the World Bank and the IMF in the context of its "Plan de redressement". Mali has accepted a multi-donor proposal for a liberalized market system, although rice was exempted from decontrol. ^{2/} Lack of a common currency is an even more formidable obstacle, and is complicated by lack of banking facilities in the River Basin. The other barriers are ones whose harmful effects will be appreciated by national governments only as the momentum of basin development quickens.

The most pressing policy issue in the Basin is that of fertilizer subsidies. While a consensus exists among governments and donors that these subsidies must be reduced and ultimately eliminated, disappointingly little progress has been made on tactics. The World Bank has made the a priori elimination of all subsidies on fertilizer a condition to financing two important projects ^{3/} - one in Mauritania, the other in Senegal. The two governments have responded cautiously, proposing instead a phased elimination of the subsidies. Donors, while accepting the Bank's economic reasoning, have

^{1/} Mauritania, "Esquisse du IVème Plan", Intro, p. 12.

^{2/} Mali CDSS, Jan. 1982, p. 24.

^{3/} These projects are the Senegal Irrigation IV project and the Mauritania Gouraye-Kaédi Irrigation project.

tended to be sympathetic to the governments political sensitivities.

Proposed Solutions

The OMVS is a vehicle for putting the economic integration case to its member governments. The negative effects of restrictive policies are increasingly recognized by the governments, and donors agree that the distortions caused by the present system should not be subsidized by external aid.

USAID, in concert with other donors proposes to strengthen OMVS ability to define policy issues and develop options backed by rigorous analysis, for consideration by its member states. OMVS, perhaps better than any single donor, can engage its members to view development from a regional perspective; to examine the consequences of one member's policy upon the other.

The OMVS' demonstrated ability to mobilize external resources for development of the Basin can be a powerful tool for persuasion, if wisely used. The benefits of change must, however, be demonstrable and coordinated donor support reliable.

USAID proposes to utilize the OMVS Consultative Committee as the principal forum for pursuit of policy reform actions. The membership of the Committee, made up of senior representatives from both donor and recipient governments, is especially suited to policy level debate and decision-making.

The agenda is in any case clear and it contains the following

items:

1. Harmonization of producer and consumer prices and input subsidies;
2. Elimination of distortions in marketing and input delivery, resulting from existing official channels of distributions;
3. Incentives to the private sector to play a substantive role in SRB development --with immediate attention given to indigenous entrepreneurs;
4. Elimination of taxes and controls on the movement of goods, services, currencies, livestock, and people between the three countries.

c. Improvement of Institutional Capabilities

Obstacles/Current Situation

Adaption to fundamental changes in the traditional way of life would be greatly facilitated by the creation of multiple options for farmers, herders, and fishermen. Irrigated agriculture as introduced to date has been rigid in its approach for technical and organizational reasons. The larger and more mechanized the perimeter, the more the farmer has been constrained. The RDAs have reduced options still further by imposing inflexible farming methods, crop selections, marketing systems. The creation of the dams and the regularization of river flow will by themselves create new choices.

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For example, second and third crops will become possible over the whole stretch of the river. This in itself will be a major change for the better.

As more perimeters are created, labor efficiency will become more crucial, choices of technology more critical, risks to the farmer greater. As the highest risk-takers, farmers must become the most important decision-makers in the development of the basin. This implies promotion of farmer organizations capable of making intelligent choices, and of institutions capable of providing reliable technical information and support services.

The agencies that can provide technical options are the extension services and the research institutions. Much remains to be learned about such matters as water management, weed and pest control, soil fertility under intensive cropping patterns, crop rotation, etc. Options can be created only as solutions are found through intensive research and demonstration efforts. These efforts in turn will need to be linked from the beginning to the problems that farmers will face as they irrigate; and solutions will have to be made available as readily as needed.

Support services to irrigation farmers in the SRB have been traditionally supplied by the RDAs. The State has sold and repaired pumps, delivered fuel, distributed seeds and fertilizer, extended credit, kept accounts, purchased outputs. The inefficiencies and costs of this system have been already discussed. The challenge is now to promote and secure change.

The reduction or dismantling of bureaucracies in Sahelian countries is at least as difficult as it is in the rest of the world. It can be said that Senegal has on occasion faced up to the need, for example, by closing down ONCAD ^{1/} in 1980, but the entrenched power of such organizations is formidable. By changing the statutes of SAED and by entering into a contract-plan with it, the Senegalese Government has taken the first steps to reducing costs and inefficiency. For its part, Mauritania has stated, at least indirectly, that the government will give priority to projects which strongly promote the participation of the population and which generate the lowest possible recurrent costs ^{2/}. Mali's position on state intervention in the Basin remains unclear. In all cases much remains to be done. In particular there has to be a significant change in mentality on the part of state agents most regularly in contact with local farmers.

Reduction of state intervention in the Basin will open the door for the participation of the indigenous private sector, at least in the provision of agricultural inputs. What is essential is to provide local entrepreneurs with access to technical advice and to affordable credit. Whether a productive partnership can be forged between farmers, the State and the private sector remains to be seen. Donor organizations, acting in concert with one another and with host governments, can facilitate and encourage the dialogue, and can insist via project financing limits on a less interventionist government role.

^{1/} Office National pour la Coopération et l'Assistance au Développement.

^{2/} Government of Mauritania Five Year Plan, 1981, p. 4.

The OMVS High Commission, as the organization charged with overseeing the integrated development of the SRB, will require continuing assistance in several key areas. It must be able to more closely correlate the agricultural and infrastructure rhythm of development; establish systems to evaluate the impact of irrigation on the river regime; and coordinate the actions of the multiple national ministries which intervene in the Basin.

Finally, the OMVS will need to play an increasingly important role in agricultural and trade policy harmonization among its three member countries. These issues have been raised by the majority of donors, including those financing the Manantali Dam.

Proposed Solutions

USAID/RBDO has in the past year conducted several studies of the institutions likely to play a major role in SRB agricultural development. The first concerns the current status of formal and informal farmer organizations in the Basin and their legal standings. The results will be incorporated in the design of the Integrated Development Project (IDP) and will complement the recommendations of the project's design team as to the approaches that will be proposed for training and strengthening these groups. The approach selected is, in short, that organizational support to and training of farmer groups will precede --for a period of a year if necessary-- actual construction activities at irrigation sites.

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A second study has defined the role that the private sector can be expected to play in the SRB. These findings were translated into specific project actions, also in the IDP, that include credit and technical support to local entrepreneurs for services to farmers that will no longer be provided by the State. The IDP will also propose strengthening the Investment Directorate of OMVS so that it may provide advisory services to private investors seeking business opportunities in the SRB.

Reduction of the RDA's role in farm management has been pursued via closely coordinated new project design activities undertaken by the USAID, IBRD, and the Caisse Centrale of France. Coordinated donor follow-up actions --at project implementation time-- will assure that the commitments obtained in principle will be carried out in practice.

OMVS is being supported by USAID, UNDP, FAO, and Germany in developing its planning and evaluation capabilities. A well-staffed, multi-disciplinary "Cellule de Suivi et d'Evaluation"^{1/} now exists in the Development and Coordination Directorate. USAID will assist it in defining its objectives and in putting in place the analytical systems required.

The policy formulation role envisaged for OMVS will take time to define and will involve pursuit of a dialogue with OMVS, its member states (in Ministries having currently no formal relations with OMVS), and the donor members of the Consultative Committee. The IDP will propose a number of policy issues requiring priority attention and thereby set the stage for the upcoming debate.

^{1/} Evaluation and Monitoring Unit.

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B. Management

The division of management responsibility for implementation of USAID's Senegal Basin Program is predicated upon the nature and level of authority delegated to host country institutions by their governments. The assignment of project execution tasks to national and regional host-country agencies, in turn, determines AID's bilateral and regional management oversight.

The three governments of the SRB have delegated to OMVS direct responsibility for managing the Basin's infrastructure. They have retained, and assigned to national agencies, authority to manage the "downstream" development of the Valley, while assigning to OMVS regional planning, monitoring, and evaluation functions in this area.

AID projects for the SRB have consequently been designed accordingly and contain clearly defined national and regional components. The national components, moreover, have been defined in close consultations with USAID Missions in order to assure harmonization of objectives with current and projected bilateral programs.

In specific terms, AID-Host Institutions management interaction will be the following:

1. The River Basin Development Office (RBDO) will be the principal interlocutor for OMVS which will implement regional project components including planning, policy development studies, monitoring and evaluation, and

management integration. The OMVS will be assisted by a management consulting team working under the supervision of the Director of Development and Coordination. Two direct hire project managers on the AID side will assure oversight.

2. The bilateral USAID Missions in Senegal, Mauritania and Mali will exercise management oversight at the national level with government organizations which include: RDAs, Research Institutions, Forestry Departments, Ministries of Public Works, of Hydraulics, Agriculture, Health, and Planning. These agencies will be provided technical assistance (to be based principally at project sites) via contracts negotiated by the USAIDs.

Bilateral Missions' workloads will increase as a result of SRB projects. Best estimates indicate that three direct hire project managers will be needed, one at each of the Missions and under their supervision, to oversee the Basin program. At least one assistant (local hire) for each of the managers will also be necessary, and financing of these has been included in projects budgets.

The Missions will exercise control over national project component budgets and will be assigned sub-allotments for direct disbursement of funds. Financial oversight of local accounts will also be under Missions' control.

Coordination of national and regional management will be assured by common reporting systems, a computerized management information system, and eventually a telecommunication system linking project sites in the basin to headquarters offices of AID and host countries. Regularly scheduled quarterly meetings among project managers will further assure close monitoring of project implementation. Formal semi-annual reviews will be scheduled and include as participants, the three Mission Directors, the RBDO Coordinator and host country officials of equal rank.

At field level, management responsibility will be entrusted to existing or newly hired national personnel supported by U.S. or third country counterparts. The selection of counterparts will depend upon the nature of the task. To promote the development of the indigenous private sector, for example, what is envisioned is an institutional contract with a non-governmental organization (NGO) having proven, field tested competence in this area. Collaboration with the U.S. Peace Corps is foreseen in the areas of credit and of fisheries extension work. Indigenous private, voluntary organizations (PVO), with the support of similar U.S. organizations, are expected to play a substantial role in the formalization and training of farmers cooperatives.

In conclusion, the SRB program is intended to assist in meeting both regional and national development objectives and thereby reduce the potential competition between bilateral and regional resources.

III. PROJECT INITIATIVES

To achieve the strategic objectives cited in section II, five projects are planned whose component elements are aimed at different levels of constraints. The development of the SRB is and will remain an effort involving many institutions, each acting according to its interests. No single agency has the means unilaterally to carry out comprehensive development actions in the SRB. Hence it will be necessary continually to refine and strengthen the structures that permit donors and recipients to act in concert with one another.

1. The Integrated Development Project (IDP).

The IDP is designed to enhance production, and address institutional and policy constraints. Treatment of the three elements simultaneously represents the integrated aspect of the project.

Production:

On the production end, project focus will be on the farmer and increased productivity will be the criterion for success. The IDP will promote farmer organization and training, multiple cropping patterns and reduction of costs by strengthening cooperatives, maximizing local decision-making authority, providing credit to farmers and local entrepreneurs, linking farmers to researchers, introducing animal traction and encouraging self-help actions. To facilitate marketing, the IDP will assist in construction of rural roads. The medium term objective will be to produce and market

agricultural outputs at a cost equal to or lower than imported products, while providing the farmer an income equal to or better than the prevailing cash wage.

The immediate production phase of the IDP provides for construction of 3,800 new hectares, and rehabilitation of about 500 hectares of perimeters with technical problems. The new designs improve pump efficiency, and allow water measurement so that farmers can better manage distribution and accounting.

Training is a major component in improving production. It includes farmer literacy, pump and equipment maintenance, a mobile extension unit, and management skills for cooperatives and RDAs.

Credit will be provided independently of RDAs for the first time, through banks which have agreed to open branches in sector headquarters.

Since farmer well-being and productivity are substantially linked to health, the IDP will propose two health sector interventions. The first will assist national health agencies to establish a monitoring and surveillance system to track incidence of (especially) water-borne diseases, and signal danger levels. These diseases are expected to increase as SRB farmers make the transition from rainfed to irrigated agriculture. The second initiative is to mobilize donors to support the development of a comprehensive primary health care system for the SRB. The IDP will financially

support a process begun by OMVS and its member states to define the magnitude of the problem and to plan development actions.

To mitigate the impact of the dams on fish resources, the IDP will propose two interventions. The first will be to construct fish ponds in the same areas where perimeters will be constructed. The second will finance a study of the feasibility of constructing an artificial estuary at the mouth of the river in order to counteract the effects of Diama dam on coastal spawning grounds.

Finally, the IDP-financed perimeters will include modest reforestation actions in the form of windbreaks. This is expected to reduce soil erosion, and provide a modest amount of fuelwood.

Institutional Issues:

The IDP will support concerted donor efforts to reduce the role and liberalize the approach of RDAs in production management. This transformation will necessarily mean a reduction in size of existing bureaucracies (with corresponding reduction in their current costs), an increase in private sector involvement and a devolution of state participation in the market place. The IDP will in turn support acquisition by RDAs of greater skills in planning, evaluation, and provision of extension services to farmers. The IDP will also strengthen OMVS and national capacities to produce feasibility level project studies and engage donors in their financing. To this end, the IDP will finance feasibility studies for up to 15,000 hectares of irrigated perimeters with the

objective of obtaining from donors by 1987 commitments for execution of these projects. Finally, the public institutions of the basin will need to develop an implementation plan for enhancing participation of the private sector in a manner which serves the interests of both. To that end, the IDP will assist the OMVS to provide to private entrepreneurs investment advice and counsel, including market studies, risk analyses and credit availability.

Policy Constraints:

The IDP will initiate policy studies at the regional level with OMVS, where structures to conduct them are already in place. These structures, staffed by representatives of SRB member states, provide both the institutional forum and the level of authority needed to address common problems.

Implementation of reforms remains, however, within the purview of national governments. Study of implementation options will be financed for relevant national ministries. Incentives to carry out reforms will be discussed during negotiations of the national components of the IDP. Policy reforms will take place when both donors and beneficiaries reach the conclusion that without them development will not take place, and when the risks inherent in carrying them out are shared. The IDP proposes to pursue agricultural policy analyses and debate in the forum of the OMVS Interstate Committee for Agricultural Research and Development (CIERDA), and to seek a consensus for action in the OMVS Consultative Committee. Both of these structures are appropriate to the task, and their membership includes all active partners in SRB development.

2. The Agronomic Research Project (ARP)

Research is essential to improving agricultural productivity. The ARP will strengthen the capacities of three existing research stations in the SRB. Extensive field trial programs will be carried out by the stations in conjunction with extension agents and farmers. This, and access to worldwide applied research results, will provide to the farmers of the basin the technological package needed to improve their performance.

While research activities, as national components of the project, will be carried out through the research institutions of the SRB states, OMVS will coordinate technical and professional collaboration at the regional level. Functional relationships between OMVS and member institutions and between researchers and extension agents will be formalized via protocol agreements.

Improved on-farm technologies, crop varieties, farming practices and cropping systems developed by the research centers will be systematically transferred to the farmers participating in the IDP project.

3. The Groundwater Monitoring Project (GMP)

This project will be an essential element in safeguarding the considerable investments planned for the Basin. It will establish within OMVS and its Member States a system to define, analyze and monitor the regime of the Senegal river and the Basin's subterranean water resources.

In addition, the project will address problems of: (a) water-logging and soil salinity in existing and proposed irrigated farms; (b) deterioration of water-quality in domestic and livestock wells; (c) discharge-recharge relationships of the Senegal River Valley aquifers; (d) changes in the groundwater regime caused by the construction of the two dams and the resulting alterations of the river flow; and, (e) irrigation development potential of groundwater in the Middle and Upper Valley (Matam-Boghé and Kayes) sectors. Data collected from the project will make possible better drainage, reduce salinity hazards for irrigated lands, define river recharge relationships and groundwater changes in the river basin.

4. The Fiscal Allocation/Responsibility Project (FAP)

This project, which is scheduled for completion in 1983, is developing within the OMVS a capacity to analyse the costs and benefits attributable to each of its Member States from SRB development. A computer formula has been developed by a U.S. University that will permit OMVS analysts to continually factor in new indicators and maintain a scientific basis for partitioning responsibility. Two computer programmers are being trained to operate the micro-computer which has been purchased and which will be installed at the OMVS High Commission.

5. The Manantali Resettlement Project (MRP)

This project will finance the resettlement of 12,000 people displaced by the construction of Manantali dam. Villagers inhabiting areas upstream of the dam will be relocated to new, agriculturally productive areas that will

permit a net betterment of their standard of living. Resources will be mobilized to assure --for the first time in the lives of most of these people-- delivery of basic health, education, water and rural development services. To assure their well-being during the transition villagers will be assisted through the second agricultural season after the move.

The project, though part of the overall SRB planning and development effort, will be implemented bilaterally through the Mali Government and the USAID/Mali Mission.

PROJECT ASSISTANCE PLANNING LEVELS

PROJECTS	FISCAL YEARS (\$ 000)									
	1982	1983	1984	1985	1986	1987	1988	1989	LOP	
Integrated Development Project	-0-	7,600	7,600	8,500	13,000	13,000	6,300	6,000	62,000	
Agronomic Research Project	1,000	2,700	2,340	2,000	3,560	1,900	-0-	-0-	13,500	
Groundwater Monitoring Project	1,000	900	1,000	500	600	-0-	-0-	-0-	4,000	
Manantali * Resettlement Project	-0-	1,900	1,900	1,500	2,000	2,700	-0-	-0-	10,000	
Fiscal Allocation Project	76	-0-	-0-	-0-	-0-	-0-	-0-	-0-	76	
TOTALS	2,076	13,100	12,840	12,500	19,160	17,600	6,300	6,000	89,576	

* Project will be designed and implemented by USAID/Mali and represents a special AID Commitment,

ANNEXES

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B. LIST OF REFERENCES.

TABLE I
OMVS ORGANIZATIONAL STRUCTURE

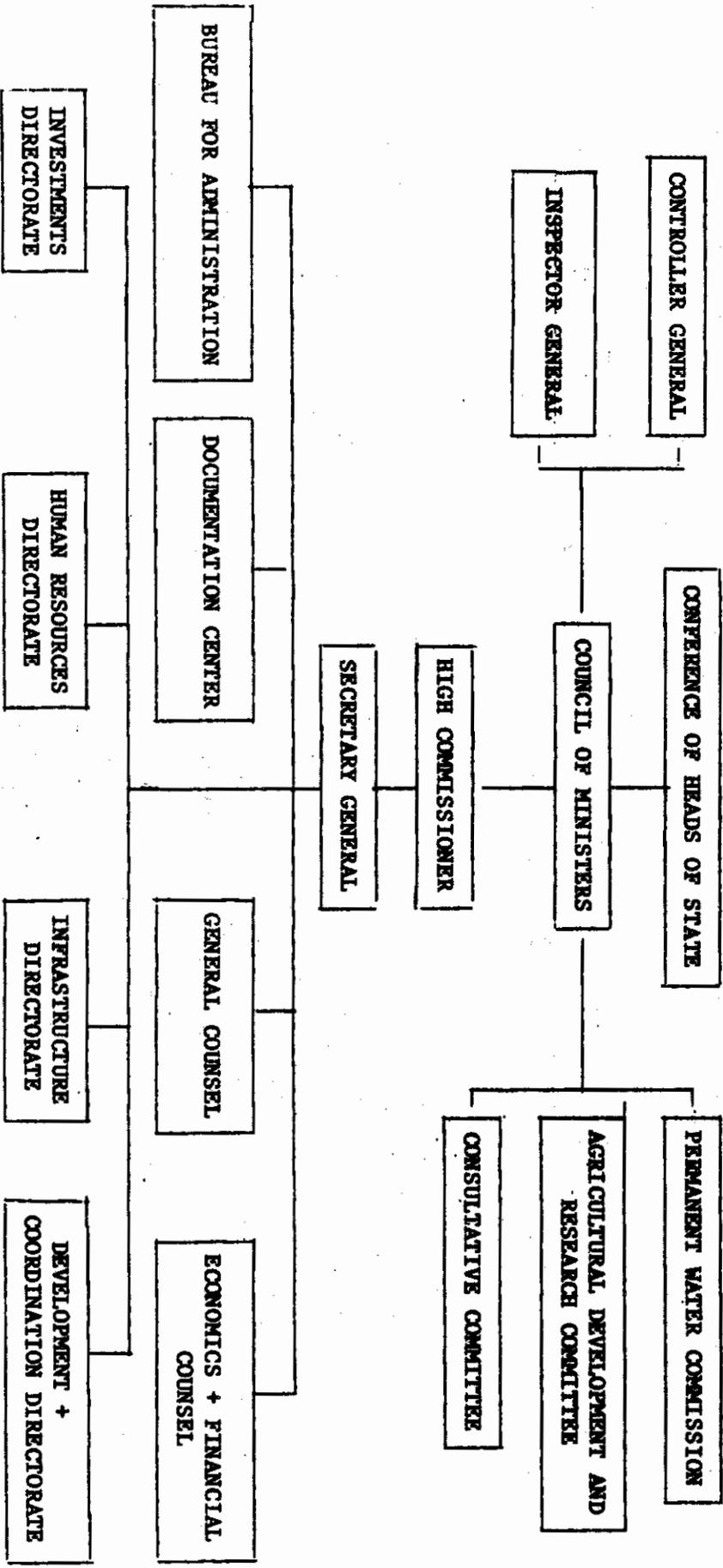


TABLE II

SUMMARY OF PROPOSED INDUSTRIAL DEVELOPMENT IN THE
SENEGAL RIVER BASIN

Industry (listed alphabetically)	Proposed Plant Location(s)	Projected Time Schedule
Bauxite Processing	Manantali, Mali Moussali, Mali Kayes, Mali	After 1990 After 1990 After 1990
Brewery	Kayes, Mali	N/A
Brick Manufacturing	Rosso, Maur.	N/A
Cotton Mill	Kayes, Mali Bogue, Maur. Maghama, Maur. Leggah, Maur.	N/A N/A N/A N/A
Dairy	Rosso, Maur.	N/A
Edible Oil Refinery	Rosso, Maur.	N/A
Fertilizer Factory	Kaedi, Maur.	N/A
Flour Production	Matam, Sen.	Project Implementation 1985-1989
Lime Processing	Diamou, Mali	Commence construction in 1978-1979
Peanut Oil Refining	Kita, Mali	Included in present 5-yr. plan for Kayes Region
Refrigerated Abattoir	Rosso, Maur.	N/A
Rice Processing	Kayes, Mali Matam, Sen. Thilogne, Sen. Aere Lao, Sen. Podor, Sen.	Processing by 1985

.../...

TABLE II (Cont'd)

Summary of Proposed Industrial Development in the
Senegal River Basin

Industry (listed alphabetically)	Proposed Plant Location(s)	Projected Time Schedule
Shoe Factory	Kayes, Mali	N/A
Sugar Cane Processing	Same, Mali Gorgol Valley, Maur. Matam, Sen. or Richard Toll, Sen.	Commence construction 1984-1985 Processing by 1983 N/A
Tanning	Trapoma, Mali Kayes, Mali Kaedi, Maur.	First Production in 1979 N/A Enlargement of existing tannery: first state to be in production by 1983
Textile	Kayes, Mali Rosso, Maur. Saint-Louis, Sen.	N/A N/A N/A
Tomato Canning	Rosso, Maur. Matam, Sen.	Commence construction in 1979 First stage to be in production by 1983.

TABLE III
SUMMARY OF PROJECTED MINING ACTIVITIES IN THE
SENEGAL RIVER BASIN

Mineral	Country	Location	Est. Quantity	Comments
Bauxite	Mali	Bamako-West	175 million tons	Highest quality with an Al ₂ O ₃ content of 40-44%
Bauxite	Mali	Kenleba-South	165 million tons	Deposits do not appear to be rich enough for extraction at this time.
Copper	Mauritania	Diaguili	---	No exploitable strata have been found as yet.
Copper	Mauritania	Massif de l'Affole	---	No exploitable strata have been found as yet.
Phosphate	Mauritania	Cive	4 million tons	High quality but exploitation is not feasible at this time.
Phosphate	Mauritania	Aleg	30 millions tons	Other explorations began in mid-1977. If results are favorable, exploitation could start in 1983.
Phosphate	Senegal	Matam	25 million tons	Exploration completed in 1982, feasibility studies could begin in 1983.
Copper	Senegal	Bakel Region	Unknown	In this same region, there are indices of chrome.

.../...

TABLE III (Cont'd)
Summary of Proposed Mining Activities in the
Senegal River Basin

Mineral	Country	Location	Est. Quantity	Comments
Iron	Senegal	Faramgalia	105 million tons	These four areas are located within the region of Kedougou. In the same region there are marble deposits which are presently being exploited and also small quantities of gold.
Iron	Senegal	Goto	175 million tons	
Iron	Senegal	Kouroudiako	22 million tons	
Iron	Senegal	Koudekourou	75 million tons	
Iron	Mali	Bafing-Bakoye (Bale)	500-600 million tons	Exploitation is envisioned for 1985-1990 if energy is available and extraction is found to be economically feasible.
Magnetite	Mali	Djidiou-Kentba	10 million tons	Exploitation feasibility studies are underway.
Iron	Mali	Diamou-Baufoulabe	150 million tons	Both of these sites are considered to be of less importance than Bale.
Iron	Mali	Nioto	10 million tons	
Bauxite	Mali	Bales	400 million tons	Deposits do not appear to be rich enough for extraction at this time.

TABLE IV

POPULATION ^{1/}(x 10⁶ Inhabitants)

Year	1970	1975	1980	1985	1990	1995	2000
Country							
Mali	5.143	5.807	6.646	7.648	8.825	10.160	11.697
Mauritania	1.245	1.421	1.634	1.890	2.192	2.538	2.939
Senegal	4.267	4.587	5.305	6.176	7.208	8.391	9.768
Senegal River Basin ^{2/}	1.4	1.6	1.9	2.2	2.5	2.9	3.4

^{1/} Source: UNO, 1978. "World Population Trends and Prospects by Country".

^{2/} Extrapolated from the 1976-1977 census data for the riverine regions, cercles, and departments, assuming a 3% annual growth rate for the river basin as a whole.

TABLE V

AVERAGE PRODUCTION, IMPORTS AND MARKETING (1970-1979) ^{1/}

Country	Production x 10 ³ t	Portion of local pro- duction ^{2/} marketed x 10 ³ t	LOCAL PURCHASES BY GRAIN BOARDS			PURCHASED IMPORTS ^{3/}		
			LOCAL PURCHASES BY GRAIN BOARDS x 10 ³ t	In % of production	In % of part marketed	x 10 ³ t	ration to production	ration to local purchases by boards
Mali	974	195	29.7	3	16	86	0.09	3
Mauritania	46	9	0.3	2	9	112	2.43	370
Senegal	657	131	21.3	3	16	374	0.57	18
TOTAL	677	335	51.3	3	15	572	0.34	11

^{1/} Source: FAO, 1980, "National and Regional Security Grain Stocks in the Sahel", Project GCP/S/RAF/L59/MUL, annex VI: Marketing, Appendix 6b.

^{2/} Estimated at 20% of production.

^{3/} Total imports include these plus gain aid (See Table 6).

TABLE VI

GRAIN AID (1973-1980) ^{1/}

Country \ Year	1973	1974	1975	1976	1977	1978	1979 ^{2/}	1980 ^{3/}	Average
Mali	129	200	74	-	-	58	10	20	61
Mauritania	63	107	26	29	31	69	16	67	51
Senegal	63	93	17	-	6	160	20	35	49
TOTAL	255	400	117	29	37	287	46	122	161

^{1/} Source: FAO, World Food Projections, 8/8/1980.

^{2/} Incomplete.

^{3/} Commitments.

TABLE VII

PROJECTIONS OF TOTAL CONSUMPTION ^{1/}
(grain x 10³ t)

Country	Year							
	1970	1975	1980	1985	1990	1995	2000	
Mali	771	871	997	1,147	1,324	1,524	1,755	
Mauritania	186	213	245	284	329	380	441	
Senegal	690	688	795	926	1,081	1,259	1,465	
TOTAL OMVS COUNTRIES	1,597	1,772	2,037	2,357	2,734	3,163	3,681	
Senegal River Basin ^{2/}	210	240	285	330	375	435	510	

^{1/} Calculated from Table IV, assuming a typical Sahelian cereals consumption of 150 kg/person/year.

TABLE VIII

OMVS - Diama and Manantali dams current
status of financial commitments
by donors

	\$ (000)
Saudia Arabia	150,000
Kuwait	100,000
Abu Dhabi	40,000
Irak	40,000
Islamic Development Bank	20,000
Federal Republic of Germany	89,333
France { Caisse Centrale de Coopération Economique	46,786
{ Fonds d'Aide et de Coopération	23,186
	} 69,972
Italy	35,000
European Development Fund	92,700
African Development Bank	33,400
African Development Fund	28,080
	} 61,480
Canada (25,106 Can. \$)	21,158
US-AID (For Manantali Resettlement Only)	10,000
United Nations Development Programme	10,000
Iran	4,000
<u>TOTAL</u>	<u>773,643</u>

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