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U.S. AID TO SENEGAL
ITS IMPACT ON AGRICULTURAL AND RURAL DEVELOPMENT

WILLIAM K. JAEGER

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U.S. Aid to Senegal:
Its Impact on Agricultural and Rural Development

by
William K. Jaeger

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Glossary

ADAP	Agricultural Development Assistance Program
AFGRAD	African Graduate Fellowship Program
ARPP	Agricultural Research and Planning Project
BAME	Bureau D'Analyse Macro-Economique (Bureau for Macro-economic Analysis)
CGIAR	Consultative Group for International Agricultural Research
CILSS	Comité Inter-Etats pour la Lutte contre la Sécheresse dans le Sahel (Permanent Committee for Drought Prevention)
CIP	Commodity Import Program
CNCAS	Caisse Nationale de Credit Agricole du Senegal (National Agricultural Credit Fund)
CNRA	Centre Nationale de Recherches Agricoles (National Research Center)
CPSP	Caisse Nationale de Perequation et de Stabilization des Prix (Price Equalization and Stabilization Board)
DAP	Development Assistance Program (AID)
DEEP	Direction des Etudes, d'Evaluation et de la Programmation (Office of Studies, Evaluation, and Planning)
EFF	Extended Fund Facility
ESF	Economic Support Fund
GOS	Government of Senegal
ICA	International Cooperation Agency
IFDC	International Fertilizer Development Center
INTERAF	African Higher Education Program -- Scholarships
IRAT	Institut de Recherche Agronomique Tropicale
ISRA	Institut Senegalese de Recherche Agronomique (Senegalese Institute for Agricultural Research)
MADIA	Managing Agricultural Development in Africa
ODA	Official Development Assistance
OMVG	Organisation pour la Mise en Valeur de Fleuve Gambie (Gambia River Basin Commission)
OMVS	Organisation pour la Mise en Valeur de Fleuve Senegal (Senegal River Basin Commission)
ONCAD	Office National de Cooperation et d'Assistance au Developement (National Office for Cooperation and Development)
PIDAC	Projet Intégré pour le Developpement Agricole de la Basse Casamance (Integrated Agricultural Development Project for the Casamance, the Senegalese implementing agency)
PVO	Private Voluntary Organization
RDA	Regional Development Authority
SAED	Societe d'Amenagement et d'Exploitation des Terres du Delta (Senegalese agricultural extension agency for the Senegal River Basin)

SAFGRAD	Semi-Arid Food Grains Research and Development
SAL	Structural Adjustment Loan
SATEC	Societe d'Aide Technique et de Cooperation (France)
SECID	South East Consortium for International Development
SODESP	Societe de Developpement de la Zone Sylvo-Pastorale (regional development agency for the Sylvo-pastoral region)
SODEVA	Societe de Developpement et de Vulgarisation Agricole (agricultural extension and development agency)
SOMIVAC	Societe pour la Mise en Valeur Agricole de la Casamance (Casamance agricultural development agency)
SONAR	Societe Nouvelle d'Approvisionnement du Monde Rural
UAM	Union African and Malagasy
WARDA	West African Rice Development Authority

CHAPTER I. INTRODUCTION

This study examines the effectiveness of the US assistance program in Senegal. Specifically, it attempts to assess the ways in which AID assistance contributed to Senegal's agricultural and rural development, and to understand the underlying reasons for the relative success or failure of the various activities in achieving their developmental objectives. In cases where AID's effectiveness was limited, an attempt is made to understand the underlying constraints and endemic problems, and to suggest changes that could improve the performance of those activities.

AID documents consulted both in Washington and in Senegal, as well as extensive interviews with AID personnel and relevant officials in Senegal, form the basis of this study. Many of the interviews were conducted during a five-week stay in Senegal in the fall of 1985, which included visits to several of AID's project sites. A short follow-up visit was made to Dakar in October 1986.

The period covered by this report extends from 1961 to 1984. Because of the meager data for the earlier years, it is unavoidable -- and probably desirable -- that the more recent activities of AID weigh most heavily in the analysis. Several sections of the report will emphasize the 1975-85 period.

This is one of six country reports on AID's assistance to

Africa that, along with a six-country synthesis report (Johnston, Hoben, Dijkerman, and Jaeger 1987), were commissioned by the World Bank in collaboration with AID.¹ The AID study, in turn, is one of seven donor studies being carried out as part of a larger research project entitled "Managing Agricultural Development in Africa" (MADIA), conducted by the Development Research Department of the Bank.²

The report includes a detailed description of what AID has done in Senegal, the reasons for AID's choices of activities, and an examination of the shifts in functional and sectoral emphasis. The impact of the program is assessed, both in terms of meeting the stated objectives of the project activities, and in terms of their contribution to fostering agricultural and rural development. The evidence on which the study is based is used to form generalizations and to suggest changes that would improve the development impact of AID's programs.

The nature of this study is inherently subjective. The benefits of many of AID's programs are not quantifiable and end-of-project evaluations are inconsistent in how they attempt to measure impact. To the extent possible, therefore, both objective information and subjective perceptions are combined in making reasonable judgments about the impact of AID's projects.

¹The six countries are Cameroon, Senegal, Nigeria, Kenya, Tanzania, and Malawi.

²The other donor studies are on Danish, Swedish, West German, EEC, UK, and World Bank assistance programs.

Conceptual Framework

The development impact of aid-supported activities will be examined within the context of how those activities contribute to agricultural and rural development. It is therefore necessary to establish an understanding of the nature and process of development, in order to provide a framework within which AID activities are placed. Much progress has been made in the last 35 years in understanding the development process. It is therefore appropriate to take from this literature a set of general propositions to guide our analysis. AID's effectiveness in furthering agricultural and rural development depends not only on how well they achieved their specific goals, but whether the activities they chose to support constitute essential elements of a coherent, well-conceived strategy for agricultural development.

This requires postulating a reasonable and widely-held view of those crucial elements of the development process. For this purpose development is viewed as a "generalized process of capital accumulation" (following H. Johnson, 1969), in which capital is viewed broadly as physical capital (plant and equipment, natural resources), human capital (in the form of skills and competence), and social capital in the form of economically useful knowledge, organizations and organizational competence (This conceptual framework is elaborated in greater detail in the companion six-country synthesis report, Johnston et al. 1987). Moreover, this definition includes the establishment of efficient social and economic mechanisms for maintaining and increasing large stocks of

capital, including policies and institutions which permit and encourage efficient utilization of that capital. In order to do this, a reasonable balance must be achieved among activities that foster growth in these various types of capital, as well as the various mechanisms that permit their efficient use. This approach includes recognition of the important contribution that technological change has made to agricultural growth (Hayami and Ruttan 1985, Johnston and Kilby 1975).

This view of development does not ignore the importance placed by many on judging development on the basis of welfare and equity criteria, but rather it incorporates the lessons learned from the "basic needs" approach popularized in the mid-1970s which demonstrated that while investments in health, nutrition, education, and housing can contribute importantly to human welfare and to economic growth, it is the growth in the economic base that is needed in order to finance these investments.

This view of the development process is now widely held among development specialists. Definitions of the essential elements of development put forth recently by Krueger (1986) and G. L. Johnson (1986) differ only slightly with the definition presented here. Johnson refers to the four driving forces of rural development as "technical change, institutional improvements, human development, and growth in the biological and physical capital base" (p. 1). Krueger stresses the importance of promoting "accumulation and efficient use of resources, the development of well-functioning markets, efficient governmental provision of infrastructural

services, and institutional development in both the private and public sectors" (p. 58) in order to achieve development goals.

Overview of AID's Program in Senegal

Senegal first began receiving US foreign assistance in 1961 as one of the states included in the Union African and Malagasy (UAM). The small program focused on technical advice in education, health, and agriculture. A full mission was originally established but was reduced to two program officers by 1965. In 1968 the AID mission began to be phased out, largely as a result of the Korry Report (1966), an assessment of AID's work in Africa after five years of operation. That report, commissioned by President Johnson, dictated AID's strategy for Africa until the mid-1970s. It recommended a shift toward concentrating bilateral programs on a small number of countries that had the size, resources, and performance to permit good progress toward development.

The Korry Report also recommended a shift toward greater support of multilateral organizations so that they could take the lead in many assistance activities. The report called for a "substantive emphasis," a more consistent and focused strategy giving priority to education and training, food, population, health, the private sector, and infrastructure.

Only ten of the AID's thirty-three country missions and field offices survived this restructuring. The majority of the countries, including Senegal, fell under AID regional offices. Their country missions were dismantled and existing programs

phased-out. No new bilateral obligations were made in Senegal during this period; only through regional activities did AID continue its work in that country.

The Sahel drought had an enormous effect on AID's activities in West Africa. The Sahel Development Fund was created by Congress to provide immediate and long-term funding to the region. Although this was originally intended to be distributed through the regional offices, in 1975 a bilateral program reemerged in Senegal (and other Sahelian countries) and most of the Sahel Development Fund's monies were channeled through that program.

Initially, AID's activities in Senegal were attempts to restore the losses in crops and livestock that had resulted from the drought. But by the end of the 1970s the program had grown to include major long-term efforts to develop the agricultural sector.

The focus on projects was disrupted beginning in 1978, when Senegal was confronted with an economic crisis arising from a combination of factors, and leaving Senegal near bankruptcy. Since that time, attention has been drawn away from development projects and toward structural adjustment and policy reforms urgently needed to cope with Senegal's continuing fiscal problems and to stimulate productivity growth.

In turning its attention to nonproject assistance, AID was preceded by the efforts of the IMF and the World Bank. But by 1983 -- and increasingly since then -- AID has played an important role, along with the French, the IMF, and the World Bank, in the coordinated effort to bring about reforms aimed at resolving

Senegal's fiscal crisis and stimulating a productive economy.

Since 1983 the content of AID's Senegal program has shifted toward a mix of project and nonproject assistance. This has occurred both because of Senegal's current crisis and because of the poor success of AID's projects in Senegal which have been focused on increasing agricultural production.

Organization of the Report

The paper is organized as follows. Chapter II provides a detailed breakdown of the AID program in Senegal since 1961. The level of assistance is examined in terms of volume, content, and sectoral breakdown. Chapter III seeks to explain why AID chose to do what it did in Senegal. In Chapter IV six AID projects are analyzed for specific information both on the appropriateness of what AID chose to do and on how well it was implemented. The impact of AID's program is assessed in Chapter V. In Chapter VI the results of the analysis are summarized and recommendations made for improving AID's effectiveness. Since this is one of three country studies being done by the author, some explicit and implicit comparisons with the experience in the other two countries, Cameroon and Nigeria, are incorporated in the last section.

CHAPTER II. VOLUME AND COMPOSITION OF AID'S SENEGAL PROGRAM

The AID program in Senegal was small until 1975 when, in the aftermath of the Sahel drought, attention was drawn to the region. Total US assistance from 1963 to 1984 was \$311 million, of which \$141 million comprised AID project and program obligations. Table 1 reveals that between 1963 and 1973 Senegal received about 1 percent of US assistance to Africa. Since that time the share has grown to 3-4 percent, rising to nearly 6 percent in 1984. Totals for US assistance are presented in current and constant dollars in Figures 1 and 2.

The United States has played a relatively minor role among donors active in Senegal; its assistance has constituted no more than two-tenths of one percent of total ODA prior to 1975. France's support for its former colony has continued to account for at least half of all concessional flows to Senegal. France has acted as a "residual donor," meeting shortfalls with quick-disbursing nonproject funds. Until recently only the EEC and the World Bank offered sizable amounts of concessional aid to Senegal, in addition to France. With the growth of the AID program, however, the United States rivaled the EEC as the second largest donor during the late 1970s and early 1980s, contributing in the

Table 1. Level of US Assistance to Senegal, 1963-84, in Current Dollars

	Total	1963-66	1967-70	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
	----- in thousands of US dollars -----																
Total US assistance to Senegal	311,900	13,300	16,400	3,300	1,900	2,500	8,800	9,400	4,500	13,100	21,500	22,700	27,000	35,500	30,500	33,200	68,300
AID's project and program assistance to Senegal	141,000	5,000	1,100	100	100	100	100	6,300	1,100	8,700	8,700	15,000	10,000	14,800	16,200	19,100	34,600
Food aid and other economic assistance	170,900	8,300	15,300	3,200	1,800	2,400	8,700	3,100	3,400	4,400	12,800	7,700	17,000	20,700	14,300	14,100	33,700
Senegal's share of total US assistance to Africa (percent)	2.8	0.9	1.3	1.0	0.6	1.0	2.9	2.8	1.5	3.1	3.6	3.8	3.4	3.8	3.2	3.4	5.9
Ratio of US assistance to Senegal's GDP (percent)	1.0	0.4	0.5	0.4	0.2	0.2	0.6	0.5	0.2	0.7	1.0	0.8	0.9	1.4	1.2	1.3	--
US assistance as share of total ODA to Senegal (percent)	--	--	--	0.2	0.2	0.1	0.1	4.8	0.9	7.1	3.8	4.9	3.8	--	--	--	--

Source: U.S. Overseas Loans and Grants (CONG-R-0105).

Figure 1
Total US Assistance to Senegal, 1963-84, in Current Dollars

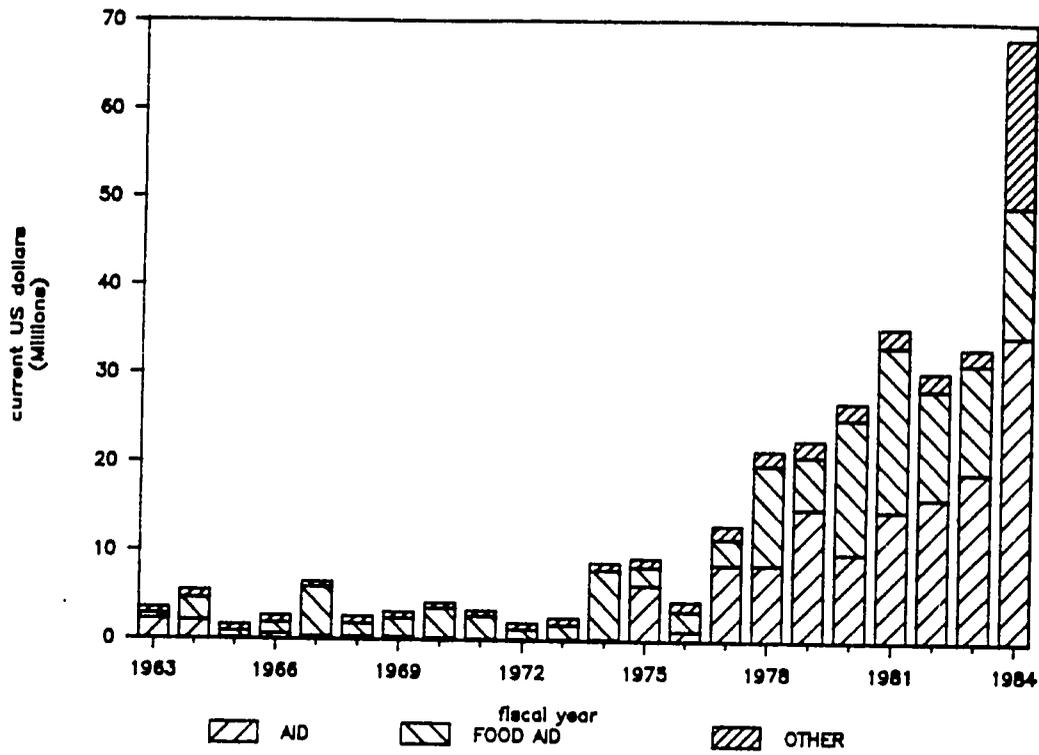
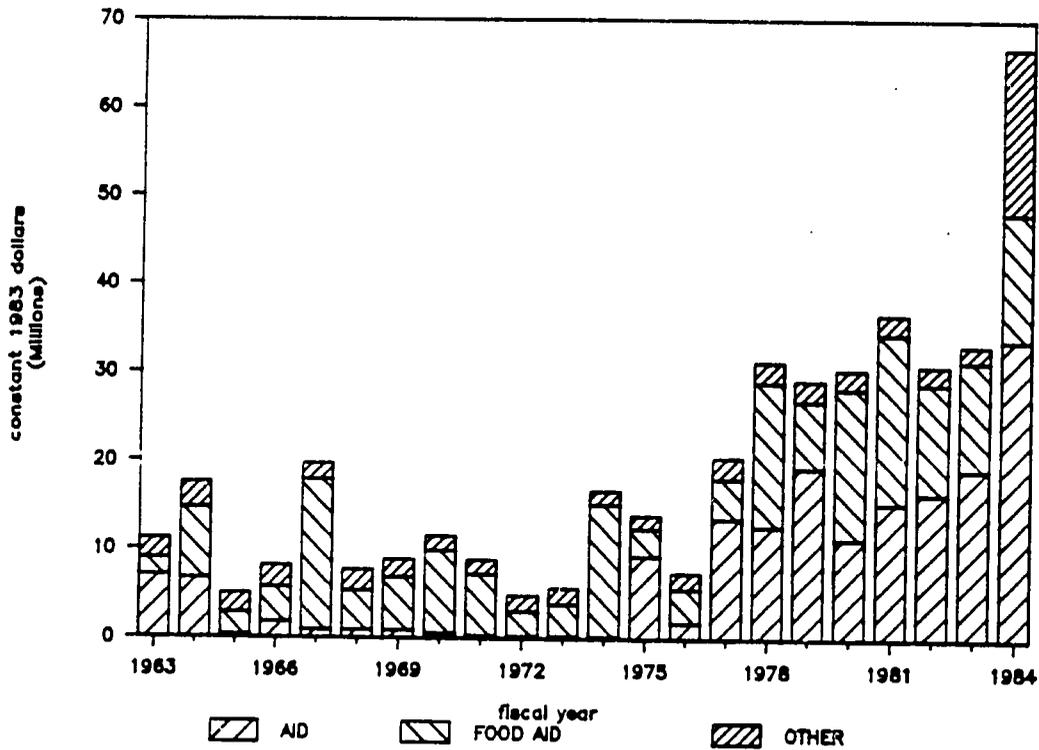


Figure 2
Total US Assistance to Senegal, 1963-84, in Constant 1983 Dollars



range of 5 percent of total ODA (Table 1). By 1983, as Senegal's financial crisis grew, large resource flows came from the World Bank, the IMF, and others. When compared to Senegal's GDP, the AID contribution has risen from one-half of one percent to between 1 and 2 percent recently.

Sectoral Distribution

US aid flows to Senegal are broken down by sector and subsector in several tables and figures presented below. The categories were chosen to reflect the focus of the study and to facilitate consistency with the other MADIA donor studies. When projects contain several components, the funds are divided among the relevant subsectors. The shares assigned to each subsector are estimated from end-of-project financial data or project papers, and are invariant between years.¹

Tables 2 and 3 reveal a high degree of variability in the level and distribution of the US assistance program, whether in current or constant dollars. Project and program aid dropped to insignificant amounts during the early 1970s. Later, after maintaining levels of \$5 million to \$15 million, the program grew to \$34 million in 1984 due to increases in non-project assistance.²

¹ For the period 1978-84 extensive use was made of the "Agricultural and Rural Development: Functional Review FY 1978-1984" prepared by AID's Africa Bureau, to attribute project totals to subsectors.

² These figures are for annual obligations which, as explained in a later section, tend to exhibit more variability than expenditure figures do.

Table 2. Sectoral Breakdown of AID Assistance to Senegal, 1963-84, in Current Dollars

Sector/subsector	Total	1963-66	1967-70	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
----- in thousands of US dollars -----																	
AID PROJECT AND PROGRAM ASSISTANCE	141,000	5,000	1,100	100	100	100	100	6,300	1,100	8,700	8,700	15,000	10,000	14,800	16,200	19,100	34,600
AGRICULTURE	96,686	1,179	58	0	0	0	0	5,583	889	7,600	6,572	7,446	8,780	12,720	13,580	13,083	19,196
of which:																	
Crop production	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage & processing	7,150	0	0	0	0	0	0	0	0	4,900	0	0	0	0	0	0	2,250
Input supply	15,150	150	0	0	0	0	0	0	0	0	0	0	0	0	0	5,000	10,000
Credit	1,275	0	0	0	0	0	0	67	10	0	186	142	150	131	145	200	245
Research	4,173	0	0	0	0	0	0	269	39	0	384	308	300	762	279	400	1,432
Extension	21,320	361	0	0	0	0	0	2,854	416	420	1,791	1,708	2,590	2,675	3,912	2,595	1,998
Education & training	10,069	238	0	0	0	0	0	168	24	0	1,787	82	1,060	1,157	2,810	2,280	463
Planning & management	13,786	38	(23)	0	0	0	0	0	0	0	1,512	1,092	1,260	2,324	3,848	1,680	2,055
Irrigation	6,704	392	81	0	0	0	0	0	0	2,280	912	0	703	1,090	0	494	752
Marketing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Livestock	12,979	0	0	0	0	0	0	2,225	400	0	0	2,530	1,680	3,702	2,008	434	0
Forestry	3,750	0	0	0	0	0	0	0	0	0	0	1,404	1,037	730	579	0	0
Fisheries	330	0	0	0	0	0	0	0	0	0	0	180	0	150	0	0	0
RURAL DEVELOPMENT	11,938	0	0	0	0	0	0	0	0	794	1,228	1,953	183	220	90	475	6,996
of which:																	
Infrastructure	6,750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,750
Health & population	5,100	0	0	0	0	0	0	0	0	794	1,228	1,903	183	222	90	435	246
Education	48	0	0	0	0	0	0	0	0	0	0	50	0	12)	0	0	0
Water supply	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Community development	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0
OTHER	32,376	3,821	1,042	100	100	100	100	717	211	306	900	5,601	1,038	1,860	2,530	5,542	8,408
FOOD AID	128,400	5,200	12,600	2,600	1,100	1,600	7,900	2,100	2,300	2,900	11,200	5,900	15,100	18,600	12,300	12,300	14,700
OTHER ECONOMIC ASSISTANCE	42,500	3,100	2,700	600	700	800	800	1,000	1,100	1,500	1,600	1,800	1,900	2,100	2,000	1,800	19,000
GRAND TOTAL	311,900	13,300	16,400	3,300	1,900	2,500	8,800	9,400	4,500	13,100	21,500	22,700	27,000	35,500	30,500	33,200	68,300

Source: USAID W-235 and COMG-R-0105 reports and project files.

Table 3. Sectoral Breakdown of AID Assistance to Senegal, 1963-84, in Constant 1983 Dollars

Sector/subsector	Total	1963-66	1967-70	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
----- in thousands of US dollars -----																	
AID PROJECT AND PROGRAM ASSISTANCE	172,496	15,725	3,181	266	255	225	189	9,307	1,822	13,581	12,684	19,305	11,288	15,313	16,413	19,100	33,842
AGRICULTURE	113,313	3,708	168	0	0	0	0	8,248	1,473	11,864	9,582	9,583	9,910	13,161	13,759	13,083	18,776
of which:																	
Crop production	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage & processing	9,850	0	0	0	0	0	0	0	0	7,649	0	0	0	0	0	0	2,201
Input supply	15,253	472	0	0	0	0	0	0	0	0	0	0	0	0	0	5,000	9,781
Credit	1,460	0	0	0	0	0	0	99	16	0	271	183	169	135	147	200	239
Research	4,628	0	0	0	0	0	0	397	65	0	560	396	339	788	283	400	1,401
Extension	25,710	1,135	0	0	0	0	0	4,217	689	656	2,611	2,199	2,923	2,768	3,963	2,595	1,955
Education & training	11,721	748	0	0	0	0	0	248	41	0	2,605	105	1,197	1,197	2,847	2,280	453
Planning & management	15,078	120	(67)	0	0	0	0	0	0	0	2,204	1,405	1,422	2,404	3,898	1,680	2,010
Irrigation	9,507	1,233	234	0	0	0	0	0	0	3,559	1,330	0	794	1,128	0	494	736
Marketing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Livestock	15,401	0	0	0	0	0	0	3,287	663	0	0	3,256	1,896	3,830	2,034	434	0
Forestry	4,319	0	0	0	0	0	0	0	0	0	0	1,807	1,171	755	587	0	0
Fisheries	387	0	0	0	0	0	0	0	0	0	0	232	0	155	0	0	0
RURAL DEVELOPMENT	13,386	0	0	0	0	0	0	0	0	1,239	1,790	2,514	206	228	91	475	6,843
of which:																	
Infrastructure	6,602	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,602
Health & population	6,681	0	0	0	0	0	0	0	0	1,239	1,790	2,449	206	230	91	435	240
Education	62	0	0	0	0	0	0	0	0	0	0	64	0	121	0	0	0
Water supply	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Community development	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0
OTHER	45,797	12,017	3,013	266	255	225	189	1,059	350	478	1,312	7,208	1,172	1,924	2,563	5,542	8,224
FOOD AID	191,855	16,353	36,435	6,915	2,800	3,601	14,959	3,102	3,810	4,527	16,329	7,593	17,045	19,245	12,462	12,300	14,378
OTHER ECONOMIC ASSISTANCE	61,268	9,749	7,807	1,596	1,782	1,801	1,515	1,477	1,822	2,342	2,333	2,317	2,145	2,173	2,026	1,800	18,584
GRAND TOTAL	425,620	41,827	47,423	8,777	4,837	5,627	16,664	13,887	7,455	20,450	31,346	29,215	30,477	36,730	30,902	33,200	66,804

Source: USAID W-235 and COMG-R-0105 reports and project files.

The drop in assistance levels from 1968 to 1975, due to closing the AID mission, are to some degree misleading since there was a simultaneous increase in regionally funded projects, discussed below, and which are not reflected in these tables.

Figures 3 and 4 show AID obligations for agriculture and rural development. Agriculture has been AID's major focus in Senegal since 1975. Aid flows to that sector have grown consistently since that year, reaching a level of \$19 million in 1984. Overall, agriculture has accounted for two-thirds of the AID program. Obligations for "rural development," in contrast, have been relatively small and sporadic; they have gone primarily for rural health services in the late 1970s and for a rural community enterprise development project in 1984. The shares of AID obligations to each subsector are given in Table 4.

Other types of US assistance to Senegal are also included in Tables 2, 3, and 4. Food aid has accounted for \$128 million since 1963, or 45 percent of all US assistance. Since the reestablishment of a bilateral program, food aid has accounted for half of the annual assistance in four out of ten years. "Other economic assistance" represents the Senegal Peace Corps Program. In real terms, this has been the most stable funding category, maintaining levels of about \$2 million annually (Table 3).

AID has been involved in a number of other activities in Senegal in addition to agriculture and rural development. These include Housing Improvement, Integrated Youth Job Development, Secondary Schools, Family Planning, and the Special Self-Help Fund

Figure 3
AID Assistance Levels to Senegal, 1963-84, in Current Dollars

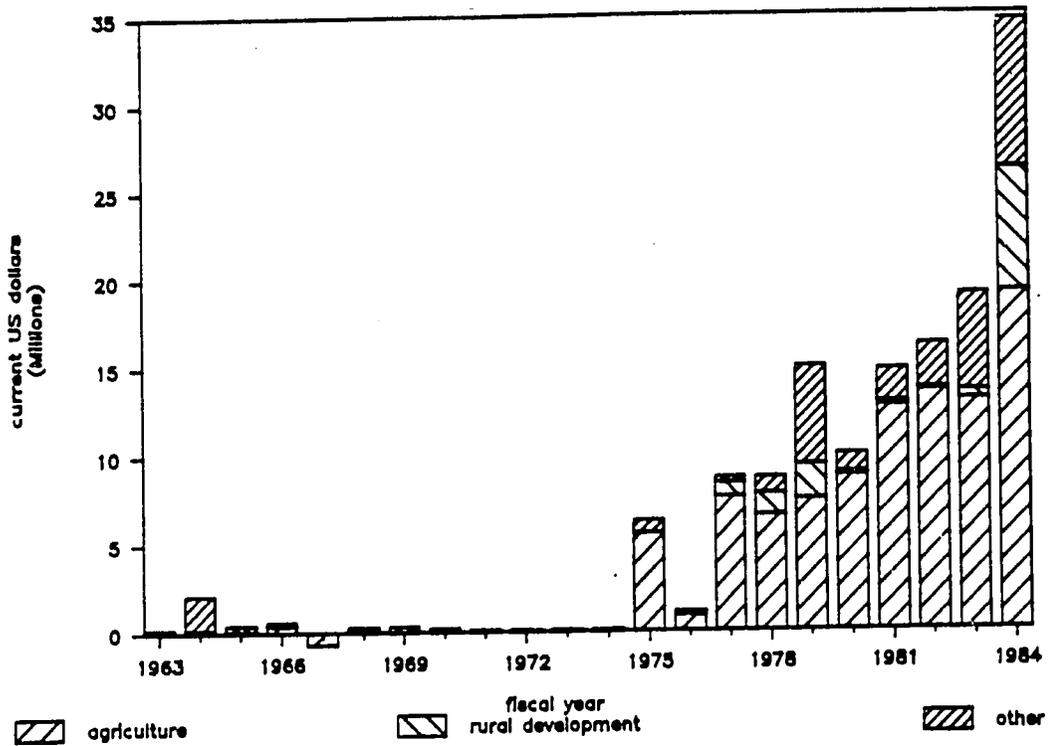


Figure 4
AID Assistance Levels to Senegal, 1963-84, in Constant Dollars

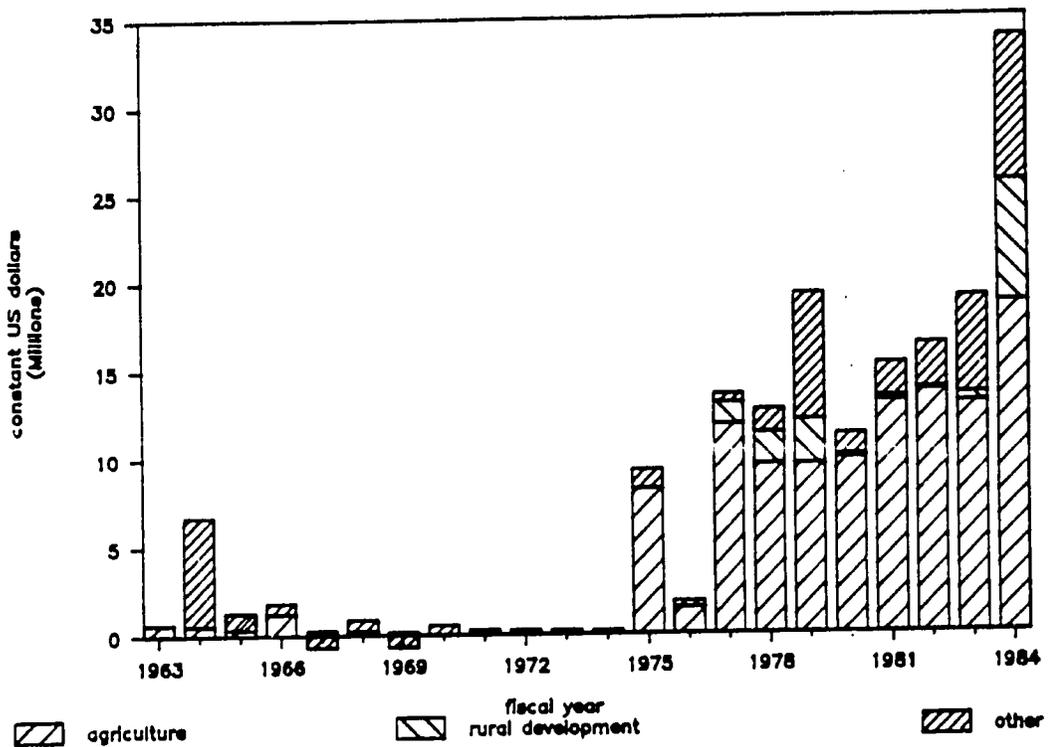


Table 4. Sectoral Breakdown of AID Assistance to Senegal, 1963-84, in Percent

Sector/subsector	Total	1963-66	1967-70	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
----- in thousands of US dollars -----																	
AID PROJECT AND PROGRAM ASSISTANCE	41	38	7	3	5	4	1	67	24	66	40	66	37	42	53	58	51
AGRICULTURE	27	9	0	0	0	0	0	59	20	58	31	33	33	36	45	39	28
of which:																	
Crop production	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage & processing	2	0	0	0	0	0	0	0	0	37	0	0	0	0	0	0	3
Input supply	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	15	15
Credit	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	1	0
Research	1	0	0	0	0	0	0	3	1	0	2	1	1	2	1	1	2
Extension	6	3	0	0	0	0	0	30	9	3	8	8	10	8	13	8	3
Education & training	3	2	0	0	0	0	0	2	1	0	8	0	4	3	9	7	1
Planning & management	4	0	0	0	0	0	0	0	0	0	7	5	5	7	13	5	3
Irrigation	2	3	0	0	0	0	0	0	0	17	4	0	3	3	0	1	1
Marketing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Livestock	4	0	0	0	0	0	0	24	9	0	0	11	6	10	7	1	0
Forestry	1	0	0	0	0	0	0	0	0	0	0	6	4	2	2	0	0
Fisheries	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
RURAL DEVELOPMENT	3	0	0	0	0	0	0	0	0	6	6	9	1	1	0	1	10
of which:																	
Infrastructure	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Health & population	2	0	0	0	0	0	0	0	0	6	6	8	1	1	0	1	0
Education	0	0	0	0	0	0	0	0	0	0	0	0	0	-0	0	0	0
Water supply	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Community development	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	11	29	6	3	5	4	1	8	5	2	4	25	4	5	8	17	12
FOOD AID	45	39	77	79	58	64	90	22	51	22	52	26	56	52	40	37	22
OTHER ECONOMIC ASSISTANCE	14	23	16	18	37	32	9	11	24	11	7	8	7	6	7	5	28
GRAND TOTAL	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: USAID W-235 and COMG-R-0105 reports and project files.

for a variety of small-scale activities.

Within agriculture the AID program has focused on providing farmers and herders with services and inputs to help them increase production: extension, input supply, and livestock account for half of the funding for agriculture since 1963. These are followed by "planning and management" and agricultural education. Figures 5 and 6 show that AID assistance has shifted among subsectors and has varied in the level of funding from year to year. Funding for research and credit have been consistently low.

Because the AID program in Senegal has been relatively small, with one or two projects dominating a subsector, shifts in the share of support for a specific subsector have more often than not resulted from starting or ending a particular project, rather than from subtle changes in AID's strategy or emphasis. For this reason, a detailed intersectoral analysis of the obligations data with the hope of bringing to light the relations between policy shifts and program composition, would bear little fruit. The same would be true of using similar data to compare AID's program with those of other donors.

When expressed in real terms (Table 3, Figure 2) the resource flows for the 1960s show more prominently, primarily because of food aid. But for project and program assistance alone (Figure 4), these levels remain quite low prior to 1975.

Figure 5
 Breakdown of AID Agricultural Assistance to Senegal, 1963-84,
 in Current Dollars

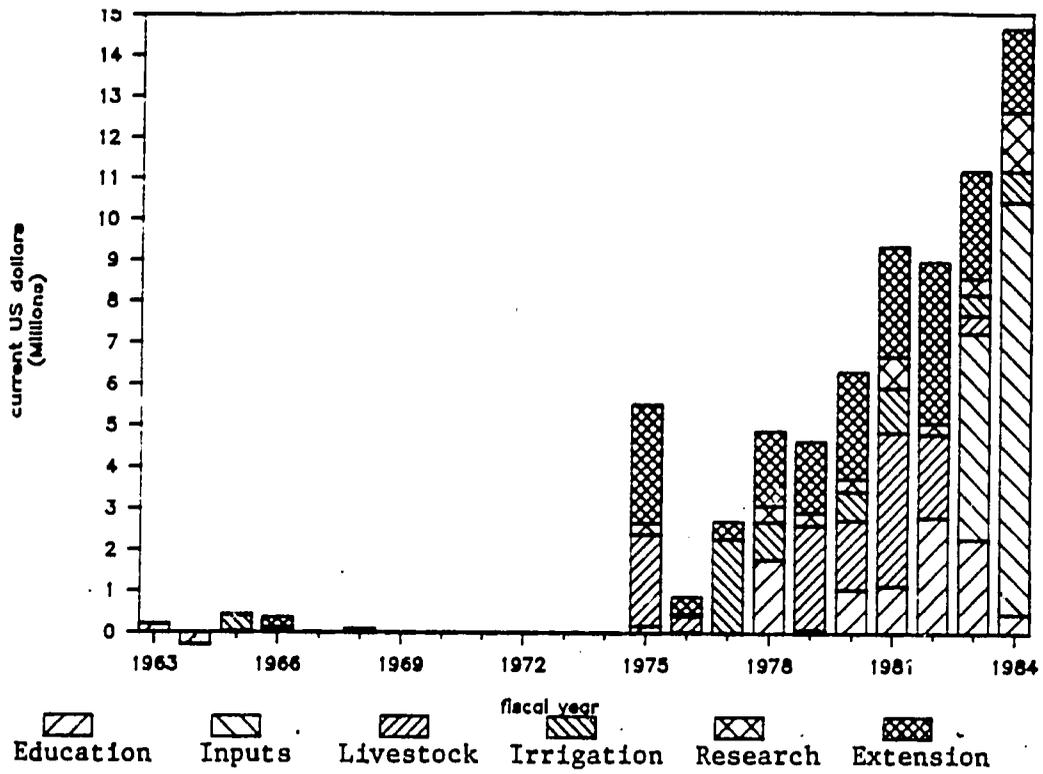
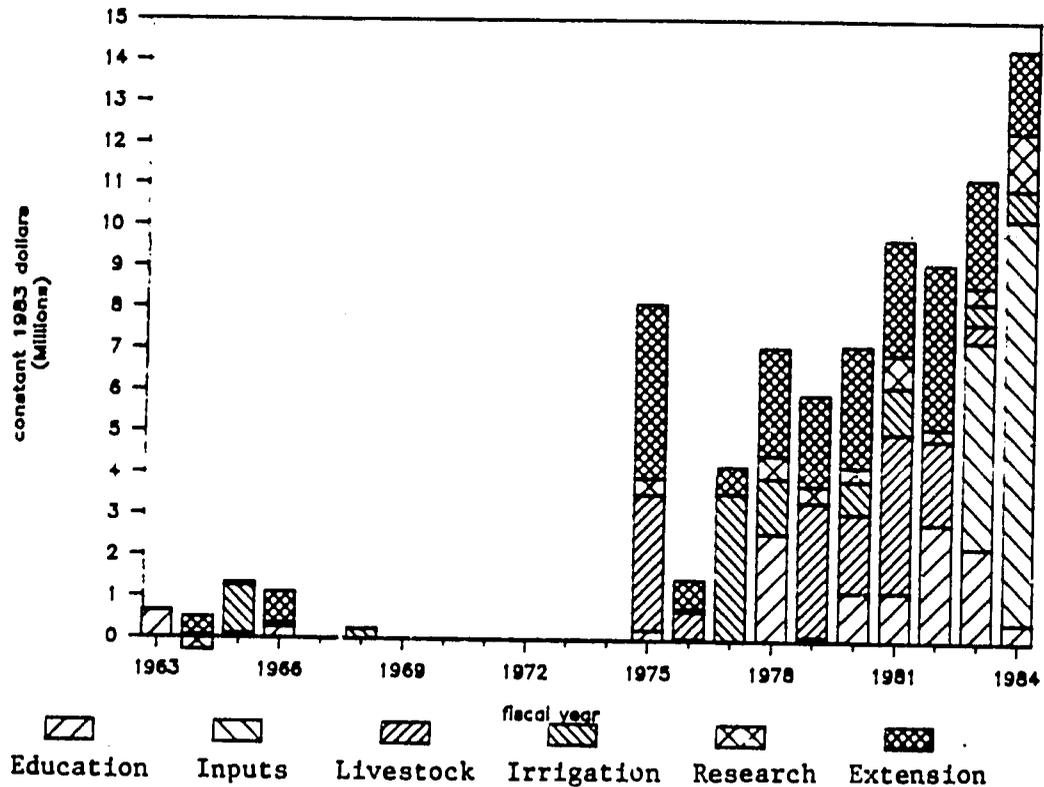


Figure 6
 Breakdown of AID Agricultural Assistance to Senegal,
 1963-84, in Constant Dollars



Regional Funding

An important share of AID development assistance is routed through centrally funded and regional accounts. In addition to the centrally funded programs of the Science and Technology Bureau -- which funds WARDA and the CGIAR (see Jaeger 1986b) -- there are eight separate regional accounts that serve Africa. The largest of these, Africa Regional, was created in 1963. The accounts for Central and West Africa (later combined with Sahel Regional), Southern Africa, and Eastern Africa were all created as part of AID's response to the Korry Report, which recommended that AID concentrate on a small number of high-potential countries in Africa while supporting regional activities for the large number of smaller countries that did not yet promise effective results (Johnston et al. 1987).

Many of these regionally funded projects were intended to replace the work of the missions that was phased out in the late 1960s. Expenditures for them totaled \$945 million through FY 1984 (Table 5). Several of these accounts administered only minor amounts, and three have been discontinued (Table 6).

Among the AID regional projects with potential relevance to Senegal, the Senegal River Basin Commission (OMVS) is by far the most important. More than \$30 million has been obligated for activities in support of this subregional organization since 1972.³

³ The regional account "Area Development Office, Dakar" was set up specifically for the OMVS subregional activities, but has only held one project, OMVS Data and Institutional Development. Nearly all other OMVS activities come under the Central and West Africa Regional Account.

Table 5. AID Regional Funding for Africa: Total Expenditures through 1984

Acct. No.	Name	Total Expenditure
698	Africa Regional	399,746
625	Central & West Africa (Sahel)	235,403
690	Southern Africa Regional	243,932
618	East Africa Regional	34,300
626	Area Development Office, Niamey	21,825
628	Area Development Office, Dakar	3,037
689	Entente States	12
697	Regional USAID/Africa	6,703
	total	<u>\$944,958</u>

Source: AID Project History Lists, various years.

Table 6. Annual Levels of AID Regional Funding for Africa, 1963-84, in Constant 1983 Dollars

Account	Total	a		1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
		1963-66 average	1967-70 average														
Africa Regional (698)	677,428	19,691	33,181	41,782	39,613	27,551	21,182	14,237	27,381	38,932	51,289	53,358	41,309	41,087	53,392	54,244	48,255
Central and West Africa Regional/ Sahel (625)	336,915	0	7,921	22,532	25,150	21,947	20,727	17,298	21,420	14,433	19,952	22,976	22,179	20,978	32,507	29,990	36,906
Southern Africa Regional (690)	238,742	0	951	3,646	6,034	8,064	4,348	5,785	8,784	66,631	54,022	6,037	5,295	17,168	16,792	16,522	18,661
East Africa Regional (618)	37,336	9,677	12,770	3,838	3,256	2,165	1,348	839	1,748	1,517	360	(106)	0	0	0	(77)	0
"Regional USAID/Africa" (697)	5,400	1,021	4,378	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Area Development Office, Niamey (626)	33,598	0	0	0	0	0	0	0	6,279	0	25,062	1,223	0	1,035	0	0	0
Area Development Office, Dakar (628)	16,841	0	0	0	0	0	0	0	0	7,337	1,750	7,754	0	0	0	0	0
Total	1,346,260	30,389	59,201	71,798	74,053	59,728	47,605	38,159	65,611	128,851	152,435	91,242	68,783	80,268	102,691	100,679	103,822

a. Annual averages for each four-year period.

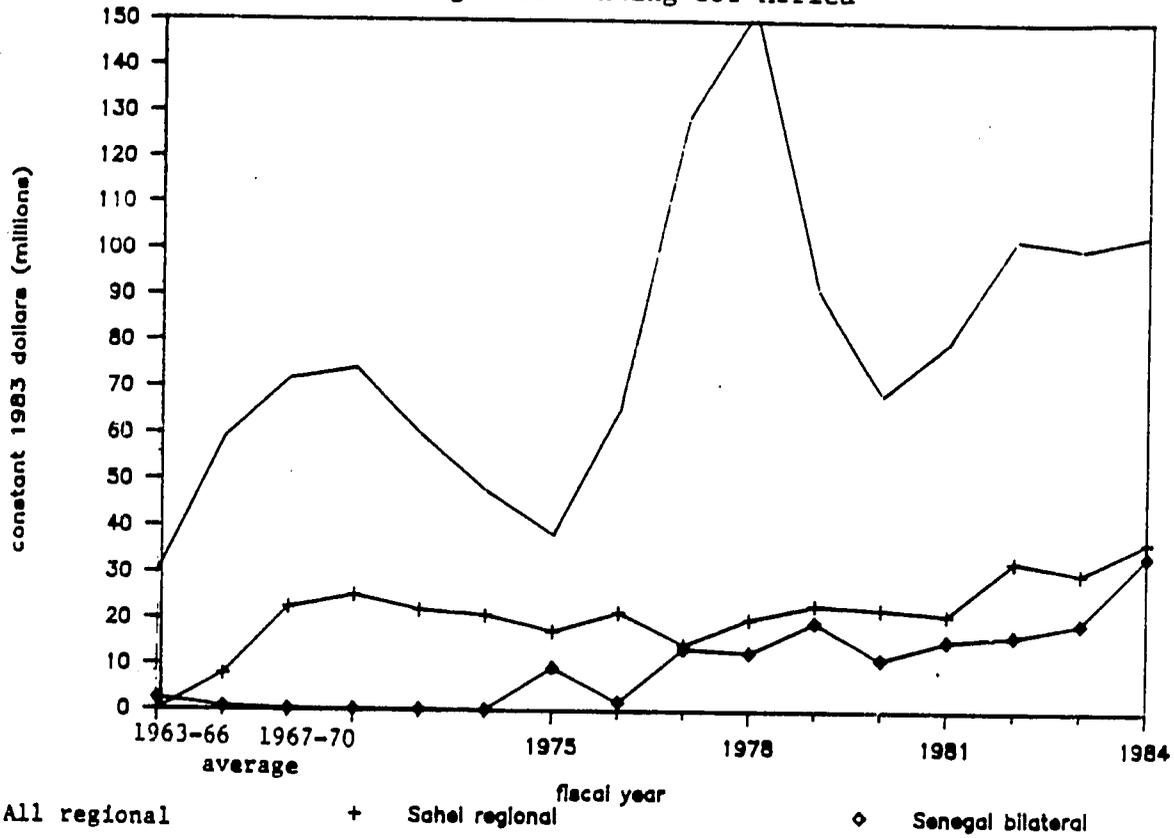
Source: USAID, "Project Assistance and Activities by Country and Technical Field; AID Dollar Financed Costs" (various years).

The OMVS has put together an integrated basin development plan in which some twenty donors and international organizations are participating as discussed in the next chapter. The parallel Gambia River Basin Commission (OMVG) has also received regional funding.

In addition to river basin development there are many regional activities intended to benefit Senegal. Among the largest are: support for the West African Rice Development Association (both independently and via core funding of the Consultative Group for International Agricultural Research, CGIAR); Regional Food Crop Protection; Semi-arid Research and Development; Planning Management and Research; and a number of education programs such as Sahel Manpower Development (more than \$11 million), African Graduate Fellowship Program (AFGRAD), African Higher Education Program (INTERAF), and African Manpower Development. In the area of health, two regional projects -- Strengthening Health Delivery Systems and Measles Control/Smallpox Eradication -- have accounted for obligations of \$50 million.

The extent to which these project funds can be attributed to a particular country varies. In the case of the OMVS, the share that is intended eventually to benefit Senegal, as opposed to Mauritania or Mali, can be reasonably estimated. But for the majority of these activities, such as SAFGRAD or WARDA, accurate attribution is not possible. For that reason these data are presented in such a way as to allow the reader to extrapolate their importance for Senegal. Figure 7 compares aid flows for the Senegal bilateral

Figure 7
AID Regional Funding for Africa



program with the total of the African regional accounts and with the Sahel Regional Account alone.

Obligations versus Expenditures

The preceding analysis was done using obligations of project funds rather than expenditures because they more accurately depict the timing of the initiation of specific activities. In some projects, funds are obligated regularly over the life of the project; in others, the entire project cost is obligated in the first year.

According to AID's financial system, "obligations" are incurred when grant or loan agreements (or amendments to them) are signed with a recipient government, university, private voluntary organization (PVO), or cooperative development organization. Purchase orders, contracts, and other documents specifically target funds to be spent from obligated amounts. The term "expenditure" is used when funds are actually disbursed against a commitment for goods and services. Accruals are when goods and services have been delivered but payment has not yet been made. Negative obligations can occur when funds are "de-obligated" as the result of excess funds which the AID mission wishes either to return to AID/Washington or to transfer to another project, or when a project is terminated. Negative expenditures can be recorded when adjustments to accruals are made. The divergence between obligations and expenditures for Senegal are depicted in Figures 8 through 11.

Figure 8
Obligations versus Expenditures by AID on Agricultural Assistance, 1963-84

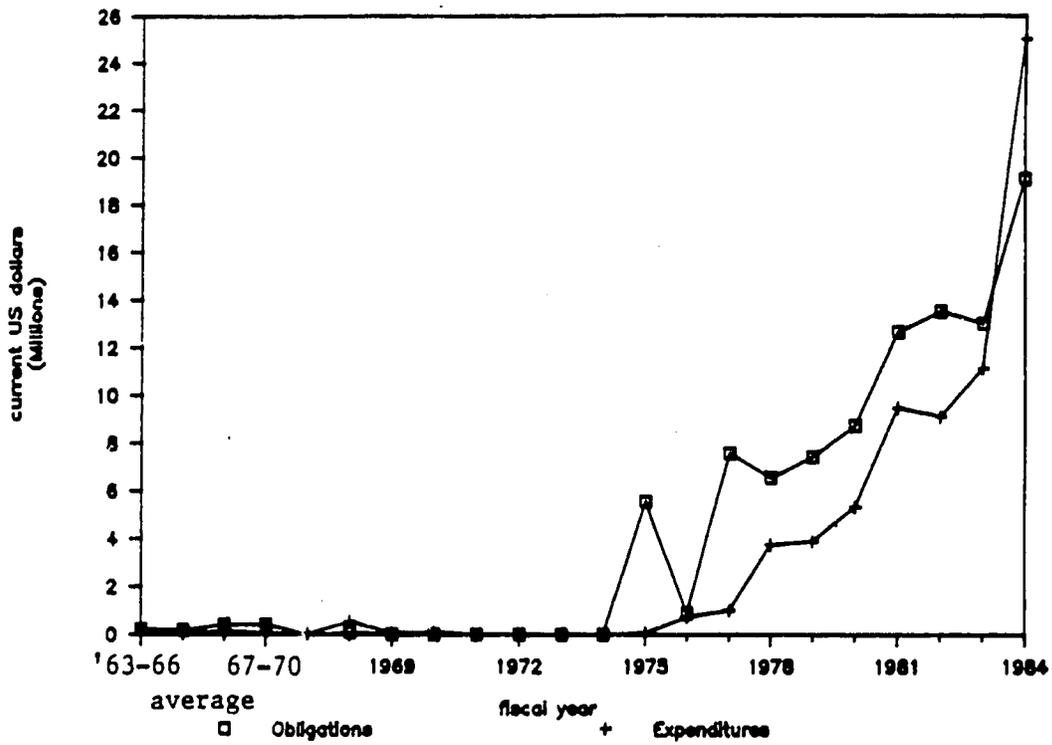


Figure 9
Obligations versus Expenditures by AID on Rural Development, 1963-84

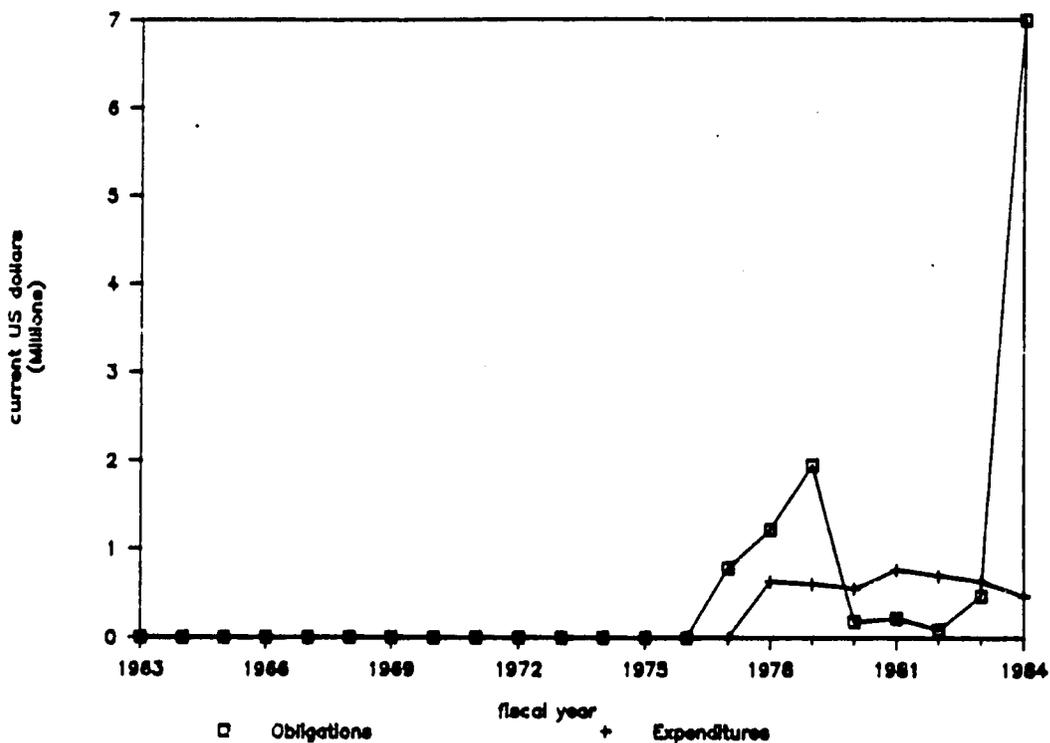


Figure 10
 Obligations versus Expenditures by AID on Agricultural Extension, 1963-84

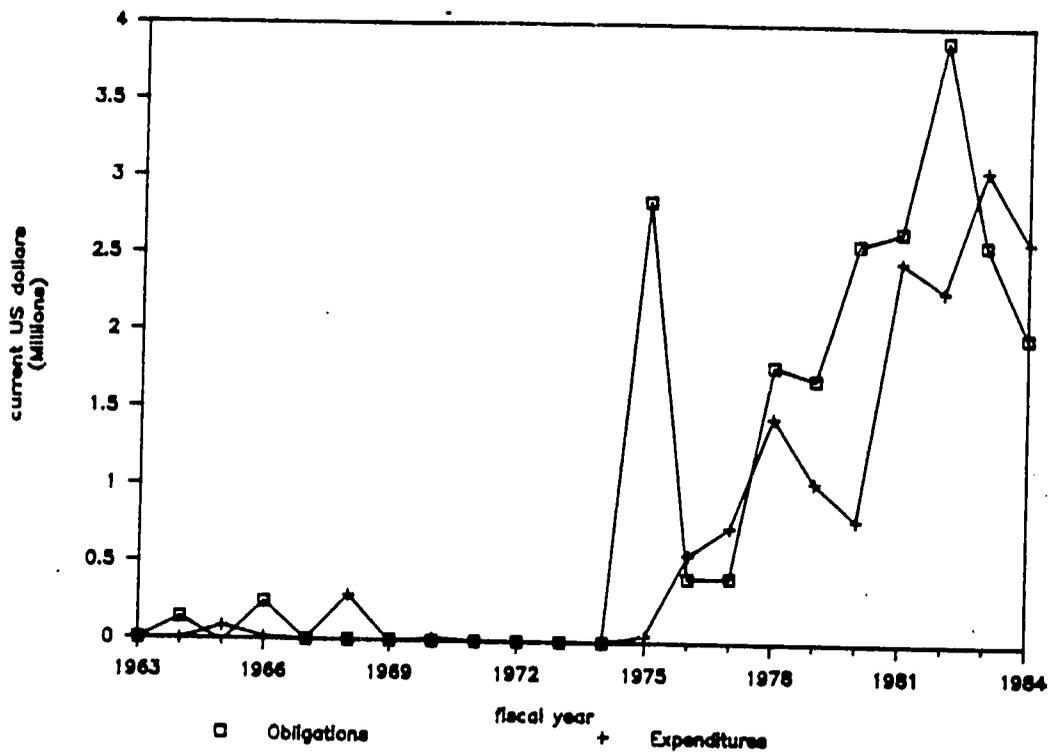
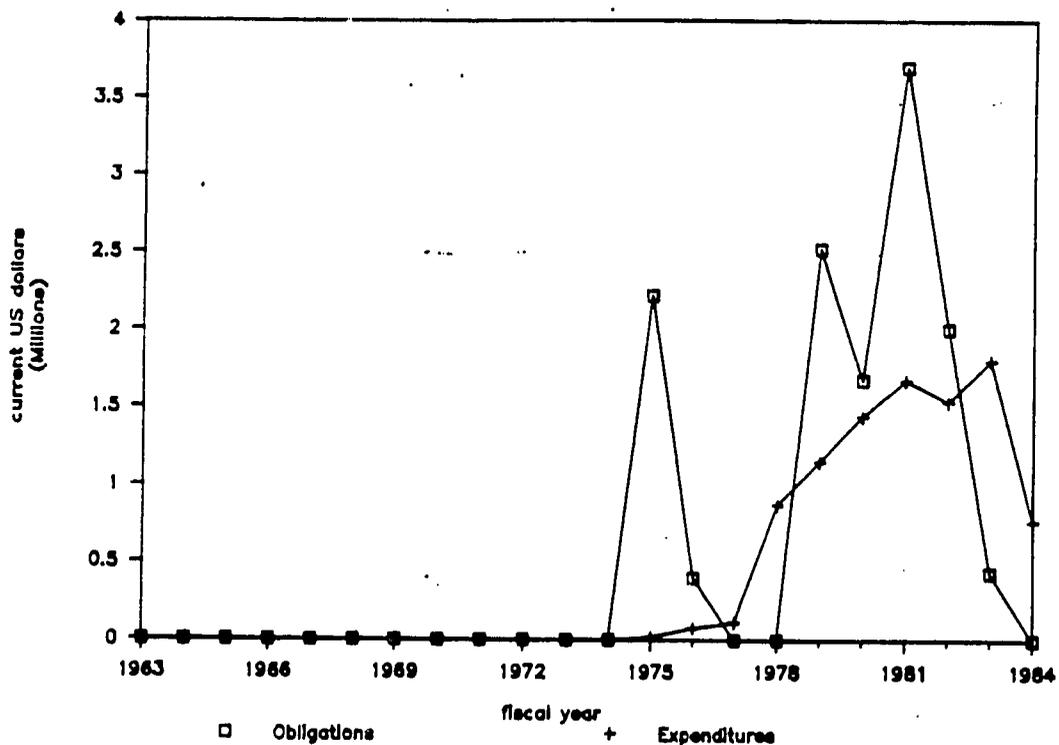


Figure 11
 Obligations versus Expenditures by AID on Livestock, 1963-84



Terms of Assistance

All AID assistance to Senegal has been in grant form except for one Economic Development Loan made in 1963 for \$1.6 million. Some of the PL 480 food aid (Title I) has been provided as a loan (see below).

Sources of Funds

The large majority of AID's Senegal program has been funded through the Sahel Development Program provided by Congress. Prior to 1978, when this program was appropriated, Senegal received assistance from the "Food and Nutrition, Development Assistance, Economic Assistance, Executive" account, and small amounts from Disaster Relief Assistance. Beginning in 1983 Senegal has been provided nonproject assistance by AID from the Economic Support Fund. Regional projects have been funded from the Sahel Development Program since 1979. Before that they were provided by the Food and Nutrition, Development Assistance Account and Disaster Relief Assistance.

Food Aid

Senegal has received both Title I and Title II food aid under PL 480, the US Agricultural Trade Development and Assistance Act adopted in 1954 and amended by the Food-For-Peace Act of 1966. The total of \$128 million from 1963 to 1984 exceeds AID's assistance to agriculture and rural development over the same period. Of the total, \$100 million has been Title II aid, donations for

humanitarian purposes. The largest annual transfers were in 1974, 1978, and 1981. These distributions have been administered through the Catholic Relief Services and the maternal and child health program of the Senegalese Government.

Beginning in 1980, PL 480 Title I food aid was made available under the Title III legislation as dollar loans to purchase US food, where the repayment of principal and interest is made in local currency when these currencies are expended on mutually agreed upon development projects. In general, PL 480 is administered by AID although it is not actually part of AID. In the case of Title III arrangements, however, the loans for purchase of US food can be tied directly to specific AID activities. The Title III program begun in Senegal in 1980 was intended to finance imports of \$7 million of rice each year. Local currency to repay the loans was used to support a variety of activities including reforestation, dune stabilization, and agricultural research. The Title III program was discontinued in 1984.

CHAPTER III. AID'S PROGRAM EXPLAINED

US assistance to Senegal can be divided into three distinct phases. The first, from 1961 to 1974, was characterized by a small program supporting a variety of activities in agriculture, health, and education. The levels of funding were not significant when compared to assistance from France and Belgium. The second phase, following the Sahel drought, resulted in the emergence of a much larger program focusing on agricultural development in the medium- and long-term. The third period was brought about by Senegal's economic crisis which, beginning in 1978, included a growing debt burden and foreign exchange shortage. Because of the severity of these problems, which have continued to the present time, nearly all donors gradually shifted attention toward the severe structural imbalances facing Senegal. As a result, AID's program in Senegal began, in 1983, to shift toward a mix of nonproject assistance and a small number of project activities.

First Phase, 1961-74

AID began its activities in Senegal in 1961 with a small program which focused on technical advice in education, health, and agriculture. Within agriculture, early funding was for seed improvement, poultry farming, and agricultural services such as

extension centers.

Senegal was originally grouped with the francophone Union African and Malagasy countries (UAM) for funding.

These 12 countries were seen as moderate, stable, and generally Western-oriented. The US role was to be supportive of the "ex-metropole" countries, France and Belgium, while offering an additional source of external assistance, and providing an additional alternative to the Soviet bloc. Initially, the assistance program was justified explicitly on political grounds, the purpose being to promote a favorable attitude toward the US and to secure essential political cooperation.

Since U.S. economic aid to these countries is not provided primarily for the purpose of enabling them to attain a specified measure of economic growth, it is not appropriate for the Agency for International Development (A.I.D.) to take the lead in such matters as influencing over-all resource allocation, determining development priorities, or assuring program level self-help measures. Initiative of this kind properly lie with the ex-metropole countries (USAID Congressional Presentation FY 1964, p. 132).

In the early 1960s, under AID's predecessor, the International Cooperation Agency (ICA), eleven in-country staff including a mission director served in Senegal. By 1965 this had been reduced to two program officers overseeing the program. The size of the AID program, as compared with total aid throughout the 1960s, remained small. Annual levels were on the order of 1 percent of the \$32 million provided by France and the EEC.

Given the lack of information on which to base an assistance strategy or a development plan, AID funded several studies in this

period including a Water Resources Survey, General Agricultural Survey, and Feasibility Studies on soil salinity, range management, rice cultivation, and livestock raising. This included a 1966 USDA survey of the Casamance Region. These study topics parallel the major activities which developed when the Senegal mission was reestablished and expanded in the late 1970s.

The survey of the Casamance Region led to the Agricultural Development of the Casamance Region Project (\$0.8 million from 1967 to 1970), an integrated approach to agricultural development of the area involving crops, livestock, extension, irrigation, credit, cooperatives, and so on. The project was based on the belief that this region offered the greatest potential for development of food production. This was the only significant activity for AID in Senegal after 1967.

The Korry Report and 1966 Foreign Assistance Act Amendments. In 1966, after five years of development assistance in Africa, Ambassador Edward Korry was commissioned by President Johnson to undertake a comprehensive review of US development policies and programs in Africa. The report concluded that: a) the task was too vast and the resources were too limited to permit a simultaneous effort on all fronts at once; b) Africa's own resources, as well as those of donors, must be concentrated on priority areas and that; c) effective results could only be expected in countries which had the size, resources, and performance to permit good development progress on a national scale. For areas of Africa not meeting these criteria, the report proposed that development assistance be

continued by funding regional and multilateral rather than strictly bilateral development efforts and programs. Since the bulk of assistance came from sources other than the US, effective use of US assistance was believed to depend on policy agreement and coordination with other donors.

The Korry Report proposed a "substantive emphasis" for US aid on agriculture and rural development, education, health, population, the private sector, and the infrastructure fields of transportation, power and communications. To increase the effectiveness of that aid, procedural improvements were urged. It was recommended that the amount of US aid to Africa not be changed sharply, but that it "increase gradually as the development of African institutions and the application of the Report's other recommendations provide growing opportunities for more effective use of US aid."

This shift to a regional and multilateral framework put Senegal's program in the category of bilateral programs that would be phased out. Given the small size of the program at the time, this was much less disruptive than in other countries. Only two projects were active; the Casamance Region Project was continued until completion in 1970, and remaining funds for the General Agricultural Survey were deobligated.

Under the rubric of Regional Programs, AID supported regional organizations such as the Entente Fund, the OMVS, and the Lake Chad Basin Commission. Regional projects relevant to Senegal included support for the West African Rice Development Authority (WARDA),

Regional Livestock and Meat Marketing, and three projects channeled through the OMVS: Regional Poultry, Regional Grain Stabilization, and general technical assistance.¹ Additional support for OMVS in the 1980s is discussed below. Parallel regional projects were sometimes funded in any of three subregions delineated by the OMVS, the Lake Chad Basin, and the Entente Fund. Assistance was also provided for health delivery systems and maternal child health.

New Directions and the Sahel Drought

The Sahel drought had an enormous impact on AID's activities in West Africa. Program funding for the region went from \$15.4 million in 1973 to \$84.5 million in 1975, of which \$63.3 million was for the Sahel Drought Program. The drought brought a sense of urgency to efforts aimed at improving agricultural practices and health services in the region.

Even before the drought, AID's agriculture programs in the region had concentrated on the cereal and livestock subsectors, with emphasis on the smallholder or herder. It was believed that by ensuring higher and more stable crop prices, and access to new technology, traditional farmers could become far more efficient. This led to support of price stabilization efforts and the creation of national grain marketing organizations in a number of Sahelian countries. There was also an emphasis on reconstruction of the

¹ Support for WARDA (625-0177) was funded from 1969 to 1977 for \$0.83 million. Livestock and Meat Marketing (625-0601), spanning 1971-74, costing \$0.1 million. OMVS Poultry (625-0508), Grain Stabilization (625-0600), and technical assistance (625-0602) together totaled \$0.28 million from 1972 through 1977.

livestock herds that the drought had decimated, but in a manner which would improve the land-animal ratio.

Strategy in the Post-drought Period: The 1975 DAP. US assistance to the region in the post-drought period combined two strategies, long-term comprehensive program and a medium-term development and protection program. The medium-term program was intended to avoid a repeat of the drought crisis by improving food production, protection, storage, and distribution. AID commissioned three teams to study the situation and develop a regional strategy for 1976-80. Those studies formed the basis of AID's Development Assistance Program (DAP), concentrating on (a) increased food crop production through use of inputs and technology, (b) improved livestock production, (c) rural health, and (d) human resources for improved management of agriculture.

The 1975 DAP was the principal statement of AID's strategy for Senegalese development after the drought. It identified Senegal's neglect of agriculture as a prime cause of the country's vulnerability: at that time, 60 percent of total exports were peanuts and 20 percent of foreign exchange was spent on imported rice and wheat. The DAP argued that the potential for growth in agricultural productivity was high, and that by diversifying export and food crops and removing constraints to the reconstruction of the rural sector, self-sufficiency in food could be achieved in twenty years.

The DAP examines the agricultural potential of the country in five distinct regions of Senegal. Those regarded as having the

greatest potential are the Senegal River Valley (or Fleuve) in the north and east, and the Casamance Valley in the extreme south. The Fleuve could become the agricultural heartland of the country, according to the DAP, if the planned network of dams were built. With the full complement of dams the total irrigated area could exceed 500,000 hectares. The Casamance Valley was viewed as very promising, especially for rice, due to the good soils, low population, and adequate water. The DAP points out, however, that the region is remote, and divided by swamps and rivers.

The analysis of the production systems and their possible improvement acknowledged that farmers "organize their resources efficiently given constraints and that risk aversion plays a large role in their planning decisions" (USAID 1975, p. A-22). Human labor was recognized as the factor limiting agricultural production. The DAP concluded that expanded farm production must come from the introduction and widespread acceptance of farming techniques that greatly increase the per worker productivity of each farm worker. Animal traction and irrigation were thought to offer the greatest scope for the adoption of improved technology.

The DAP supported agricultural research, with an emphasis on appropriate, profitable, and divisible technologies. Historically, agricultural research in Senegal has been guided by the French at IRAT, which has been criticized for focusing on model farmers and for narrowly pursuing work limited to demonstration sites and pilot villages for the past twenty year.

Compounding the region's food problems, pricing policies

favoring urban constituencies were found to be deleterious to improving agriculture -- but difficult to change. Policies that could stabilize grain prices were recommended.

Livestock development was discussed thoroughly, and recommendations made for developing a self-sustaining, economically viable livestock industry. The program emphasized infrastructure and planning, and the need for flexibility.

In reviewing Senegal's Fourth Four Year Plan (1973-77) the DAP noted that the plan places much hope on capital-intensive projects. In agriculture, water and water management are the focal points, especially the elaborate hydraulic schemes on the Fleuve. Further, the DAP noted that the plan does not stress equity.

The DAP concluded by recommending an emphasis on training and management, two areas seen as constraining the implementation of AID's program in the region. These are areas in which AID should have a comparative advantage. Possible projects were suggested, including several range management and livestock activities, irrigated rice cultivation on the Fleuve, reforestation, seed multiplication, and support for generating, compiling, and analyzing agricultural statistics.

The Growth of AID's Senegal Program. Although Senegal was not as seriously affected by the drought as other countries in the region, bilateral projects reemerged there in 1975. That year a \$6.5 million program for cereals and livestock was launched, intended to

provide the medium-term assistance needed.²

The long-term strategy developed by AID was manifested in the set of projects which emerged during the late 1970s. These included the Casamance Regional Development Project (\$23.7 million), which dominated the AID program from 1978 to 1984; the Bakel Irrigated Perimeters Project, which has become a major focus of AID's project assistance in the mid-1980s; Grain Storage; Rural Health Services; and additional projects to continue both the Cereals and Livestock activities begun in 1975. Nearly all of the "possible projects" suggested in the 1975 DAP can be found among those that made up the program in 1979. The one project that is not discussed explicitly in the DAP is the Casamance Regional Development Project.

Some of the ideas presented in the DAP appear to have originated in AID's work in Senegal during the 1960s. Range management, livestock production, and rice cultivation had all been studied by AID earlier. In addition, an integrated project in the Casamance with many similarities to the 1978 Casamance Region Project was undertaken following a study of the region's potential in 1966. That project was never fully developed because AID's bilateral mission closed, but the central themes of that project were taken up in the 1978 Casamance Project.

² The Senegal Cereals Production Project (685-0201) was funded from 1975 to 1980 for \$4.5 million. The Senegal Range and Livestock Development Project (685-202) received funds from 1975 to 1983 totaling \$5 million.

Third Phase: Causes and Responses to Senegal's Economic Crisis

The crisis that confronted Senegal beginning in 1978 was the result of a number of perceptions, structural characteristics, and changes in the economic environment that left Senegal in a dire financial and economic situation by 1980. The Senegalese Government had developed a mode of operation that gave priority to maintaining levels of consumption and influence for its urban and rural constituencies rather than to promoting development. This situation evolved in part because the donors, especially France, had conditioned the government to believe that they would substitute aid for domestic savings, accept the sluggish performance of the economy, and cushion the Senegalese against any short-run instability in export earnings or domestic production. The Government of Senegal had been operating under unrealistic assumptions for quite some time, due in part to circumstances that kept the economy apparently secure until the late 1970s (Lewis 1984). Among the factors that contributed to the crisis were these:

A large top-heavy bureaucracy left over from the colonial period when Senegal was the regional headquarters for French West Africa, was extremely costly but continued to grow as a means of maintaining a constituency.

A large service sector, accounting for 59 percent of GDP, became a burden to the economy and was apparently not effective in earning foreign exchange or generating growth in other sectors.

A poor agricultural endowment left scant opportunity to grow additional marketable surpluses. Poor soils, low and unpredictable rainfall, and the high cost of exploiting irrigated potential resulted in little improvement in agricultural production as population increased.

A dependency on groundnuts for export earnings made Senegal especially vulnerable to changes in weather patterns and international prices. Given the substitutes encroaching on the market for peanut oil, the future looked dim.

Strong ties with France had a cushioning effect on Senegal; the French Treasury provided assistance to the West African Monetary Union and also made available large volumes of concessional assistance, in its role as "residual donor," to meet shortfalls that occurred. This had the effect of diminishing risks, or at least the perceptions of those risks.

Domestic policies that favored the urban middle classes, government employees, and rural elites (especially the Mourides) -- all of them constituencies of the Government of Senegal -- left little attention and few resources for the rural poor, while expanding the public sector.

The formation of the Club du Sahel to assist the member nations of CILSS meant large amounts of funds for Senegal. These projects competed with each other for Senegalese manpower, had long gestation periods, and gave the impression that aid was no longer a problem. Although Senegal was less affected by the drought than other countries, it received an

important share of the available funds, perhaps in part because of President Senghor's role in organizing CILSS. Arab donors were extending aid to African countries by the mid-1970s. Senegal, being predominantly Moslem, was in a position to request -- and receive -- both project assistance and balance-of-payments support. Again, it was assumed that such aid would be forthcoming well into the future.

A surge in international phosphate prices coincided with the 1973 oil price shock and more than offset the impact of the latter on Senegal's import bill. Phosphate exports increased from 5 percent to over 15 percent of total export earnings. Although phosphate prices fell in the late 1970s, the earnings opened up Senegal's access to international credit markets, setting the stage for the debt crisis to come.

Although all of these were contributing factors, the crisis was triggered by droughts in 1978 and 1980, which dropped peanut exports to one-third of their 1977 levels, and by the 1979 oil price shock, which this time did not coincide with a rise in phosphate prices. Fiscal discipline had broken down, farmers' debts were canceled by the principal parastatal, and the country's foreign exchange reserves were run down to deeply negative levels. The reaction to this crisis, by the Government of Senegal as well as by the donors, occurred in stages (Lewis 1984). Only gradually did the Government of Senegal come to accept that the crisis would

not correct itself.³ The need for structural adjustment was emphasized by the IMF, the World Bank, France, and later the United States. The Arab donors, in contrast, viewed policy-based aid to be an intrusion on the sovereignty of the recipient.

The shift in the government's position came suddenly in late 1979 with its "Plan de Redressement," which committed it to a comprehensive agenda of adjustments. This included disengaging the central government from direct rural operations, reducing the state bureaucracy, introducing import controls, strengthening export stimulants, and restructuring agricultural markets and services.

The donors reacted differently and at different times. The World Bank and the IMF led the dialogue with the Senegalese Government. France provided much of the financial assistance required for structural adjustment but stayed in the background. At the time the crisis began, the AID program was still relatively small and project-oriented; it showed little interest in Senegal's macroeconomic affairs.

The growth of the AID program, however, coincided with the emergence of the crisis; obligations doubled in 1979. Also, AID and the government were in the process of negotiating a joint reexamination of the US assistance program. That resulted in the "Joint Assessment of U.S. Assistance Programs in Senegal" in 1980, involving AID, the Ministry of Planning and Cooperation, and a number of consultants. Evaluations of four projects (Bakel

³ A detailed chronological account of the unfolding of the crisis is presented in Lewis (1984).

Irrigated Perimeters, Bakel Livestock, Sine Saloum Rural Health, and Cereals I) formed the basis of the assessment. In addition, survey of project beneficiaries was undertaken by the Ecole Nationale d'Economie Appliquée (ENEA).

The primary focus of the Joint Assessment was on projects, although it included a macroeconomic evaluation by Elliot Berg under an AID contract. Among the findings derived from the four project evaluations were (a) a general deficiency in data collection and monitoring required to determine the impact of projects (especially those considered to be pilot activities); (b) a need for greater involvement of beneficiaries in the design and implementation of projects; (c) a need to increase the productivity of projects and stimulate local productive forces; (d) a need to scale back the overly ambitious implementation schedules of projects; and (e) a lack of clear and effective lines of authority and accountability for management of projects, especially those managed collaboratively. AID's response to these recommendations included augmenting mission staff with three full-time economists to address macroeconomic, microeconomic, and overall program questions (USAID Annual Budget Submission FY 1984).

Although the Joint Assessment focused on AID's project assistance, it recommended that AID consider Senegal's severe balance-of-payments crisis in formulating its strategy, and that it help in restructuring and reforming the country's regional development agencies (RDAs). The combination of the evaluations and recommendations, the growing severity of the crisis, and a

desire to coordinate with the IMF and the World Bank led AID into an active involvement in structural adjustment and reform issues. Structural adjustment and nonproject support. AID's first budgetary support for Senegal came in 1983 with a \$5 million fertilizer import program and an additional \$5 million Economic Support Fund (ESF) grant. The local currency generated from the sale of fertilizer was to be used to support agricultural credit and producer groups. Additional ESF funds of \$10 million in 1984, and \$15 million in 1985 went to Senegal. AID's direct participation in budgetary support came several years after the crisis was recognized. The mission had intended to begin the program in 1982, but was delayed when AID/Washington expressed concern that the planned support had not been thoroughly researched. Those concerns led the mission to a contract a sectoral review of agriculture in Senegal (Abt Associates 1985).

Both the IMF and the World Bank have been actively engaged in promoting structural adjustment in Senegal since 1979. The IMF completed negotiations for the Extended Fund Facility (EFF) in August 1980. Under Structural Adjustment Loans (SALs), which were a relatively new model for lending, the World Bank pressed for the reforms of fiscal and monetary policies, agricultural policies, investment programs, prices and incentives, and parastatals. The SAL plan was complex, listing 32 measures the Government of Senegal was obliged to undertake, including 13 actions they were supposed to initiate or complete during the first three months of the loan.

The pressures to reform proved too great for the Senegalese

Government. Three months after the EFF was signed the IMF put it on hold, and in September of 1981, it canceled the arrangement and shifted to one-year standby loans. In 1983 the second installment or "tranche" of the World Bank's SAL was canceled, along with the IMF standby, when the government was unable to fulfill the terms of the agreement. This calamity was the result of bad weather, overly optimistic forecasts, a drop in peanut prices, and apparently trying to do too much too soon. In the end it was the lack of reform in the peanut industry that led to cancellation of the SAL; a policy to encourage farmers to store their own seed was rescinded by the government at the last minute, leaving the Bank with no choice.

For a variety of reasons reforms in the agricultural sector proceeded more slowly than anticipated. ONCAD, the large, inefficient, and corrupt parastatal charged with input distribution, farmer credit, and marketing of peanuts, was dissolved, but it was replaced with a temporary agency, SONAR (dissolved in 1984). With the cancellation of the SAL, the IMF was the only multilateral institution dealing with overall reform in the agricultural sector.

In 1983 AID assessed the situation and concluded that (a) a 100 percent project-oriented approach was relatively ineffective; (b) policy implications must be examined in a coherent way that includes pricing and institutional constraints on farmers' ability to respond; (c) more in-depth analysis is required to understand the details of farm economics in Senegal; and (d) the US program

will have to work within the exigencies of the economic stabilization measures proposed by the IMF. In view of these conclusions, AID began a gradual move from an entirely project-oriented mode to one which included nonproject assistance. It focused on the fertilizer subsector, proposing policy and institutional reforms which would also reduce the implicit budgetary drain of the agricultural sector, and also conducting studies to set the stage for future assistance (an agricultural sector assessment, credit and savings studies, and a fertilizer marketing study).

Fertilizer was chosen for a number of reasons. First, a study by the International Fertilizer Development Center (IFDC) had concluded that fertilizer did not require subsidies to be financially profitable in Senegal, particularly for food crops. Second, the implications for foreign exchange savings and earnings from potential increases in peanut exports looked promising, as did the reduction in the budgetary deficit when subsidies were removed. Third, the current situation in fertilizer distribution was inefficient and required reform. And fourth, results from this kind of intervention could, in a short time, be reflected in increased rural incomes. Details of the resulting \$5 million Commodity Import Program (CIP) are discussed in the following chapter.

For comparative purposes the \$5 million amount of the US non-project initiative should be noted. The IMF one-year stand-by loan was \$82 million in 1982, in addition to the IMF Compensatory Fund

Financing of \$55 million in September 1981. The World Bank SAL was \$60 million (two-thirds of which was distributed), and France contributed \$150 million each year in exceptional aid, including a \$26 million advance from STABEX (the European Economic Community Fund for stabilizing export revenues among Third World signators of the Lome Convention). In addition, Saudi Arabia extended Senegal a \$50 million concessional loan in 1981, and Kuwait deposited \$110 in Senegal's Central Bank at favorable interest rates to enable the country to pay off short-term debt. Although US assistance to Senegal had grown to levels representing about 10 percent of the total ODA by 1981, the US role in nonproject structural adjustment support was clearly minor in financial terms when AID entered into policy dialogue in 1983. Since that time the levels of AID's nonproject obligations have increased, as has the influence of US policy advice.

In general, donors were in agreement about what changes were needed to remedy Senegal's economic crisis. Nevertheless, donors occasionally worked at cross purposes. For example, as part of the conditions for the SAL the World Bank had required the Senegalese Government to do field tests on new modes of rural cooperative organizations in the Sine Saloum region. AID was told about this plan because of its Cereals Project in that region. Later on, however, the World Bank canceled its loan to SODEVA (the regional development authority) because the government had canceled the field tests; France supported the action by withdrawing its support for SODEVA, but AID continued funding its project within SODEVA's

jurisdiction, arguing that AID's activity was focused on food grains, not on peanuts, and would not be undermined by the abandonment of the Bank's organizational experiments (Lewis 1984).

In another instance, in 1983 AID was promoting a plan to reduce fertilizer subsidies gradually over several years. The IMF decided to include elimination of fertilizer subsidies as part of its loan. As a result, subsidies were dropped suddenly in 1983, which had a disruptive effect on the purchase and use of fertilizer. Since that time a more gradual approach to subsidy removal has been agreed on by donors and the government, and is now being implemented.

As AID increased its non-project assistance, it sought to consolidate its project activities. Partly on the basis of the findings of the Joint Assessment and other evaluations, several projects begun during the post-drought period were discontinued. These included both livestock projects, Cereals II, Grain Storage, SAED Training, Regional Food Crop Protection, and the Casamance Regional Development Project. Projects that were continued or expanded because of evidence of success were the Bakel Small Irrigated Perimeters and Rural Health Care in the Sine Saloum region. In both of these cases, success was believed to be partly attributable to a high degree of local participation, and to major changes in the projects' implementation procedures in response to very critical midterm evaluations.

As of 1984, when a new mission director took over, AID's agricultural strategy had four objectives: to continue government

decontrol and commercialization of the rural production process; to promote improved agronomic practices; to conserve and enhance soil and forest resources; and to increase land under irrigation.

Growing attention was paid to irrigation not only because of AID's belief that the Bakel Small Irrigated Perimeters Project was a success, but also because of the approaching completion date for the two dams on the Senegal River and the anticipated potential for irrigating up to 300,000 hectares along its banks.⁴

In its support of the rural health system, AID focused on family planning. The Sine Saloum Rural Health Care project was redesigned after a 1980 evaluation, which described it as a project on the verge of failure. As a result, substantial progress has been made to provide rural health services to nearly 1 million people in the region. This was accomplished by improving management, staffing, and financing systems, which increased the program's effectiveness. The rural health services is now largely financed by its clients.

By 1984 the GOS produced two major policy statements, the Nouvelle Politique Agricole (New Agricultural Policy) and the Medium- and Long-Term Economic Programs. Both reflected the themes promoted since 1979 by the IMF, World Bank, AID, and others. The Nouvell Politique Agricole was the result of the dialogue between the World Bank, AID, the French, and the GOS. It called for (a) reduction of the role of the rural development agencies and

⁴ The Diama Dam at the mouth of the Senegal River is due to be completed in 1987, and the upstream Manatali Dam should be finished in 1988.

parastatals; (b) increased efficiency in the supply of agricultural inputs; (c) alternative production strategies; (d) more financing for rural development; and (e) environmental protection.

Organisation pour la Mise en Valeur du Fleuve Senegal (OMVS)

The controversial OMVS scheme represents the major response, by both the GOS and the donors, to the failings of Senegalese agriculture. The idea of damming the Senegal River had its origin in the colonial era. The plan currently being implemented is to dam the river in two places, at the mouth so that salt water will not flow upstream, and in Mali to guarantee a continuous flow of water all year, thereby creating the potential for irrigating 300,000 to 400,000 hectares in Senegal, Mali, and Mauritania. Cost projections for the dams in the three-country program are \$3 - \$4 billion. Senegal's investment in the irrigation plan is expected to use up about 40 percent of the capital investment of its Sixth Development Plan. The scheme envisions a transformation of land, settlement, and agricultural practices over several decades. The GOS justifies the scheme on the basis of reducing the risk that is associated with rainfed agriculture.

Critics argue that the scheme is much too costly and that the planned irrigated hectarage will never be achieved. Furthermore, the scheme does not provide gravity-fed irrigation; rather the completed dams will provide the potential for a constant flow of salt-free water from which irrigation water can be supplied by low-lift pumps. But the profitability of pump irrigation in many areas

is limited because of the height of the river's banks (5 to 30 meters). In addition, the area's remoteness from sizable markets will result in low prices to farmers. The AID Bakel Small Irrigated Perimeter Project was launched in part as a testing ground for small-scale pump irrigation of this type. (A detailed analysis of these issues is presented in the following chapters).

US assistance to OMVS from 1971 to 1983 has totaled \$22 million. AID has not participated directly in financing construction of the two large dams on the Senegal River, but it has supported OMVS through agronomic research, environmental assessments, aerial surveys and mapping, ground water monitoring, and policy planning and fiscal allocation plans. AID's regional OMVS Agricultural Research Project was "bilateralized" into the Senegal Mission in 1984.

CHAPTER IV. CASE STUDIES OF AID ACTIVITIES

This chapter examines in detail selected AID activities in Senegal from the 1975-85 period. This case study approach provides a reasonable amount of detail on a sample of AID's project activities, since it would be impossible to study all of AID's projects in Senegal.

The purpose here is to illustrate with concrete examples some of the generalizations and conclusions derived, in part, from these case studies, and presented more generally in the two chapters that follow. Each account will give a concise description of the project, followed by an analysis of the achievements and major problems, as well as evidence of its development impact.

The choice of projects was guided by several criteria. First, the sample includes the most important projects in AID's portfolio based both on the size of the project in financial terms and the length of time over which it received attention. Second, it covers a broad range of the agricultural activities with which AID has been involved. And third, it represents a diverse set of activities in terms of the impact, the problems encountered, and the way they were handled.

Six activities will be examined: the Casamance Regional Development Project (\$23.7 million), Bakel Small Irrigated

Perimeters (\$8.2 million), Cereals Projects I and II (\$12.2 million), SODESP and Bakel Livestock Projects (\$12 million), Agricultural Research and Planning Project (\$4.9 million), and the Agricultural Production Support Project (\$5 million). Together they constitute nearly half of all AID obligations to Senegal between 1975-84. In addition to these projects, AID has promoted rural health services, grain storage, reforestation, marine fisheries research, a number of PVO projects, and several management training activities.

The Casamance Regional Development Project

The Casamance Regional Development project was the largest AID project funded in Senegal prior to 1985, accounting for 20 percent of all obligations between 1978 and 1984. It was a five-year project intended to meet the Senegalese Government's short-term goal of food self-sufficiency, while addressing long-term constraints on development. The project's \$23.7 million provided for long-term development of the regional implementing agencies (including training for additional staff and extension agents), the funding of two social action programs, and efforts to increase agricultural production. AID-financed activities included institution building, studies, agricultural extension, field trials and seed multiplication, research, agricultural credit, functional literacy, and health.

It has been widely believed that, given its high rainfall, the Casamance region has the greatest potential of any region in

Senegal as an agricultural production area. However, prior to the project's initiation, development activities had been promoted in the Casamance region on an ad hoc basis, without any overall plan. AID's interest and involvement in the region dates back to 1967 when, after undertaking a survey, it financed an "Agricultural Development-Casamance Region" Project (\$0.8 million) with many of the same activities found in the later project. The 1968 project was ended in 1970 as a result of the mandated shift to regional projects.

The Casamance Regional Development project encountered severe implementation problems. It was evaluated in July 1981 and again in July 1983, and an audit was done by the AID Inspector General's Office in January 1983. All three analyses concurred that the project had not met its objectives. The 1983 Evaluation concludes that

five years after its beginning and two years from completion of an extended first phase, the project is ... having very little impact on agricultural production... other activities of the project, with the possible exception of the applied research program at ISRA, are achieving equally disappointing results (USAID 1983 p. i).

The Audit concludes that the project had "little to show for its efforts after nearly five years of AID support." Because of long start-up delays, the 1981 Evaluation was limited in scope. It did, however, point out that the project was overoptimistic in its assessment of the capabilities of SOMIVAC (Société pour la Mise en Valeur Agricole de la Casamance, the regional agricultural development authority) and of implementation timing.

Both of the 1983 assessments point out a number of serious, if not insurmountable, problems. The Evaluation suggests that the lack of progress in project implementation and impact arose more from administrative and management problems than from glaring effects in the technological packages. These problems included the restrictive legal statutes under which SOMIVAC operated, the unreliability of GOS counterpart contributions, lack of necessary inputs and material support for project activities, weak planning and lack of monitoring, and the absence of incentives for good work and of sanctions for low productivity and negligence by project employees. The report notes that many of these problems are common to all public-sector rural development projects in Senegal and reflect a general lack of monetary, fiscal, and administrative discipline within the public sector. Its recommendations focus on correcting these institutional and management problems with organizational changes, extensive training for project personnel, and stronger and more direct involvement by AID.

The Inspector General Audit interpreted the situation differently, blaming faulty project design:

The Project Paper overestimated the capabilities of the primary implementing agency to implement this complex and ambitious project. An assessment that the GOS was capable of supporting the project financially was incorrect. The Social Action programs were poorly designed, necessitating a redesign by the USAID. As a result, the implementation of project activities has been showing few tangible results after nearly five years of AID financing. There is a serious need for the implementing agency to obtain the GOS authorities it needs to operate a development program. There is also a need to reassess the size and scope of the project and determine if it should be scaled down to something the GOS will be able to support. (USAID/Inspector General

1983, p.i)

The source of these problems in the Audit's view, are related to the projects structure and design; they are, therefore, less conducive to correction by reorganization or by having AID "babysit" the implementation agencies. The institutional capacity was found lacking, the GOS was regarded as financially incapable of supporting the activities, and the design of much of the agricultural production component and of the social action programs was faulty.

The rural health care component also had design problems and was revamped in 1983. During implementation, however, it was discovered that many of the same services were already being provided by another donor's project. It also appears that the GOS was not very interested in this component of the project.

Delays and the ineffective use of technical assistance impeded the development of the institutional capacity of SOMIVAC and PIDAC (Projet Intégr  pour le D veloppement Agricole de la Basse Casamance, the Senegalese implementing agency). Procurement problems were persistent and contributed to the ineffective use of technical assistance. The Audit found "little evidence that the project has yet made measurable impact upon SOMIVAC's and PIDAC's capabilities to plan and implement the development program" (ibid p.8). Financial mismanagement was another problem.

A Special Covenant of the Grant Agreement required the GOS to give the implementing agencies administrative and financial authority to implement the project effectively, but that covenant

was not fulfilled. Not until July of 1985 was PIDAC given authority to write its own checks. The agreed upon contribution to the project by the GOS (\$4.1 million) was never made, leaving AID to finance the recurrent costs of the project and raising doubts about the operation of activities after AID support was withdrawn.

There were also serious delays in initiating the project's planned technical assistance components. Only one institution, Louisiana State University (LSU), responded with a bid on the project. But after 18 months LSU declined to field a technical assistance team. Later a contract was signed with SECID, the South East Consortium for International Development.

Delays in identifying and sending personnel for long-term training occurred as well. Counterparts lacked motivation, according to some advisors, which stemmed in part from inadequate logistical support and facilities.

After four years, no appreciable impact on crop production was discernible. And due to lack of training, the effectiveness and competency of the extension agents had not been adequately developed. The projected site for the seed multiplication farm was found to be unsuitable and, as a result, no permanent site had been identified as of 1983. Technical advisors were in some cases ill-suited for their positions (for example, the seed farm was overseen by an advisor trained in animal husbandry).

The technical packages intended to raise agricultural production posed some fundamental problem for the project. The Audit report noted that "the project area lacks a technical package

suitable for extension." The 1983 Evaluation examined the technical aspects in more detail. It found "little good evidence on the benefits of many of the extension themes" (USAID 1983a, p. 33). Results of a study of data compiled by the Direction des Etudes, d'Evaluation et de la Programmation (DEEP) showed significant yield effects for a number of the "themes," but these turned out not to be innovations but techniques with which farmers in the area were already quite familiar, such as early seeding, number of weedings, and the application of manure. Many studies of African farmers' production systems reveal that they use their limited resources efficiently given the tradeoffs and constraints with which they are faced, so that advising farmers to plant early may simply reflect a failure to recognize the other demands on a farmer's time that compel him or her to plant later. Even the evaluation team, however, appears to have missed the ineffectual nature of some of the prescriptions, observing that

to reduce fertilizer costs, PIDAC has asked the farmers to use organic manure and to keep their animals in corrals inside their fields. There is no problem with this theme because it is a custom anyway (USAID 1983a, p.29).

The project paper is vague on how increased production is to be achieved. The "logical framework" of the project paper identifies the doubling of yield as an "objectively verifiable indicator" for rice and corn, and increases of 20 percent as targets for millet, sorghum, and peanuts. These gains, however, are based simply on the assumption that "provision of agricultural extension and credit services are an effective means of increasing

agricultural production" (USAID 1978b, Annex A2).

One of the objectives identified in the project paper is to export 20,000 tons of rice from the region by the year 1990. Actual trends have moved in the opposite direction, however: imports to the Casamance region have risen from 19,833 tons in 1980 to 27,905 tons in 1984 (Jammeh 1985). An ISRA farming systems study estimated that farmers in the Lower Casamance produced less than 40 percent of their own household consumption of rice, at least partly due to the poor rainfall in recent years and the resulting shift by farmers to cultivating upland cereals.

Progress was made, however, in the research component of the project operating within the Institut Senegalaise de Recherche Agronomique (ISRA). The 1983 Evaluation observes that "by all accounts the farming systems team at ISRA is a success" (USAID 1983a, p.94). And the IG Audit notes that "the field trials activity is achieving positive results... As a result of rice seed variety testing, an improved variety has been identified which is resistant to rice blast, one of the main diseases of the project area" (USAID/Inspector General 1983, pp.14-15). These tentative results were achieved in spite of severe logistical problems. Coordination between the research and extension agencies (ISRA and SOMIVAC) was improved with the creation of a Liaison Unit for Research and Development in the region. ISRA initiated the addition of this component to meet one of the "conditions precedent" to the second disbursement of funds for AID's Agricultural Research and Planning project.

The Farming Systems Research (FSR) component is given credit for collecting useful farm-level data and for redirecting some of the attention of ISRA's researchers' to on-farm conditions. As a result, the FSR analysis has revealed that some of the technical themes being tested were inappropriate. Surveys showed that farmers were abandoning their rice fields for reasons of rainfall, soil, and price, according to AID technicians.

The primary information-gathering activity of the project itself was the FSR unit of DEEP which undertook surveys, analyzed the data using microcomputers, and prepared several reports. Very little data of this type is available for the Casamance, making such information extremely valuable for understanding the resource base, constraints, and potential in the region. Within AID, however, these reports are essentially unknown, both in Washington and in Dakar, and copies are unavailable.¹

One technical theme that has emerged over the course of the project in the Lower Casamance is the idea of constructing small earthen dams in low-lying rice producing area, which cause small impoundments to form. Many of the gently sloping rice fields have become increasingly saline, making them unsuitable for growing rice. Normally rain flushes the salt out of these soils, but rainfall has been relatively low in recent years. The building of dams to form impoundments in these fields is believed to rehabilitate the land and permit rice to be grown. During the

¹ This exemplifies the lack of "institutional memory" in AID. In this case even the AID staff member closest to the project did not recall these studies until being reminded of them.

course of the Casamance project, and especially as other components have been discontinued, increased attention has been given to these antisalt dams. In 1988 AID plans to obligate \$5 million of a \$20 million Southern Zone Water Management Project that will focus on this and other technological innovations.

Increased attention to the dams has been accompanied by a debate about their potential benefits. The AID mission in Dakar claims that the benefits have been demonstrated, but AID technicians close to the project, including the Casamance project manager, contend that there is still no hard data to support that claim. A 1985 Round-Table Meeting in Ziguinchor, attended by several of the organizations involved (PIDAC, ORSTOM, ISRA, and the Ministry of Hydrologic Resources), recognized the absence of data that could be used to evaluate effects of the dams. The recommendations from the Round-Table focused on the need to initiate studies and joint research on the dams; it was also recommended that work on a Chinese-financed dam be stopped pending results of a study of the Guidel dam and other existing small dams (Keita 1985). The ISRA station in the Casamance is currently conducting such a study, but results are not yet available. In 1986, as part of that study, ISRA planted rice in test plots behind the three-year-old dam at Ulampan (the first dam constructed) to test whether or not the salinity levels had declined sufficiently to permit cultivation. The test failed to show the rehabilitative effects of the dams; nearly all the paddy rice died.

In several cases small areas of land are now cultivated that

were previously saline, but other areas near the dams are submerged and can no longer be farmed. Whether the dams are responsible for declining salinity is difficult to determine because of the higher rainfall in the past two years, which normally would reduce the salinity levels. Farmers in the region explain that salinity problems have come and gone previously, depending on the rains.²

In addition to the lack of any data on the direct benefits of the dams, assessing their net economic effect is made even more difficult because farmers will grow crops elsewhere when salinity problems arise. Because of the availability of other land for cultivation, it is a common practice for farmers to shift to their upland fields when the rice fields become saline. If a farmer's labor is equally productive on the upland fields and the rice fields, then the dams provide no net benefits. However, if a farmer's labor is significantly more productive when cultivating rice rather than maize or other crops, and if the dams in fact result in the rehabilitation of those rice fields, then the dams would mean a net productivity gain. Estimating the magnitude of that gain, and comparing it with the cost of the dams, does not appear feasible, however, given the lack of information.

AID's involvement in the Casamance has a political dimension as well. In recent years there have been strong secessionist sentiments in the Lower Casamance, resulting in several uprisings.

² Similar but smaller dams of this type existed in the region before AID's involvement, built by farmers themselves. But in addition to keeping out tidal waters these dikes provided a path between villages that were otherwise cut off from each other.

Having a donor like the US present provides the Government of Senegal with evidence that the region is not ignored.

As one of many integrated rural development projects attempted in Africa by AID and other donors, the Casamance project confirms the lessons learned elsewhere. Experience indicates that these efforts are too complex, too expensive, and do not succeed in development of several aspects of a rural economy simultaneously. The costs are high in part because a lack of absorptive capacity and a weak institutional structure result in inefficient and ineffective use of funds. And the benefits have been disappointing because of technological optimism, market limitations, and the attempt to do too much too quickly.

Bakel Small Irrigated Perimeters Project

The Bakel Small Irrigated Perimeters Project (\$8.2 million from 1977 to 1985) was originally a small-scale activity to test the feasibility of developing village-level irrigated crop production along the upper Senegal River. The project has recently been renewed and enlarged under a second phase entitled "Irrigation and Water Management I" (\$8.5 million funded over five years).³

The Bakel project has taken on importance for AID in Senegal for three principal reasons. First, the goals of the Bakel project are consistent with the Senegalese Government's strategy of

³ The Irrigation and Water Management Project (685-0280) which began in 1986 is essentially phase II of the Bakel Small Irrigated Perimeters Project as described in the original project paper (p. 26). Middle-sized perimeters are to be developed based on intervillage groupings.

achieving food self-sufficiency and reducing the vulnerability of food production to irregular rainfall. Second, the current construction of two major dams on the Senegal River at Diama and Manetali -- one down river and one up river -- will provide flood control, saline protection and hydroelectric power. On completion of the two dams, and with a year-round flow of fresh water, they are expected to permit the development of pump irrigation of up to 300,000 hectares of land along the river. The Bakel project is seen as a testing ground for the development of that irrigation potential. Third, according to the AID mission in Senegal, the Phase I project has been a success.

The project grew out of the experimentation of an innovative farmer who, after seeing pump irrigation in France, brought a pump back from France to attempt irrigation in his own village. After experiencing difficulties obtaining fuel and spare parts, the farmer solicited help from several organizations. From 1974 to 1976 OXFAM, SAED (Societe d'Amenagement et d'Exploitation des Terres au Delta du Fleuve Senegal), "War on Want", and AID supported a pilot activity in 19 villages. Then, in 1977, AID approved the Bakel project calling for placing 1,800 hectares of land under irrigation in a total of 23 villages over five years, principally for rice production.

The project was evaluated in 1980 and 1982 and an impact evaluation was done in 1985. In addition, at least four economic studies have been done related to the project. During the first five years of the project, the organizational and technical

problems were serious enough that the very critical 1982 Evaluation considered the option of terminating the project. In response to that evaluation, major changes were made in the operation of the project. The 1985 Evaluation was much more favorable.

Implementation of the project was constrained by organizational problems. Prior to 1983 AID was unable to establish an effective counterpart relationship with SAED. As a result, the potential benefits from on-the-job training of SAED personnel were lost. Furthermore, the perimeters were being expanded too rapidly at that stage, resulting in poorly designed and constructed irrigation systems that were inefficient and costly to operate. Maintenance and repair facilities for the pumps were grossly inadequate.

In addition, SAED insisted that farmers grow only rice on their irrigated plots. This resulted in strong resistance from farmers who wanted to grow irrigated corn and sorghum as well. The conflict was finally resolved by permitting the farmers to diversify their cropping pattern.

The way AID managed the finances and commodities for the project was at times detached, irregular, and not standardized. For example, different pumps and vehicles were procured which creating difficulties in their use and supply of spare parts.

Many of these technical problems were in time overcome by AID's contract technicians at the project site, after the 1982 evaluation warned that the project was near collapse. A float pump, designed locally and developed by project staff, was more

durable and less expensive than pumps used previously. And water pumping costs were cut by better water management, better pump maintenance, and better perimeter construction.

By 1985 many of the organizational problems had been resolved. As the Impact Evaluation pointed out,

The BSIP Project is very much a participatory one. That is, the beneficiaries -- the farmers -- have increasingly been involved in planning, implementing and evaluating project activities since 1977. As such they are co-managers along with the main implementing agency -- SAED. Therefore the findings reflect this participatory approach to management, used in the broadest sense to include decision-making among SAED agents at the bureaucratic level, and among farmers at the local level. (USAID 1985a, p.5)

SAED's management improved over the course of the project. The Impact Evaluation found that "training appears to have contributed to sustained participation by key personnel at the bureaucratic and farmer level" (ibid p.14), although no participant training was budgeted in the project paper.

Part of the implementation success was attributed to the "distant relationship between AID and SAED." It allowed for host-country "ownership" of the project, which made it more likely that the activities would be sustainable after completion of the project.

As of 1985, there were 25 active village cooperatives, or "groupements." Through 1984, 800 hectares were irrigated, and average yields were 5 tons for rice and 2.5 for corn. Although the results fell short of original expectations, those expectations had been revised downward early on and, for many, the outcome was a

success.

Inadequate data make assessing the project difficult, however. All the evaluations refer to the problem of inadequate data with which to analyze the costs and benefits of the technology on which the project is based. As of 1984 sufficient data had still not been assembled on the costs of paddy and other crop production, in spite of the urgent recommendations of earlier evaluations. The 1980 Joint Assessment pointed out that, without such data, "one cannot be sure that the project's rate of return is competitive with other alternatives, such as dryland farming or animal husbandry" (USAID and Republic of Senegal 1980). Two years later this still appears to have been a problem: "No reliable estimates of the profitability of production were available. Valuable time has been wasted redoing benefit/cost analysis to no effective purpose" (Keller et al. 1982, p.6). Beginning in 1983 several surveys were conducted and the data analyzed. These studies indicate that without the subsidies that have been in effect over the course of the project (credit, technical assistance, perimeter excavation and development), the majority of farmers would not continue to cultivate the irrigated rice on which the project is based.

The Bakel project was completed in December 1985. The follow-on, Irrigation and Water Management I, was initiated in August 1985 but is not yet fully operational. It is intended to build on the experience, investments, good management and farmer participation of the first project. A great deal was learned in the 8 years of

the phase I project: the organization of village farmers groups to deal with collective use of pumps, water, and irrigated perimeters; organizational arrangements between AID, SAED, and these village groupements; and the technology used --type of pumps, durable pump floats, canal construction, etc.. The Phase II project would make "design and operational improvements (that) are necessary to establish a replicable prototype system" (USAID 1985e, p.2). Further refinement of that technology is expected as well as definition of the potentials for irrigation in the river valley. Again, the OMVS's development of the irrigation potential of the Senegal River, as well as Senegal's New Agricultural Policy which seeks to disengage the state from direct involvement in irrigated production, were key factors in AID's decision to continue this activity.

The project calls for raising the efficiency of the village irrigation systems and extending them to about 50 percent of the Bakel region's irrigation potential. To do this the project will provide improved techniques of planning, construction, operation, and management of existing, expanded, and new systems of village irrigation. The project paper contends that land allocation under the previous scheme, which allocated 0.1 to 0.2 hectares per adult, were uneconomic and that future designs should be based upon 0.35 hectares per adult.

The phase II project paper contains an economic analysis intended to demonstrate and justify AID's continued support and expansion of this activity. A critical examination of that

analysis, however, leads to two observations. First, a consistent lack of realism characterizes the assumptions made; the resulting exaggerated claims about the economic returns to the project suggest that the paper is more an advocacy document written to gain approval of the project than it is an objective and realistic assessment of expected project results. Second, the economic analysis in the project paper fails to address the most critical question on which the project's success depends, namely: Will farmers chose to participate in small-scale irrigation after project support is withdrawn? The project paper concentrates on the returns to the overall project investment over twenty years, and concludes that a 16 percent return on investment can be expected. This presumes, however, that farmers will decide (since they are the key decisionmakers) to invest their time, land, and cash income in small-scale pump irrigation, but the analysis does not explicitly consider the alternatives open to farmers and the opportunity cost. Both issues are crucial to the project and its potential success. Moreover, they are recurrent issues found in AID projects in other countries, and in the projects of other donors as well. For these reasons, and because the project was so recently renewed, these issues are examined in some detail here.⁴

The economic analysis of Irrigation and Water Management I.

The economic analysis in the project paper (USAID 1985e Annex 9.6)

⁴ The project paper's economic analysis was written by a consultant not by the mission's agricultural economist, who had expressed strong reservations about the project and, as a result, was largely excluded from the process of developing the project.

provides an analysis which calculates the return on investment for the \$8.5 million project. The favorable rate of return (16 percent) is computed from a series of assumptions about production, yield, expanded acreage, and prices over a twenty-year period. Many of the assumptions made are unrealistic and exaggerated, and there are analytical oversights. Some of the numbers used are clearly at odds with factual data from several sources including AID's own studies. Among the questionable assumptions made are the following:

1. Assumption: Rice yields will rise from 4.5 tons to 7 tons.⁵

After seven years of technical assistance and close supervision, the average yields achieved among project farmers is about 5.5 tons/ha. The highest yields in the world, found in Japan and North Korea, are still under 6 tons/ha. Average yields for irrigated rice in Southeast Asia and South Asia are between 1.8 and 2.9 tons/ha (Barker et al. 1985, p. 45).

Nowhere in Africa are average rice yields above 4 tons (Pearson et al. 1981). Moreover, other irrigation projects in Africa have experienced declining yields after technical

⁵ The 7-ton yield figure is clearly a "per crop" yield rather than a "per year" yield. No double cropping of rice in the dry season has been anticipated under the project since, according to the project technicians, it would not be successful: rice does not grow well in the cool dry season and varieties that would grow under the cooler conditions would have a longer growing cycle. Because of the longer gestation period that would result, the lower water level in the river, and lack of supplemental rainfall, the costs of pump irrigation would probably be three times as high as in the rainy season and would clearly not be economic. In addition, because little else is growing during the dry season, the rice plots would be severely attacked by insects, rodents, and birds.

assistance and supervision was ended, resulting from improper maintenance or control of water flow, loss of soil fertility, and erosion.

2. Assumption: Fertilizer use on rice will rise from 250 to 450 kg/ha, with yields rising to 7 tons. This change, if attributed to fertilizer alone, represents an incremental increase in rice yields of 12.5 kg for every additional kg of fertilizer. Average yield increases -- that is, the total yield increase divided by total fertilizer applied -- can attain levels of 10 - 20 kg/kg at experiment stations in Asia for high-yielding varieties (Barker et al. 1985, pp.79-81). Not only are response rates of this magnitude being assumed for the Senegalese environment characterized by little research, poor infrastructure, and inexperience, but they are assuming incremental, or marginal yield increases that are higher than average yield responsiveness under the best conditions in Asia. Over the range of fertilizer application from 250 to 450 kg/ha will bring the amount of nitrogen (depending on the mix) to a level near or above the point of maximum yield, where the marginal yield improvement is low. The most responsive segment of the yield response curve has already been exploited in achieving the yields of 4.5 tons assumed in year one.

3. Assumption: Maize yields will rise from 2.5 tons to 5 tons. This change occurs with an increase in fertilizer use from 150 kg/ha to 300 kg/ha, representing a yield response of 16.7 kg

of maize per kg of fertilizer. These figures are similar to those found for hybrid maize in Kenya and elsewhere, and for the average response of maize to fertilizer over the 0 to 100 kg range. Raising fertilizer use from 150 kg to 300 kg -- for local or improved open pollinated varieties -- cannot be expected to achieve yields or response rates of this magnitude.

4. Assumption: The price of fertilizer in economic terms (adjusted to remove policy distortions such as subsidies) is made initially at 100 CFAF, then declines to 85 CFAF. Actual fertilizer costs are higher than this based on recent studies funded by AID. A paper by the AID/MSU/BAME Project (Crawford et al. 1985) computes economic prices for NPK and urea at 157 CFAF and 100 CFAF respectively. Given the mix of the two used by farmers in Bakel, the average price can be computed at about 123 CFAF/kg. Fertilizer distribution is already significant, and it is a divisible product with no apparent reason to expect reduced costs with increased volumes.

5. Assumption: Onions will account for 25 percent of total value product. This crop receives almost no attention in the previous project, but it figures importantly into the profitability of the second phase. No sources are given and no information is provided on how these 5,400 tons of onions will be marketed. And they make the incredible assumption that with an increase in supply of this magnitude, prices will not decline. Recent interviews with farmers in the region

suggest that regional markets for onions and vegetables have already reached the saturation point, and as a result some farmers have stopped producing these crops.

6. Assumption: All the production of all crops in all years will be consumed in the Bakel region, substituting for imports to the region. This assumption is made implicitly and permits the use of higher product prices (c.i.f. price plus transport to Bakel), but it implies that all the production will be purchased and consumed in the Bakel region (without depressing prices). Specifically, this assumption implies that by the sixth year of the project the 35,000 residents in the region will consume an additional 8,640 tons of rice, 2,583 tons of corn, and 2,268 tons of onions. Demand is assumed to be perfectly elastic (prices remain unchanged in spite of this large production increase). By year 16 it is assumed that the local population will spend 1.53 billion CFAF (\$3.4 million) on additional rice, maize, and onions from the project perimeters. This amounts to about \$100 per person, or one-fourth of Senegal's per capita GNP. A more reasonable assumption would be that the farmers' production could be marketed in the heavily populated Dakar region. In that case the prices used in the analysis for rice and maize should be reduced by about 40 percent.

7. Assumption: Individual plots will be enlarged to .35 hectares per farmer. Increasing the size of the area per adult ignores the severe seasonal labor constraint. Rice

requires seven times as much labor as rainfed sorghum (Keita 1983). Nearly all the evaluations and analytical reviews of the project point out the seriousness of the labor constraint in the perimeters, especially during the rainy season when rice planting must occur. During this time farmers in the region are occupied with their rainfed fields; the evidence suggests that they will neglect the irrigated perimeters to cultivate sorghum. The rationale for the larger plot is that a larger plot is needed to make production economic. Presumably this is to make the use of animal traction economic, but no explicit analysis is developed. And it is unlikely that 0.35 ha will be sufficient to justify ownership of draft animals, and sharing or renting of draft animals has not been successful in West Africa (Jaeger 1986). AID's own economic analysis based on a survey in the Bakel region concludes that "the working population appears to be inadequate for farmers to use labor-intensive practices, as required by small-scale irrigation agriculture without recourse to import of labor from outside" (Keita 1983 p. 30). Those farmers who cultivate the irrigated perimeters hire labor costing on average 13,800 CFAF per hectare. Wage rates are estimated to be about 750 CFAF per man-day, exceeding the average return to labor of 432 CFAF (Keita 1983, p.67).

Modifying the economic analysis to reflect more realistic assumptions for prices and yields results in an estimated rate of

return between 5 and -10 percent.⁶ Returns to labor fall below 400 CFAF with these changes.

Farmers' criteria for making decisions. A farmer's willingness to enter into, and continue, pump irrigation depends on a number of factors including the profitability of the activity, the risks of a shortfall in production, the risk of cash losses, and the availability of necessary inputs. But by and large farmers will use their labor where it gets the highest return. Many studies have shown that for the land-abundant areas of semiarid West Africa, a farmer's labor is the scarce resource, and he or she will use it where the payoff is highest. Or, explained somewhat differently, to achieve a given level of output a farmer will use the technology which minimizes the requirements of those factors of production which are scarce or expensive. The failure to recognize this has resulted in concentrating on inappropriate, yield-maximizing technologies in projects and in research in many parts of Africa (Binswanger 1985). Referring to land-abundant West Africa, Binswanger concludes that,

it is also important to sharply curtail work on labor intensive husbandry techniques to raise yields. Decades of work on incorporating manures or crop residues into land abundant farming systems have met with very limited success. Moreover, seasonality of labor use in the existing farming system must be considered as well. The worst kind of research is research on husbandry techniques which increases peak season labor demand, a point long ago emphasized by (David)

⁶ The economic analysis in the project paper was modified by the author to take account of the above discussion. Fertilizer was priced at 120 CFAF, rice at 77 CFAF, maize at 60 CFAF, and onions at 50 CFAF. Yields were allowed to rise from 4 to 5.5 tons for rice and from 2.5 to 4 tons for maize. Assumptions about onion productivity were not altered, since no sources or basis for these was provided.

Norman and others.

Indeed, increasing rice production during the rainy season and transplanting rice to raise yields are examples of the "worst kind" of husbandry technique, since they demand very high labor inputs just when the demand for farmers' labor is at its peak.

The question of return on investment for the project as a whole is mute if the economic choices for the farmer are not likely to lead to a willingness to participate. Since the project has provided subsidized inputs and services, current participation by farmers does not provide an indication of the choices farmers would make in the absence of subsidies.

Data from several sources indicate the relative returns to irrigated versus rainfed agriculture in Bakel. At least for irrigated rice, the net returns to labor are significantly lower than for traditional rainfed crops.

Results from AID's first survey in the area (Keita 1983) indicate that farmers are reluctant to shift labor from rainfed to irrigated plots in the rainy season. Data collected from three villages show that the economic returns to all labor for irrigated rice is 400 CFAF/ha, whereas for sorghum and millet it is 488 CFAF and for maize it is 542 (computed from data in Keita 1983, pp. 34-67). Calculations from other data sources concur when realistic assumptions are made (Franzel 1979, Salinger and Stryker 1983).

A more thorough survey was recently completed (Keita 1986); it permits a comparison of irrigated production in 1984 and 1985. The results are consistent with the analysis above: Farmers were seen

to be shifting their irrigated plots away from rice and into sorghum and maize. Keita's analysis gives a clear explanation for this: he shows that the net return to labor for irrigated rice is 715 CFAF a day, while the returns to labor for sorghum and maize are 1,500 and 1,000 CFAF a day, respectively.⁷ The data also indicate that between 1984 and 1985 the percentage of irrigable land actually cultivated (that is, the cropping intensity) declined. According to Keita this was due to the better rainfall in 1985 which led farmers to shift more of their labor to rainfed farming, and also to the disruptive effects of policy changes made by SAED.

In this environment, the economics of rice make it less attractive than other crops for two principal reasons. First, the labor requirements for rice production are three times as high as for irrigated maize or sorghum.⁸ And second, rice requires between three and four times as much water to irrigate. The irrigation costs for rice amount to about one-fourth of the value of production. As a result the net return to a farmer's labor is substantially lower in spite of the higher yields.

The project's concentration on rice appears inappropriate for

⁷ The data for maize are from a village in its first year with irrigated crops. Keita (personal communication) indicates that in other villages with more experience, maize is the most profitable crop.

⁸ These labor figures are from the survey villages where most rice is planted directly according to Keita (personal communication). Transplanting rice, which is being promoted by AID technicians, would result in a large increase in labor requirements (75 additional person-days per hectare).

this region. In spite of Keita's analysis of the returns to labor for the different crops (showing maize and sorghum to be superior to rice), and in spite of his identifying the labor constraint as the central problem, he concludes that "rice cultivation represents one of the best alternative uses of farm family labor" (p. 68). Concern about Senegal's rice imports which require substantial scarce foreign exchange, is clearly one of the main motivations for trying to develop the country's rice producing potential. But in the Bakel region rice is not the staple food; farmers devote about 80 percent of their land to millet, sorghum, and maize (Keita 1983).

Production of rice beyond meeting the local demand appears more problematic. Any significant amount would have to be transported to the main population center, Dakar. In order to compete with imports of broken rice (ignoring for the moment the price distortions resulting from import taxes and officially set product prices), the price to farmers would have to fall greatly. The cost of putting Thai broken rice on the market in Dakar is currently about 70 CFAF/kg. Transportation from Bakel to Dakar costs about 25 CFAF/kg. In order to price their rice competitively on the Dakar market, Bakel farmers would only receive about 45 CFAF/kg for their production. Using Keita's most recent analysis of farm budgets (1986), but adjusting for this new producer price, the net return to labor would be about 280 CFAF/person-day, or less than half what appears to be acceptable in the Bakel region where casual agricultural labor is normally hired for about 750 CFA/day.

Keita's survey points out, furthermore, that the peak labor demand period is during rice planting, when adult males are fully engaged in agriculture, the majority of their labor going to the rice fields. This is the situation for households cultivating between 0.025 and 0.1 hectares of rice per adult. It would seem to be extremely difficult to increase the plot size to .35 hectares.

The evidence suggests that only a few farmers are likely to continue to operate these rice plots after the project concludes and subsidies stop -- including those with other sources of income such as remittances from abroad, and to supply the limited local demand for garden crops. Most farmers will find their traditional rainfed agriculture has a higher payoff and, in terms of cash investment, a lower risk.⁹ In years when rainfall is low the perimeters have definite advantages. But to justify the investment, the return to labor must compete with the opportunity cost of labor more consistently than it does. It is unlikely that many farmers will be able and willing to farm 0.35 hectares of rice without continued subsidization of inputs and services.

This project exemplifies two problems that are far from unique

⁹ A convincing test of the profitability of the technology would be to find farmers that were using it independently of the project. While visiting Bakel the author was informed of two farmers who were irrigating independently of the project. Upon investigation, however, they were both found to be special cases. One was a Marabout (Moslem leader) whose followers represented a free labor supply that, without irrigation, would be idle part of the year. By irrigating a plot he was able to employ his religious students and produce the food required to feed them. The other was a local merchant that had been given a pump and was experimenting with gardening (for only the second year). So far he had been subsidizing the activity from his business and was unconvinced that it would pay.

either to this project or to this AID mission. First, this is a technology-based project, one that is fundamentally dependent on the acceptability of the technology being transferred from both an economic and sociocultural standpoint. In many such cases, AID has failed to adequately identify, monitor, and assess the key indicators related to project success and acceptable technologies. In this case, substantial progress was made in strengthening the organizational structure of farmers' groups so they could collectively manage the irrigated perimeters. But the critical importance of the economic return to a farmer's labor from this activity as compared with the alternative of rainfed farming has been generally neglected. The analytical work of the project paper focused on the economic return of the project investment itself, concentrating on yield and on rice, instead of examining the relative returns to the farmer's labor for a variety of crop production activities.

Farming systems research -- with AID as an important promotor -- has popularized the importance of making such research relevant to small farmers, by taking account of their objectives, constraints, and environment. But in this project inadequate consideration was given to the constraints and incentives of the farming system relevant to farmers in Bakel. These issues were, however, recognized in more general AID strategy statements for Senegal, such as the 1975 DAP which recognized labor as the critical constraint on production.

Second, the project exhibits a drawback characteristic of many

"pilot" projects in AID. They rarely remain "pilot" in nature, but rather quickly become activities to which the mission is committed. This results from the substantial investment of staff time in project development and technical development. There are disincentives associated with what would be viewed as abandoning a project, instead of being viewed as a useful pilot experience where important knowledge was gained. Moreover, the pressures on AID missions to obligate funds encourage expansion of pilot activities into larger ones. In this case, several AID contract technicians had worked on the project for many years; they clearly "believe" in what they are doing, and the AID mission relies on them for much of the technical information used to justify phase II.

Although much has been learned from the project, the extent of that learning has been limited for several reasons. First, the location chosen for the project is probably the most difficult along the Fleuve, being farthest from potential markets and having high river banks that make pump irrigation very costly. One of the primary reasons for choosing Bakel was that the New Directions legislation directed AID missions to focus on the "poorest of the poor." With many donors vying for position along the river to test their irrigation technologies, AID's mandate at that time was to take the most difficult region. The conclusion that using small-scale irrigated perimeters to grow rice is not economic at Bakel says little about the likely success for similar perimeters in the middle or lower Fleuve, where the banks are lower and markets are closer.

Second, the project has focused on rainy season rice, which reveals little about the potential for dry season irrigation. The OMVS irrigation plan for the Senegal river based on the creation of a vast potential for dry season irrigation after completion of the Manatali dam. Because dry season irrigation has been largely ignored, the role of the project as a "testing ground" for that potential has not been achieved.

Third, had the project included more systematic monitoring and analysis of the technologies from the start -- including a comparison of the returns to labor on a range of crops for both irrigated and rainfed agriculture -- more could have been learned about the potential for "supplemental irrigation" of maize and sorghum during the rainy season. Under this system, farmers would grow these crops in irrigable plots but adjust the amount of irrigation to complement the rainfall pattern as it develops (as some of the project farmers already do). By adjusting the amount of water pumped, farmers would control costs according to the rainfall, reduce the risk associated with erratic rains, and stabilize their food production -- all of which are goals consistent with the Senegalese Government's goals of stabilizing food production and promoting food security.

Cereals Production I and II

The Cereals Production Project I was developed in 1974 as a medium-term AID project to counteract the effects of the Sahel drought. Between 1974 and 1979, \$4.5 million was obligated under

Phase I of this project. The major focus was to increase millet production in the peanut basin (Thies and Diourbel regions) where it is economically important and plays a key role in the government's food security policy. The project was implemented through the regional development authority, SODEVA (La Societe de Developpement et de Vulgarisation Agricole). It included expansion of the extension services in the area, in-service training, and establishment of an Economic Research and Evaluation Unit to promote linkages between researchers and farmers.

The AID mission in Senegal declared Phase I to be a success based on an evaluation which admitted that "it is not possible to measure the impact of the project on production or on the productivity of the farm unit" (LeBeau 1978, p.2), but stressed the excellent implementation by SODEVA, the development of physical facilities, and the expansion of the extension staff. The evaluation found that use of the "higher level technology" had not expanded as expected, in part because of the failure to demonstrate the "economic superiority of the higher levels of technology over the less intensive technology" (ibid p.1).

Nevertheless, Cereals Production Phase II was initiated in 1979 for \$7.7 million to be obligated over five years. When combined more than \$12 million was spent on the two phases of the project, over a ten year period. During that time, the primary objective of the project -- increasing millet production -- was not achieved. The development of SODEVA as an effective extension institution has recently shown some progress in certain areas, but

SODEVA has suffered from managerial and funding problems, changes in its mandate from the government, and significant cuts in its field staff because of Senegal's financial crisis.

Between 1979 and 1981 several assessments of the Phase II project were made, including an analysis by Michigan State University's African Rural Economy Program (Franzel 1979), and an Interim Report (USAID 1979b), an evaluation for the Joint Assessment of US Assistance Program in Senegal (USAID and Republic of Senegal 1980), an Inspector General Audit (USAID/Inspector General 1981), and later, in 1984, a Mid-term Evaluation was added (RONCO 1984). Early project documents tended to concentrate on the economic viability and justification for the project (Franzel 1979, USAID/Inspector General 1981, AID and Republic of Senegal 1980), while the focus has shifted in recent years toward strictly institutional concerns. These studies documented many of the problems which beset the project, problems related to its design, economic justification, implementation, recurrent costs, and the GOS contribution. The origins of some of these can be traced back to Phase I.

The Joint Assessment and the Inspector General's Audit state that the major focus of the Phase I project was to increase millet production. And the Phase II project paper states that "one of the principal outputs anticipated from the project is to increase the yields of millet by 340 kg/ha by 1983" (USAID 1979 p. 6). In Phase II there is a shift, however, toward institution building to achieve this end. The project's outputs include a strengthened

SODEVA, a women's unit, off-station research to improve extension themes, and audio-visual techniques for extension use. The project's purpose is said to be to "diversify and increase productivity of food crops and livestock" in the region.

Although the Phase II project paper forecasts an internal rate of return in excess of 50 percent (p. 2), neither of the two analyses that predate the Phase II project paper offer support for continuation of the project based on the central theme of increasing millet production. The only detailed economic analysis to arrive at any conclusions found that "the costs of the project far outweigh the benefits accrued" (Franzel 1979, p.41). The internal rates of return from his study are negative, and the benefit-cost ratios range from 0.22 to 0.4 (p. 39). The only other analysis that predates the project paper is that of LeBeau (1978), indicating that the technology was unproven.

These results were challenged by the AID Mission on the basis of the assumptions and data used in the analyses. By recomputing the analyses with different figures they arrived at a rate of return of 17 percent. And since the official evaluation report was positive in terms of the institution-building objectives of the project, the second phase was recommended.

Throughout this period there were two points of view on the performance of the project. Some observers considered it successful, pointing out progress in institutional development and in "building on what had been achieved in Phase I," and ignoring the lack of any evidence of increased production of millet. The

second group continued to point out that no increases in production had occurred.

Phase II based the economic returns to the project on heavier use of NPK fertilizer (250 kg/ha) and improved cultural techniques. The area under millet production was assumed to increase by 10,000 ha to 232,000 by 1983. And millet yields were assumed to rise to 1 ton/ha by 1985, while land devoted to peanuts remained constant. The number of farmers using oxen traction was expected to increase from 7,455 to 17,400 in four years. The farm-level analysis assumed yields of 1,200 kg/ha for millet. Yet yields for millet in the range of 1,000 to 1,200 kg/ha are unheard of for on-farm conditions in this region, and on-farm research from numerous sources consistently demonstrate that it is not economic to use fertilizer on rainfed millet (Matlon 1982, 1983; SAFGRAD/FSU 1983, 1984).

The Audit (USAID/Inspector General 1981) was extremely critical of the project and questioned the justification for Phase II. It cited the lack of any evidence that the first project had increased millet production. The two key improvements from the project were to be the use of fertilizer and of the new SOUNA III millet seed. Data indicated, however, that there was no increase in millet production, fertilizer use, or use of SOUNA III seed. In fact, available data showed that between 1975 and 1978 millet production increased 3.2 percent in the AID project area, while in an adjacent nonproject area, production increased 4.7 percent. Fertilizer use in the area actually declined. No evidence was

found that use of SOUNA III was expanding. The audit cites concurring findings by a World Bank study, which concluded that SODEVA's activities had little impact on production.

As a result the Audit takes issue with the Phase II project paper's assertion that by 1983 a 70 percent increase in millet production would occur through the use of SOUNA III, fertilizer, and early thinning. Given the lack of any basis for this forecast the Audit recommended that "inasmuch as the first project was not the success the project paper indicated it to be, we believe the Africa Bureau should reevaluate its approval of the second Senegal Cereals Production Project" (ibid p.6). The AID Mission objected, stating that "no one quantifiable objective was set by which to measure project impact in view of the scope of services planned for a farmer intensification program", and argued that "the basis for increased yield had been developed during Phase I's execution" (ibid).

The Audit also found that the Government of Senegal was not paying for salaries and related costs in accordance with the project agreement, and that AID should demand a refund for overcharges. The AID Mission contested this finding also, and persuaded the Africa Bureau not to accept the Inspector General's recommendation. Funding for Phase II went ahead.

The most recent assessment of progress, the midterm evaluation (RONCO 1984), concentrates on the institutional aspects of the project and avoids the productivity issues for the most part. It concludes that "the anticipated production increase targets have

not been achieved. However, a significant proportion of other project objectives are well on the way to being attained" (RONCO 1984, p. 11-12). Continued support for SODEVA was recommended, based on the eight years and \$12 million already spent "in the creation of the vehicle for the transfer of the results" which were assumed to be forthcoming from the recent large investment in Senegal's agricultural research (\$18.2 million in 1982/83).

Nevertheless the midterm evaluation reluctantly observed that "the projected yield increase of millet has not been achieved" adding that "there is evidence that SODEVA did a great deal to convey the extension messages existing at the beginning of Phase II to the farmer" (RONCO 1984, p. 52). This would be relevant if those extension messages were appropriate and transferable, but like the findings of the LeBeau evaluation six years earlier, there appeared to be no evidence that this was the case. The technologies upon which the project was based appear to be unattractive to farmers.

The midterm evaluation supported the need for calculating the return to labor in future assessments of these technologies because "it has been shown in several studies that the small farmer has an acute awareness of the value of his time and this gives a sound basis for assessing the likelihood of any measure being adopted" (RONCO 1984, p. 52). Having said that, the evaluation failed to take note of Franzel's analysis showing that the returns to labor (and land) for peanuts in the region are double the returns for millet in financial terms, and five times as much in economic

terms. Unfortunately, the on-farm results from the project are not presented in the RONCO report, presumably because they are poor.

The "other project objectives" referred to include upgrading SODEVA staff to meet the evolving needs of the project area, strengthening SODEVA's ability to produce and use audio-visual extension aids, enhancing SODEVA's ability to collect and analyze data on macro and micro effects in the basin, and tightening the link between applied research and extension. The midterm evaluation found that SODEVA "has evolved into a more professional and capable extension organization" than it was when it took over from SATEC in 1968. AID assistance has fostered effective links with CNRA, with the result that a feedback system now exists through which the results of on-station research are tested in on-farm trials, and farmer reactions are transmitted through SODEVA back to CNRA. Certain components of the project were not as far advanced as was anticipated, and the evaluation recommends certain components be dropped.

The evaluation points out, moreover, that after the project design and before implementation,

the entire policy and institutional framework within which SODEVA had been operating altered radically. The supply system for the factors of production and the agricultural product purchasing organization virtually disappeared. Short-term credit for input purchases was cancelled. The cooperatives came under severe scrutiny and were generally discredited (RONCO 1984, p. 2).

During this time, fertilizer supply in the region dropped from 18,000 tons to 725 tons between 1981 and 1984.

Severe staffing problems affected project implementation as

well, both at AID and SODEVA. The first project manager for AID had no formal background in agriculture or in AID management systems. Funding was a constant source of friction between AID and SODEVA due to some bureaucratic delays and also as a result of the Inspector General's Audit. There were "continued misunderstandings between the financial control offices of USAID and SODEVA as to each other's requirements, despite eight years of project operation" (RONCO 1984, p. 4).

Finally, the recurrent cost issue with regard to sustainability of the project came to a head in 1983. Senegal's government was required by AID to show how it would continue funding after the project came to an end. In the absence of such a plan, funding was stopped for six months. Resolving this issue absorbed substantial project management resources and created a great deal of confusion within SODEVA.

Nevertheless, the recurrent cost issue remains a crucial one in judging the long-term effects of the project. Given the lack of an existing technology to be transferred to farmers that is evident from the project's history, the organizational and training gains can only be valuable if they can be maintained until technologies that offer increased productivity and economic returns are forthcoming. But with Senegal's severe financial crisis, and the consensus that one of the central problems is an inflated government payroll, this becomes less likely. The question must arise: What evidence is there that using scarce government revenues for this purpose is warranted?

The current situation suggests that, especially now, Senegal cannot afford to sustain SODEVA until it can point to some specific sources of increased productivity that would result. Clearly, poor rainfall and the financial crisis have hampered the project's progress, but these are insufficient explanations for failure of a technology-based project without a technology. Reducing the size of regional development authorities like SODEVA, which was enlarged by AID for this project, has become one of the key policy reform being insisted on by donors, including AID.

In 1985 the project completion date was amended to extend the life-of-project through 1987, but in effect this constituted shifting the remaining resources of the project to other uses, primarily agroforestry. As a result, villages have been working to establish village woodlots and field plantations of acacia albida and some fruit tree species, to help prevent environmental degradation which in recent years has been recognized by the government and donors alike as a severe problem in Senegal.

Livestock

In response to the devastation of crops and livestock during the Sahel drought, AID undertook two projects in Senegal aimed at recovering the losses in livestock population, sustaining livestock production, and promoting marketing and consumption of meat. Range management was a critical component of the strategy, because of the view that overstocking prior to the drought had contributed to the huge losses.

The first of these projects was the Senegal Range and Livestock Development Project in Bakel (to be referred to as Bakel Livestock). It was introduced in 1975 along with Cereals I as the two "medium-term" responses to the drought. The project was intended to manage grazing reserves of 110,000 hectares, increase cattle from 11,200 to 16,000, develop year-round water resources, and provide veterinary care. Later amendments to the project increased the range area to 220,000 hectares and the cattle to 25,000. Between 1975 and 1983, \$5 million was obligated before the project was terminated with the "de-obligation" of \$0.1 million.

The second project, SODESP Livestock Development Project in northern Senegal, had as its objective to integrate livestock production and marketing by financing both production and commercialization activities in a "stratification model" where ranging, rearing, and fattening are done in different areas. Also included was a system for water and range management, forestry, and creation of a data base for research and monitoring. Of the \$7 million obligated between 1979 and 1981, nearly \$1.8 million was "de-obligated" in 1985 when the project was terminated.

These two projects encountered problems common to livestock projects undertaken by AID and other donors in African countries. Both projects assumed that range livestock populations could be controlled so that water, forage, and herds could be balanced. The fact that the rangelands were public domain and used by transhumant herders was not fully considered. In addition, they failed to meet their objectives because of unrealistic project design, poor

project implementation, and inadequate accounting and management of project assets (USAID/Inspector General 1984).

Most of the \$7 million spent in the SODESP project was for supplemental feeding and marketing. As of 1984, only 263 cattle had been sold, compared with project objectives of 6,250 cattle and 4,950 small ruminants. Qualitative factors such as weight and birth rates had declined. The other components of the project such as range management, research, and monitoring, were not implemented.

The 1982 Special Evaluation observed "no progress to date towards attainment of the three range management outputs" and noted that the objective "to establish a technically sound, socially-acceptable, cost-effective and implementable system of resource management was probably not realistic" (USAID 1983c, pp. d-5,6). The evaluation recommended that continuation of the project be made contingent on remedying the problems. Specifically, the lack of research and monitoring prohibited any proper evaluation of production and costs of the scheme. AID stopped funding temporarily to force SODESP to conduct an impact study of the project. Funding was resumed in January 1984. Other recommendations in the Evaluation were not implemented.

According to the Evaluation, nearly 7,500 cattle were enrolled in the program in 1983. The livestock, however, could not be controlled. With no provisions for drought conditions, most of the project livestock had left the area by early 1984. The End-of-Project Completion Report concluded that gaining control of cattle

numbers and movements was the fundamental, and unresolved, problem for the project. The report also observed that the stratified system upon which the project is based is a radical change in livestock production patterns and "the long term economic viability of SODESP remains unknown" (Harms 1984, p. 12).

As of 1983 the Bakel Livestock project had developed, at most, half of the 220,000 hectares of range planned for the project. The cattle population increased by 882 instead of the 14,000 projected over the life of the project. Year-round water resources had not been developed; herders were short of water as of 1984. Range deterioration had not been checked. In contrast, the veterinary health program had shown some positive results.

The Final Monitoring and Evaluation Report (CRED 1985) was the product of eighteen months of work in the field by a team of researchers studying each of the project's components. The extended monitoring effort by this team was itself the result of an earlier evaluation which concluded that one major shortcoming of the project was the lack of baseline data, which made it impossible to gauge the impact of key interventions.

With respect to the water catchment ponds, the Final Evaluation team found that "unfortunately, even though all ponds filled at least once during the rainy season, they did not retain water for very long, and most of it was of no benefit to livestock" (CRED 1985, p. 38). All the ponds dried up by January or February.

The firebreaks, intended to reduce the rangeland burns, were ineffective. Comparisons of overall rangeland burns before and

after the firebreaks "indicate that neither the extensive firefighting plan nor the firebreaks themselves have had a noticeable impact on annual burning" (CRED 1985, p. 40).

The Final Evaluation Report did observe that the provision of veterinary services had been a successful intervention. The outposting of livestock extension agents made it possible to respond immediately to outbreaks of contagious diseases. The team concluded that "observed gains in morbidity and mortality of livestock was directly related to this particular approach of animal health extension services."

The design of the Bakel Livestock project assumed that the increases in livestock production could be marketed. A 1980 evaluation directed attention to the lack of marketing potential in the region, but the project continued as planned -- without a marketing strategy. At one point a plan to market livestock to Dakar was attempted, but it proved unsuccessful due to the low return and high transport costs. At the time of the Final Evaluation, livestock were being bought from herders and sold on the Bakel market. This was the result of pressure from local authorities, who were having trouble convincing private operators to butcher their animals given the low official prices for meat.

The Bakel Project overlooked the fact that herders in the area traditionally held cattle for a variety of reasons other than as a commercial activity. Livestock represent a store of wealth and savings, and are sold for subsistence purposes.

In summary, these two projects have produced results similar

to AID livestock projects throughout Sub-Saharan Africa. The experience is summed up well in a recent "Summary Report on AID Assistance to Develop Livestock in the Sahel" which concluded that these livestock projects were "poorly designed, largely because the early Sahel development strategy on which they were modeled included several unsound assumptions. As a result, project assumptions were flawed making it impractical, if not impossible, for these projects to succeed" (USAID/Inspector General 1985).

Agricultural Research and Planning

The Senegal Agricultural Research and Planning Project (ARPP) began in December 1981 as a five-year project involving Michigan State University (MSU) and the Senegalese Institute for Agricultural Research (ISRA). The project was designed as a component of a multidonor program -- involving the World Bank, France, and AID -- to decentralize the activities and strengthen the capacity of ISRA.

The five-year, \$5 million project was intended to be the first phase of a long-term involvement to develop research capacity in Senegal. Other AID support for ISRA includes \$5.6 million in local currency through the PL480 Title III program and approximately \$10 million from other bilateral and regional projects such as the Casamance Regional Development Project.

The goals of the project were: (1) to develop the agricultural research capacity at the macro level in Senegal; (2) to organize and carry out research on production systems at the micro-level in

major regions of the country; and (3) to conduct research on food, nutrition, and agricultural policies to guide policymakers.

As of 1985 the project appears to have made excellent progress toward most of the intended goals. Research results and studies are available in published form and have been used by government policymakers. The 1985 Mid-Term Threshold Evaluation found no major gaps between the original objectives and those currently guiding the project. It observed that "a good foundation (had) been laid in this initial phase for the long-term (10 to 15 years) institutional-building effort within ISRA" (USAID 1985c, p. xii). The team found that support for the Bureau for Macroeconomic Analysis (BAME) had "played a key role in launching macroeconomic research as a significant contributor to agricultural policy formulations in Senegal" (p. xiii).

The Production Systems Research component has had varying degrees of success in the three regions where studies were conducted. These efforts were particularly beset with problems related to lack of human and financial resources with which to implement the program.

Data collection was found to be critical to the long-term success of the program. The type of data and analysis being produced has been especially effective in screening and evaluating technologies. The report cautioned, however, that the limited capacity among the Senegalese to use the computer technology could jeopardize the long-term success of the effort. Also, there had been some debate over data collection methodology (the trade-off

between timeliness and quality), which had created some conflict among staff members.

The ARPP included a strong training component which was also quite successful. It provided the major share of the training necessary to strengthen ISRA in these areas. Both the long- and short-term training programs were well received and efficiently executed. However, additional training in computer analysis skills was needed.

The success of ARPP depends on the success of the entire multidonor program, of which it is a part. The vulnerability implied in this link was particularly evident beginning in 1984. Disagreements and discrepancies in implementation of ISRA's reorganization arose between the World Bank and GOS which nearly led to cancellation of World Bank financing -- a step that would have been disastrous to the AID project. Lack of financial accountability, misuse of funds, and failure to reorganize and decentralize the ISRA bureaucracy were among the issues contributing to this crisis. Problems still remain, although the government has acknowledged their failure to comply with some of the terms of the project and has taken corrective action in close collaboration with the World Bank's staff.

The AID project has been affected in two important ways by the related World Bank project. The World Bank efforts attempted to change too much in too short a time and that has been extremely disruptive to ISRA. Secondly, because AID only financed one part of ISRA, other programs without substantial funding were not

strengthened concurrently, and this uneven financing and growth has given rise to conflicts within ISRA.

Two conclusions seem obvious when this project is assessed in the context of AID's experience in Africa generally. First, the experience and expertise MSU brought to this project was importantly related to its success, as was the AID mission's role in implementing the project. The complexities and uncertainties of the Senegalese environment make it extremely important to "pull it all together" in order for project aid to be successful. Given the prior experience of MSU staff in Africa, and their involvement in the design of the project by way of the Title XII collaborative mode legislation, they were in a position to avoid many of the delays and misjudgments that occur with less experienced contractors. For example, MSU was able to send eleven long-term trainees to the US (on funds from other sources) even before the project contract was signed. And the design of the training component, which was managed by MSU with summer sessions in the US and participants returning to Senegal for three to six months to do research, exemplifies the careful planning and design which recognized the importance of establishing close ties between the project and the University. MSU was able to provide continuity and coordination of the training, in part because of their experienced and committed on-campus staff.

Second, an important contribution this project has made and should continue to make is to help provide the basic agricultural data and analyses on production, resources, and constraints that

are essential but conspicuously lacking in Senegal. Agricultural policymakers have an extremely difficult task in making decisions about the kinds of changes being proposed by the donor community. These decisions are made even more difficult by the lack of adequate statistics and analyses with which to assess the impact of different policy choices. The recent study by ABT Associates, Senegal Agricultural Policy Analysis (1985) commissioned by AID, reveals just how little is known about such factors as acreage, yield, labor supply, fertilizer response, and cropping patterns. While the study is in many ways comprehensive, it is unable to address many of the key issues or even offer a partial analysis of them. In discussing the role of maize in Senegal's crop mix, for example, the authors can only comment that the analysis of crop budgets is beyond the scope of their paper, given the lack of data. The volume's executive summary emphasizes that "it is imperative that the GOS continue to gather the more complete levels of data that are requisite to the formulation of policies that can be applied with greater degrees of confidence than is now possible." It seems clear, therefore, that the AID project has made a significant contribution to the formation of social capital, in the form of economically useful knowledge.

The project will be completed in 1987. The 1985 Mid-Term Evaluation recommended that the second phase of the project be undertaken without interruption, directly following the completion of phase I. The anticipated renewal has been delayed pending resolution of the formidable problems between the World Bank and

the GOS regarding the reorganization of ISRA. It is now believed that a second project will begin in 1987, with MSU as the likely contractor.

In spite of the clear progress toward project goals for the ARPP, there remain difficult questions about the long-term viability of a national research institute of the scope envisioned in the multidonor effort. Senegal is a small, resource-poor country with limited agricultural potential, and the government is unlikely to support ISRA fully for many years. The prospect of maintaining a "critical mass" of qualified researchers is uncertain; the limitations on career development may give rise to a high rate of attrition, especially among the best qualified researchers. The constraining bureaucratic framework, poor "rewards system", and the lack of a stimulating scientific environment will make retaining good scientists difficult. Project personnel were clearly aware of this problem, expressing some doubts about the ability of ISRA to retain their long-term trainees over the next ten years. Forming close links between Senegalese researchers and the International Agricultural Research Centers, especially ICRISAT and IITA, might reduce the effect of these problems.

Agricultural Development Assistance: Sahel Development Fund

The Senegal Agricultural Development Assistance Program (ADAP), begun in 1983, represents AID's first experience with policy reform and balance of payments support in Senegal. The

purpose of the program was to encourage the Government of Senegal to undertake reforms in the fertilizer and cooperatives subsectors that would result in increased agricultural production. The program would finance imports of fertilizer (\$3.05 million), shipping of fertilizer in US flag vessels (\$1.2 million), and technical assistance for two related studies (\$0.75 million), an agricultural sector assessment, and a rural credit and savings study.

AID regards the fertilizer subsector as a relatively self-contained framework within which it could begin to urge the government to reform some of the policies constraining agricultural productivity and food self-sufficiency. These included the high levels of subsidies on inputs, the low prices for domestically produced food, the inefficiency of the regional development authorities (RDAs), and an ineffective cooperative system. By providing nearly 100 percent of the fertilizer requirements for 1984/85, it was hoped that the program would give AID considerable leverage in negotiating with the government on policy and institutional reforms. The program would help meet urgent balance of payments problems by providing essential imports, and through the sale of the imported fertilizer provide the local currency needed to carry out essential agricultural programs. Local currency proceeds were to be used for literacy training programs to strengthen village-level cooperatives and producer groups, and for several other activities.

The first condition for disbursement of the grant was that the

GOS set forth its proposals for an IMF Standby Agreement for 1983/84. This was fulfilled and later the IMF approved the agreement. Major elements of the package included reducing the deficit of the CPSP (Caisse Nationale de Perequation et de Stabilization des Prix) by increasing prices for rice, sugar, and oils; putting ceilings on government investment, import growth, and civil service growth; limiting RDA subsidies, reorganizing agricultural marketing and the financing of inputs; and undertaking a comprehensive review of agricultural policies and parastatals.

The disbursement of local currency from the program was contingent on authorizing village-level cooperatives with access to credit sources. A bill fulfilling this requirement was enacted in the National Assembly in May 1984. (Although AID decided not to use the local currency generated to finance rural credit and waived that condition in early 1984.) The reorganization of the rural credit system that took place was significant. The existing cooperatives had been created as part of a "top-down" structure under the now-defunct ONCAD system, which had been mismanaged, had encouraged farmers to expect loan forgiveness, and had restricted access to credit and inputs, excluding legitimate farmers groups. As a result of the 1984 law, a new system has been put in place in which farmers can organize themselves and enter into independent borrowing relationships with the CNCA (Caisse Nationale de Credit Agricole). CNCA has performed well so far. As of May 1986, only 2.3 percent of its commitments of 1.3 million CFAF was overdue. This repayment has been enforced by requiring full reimbursement of

the previous year's loans by all members of the farmers' group before supplying new inputs.

The principal reforms targeted by the program were to reduce fertilizer subsidies gradually, to permit the private sector to participate in fertilizer marketing, and to reduce outstanding seasonal agricultural credits. The fertilizer subsidy covenants were satisfied in a de facto manner because the IMF Standby Agreement stipulated that the government would use none of its own funds for fertilizer subsidies. The government could, however, use the local currency generated from the ADAP to finance a 20 CFAF/kg subsidy for fertilizer in 1984. (As a result fertilizer prices were raised from about 50 CFAF to 80 CFAF, which still represented a 20 CFAF subsidy.) The covenant requiring the government to present a plan for reorganizing the fertilizer marketing system was not fulfilled, although the New Agricultural Policy presented in April 1984 endorsed cash sales to producers by the private sector as a strategy for financing fertilizer supply.

Fertilizer distribution policies have been improvised on a year-to-year basis since 1982. In 1982 and 1983 compulsory levies were imposed on farmers' peanut sales to finance the following year's purchase of fertilizer. Subsidized fertilizer was distributed through various RDAs in 1984. And in 1985 and 1986, cash sales of subsidized fertilizers have been made through private operators, the RDAs, and cooperatives. Delivery systems, credit, and subsidies vary considerably by region. As a result of reduced subsidies and credit, as well as uncertainties about pricing and

channels of distribution, fertilizer consumption has fallen dramatically from 70,000 tons in 1980 to about 25,000 tons in each of the past three years.

The reduction of outstanding agricultural credit was accomplished when the government repaid 20.6 million CFAF to the banking sector. The CPSP deficit was reduced from 8.7 billion CFAF to 3.5 billion CFAF by increasing the retail prices of rice, sugar and edible oils. These reforms were made in response to the coordinated conditions set out by the IMF, the World Bank, and AID.

The first ADAP included a Commodity Import Program (CIP) which itself was subject to considerable delays. The Government of Senegal failed to name importers for the fertilizer primarily because the removal of subsidies made it impossible to predict the effective demand, and importers might be unable to sell the quantity imported. AID took the lead in identifying an importer and reaching a contractual agreement with the government. But parastatals had problems paying for fertilizer because they were unable to obtain letters of credit from Senegalese banks.

Due to changes in international prices for sulfur, AID agreed to pay a price differential to US exporters. In addition, a shipping differential was paid to US shippers out of ODA funds to compensate for the higher cost of using US ships. As a result the 4,000 metric tons of sulfur, with a Dakar c.i.f. value of \$452,000 using world prices, was procured by paying a total of \$415,000 to US shippers and suppliers. As a result, only 52 percent of the \$867,600 disbursed for sulfur procurement can be properly termed

balance of payments support to Senegal.

The program has had the effect of drawing AID more actively into the policy reform process in Senegal. The reforms that coincided with the ADAP were not a GOS response to AID conditionality alone. The \$5 million commodity import program and the \$5 million ESF grant are small compared to the 1983/84 IMF Standby Agreement of \$69 million, a World Bank loan of \$30 million, and an IDA credit of \$30 million.

The scale of US involvement in structural adjustment in Senegal has been growing, however. In 1986, \$20 million is planned for AID nonproject assistance to Senegal, including a \$5 million Agricultural Production Support Project grant and \$15 million of a \$45 million, three-year Economic Support Fund IV program. It is important to point out that the AID's share of nonproject support is in the form of a grant rather than a loan and, as a result, AID's influence in the policy dialogue is likely to be more than proportional to the dollar amount of its program. In fact, AID has now become an influential partner -- along with the IMF, the World Bank, and France -- in the policy dialogue that appears to be making gradual, but substantial, progress. In addition to the reforms in the areas of rural credit and fertilizer distribution noted above, cereal marketing, except for rice, is now open to the private sector. Subsidies on fertilizer are to be removed gradually over the next three years. And considerable progress has been made in reducing the fiscal burden of the overstuffed RDAs: in the five principal agricultural development agencies, their staffs

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have been reduced by 40 percent, including a reduction in ISRA personnel from 1,192 to 500.

CHAPTER V. EVIDENCE OF THE IMPACT OF AID'S PROGRAM

This chapter seeks to assess the development impact of AID's activities in Senegal. A number of difficulties arise in attempting to do this. First and most obvious, "impact" is extremely difficult to measure. Even more difficult is trying to compare impact for very different types of activities such as rural health, farmer credit, or participant training, in comparable terms. The lack of sufficient data or consistent end-of-project evaluations prohibits a comparison of economic rates of return, as is the practice at the World Bank and elsewhere (a practice that is itself controversial). Nevertheless, there is enough evidence in many cases to permit informed judgments about impact. Those judgments, with supporting evidence, are presented below.

Because of the small share of total ODA going to Senegal that is contributed by AID, and the relatively short time during which the program has been sizable, it is impossible to use any national statistics, such as changes in income or production, as indicators of results attributable to AID assistance.

The reader should keep in mind that the focus of this study is on the development impact of agricultural aid, and not on other objectives of those resource flows. The importance of political and humanitarian objectives is made clear in the AID Congressional

Presentations and elsewhere. Since these other objectives are not considered explicitly in this study, the judgments made will tend to understate the effectiveness with which AID attains all its objectives.

Conceptual Framework

In order to assess the effectiveness of AID assistance in promoting agricultural and rural development, a framework is necessary to guide the analysis. As described in chapter 1, we take as a basis for analysis a framework derived from the substantial progress that has been made in the past 35 years toward understanding the development process and the critical elements of a development strategy. A set of general propositions guides the analysis, since AID's effectiveness in furthering agricultural and rural development depends not only on how well they achieved their specific goals, but whether the activities they chose to support constitute essential elements of a coherent, well-conceived strategy for agricultural development.

Thus we postulate a reasonable and widely-held view of the critical elements of agricultural development, beginning by viewing development as a "generalized process of capital accumulation" (following H. Johnson, 1969), in which capital is viewed broadly as physical capital (plant and equipment, natural resources), human capital (skills and competence), and social capital in the form of economically useful knowledge, organizations and organizational competence. This definition includes the establishment of

efficient social and economic mechanisms for maintaining and increasing large stocks of capital, including policies and institutions which permit and encourage efficient utilization of that capital. And emphasizing that a reasonable balance must be achieved among activities that foster growth in these various types of capital, as well as the various mechanisms that permit their efficient use, and recognition of the important contribution that technological change has made to agricultural growth (Hayami and Ruttan 1985, Johnston and Kilby 1975).

As stated earlier, this view of development does not ignore the importance placed by many on judging development on the basis of welfare and equity criteria, but rather it incorporates the lessons learned from the "basic needs" approach popularized in the mid-1970s which demonstrated that while investments in health, nutrition, education, and housing can contribute importantly to human welfare and to economic growth, it is the growth in the economic base that is needed in order to finance these investments.

Efficiency in Implementation

AID's projects have been implemented in various ways ranging from close supervision by direct-hire personnel, to use of contractors, or PVOs, to resting primary responsibility in an agency of the recipient country. Many projects in Senegal have experienced implementation problems, which in turn have hampered the achievement of intended goals. It is often difficult, however, to separate implementation problems from other structural or design

problems that have direct consequences for implementation.

Unrealistic estimates of costs and of the time required to accomplish specific activities have adversely affected some of projects in Senegal. This is partly the result of an incentive system within AID which encourages designing projects in such a way as to ensure approval. Delays in recruiting technical assistance teams, sluggish bureaucratic procedures in Senegalese agencies, and poor planning have all hampered AID projects. In the case of the Casamance Regional Development project, the overly ambitious and complex design of the project made effective implementation impossible. Discontinuities in project staffing, and delays in recruiting staff hindered implementation of that project. In addition, poorly defined division of responsibility among AID, contractors, and the Senegalese Government have caused delays and conflicts. Among the projects hurt by difficulties in the division of responsibility between AID and GOS agencies were Bakel SIP, SODESP Livestock, Cereals I and II, and Casamance Regional Development. And in the case of the livestock projects the goals of AID and of the GOS appear to have diverged, also adversely affecting implementation.

The Agricultural Research and Planning Project experienced only minor implementation problems. The AID Title XII regulations permitting university contractors to be involved in design and implementation added a degree of continuity that facilitated efficient implementation. AID also made funds available so that long-term training of Senegalese could begin even before the

project was initiated. Because MSU designed the project, they were able to avoid delays, and they knew exactly what the project design intended. AID staff point out that in some cases there is considerable confusion due to lack of communication and understanding between the design contractor and the project contractor.

Impact of AID's Agricultural Projects

The impact of AID's agricultural projects in Senegal has been minimal. In some cases the activities undertaken proved costly for Senegal because of the financial, staffing, and political costs associated with these undertakings. The major agricultural projects begun in the mid- and late 1970s failed to accomplish their objectives, and in the process they helped to create or expand government agencies that are ineffective and that have burdened Senegal with unsustainable recurrent costs. Most of AID's agriculture projects attempted to increase productivity, but they have been based on the transfer of specific technologies that have proved to be unsound, inappropriate, or nonexistent. Regional extension agencies were created or expanded to disseminate technical packages, but they delivered messages that were unacceptable or, in some cases, advised farmers to do things they were already doing. The AID mission recently expanded its involvement in two technology-based production projects, the irrigated perimeters in Bakel and the anti-salt dams in the Casamance. In both cases, the available evidence does not support

the claims made about the benefits of these technologies.

Senegal has presented a difficult environment in which to work over the past decade. The financial crisis beginning in 1979 forced all major donors to alter their strategies and concentrate on solving serious structural problems. Droughts occurred in 1977, 1979, 1980, and 1983, exacerbating the fiscal crisis and putting severe strains on the rural economy. To varying degrees this has affected the implementation and potential impact of some of AID's projects. But it is not clear that substantial success would have been achieved in the absence of these difficulties.

The impact of AID's major agricultural projects over the past decade has, to a large extent, been embodied in the four public agencies SODEVA, SOMIVAC, PIDAC, and SAED. These Regional Development Agencies (RDAs) are now under pressure to reduce staff, cut expenses, increase efficiency, and demonstrate their value. Their inability to deliver adequate services is documented not only in AID's evaluations but also in reports of the World Bank and the French. In general they indicate that the RDAs produce limited services at high cost, are not well received by farmers, and have little impact on production.

This burden created by development assistance is not limited to agriculture or to AID. Project proliferation in Senegal resulted in over 200 projects from the twelve major donors (Goldstein 1984) with enormous recurrent cost obligations. GOS commitments to future development and recurrent cost financing of several major investments are enormous. Senegalese investment in

the OMVS scheme alone is expected to use up about 40 percent of the capital investments of the Sixth Plan for 1984-89 (Linehan 1984). The Dakar Marina and the University of St. Louis, also imply sizable commitments. While the full recurrent cost burden of these, and all other donors' projects is not known, there is little doubt that the recurrent cost requirements cannot be met.

The Senegalese Government has contributed to the proliferation of projects and overcommitment. It appears to have been skillful in soliciting aid, and in the process it minimized and underestimated the recurrent costs because projects would have been less attractive to donors if the full costs were explicit. The government has been able to assume that, once donors were committed, they could be persuaded to provide additional funds to keep their projects going. In 1981 the government appealed to donors to cover the 9 to 11 billion CFAF in counterpart requirements for their projects (Goldstein 1984).

Among AID's projects, however, the Agricultural Research and Planning project has been exceptionally well implemented both by MSU and the AID mission. It has resulted in organizational development, human capital formation, and social capital in the form of economically useful knowledge. The scarcity of the kinds of information and analysis necessary to make policy decisions make it clear that the studies and the data collection efforts developed under the project are extremely valuable. Establishing within ISRA the capacity to continue producing this kind of knowledge can have a lasting impact. The long-term training included in the project

represents human capital formation in an environment that is severely lacking in trained manpower, especially in such fields as the agricultural sciences and economics. The project has made progress in developing the Senegalese capacity to do research and increase the knowledge base about agriculture -- beyond the experiment station -- something that has been seriously overlooked in the past.

The multidonor effort to reorganize ISRA, led by the World Bank, has had implementation problems; it is impossible to say whether the eventual structure and performance envisioned for ISRA can be achieved and sustained. If the reorganization is not successful then the macroeconomic and production systems research units established by MSU may have a reduced long-term impact. But it seems clear that a contribution has been made that will influence Senegal's policymaking and agricultural research system. And while the trainees that have benefited from the project may not fill positions that exactly fit their skills, there are many examples of individual achievements which suggest that human capital investment must be seen in broader terms.

Of the six countries being examined under the MADIA/USAID study, only in Senegal did AID become involved in an integrated rural development projects (IRD), with the Casamance Regional Development Project. The experience of that endeavor confirms the lessons learned elsewhere, that such projects are too complex, too expensive, and do not succeed in their goal of developing many aspects of a rural economy simultaneously. The high costs result

partly from the lack of absorptive capacity and weak institutional structure which lead to inefficient and ineffective use of funds. Their disappointing success has also been because of technological optimism, market limitations, attempting to do too much too quickly, and other reasons.

In contrast, the AID Sine Saloum Health program is one of a handful of primary health care programs in the developing world that are successfully managed and financed by users at the village level. The viability of this program has been achieved through village participation, whereby villagers have shared in the cost and management of the delivery system within their own communities. If long-term viability of this program is achieved, the benefits to the rural agricultural population should be substantial.

The Impact of Policy Dialogue

AID's direct involvement, since 1983, in nonproject assistance and policy dialogue has resulted in progress toward liberalizing agricultural marketing, pricing, credit, and reducing government debt reduction. This "policy dialogue," which has been coordinated with efforts of the IMF and the World Bank, has persuaded the Government of Senegal to move toward important reforms affecting agriculture, parastatals, prices and incentives, and fiscal and monetary policy. The government liquidated several inefficient public enterprises and has also successfully divested some public holdings such as SISCOA (Societe Industrielle Senegalaise de Constructions Mecaniques et de Matieries Agricoles). Staffing

levels have been reduced and wage and salary increases have been contained in the public sector. Agricultural prices have been increased to provide incentives to farmers; official prices for rice and fertilizer have risen.

Since US involvement began in this area with the 1983 fertilizer import program, the scale and influence of AID's policy reform program has grown substantially. The US is now one of four principal voices (along with the World Bank, the IMF, and France) in the policy dialogue which, after a difficult beginning, has made considerable progress.

These reforms are quite recent, however, and policy changes can be reversed. It would be premature to draw conclusions from this experience for several reasons. The political risks of pushing for too much too fast are well known. To some extent, Senegal has seen international assistance as a viable alternative to adjustment in the past, and aid flows that are concessional and fungible remain substantial. But if foreign assistance were to diminish, the short-term consequences could be serious. The urban population, trade unions, religious brotherhoods, and civil service are well-organized and powerful. It is impossible, however, to measure or predict the extent of the political risks involved in these reforms.

Policy reform can result in important long-term benefits, but it must be seen as a precondition for generalized development, a transitional phase rather than a long-term development strategy. Once Senegal's major policy problems are resolved, the gains to be

had from further reform will be reduced, and they will be much less persuasive. Furthermore, with economic and fiscal recovery, the willingness of the Senegalese to adhere to a donor's conditionality requirements will surely diminish.

AID's capacity in the area of policy reform is difficult to judge given the short time span and the close coordination with the other major donors. The AID mission recognizes the importance of information and analysis in choosing policy instruments and arguing persuasively for their use. While the cost of structural adjustment aid, in terms of staff to oversee implementation, may be much less than for project assistance, the requirements in terms of information, analysis, and sound judgment are high. Given the shift in program focus since 1983, it is imperative that AID staffing in Senegal be strengthened in those areas where expertise is needed in order to be in a position to offer well-founded policy advice to the government. Since conflicting advice from different donors would be counterproductive, collaboration is needed among donors and with the Senegalese Government in undertaking sector-policy analysis to form the basis for further AID programming discussions.

Biases and Distortions Caused by Aid

Aid can have unintended as well as intended effects. Offers of financial assistance by donors can bias the judgments made by recipients about policy and use of revenue. Sometimes the biases are intentional and constructive, as in the case of attaching

conditions for policy reform, or using aid to induce recipients into making long-term investments in agricultural education or research. In contrast, aid tying, recurrent costs problems, enlarged government bureaucracies, and government involvement in inappropriate activities are kinds of distortions that can be costly or counterproductive.

Examples of all these kinds of distortions can be found in the Senegal experience. In addition, one factor leading Senegal into its current economic crisis was the distorted perception that resulted from the government's belief that donors, especially France, would cushion them against the risks of economic downturn. As a result of this perception, the government was operating under unrealistic assumptions.

Immediately after the Sahel drought it was widely believed that government intervention was needed in Senegal to restore the agricultural economy to full productivity. The major donors, including AID, responded with initiatives that, together, left the government overextended. AID contributed directly to this problem with its project aid that encouraged expansion of regional parastatals such as SOMIVAC, PIDAC, SAED, and SODESP. The government and donors alike now acknowledge the burden this has placed on government revenues. Donors are now urging the government to reduce the burden of organizations which they helped to create.

It should be kept in mind that the financial burden is only one aspect of the problem. The more than 200 projects promoted by the major donors have also created less tangible burdens because of

their need for well-trained and experienced Senegalese. Projects often recruit staff by drawing individuals away from government jobs or other private sector employment, disrupting the functioning of the organizations that they leave and interrupting the careers of the individuals who are enticed by relatively high pay for what are generally temporary positions. Some AID-funded projects which include training components have contributed to the supply of well-trained individuals. But all too often donor projects have placed a burden on the limited pool of trained and experienced individuals.

CHAPTER VI. CONCLUSIONS AND RECOMMENDATIONS

This chapter summarizes the findings of this study. Conclusions and recommendations are based primarily on evidence from AID's experience in Senegal. But because the author is also examining AID programs in Cameroon and Nigeria, it is unavoidable -- and probably desirable -- that these conclusions reflect some of what has been learned from these countries as well. A set of conclusions are presented that reflect generalizations and patterns that emerge from the study. And recommendations are put forth which are believed to be reasonable proposals for improving the effectiveness of AID.

Several matters should be kept in mind when interpreting these conclusions and recommendations. First, the study is focused on the development objectives of aid and therefore will understate its overall effectiveness by ignoring the extent to which other objectives -- such as political or humanitarian ones -- are met. Second, the analysis is based to a large extent on judgment and subjective assessment of impact and success. Different people view the impact of AID's activities differently. Disparate assessments were weighed along with the available evidence in an effort to reach a balanced conclusion. Third, an attempt has been made to be "forward-looking" and practical in drawing conclusions and making

recommendations by focusing on modifications in what AID does and the way it does it that are realistic.

Conclusions

The Sahel drought created a situation in which AID was compelled to act and act swiftly to try to reduce the damage and at the same time to reduce the risk of a recurrent drought. That compelling situation led AID to initiate a number of activities that were not sustainable and that did not result in the kinds of benefits that were promised. Because of the pressure to initiate a program quickly, existing studies and plans developed during the 1960s formed the basis for these projects. AID's principal agricultural projects in Senegal, begun in the mid- and late 1970s, were efforts to increase agricultural production. They were ineffective to that end.

Integrated rural development, livestock/range management, and extension/production projects were popular approaches taken by AID and other donors as well to address Africa's problems in the 1970s. The results of these activities in Senegal confirm the lessons learned elsewhere: integrated rural development projects and livestock projects have been unsuccessful, and extension programs without a salable product will not affect production.

The AID mission in Senegal was at times recalcitrant, unwilling to acknowledge clear evidence that their principal projects were not achieving their goals. Many evaluations made the lack of success clear, but the mission failed to adopt an "error-

embracing" attitude, resulting in its prolonged and costly involvement in a number of unsuccessful projects. In contrast, in the case of the first Bakel irrigation project and the Sine Saloum Health Services project, the mission did respond to very critical midterm evaluations, and it took effective action to correct serious management and implementation problems. More recently, however, with respect to irrigation in Bakel and anti-salt dams in Casamance, the tendency has persisted to defend the mission's ongoing activities beyond what the facts support.

The evolution of development thinking over the past twenty-five years makes the importance of learning-by-doing eminently clear. What is now known about the difficulties of trying to manage livestock in Africa, or about the unlikely success of integrated rural development, is the result of having tried them. If AID and other donors had not made the attempts, we would not today be aware of many of the difficulties involved. What is essential, however, is to learn these kinds of lessons quickly (to minimize the costs of learning), and to retain the knowledge that has been acquired.

AID's efforts to increase agricultural production in much of Africa underscore an important misperception. Many agricultural projects and agricultural research efforts in Africa have been narrowly focused on yield as the single most important measure of agricultural improvements over traditional practices. This focus is misleading when farmers' labor is scarce and land is relatively abundant, and it has resulted in a misguided preoccupation with

attempting to increase yields while ignoring the extremely high demands being made on a farmer's valuable time. Recognizing that farmer's objective is to increase the returns to labor, and that during critical periods of the growing season his or her labor is extremely scarce, is fundamentally important if progress is to be made in developing technologies appropriate for much of West Africa.

AID's recent involvement in policy dialogue and nonproject assistance, along with the World Bank, the IMF, and France, has resulted in substantial progress toward liberalizing agricultural marketing and pricing, credit restructuring, and reducing government debt. These reforms, if maintained, could have substantial benefits.

The study suggests a number of specific conclusions as well.

1. AID's project designs are often unrealistic. Given the procedures used, AID seems to be unable to base project identification and design on realistic assumptions and assessments of the benefits that can be expected. The economic analyses of the benefits and costs are not required to rest on empirically supportable and realistic assumptions. Many AID projects try to do too much in too short a time with too few resources. The incentives within AID focus attention on getting projects approved, not on making them successful. As a result, projects are often designed to make them acceptable in Washington.

2. AID has been negligent in the monitoring and data collection that is necessary to verify progress toward achieving

the benefits upon which a project's approval and success are based. Few serious efforts have been made to demonstrate the actual gains in agricultural productivity resulting from a project, even after project evaluations have cautioned that this was a serious omission.

3. Project aid from AID and other donors to Senegal has exceeded the limited absorptive capacity of the country. The lure of grant aid has led Senegal to overcommit itself with respect to counterpart funding requirements, recurrent costs, and especially the provision manpower with the skill and competence to implement and manage projects effectively.

4. Lack of continuity has impeded AID's ability to make more substantial contributions to fostering agricultural development. Discontinuities and delays in recruiting mission staff and contract staff have hurt project implementation. Vacant positions in AID staffing appear to result from a combination of recruiting difficulties and poor planning. The turnover of staff has affected project performance, limited institutional memory, and inhibited "learning-by-doing."

5. The AID system places more importance on funding levels than on the success of its activities. AID staff are rewarded for obligating funds, not for implementing successful projects. Those who design or promote projects that are inappropriate or based on unrealistic assumptions are not held accountable, nor is their career advancement adversely affected when these projects ultimately fail. This is partly due to the difficulty of measuring

impact, or separating external factors from design or implementation errors. But it is also due in large part to the nature of the incentive system, combined with the pressures from Washington to "move money." Moreover, since staff assignments are short, the individual responsible for a particular initiative is rarely present when the outcome of their decisions are felt.

6. Project evaluations done by consultants under contract can sometimes be biased toward the outcome desired by the mission. Since consulting firms get their contracts directly from the mission, it is in their interest (because they want future contracts) to please the mission. As a result some evaluations are too generous to the project being assessed. A careful reading can reveal an attempt to camouflage serious problems.

7. Knowledge about agricultural resources and productivities in Africa are extremely poor. For African governments to make policy and manage their agricultural sectors, these data bases must be improved. AID efforts such as the Agricultural Research and Planning Project contribute importantly to developing this valuable knowledge. Recognition of this lack of essential information is expressed in numerous AID documents for Senegal and other African countries. But AID seems reluctant to commit substantial funds to fill this gap, in part because the benefits are less tangible than in the case of trying to affect production directly.

8. To implement projects well, the institutional capacity and skills to undertake development activities are essential given the complexities involved. The fact that Michigan State University had

experience in Africa as an institution, and also had many staff with African experience and language skills, was important in the success of the Agricultural Research and Planning Project.

9. Nonproject aid to promote policy reform can result in important changes with long-term effects on agricultural development. However, as a donor strategy it is transitional and cannot form the basis of a long-term development strategy. This kind of aid contributes only indirectly to the "generalized process of capital accumulation," by helping to create a favorable policy environment and promote the "establishment of efficient social and economic mechanisms for maintaining and increasing large stocks of capital per head in the various forms" (H. Johnson 1969). Nonproject assistance may be less costly for AID to manage, but it requires thorough analysis and consistent advice by skilled and knowledgeable staff. Inconsistent advice stemming from changes in ideological views or shifts in directives from Washington could result in a loss of credibility as well as adverse consequences for development. The scarcity of basic data on the agricultural economy makes it impossible to predict the outcomes of specific policy changes. Thus changes in cereal prices, fertilizer prices, and distribution systems are promoted with little more than guesswork on the effects. For example, recently the question of privatization in Senegal resulted in a great deal of speculation (with little supportive evidence) about the capacity of private entrepreneurs to fulfill the role of the parastatals.

10. There are limits to what can be accomplished using aid

ted to policy reform. First, once major policies that inhibit efficiency and productivity are corrected, the returns to further conditional aid will diminish. Second, a government's responsiveness to sectoral support and its conditions is a function of the costs of refusal. Senegal has been an exception because its current crisis has limited the available options. Third, it is extremely difficult to recognize and assess the legitimate political justification for policies that appear, in economic terms, to be inefficient and costly.

Recommendations on Choice of Activity

1. AID's successful involvement with agricultural research should be continued. The links that have begun to form between ISRA and international centers such as ICRISAT and IITA should be strengthened.
2. AID should continue to support the establishment of sustainable systems for collecting basic statistics on agricultural resources and productivity. Essential knowledge about agricultural resources is currently inadequate. Policymakers are "planning without facts." Collection of basic data on crop acreage, yields, production, and livestock numbers merits a high priority.
3. Investments in human capital both through participant training and support for educational institutions should be continued. These investments must be carefully balanced with current and future demand for specific skills, but they are relatively easy to implement and the payoffs can be high and

sustainable.

4. Projects based on the transfer of a specific technological package offering high productivity gains -- such as deferred grazing schemes or a millet production package -- should be viewed with great skepticism. Such technologies are particularly susceptible to exaggeration and unrealistic assumptions. Their appropriateness is extremely difficult to judge ex ante, and the projects have generally been unsuccessful.

5. AID should avoid projects which are complex and require intensive management and supervision. AID staff resources are scarce. Project difficulties and problems are exacerbated by discontinuities in staffing, delays, and inexperience.

6. Projects which require the creation of a management entity are especially difficult to carry out successfully and should be avoided except when there are compelling reasons. It is extremely difficult in a short time to establish a viable and effective institution with an incentive system that encourages efficiency and discourages abuses. Furthermore, new institutions place additional demands on one of Africa's scarcest resources -- the limited skilled, well-trained, and experienced manpower.

Recommendations on Implementation

1. Some device is needed to enforce realism in project design. Improved accountability for the assumptions, and realism of the estimated benefits and costs, must be made. AID cannot continue to approve projects based on an economic analysis like that found in

the Irrigation and Water Management I Project. Specific changes are difficult to prescribe, but assigning authorship to project design documents -- and attribution for specific figures and assumptions might create an incentive for making more realistic assessments of projects.

2. AID should implement a more systematic procedure for evaluating its projects, insisting on high and consistent quality in the reports and on the power to enforce their recommendations. Contracting evaluations to consulting firms should be handled by AID/Washington to avoid conflict of interest when consulting firms try to please the mission. An autonomous yet powerful evaluation office is needed. Evaluations could be handled similar to Inspector General's Audits, where their recommendations can be enforced and are therefore taken seriously. Augmenting the responsibilities -- and technical competence -- of the Inspector General's office might be an effective way to do this.

3. AID procedures should be improved to facilitate "learning-by-doing" and the creation of institutional memory. Learning would be enhanced, and continuity increased, if staff remained in one country for a longer time, or if staff were involved with a specific region or country over an extended period -- including time in Washington. This would augment AID's institutional memory as well as the staff's expertise. The kind of experience that Michigan State University brought to the Agricultural Research and Planning Project is evidence of the value in encouraging the development of those capabilities.

4. In the case of agricultural production projects, data collection and monitoring of progress toward project objectives should be done throughout the course of the project, and in such a way that productivity gains attributable to the project can be measured. Doing this kind of monitoring through a national institutional body is much more preferable than creating a special study.

APPENDIX

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