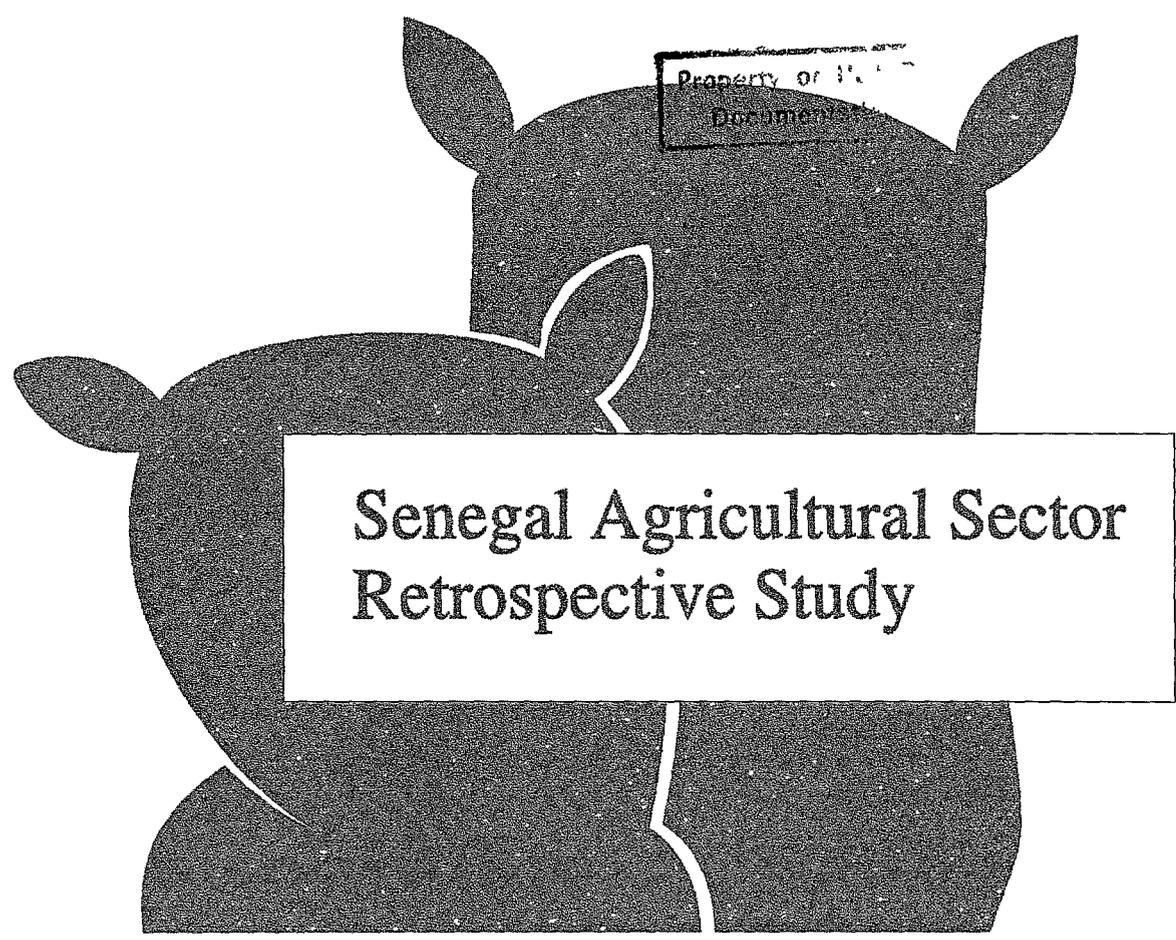


- PN-ACE-382 -

99444



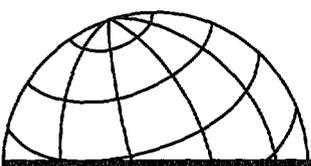
Property of U.S. Agency for International Development

**Senegal Agricultural Sector
Retrospective Study**

Property of U.S. Agency for International Development

Submitted to
 United States Agency for International Development
 Under Contract LAG-4200-I-00-3056-00

Submitted by
Tropical Research and Development, Inc
 7001 S W 24th Avenue
 Gainesville, Florida 32607 USA



September 1996

PN-ACE-382

SENEGAL AGRICULTURAL SECTOR RETROSPECTIVE STUDY

Property of USAID/DA P
Document

Written by.
Millie Gadbois
Mamadou Daffe
Abdrahmane Diallo

Property of USAID/DA P

**Submitted to
U S Agency for International Development
Under Contract LAG-4200-I-00-3056-00**

**Submitted by.
Tropical Research and Development, Inc
Gamesville, Florida, U.S A.**

September 1996

Senegal Agricultural Sector Retrospective Study

EXECUTIVE SUMMARY	ES-1
I INTRODUCTION	I-1
II USAID-FUNDED AGRICULTURAL PROJECTS AND THE AGRICULTURAL POLICY ENVIRONMENT IN SENEGAL	II-1
III THE IMPACT OF USAID-FUNDED AGRICULTURAL ACTIVITIES DURING THE PAST 35 YEARS	III-1
IV SUSTAINABILITY AND REPLICABILITY OF IMPACTS	IV-1
V CROSS-CUTTING ISSUES	V-1
VI CONCLUSIONS, LESSONS LEARNED AND RECOMMENDATIONS	VI-1

Annex I
Annex II

Bibliography
Scope of Work

LIST OF ACRONYMS

ACDI	Agence Canadienne de Developpement International
ADO	Agricultural Development Office (USAID)
ASAL	Agricultural Sector Adjustment Loan
ATI	Appropriate Technology International
CBNRM	Community-Based Natural Resources Management (Project)
CCCE	Caisse Centrale de Cooperation Francaise
CCG	Champs Collectifs de Gestion
CDSS	Country Development Strategy Statement
CONSERE	Conseil Superieure de L'Environnement et des Ressources Naturelles
CNCAS	Caisse Nationale de Credit Agricole du Senegal
CNRA	Centre National de Recherche Agricole
CPSP	Caisse Nationale de Perequation et de Stabilisation des Prix
CPSP	Country Program Strategic Plan
CR	Communaute Rurale
CTL	Conservation des Terroirs du Littoral
DAT	Direction de l'Amenagement du Territoire
DPDA	Declaration de Politique de Developpement Agricole (DPDA)
EBA	Enterprise a Base Agricole
ESF	Economic Support Fund
FAO	Food and Agricultural Organization
FPOB	Federation des Paysans de Bakel
FSR	Farming Systems Research
GDP	Gross Domestic Product
GIE	Groupement d'Interet Economique
GOS	Government of Senegal
IFPRI	International Food Policy Research Institute
IRD	Integrated Rural Development
IMF	International Monetary Fund
ISRA	Institut Senegalais de Recherches Agricole
KAED	Kaolack Agricultural Enterprise Development
KAP	Knowledge, Attitudes and Practice (Study)
LPDA	Lettre de Politique de Developpement Agricole
MEPN	Ministère de l'Environnement et Protection de la Nature
MDR	Ministère du Developpement Rural
NAP/NPA	New Agricultural Policy/Nouvelle Politique Agricole
NRBAR	Natural Resources-Based Agricultural Research
OMVS	Organisation pour la Mise en Valeur du Fleuve Senegal

Senegal Agricultural Sector Retrospective Study

ONCAD	Office National de Cooperation et d'Assistance au Developpement
ONG	Organisation Non-Gouvernementale
PACD	Project Assistance Completion Date
PASA	Programme d'Ajustement Structurelle Agricole
PGCRN	Projet de Gestion Communautaire des Ressources Naturelles
PIDAC	Projet Integre pour le Developpement Agricole de la Casamance
PNAT	Plan Nationale d'Amenagement du Territoire
PNUD	Programme des Nations Unis Pour le Developpement
PRECOBA	Projet de Reboisement et de Conservation du Bassin Arachidier
PROGES	Projet Gestion de l'Eau dans le Zone Sud
PRS	Projet Rural de Sedhiou
PRS	Projet de Reboisement du Senegal
PSR	Production Systems Research
RN	Ressources Naturelle
RSI	Remote Sensing Institute
PVO	Private Voluntary Organization
RDA	Regional Development Agency
SAED	Société d'Amenagement et d'Exploitation des Terres du Delta du Fleuve Senegal et des Vallees du Fleuve Senegal et de la Faleme
SODAGRI	Société de Developpement Agricole et Industriel du Senegal
SODEFITEX	Société de Developpement des Fibres Textiles
SODESP	Société de Developpement de l'Elevage dans la Zone Sylvo-Pastorale
SODEVA	Société de Developpement et de Vulgarisation Agricole
SOMIVAC	Société pour la Mise en Valeur Agricole de la Casamance
SONAR	Société Nationale d'Approvisionnement du Monde Rural
SZWMP	Southern Zone Water Management Project (PROGES)
UG	Unite de Gestion
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WID	Women in Development

EXECUTIVE SUMMARY

A Background to the Study

USAID has undertaken 36 years of development assistance to Senegal (1961-1996) including the financing of nearly forty bilateral projects in agriculture, rural development and natural resources. Funding of these activities has totaled nearly \$180 million. In addition to the bi-lateral projects, USAID/Senegal also participated in a number of regional agricultural and rural development projects over the period. Activities ranged from seed and cereal production, livestock production and poultry research, and dune stabilization to integrated rural development, agricultural research, irrigation, reforestation, and investments in agricultural enterprises. Projects were conducted throughout the country from the Senegal River Basin and the North Atlantic Littoral to the Peanut Basin, Senegal Oriental and the Casamance.

The study of USAID/Senegal's activities in the agricultural sector is part of a comprehensive effort to develop the necessary documentation for the preparation of the sector analyses which will serve as the basis of the Mission's new strategy.

B Objectives and Scope of the Retrospective Study

The principal objectives of the study are to review and assess the impact of USAID's agricultural, rural development and natural resource activities in Senegal during the past thirty-six years, with particular emphasis on the period of the last twelve years, when the Government of Senegal initiated its New Agricultural Policy (in 1984). The study focuses on the impact, sustainability, and replicability of USAID's financing of the agricultural sector, as well as the lessons learned from past and present projects successes and failures, and recommendations for future strategy. The study also analyzes the assumptions made in undertaking these activities and assesses their relevance to meeting Senegal's agricultural needs. Projects are assessed as to their conformity with USAID/Senegal and GOS policies at the time.

C Methodology

The retrospective study was undertaken over an eight week period between June and August 1996. The team was composed of an agricultural economist/team leader, an agronomist, and a sociologist. The initial two weeks were spent in Dakar reviewing documentation, meeting with relevant USAID and GOS personnel, and planning the study methodology. The documentation was vast, and included both project-related and more general USAID and GOS agricultural policy documentation.

The next three weeks were spent visiting past and present project sites, interviewing both officials and project participants. When interviewing farmers or other beneficiaries, the team employed a Rapid Reconnaissance survey approach. The team traveled first to the Casamance Kolda, and Kaolack Regions, where present and past project officials and beneficiaries were interviewed, and project sites visited. The team next traveled to the Bakel area, and then to St Louis. On-going and/or former projects were also visited in Louga, Thies, and Diourbel. The remaining three weeks were spent preparing the draft and final report, meeting with GOS officials and other donors, and holding follow-up discussions with USAID/Dakar.

D Choice of Representative Agricultural Project

Approximately 37 major bi-lateral agricultural projects have been funded over the past 35 years. Because of time limitations, the team identified a sample of approximately 20 USAID-funded agricultural projects which we found to be representative.

Several criteria were used by the team to identify representative projects, including the policy in the agricultural sector at the time of project design and implementation, the type of project, and the extent to which it represented a particular development strategy or theme, such as integrated rural development (IRD), farming systems research (FSR), or policy reform, and the region.

E The Agricultural Policy Environment in Senegal

The macro-economic and agricultural policies in place during the past 36 years provide the background for understanding the agricultural sector, and the context in which USAID/Dakar's investments were made, and the projects themselves.

From 1960 through 1996, four major agricultural policy eras have been identified: the period of heavy state involvement in agriculture (1960-1983), the New Agricultural Policy (1984-Early 1990's), when the state considerably reduced the level of financing and control of agriculture, Structural Adjustment (Early 1990's-1993), a continuation of the slow process of reform begun under NAP, and the post-devaluation era (1994-present).

Agricultural policy in the post-independence period was characterized by heavy state involvement in agriculture, with prices and marketing controlled by the state. Agricultural production grew at a faster rate (4.4 percent annually) than did the economy in the immediate post-independence years from 1959-1968. But, by the late 1960's agricultural production began to fluctuate sharply due to a combination of drought and low producer prices (Abt Associates, 1985). The stagnation of the agricultural sector in this period is attributed to periods of prolonged drought, exogenous international economic factors, and inappropriate GOS policies.

Rural institutions formed purportedly to assist the rural sector did not accomplish their mission, and indeed, often had negative effects on the sector. This was particularly the case of ONCAD (*Office National de Cooperation et d'Assistance au Developpement*) whose role was to control domestic peanut and cereals markets, and to implement a national agricultural credit program.

By the late 1960's regional development agencies (RDA's), such as SODEVA, SAED, SODESP, SODAGRI, SODEFITEX, and the SOMIVAC had replaced the under-financed traditional services which had existed since the colonial era. But the effectiveness of the RDA's was often thwarted by overcentralized decision-making, a tendency to disperse efforts by trying to provide too many services, a paternalistic and authoritarian approach to the rural population, and extension of technologies inappropriate to on-farm conditions.

By the late 1970s, however, the agricultural sector (and the Senegalese economy) was in a crisis, with mounting balance of payments problems, a second oil "shock", an appreciating US dollar (which substantially increased the debt service burden owed in dollars), a decline in the world market price of peanuts, recurrent drought, political pressure to maintain subsidies for urban consumers, declining farmer confidence in GOS agricultural policies (as demonstrated by a general refusal to repay debts as farmers increasingly sold peanuts outside formal marketing channels where prices were higher) and the complete breakdown of the rural credit system.

In the early 1980s GOS pricing policies which had favored urban consumers by maintaining low producer prices were reversed for several years in an attempt to encourage production.

In 1984 the GOS announced the New Agricultural Policy (NAP), which was a major effort by the government to cutback state investment and involvement in the agricultural sector. This would be achieved by severely reducing the financing of RDA's, and increasing the efficiency of input delivery services. The NAP heralded the gradual withdrawal of the state from activities which could instead be undertaken by farmer-based organizations or the private sector.

The average farmer was by this time facing a continued situation of declining farm revenues, and little possibility of raising productivity because of the rising cost of inputs (which were increasing much faster than producer prices), and lack of access to credit.

By 1989 the NAP was effectively dead and was replaced by a period of structural adjustment outlined in the Agricultural Adjustment Loan (ASAL, or PASA in French). Structural adjustment continued to be ineffective in large part due to the continued overvaluation of the CFA. Discussions concerning the ASAL continued throughout the 1980's but the agreement was finally signed in 199-

There is little evidence, however, that structural adjustment has increased agricultural production. The above-mentioned shift in production away from cash crops to food crops cannot be attributed

to policy reform, as relative prices did not move significantly in favor of food crops. There is also little evidence of increased productivity of land or labor attributable to structural adjustment.

Agricultural policy reforms were only fully implemented after the devaluation of the F CFA by 50 percent in January 1993, in the opinion of many. The present agricultural policy includes many of the same reform objectives stated in NAP and the ASAL, including the liberalization of input markets, the reduction in GOS involvement in the agricultural sector, the granting of legal title to farmer's lands, and the promotion of private investment in agriculture. In other words, farmers must develop strategies for competing in the free market without any assistance from the state.

But it is still unclear how the private sector can replace the void left by the GOS retreat from input and output markets and extension and agricultural research, especially in those sectors or zones where it is not profitable for them to invest. While it is true that it will take time for private traders to develop and respond to investment opportunities, the evidence thus far is that the private sector has not replaced the GOS in many of these functions. As a result, there is a void, the farmers are on their own (at least those encountered by the study team), without extension, inputs, agricultural equipment, or access to credit.

In the absence of improved seeds, fertilizer, insecticides, extension services, and adaptive research to improve/restore soil fertility (without which yields will not be sufficient to justify the cost of improved inputs, assuming their availability), it will be impossible to attain the LPDA objective of increased agricultural productivity and competition. Improved inputs are necessary to increase productivity, but also to conserve an increasingly degraded natural resource base. At present prices, inputs are beyond the means of the vast majority of Senegalese farmers.

F USAID/Senegal Policies/Objectives/Strategies and Agricultural Projects

USAID/Dakar began operation in 1961 and was immediately involved in agricultural development. Over the next 36 years more than \$180 million was invested in 38 bilateral agricultural projects, regional programs, such as OMVS, and agricultural activities supported through PL 480 funds. Six major periods or phases of U S bilateral assistance to Senegal's agricultural sector have been identified: the early years (1961-1970), regional development programs (1970-1975), integrated rural development (1975-1980), the transition (1981-1985), the structural adjustment (1986-1991), the natural resource management (1992-1997).

Early Years (1961-1970)

The early years of USAID/Dakar's involvement in the agricultural sector were optimistic years for agricultural development. USAID investments during this period were generally production oriented in such areas as seed improvement and agricultural extension, water resource development, and poultry research and extension. The projects were small-scale.

There was really no prevailing strategy for USAID agricultural investments at this time, it was, as Acedo (1995) states, a policy of "learn as you go " The underlying assumption, however, was that diffusion of available technologies would increase agricultural production

Regional Development Programs (1970-1975)

It was during this period that most of the regional development agencies (RDA's) were created by the GOS, as well as numerous agricultural-related parastatals USAID did not finance any bilateral agricultural projects during this period, as USAID/Dakar became the Regional Development Office (RDO) for six West African countries

Integrated Rural Development (1975-1980)

USAID discontinued its regional approach to development assistance to return to bi-lateral assistance projects during this period Massive relief efforts were also funded to alleviate conditions caused by the worst drought in 60 years In addition to humanitarian assistance, there were many small-scale agricultural projects aimed at mitigating the impact of the drought in rural areas

But it was during this time that USAID financed several major integrated rural (and regional) development projects in the Fleuve, Peanut Basin, and the Casamance This strategy reflected the prevailing development theory of the day, that meeting basic human needs is the first step in the development process

Major projects included the Bakel Small Irrigated Perimeters, the Grain Storage Project, Cereals Production (Phase II), the Casamance Regional Development, and SODESP Livestock Production These projects were generally institution-building in nature, with significant inputs of technical assistance They were usually integrated in nature and included technology transfer and agricultural extension and research

In 1980, a joint USAID/GOS evaluation of US bilateral assistance of the 1975-1980 period was undertaken Most of the projects discussed were agricultural

In the assessment the approach of undertaking development via public institutions such as the RDA's is first called into question, and the need to increasingly involve non-public local institutions in development assistance is recommended The concept of the need for policy reform to reduce farmer reliance on public services, such as subsidized inputs, credit, and GOS extension services is also broached, with the proviso that the impact of unregulated input and output markets on the rural sector needs to be further studied

The Transition (1981-1985)

These years also signaled the transition on the part of GOS agricultural policy from an interventionist (although often ineffective) provider of rural services to a gradual withdrawing of the state from many of its activities. This transition was occurring in a time of continuing financial crisis for the GOS, and a growing food deficit for the country.

USAID/Senegal developed a new CDSS which had the major goal of maintaining long-range food self-sufficiency (although the way in which food self-sufficiency was defined it is clear that the notion of food security was really the intended goal.)

There was a greater emphasis during this period on non-project assistance, as USAID was transferring resources to the GOS to implement policy reforms. USAID activities were consolidated from five to three geographical areas: Sine Saloum, Casamance, and the Fleuve.

Structural Adjustment (1986-1991)

The CDSS for the 1986-1990 period maintained the overriding objective of supporting Senegal's goal of achieving self-reliance in food production. (Even though studies funded by USAID/Senegal maintained self-sufficiency was an unrealistic and economically inefficient for Senegal.) The short-term measurable goal was to achieve a positive per capita rate of increase in Gross Domestic Product (GDP) through the interaction of efforts to improve economic performance through policy reform, a 5 percent annual increase in cereal production, and decreases in the fertility rate through family planning.

The NAP had made much of USAID's prior focus regional rural development obsolete. The new agricultural projects were designed to develop technology, transfer those technologies to farmers and rural enterprises, and support increases in production through free market structures.

Major agricultural projects started during this period include Agricultural Production Support, PVO/NGO Support Project, Southern Zone Water Management, the Reforestation Project, and the Natural Resource-Based Agricultural Research Project.

In 1988, in accordance with USAID's Strategy for Sustainable Development, the Dakar mission revised its goal to increase per capita growth and food security through an orderly process of financial stabilization, structural reform and projects in selected key areas. (At last there was recognition the part of USAID/Dakar that self-sufficiency in food production was not attainable.)

The mission defined three strategic objectives:

1. Promote a dynamic market economy

- 2 Increase cereals production
- 3 Improve Family Health

USAID continued its policy dialogue on reforms of the agricultural sector through the ESF (II-V) and PL480 Title I programs

Natural Resource Management (1992-1997)

In 1991 USAID/Senegal prepared a CPSP for the 1992-1997 period which acknowledged that the three strategic objectives defined in 1988 were too broad and were unattainable for the USAID/Dakar mission. It was decided to concentrate on the fundamental problem in Senegal of reaching a balance between population growth and natural resources. The policy reform dialogue between USAID/Dakar and the GOS would also concentrate in these areas.

The CPSP also emphasized elements of the agencies "Strategy for Sustainable Development" which included support for sustainable and participatory development with a focus on developing partnerships and the need to develop a constituency for policy reform within the GOS. But it was never specified precisely how participation and partnership would be developed.

Four strategic objectives were defined:

- 1 Decreased family size
- 2 Increased crop productivity in zones of reliable rainfall
- 3 Increased value of tree crop production
- 4 Increased liberalization of the market

The CPSP was developed in an environment of increasing financial uncertainty of USAID. The future of the agency was in doubt during 1992/93. At the present time USAID/Dakar is developing the necessary documentation for the preparation of sector analyses which will assist in the preparation of the new strategy for the 1997-2005 period.

Agricultural projects initiated during this period include the Kaolack Agricultural Enterprise Development Project and the Community-Based Natural Resource Management Project.

G. The Impact of USAID-Funded Agricultural Activities During the Past 35 Years

Early Projects (1961-1983)

The earlier projects corresponded with a period of heavy GOS involvement in the agricultural sector, with investments funded through RDA's, traditional services or research institutions. The projects from this era chosen by the study team are reflective of the period.

Cereals Production Phase I (1975-1979) was part of USAID's medium-term response to the drought, and was a crop intensification project undertaken with the RDA SODEVA in the Thies, Diourbel, Kaolack and Fatick regions in the Peanut Basin and in Louga Range and Livestock development (1975-1985) was both a livestock and infrastructural development project undertaken in collaboration with traditional services in the Bakel area. The Casamance Regional Development Project (1978-1986) was an integrated development project that also combined agricultural production and research with institutional development. The institutions involved were SOMIVAC, PIDAC and ISRA/Djibelor. The Bakel Small Irrigated Perimeters Project (1977-1986) involved the introduction of irrigated rice into the zone via the SAED. The SAED Personnel Training Project (1979-1986) provided institutional support to SAED. The Africare Reforestation (1979-1983) and the Dune Stabilization Project (1981-1987) were prototypes of future natural resource conservation and management projects.

The projects undertaken in these years shared many characteristics. The earlier projects were a medium-term response to the drought and involved the intensification of agricultural production with the (unrealistic) objective of attaining food self-sufficiency.

By the 1970's, and in keeping with the GOS's policy of heavy state involvement in agriculture, the projects were large-scale integrated rural development projects, usually undertaken by RDA's. Agricultural production and intensification were the primary elements in these projects, but related components included input supply, rural credit, literacy training, livestock activities, and infrastructure development, among others.

The support and development of collaborating institutions (SODEVA, SAED, SOMIVAC, ISRA) were important parts of these projects, as was the training of participants at all levels (farmers, extension agents, and institution personnel).

These projects were successful in developing and disseminating technologies to farmers, although the changing agricultural policy environment has rendered unsustainable (or non cost-effective) some of the more high-input technologies. Much of the infrastructure constructed during this period has remained in continued use, and includes grain storage warehouses, wells, dikes, office buildings, residential dwellings, and roads.

The activities undertaken in early natural resource projects have served as a basis for future natural resource conservation and management policy strategy, which was employed by USAID and the GOS to improve Senegal's heavily deteriorated natural resource base. Although located in specific geographical areas, the results of these two projects have had a wider impact as they have served as test sites for future natural resource conservation strategies, which continue to be used to gradually but significantly improve Senegal's natural resource base.

The NAP Era Projects (1984-1991)

The agricultural projects funded during this period corresponded with the objectives of the New Agricultural Policy (NAP) and the Cereals Plan formulated by the GOS in the mid-1980's, which reduced state involvement in the agricultural sector and promoted price and market liberalization, together with improved resource management

Projects funded during these years were of two general types those involving increased agricultural production and productivity and those involving institutional development and/or technology transfer Production projects include Cereal Production, Phase II (1980-1991), Irrigation and Water Management I (1985-1991), Reforestation (1986-1993), and Southern Zone Water Management (1988-1997) Institutional support and technology transfer projects include National Land Use for Planning and Development (1981-1985), Agricultural Research and Planning I (1981-1988), Community and Enterprise Development, and Technology Transfer (1985-1995)

The projects were less integrated, often concentrating on one particular component, such as water resource development and management (Southern Zone Water Management Project, Irrigation and Water Management I Project), reforestation or land use planning There were also umbrella project, which financed a multitude of smaller interventions

As GOS policy was to reduce the role of the state in agriculture, USAID projects started to collaborate more fully with NGOs and farmers (and other private sector) groups, as in the Community and Enterprise Development Project This was also in keeping with the increased awareness on the part of USAID of the need to increase the participation of project beneficiaries in project identification and implementation

The Senegal Reforestation Project also reflected the existing environment of reduced state services in the forestry sub-sector A major impact of the project was its collaboration with the private sector and village groups in reforestation activities, which was in many ways a model for future projects, as was its participatory approach

Due to the sudden and premature closing of the Irrigation and Water Management Project and the Agricultural Production Support Project (685-0269), they did not achieve their objectives and had little positive impact Other projects, such as the "Buffalo" sub-project had such weak results that it is difficult to assess the impact

Recent Projects (1992-1997)

The most recent agricultural projects correspond with the 1992-1997 Country Program Strategic Plan developed by USAID/Dakar in 1991 The strategic goal was to increase private incomes

derived from natural resources. Four strategic objectives were defined, three of which are related to agriculture:

- Increase Crop Productivity in Zones of Reliable Rainfall (Strategic Objective N° 2),
- Increase the Value of Tree Production (Strategic Objective N° 3),
- Increase Market Liberalization of Agricultural and Natural Resource Products (Strategic Objective N° 4),

Projects funded during this period include the NGO/PVO Support (1990-1998), Natural Resource-Based Agricultural Research (NRBAR), 1991-1998, Kaolack Agricultural Enterprise Development (KAED), 1992-1997, and Community-Based Natural Resource Management (CBNRM), 1993-2002.

Several of the projects funded correspond with Strategic Objective N° 1, including NRBAR, KAED, and CBNRM, and whose activities concern research and implementation of natural resource-based technologies.

Sub-objectives of the first strategic objective concern the increase of soil productivity by increased use of improved technologies, such as windscreens, living hedges, field trees, use of fallow, chemical and organic fertilizers, crop rotation, water resource management, improved seeds, erosion control, etc.

While it is premature to see the impacts of these recently funded projects, it is evident that project beneficiaries have become more involved in choosing and managing project activities. This is true of KAED, and in CBNRM, which is only in its initial phase. The inclusion of revenue-generating activities, combined with natural resource management strategies in KAED will be instrumental to post-project sustainability.

H Conclusions

1 General

- USAID funding of the agricultural sector has achieved much success, particularly in the area of training, transfer of agricultural and natural resource-based technologies, and institutional development. These successes have been achieved in an environment of uncertain rainfall and worsening agro-climatic conditions over the past 25 years. The agricultural situation in Senegal would have been far worse in the absence of funding.
- Significant portions of project funds do not reach the ultimate beneficiaries and do not arrive at the village or farm-level. Large percentages of total funds have been

allocated to expatriate technical assistance or GOS administrative structures

2 *Policy Environment*

- Changing agricultural policies have not provided an enabling environment in the short or medium-term for most farmers
- In the pre-NAP years of heavy GOS involvement in agricultural sector, there was poor performance of RDA's and traditional services of input delivery
- Post-NAP Policy Reform Years
 - little, if any, positive impact of reforms on agricultural production or productivity,
 - farmers have been the "losers", at least in the short-run,
 - the sustainability and replicability of project results have been negatively affected by policy changes vis a vis input prices (rising far more than producer prices), and limited access to credit,
 - subsidies were significant to even low levels of fertilizer use (necessary for both increased yields and conserving soil quality),
 - farmers in several regions need continued access to extension services (it is not clear that NGO's have the capability to replace GOS technical services)

3 *Project Design, Implementation and Management*

- Project designs were frequently overambitious, use unrealistic or incorrect assumptions, and often do not take into account farmer's resource constraints (poor soil, inadequate water, labor shortages at peak periods, or lack of capital to invest in agriculture)
- Project results and impacts would generally be more sustainable and replicable if beneficiaries and collaborating institutions had been associated from the beginning (design phase)
- There needs to be greater continuity among USAID projects. Instead of implementing each project as an isolated entity, we need to build on the results of

prior projects (This is particularly striking when projects in the same region with the same goals, as with PIDAC and SZWMP)

- The lack of viable baseline and other monitoring and evaluation data impede quantitative measures of impacts
- The life of projects is often too short Implementation begins slowly and often ends as results and impacts were just beginning
- An evolution of increased participation of clients in choice of activities and implementation approach (if not in design) is observed in recent years during the CPSP period (1992-1996) The participative approach to the identification of needs and activities will result in project more responsive to clients needs (SZWMP, KAED, CBNRM)

4 *USAID Strategy and Management*

- Certain USAID procedures appear complicated, inflexible and insufficiently adapted to client needs and capabilities
- There appears to be a lack of flexibility necessary to respond to changing environment or circumstances once projects have been initiated is remarked
- There are frequent changes of USAID policy, often due to modifications from AID/Washington or changes in USAID/Dakar direction

5 *Local Institutions*

Local institutions are characterized by

- insufficient organizational and planning capability,
- little quality control and supervision of personnel and activities,
- overly centralized management style and decision-making, and
- inadequate financial management

Greater attention to these weaknesses needs to be addressed

6 *Technical Assistance*

- Expatriate technical assistants are often insufficiently integrated into local institutions. This results in little transfer of skills between assistant and counterparts,
- When projects are managed by TA teams, there is little collaboration with local counterparts in financial and technical decisions
- It would be advisable to include counterparts in the management process to ensure sustainability of management ability after the end of the project
- A greater percentage of Senegalese TA should be used because a highly qualified cadre of Senegalese professionals exists

7 *Technologies*

- Technologies successfully developed and/or extended by USAID projects include those related to
 - productivity of land (agro-forestry, anti-erosion, organic and chemical fertilizers),
 - water resource development for rice production (technologies de vannes adaptées aux contraintes du sel et d'utilisation opérationnelle comme planches en polyester et a manipulation cremailliere PIDAC/ISRA, bec de canard, digues compactees, diguettes en courbe de niveau) and village organization and provision of training to village and intra-village groups (SZWMP),
 - the introduction of a system of cultivation in ridges (*en billons*) in low-lying rice fields to mitigate impact of salt on rice (PIDAC/ISRA), and,
 - methods of intensification of rainfed rice (plateau) semis en ligne, input use (fertilizers, insecticides, etc), animal traction (PIDAC), use of compost (PROGES)
- Productivity increases expected from the introduction of these technologies have often not been sustainable due to the lack of access to inputs and agricultural equipment in some projects, the lack of farmers resources, or lack of secondary infrastructures. As a result, in spite of the often significant results achieved,

increased yields are not sustained

- There is a need for continued GOS and donor investment in the agricultural sector. Although small investments can be undertaken by farmers or through access to credit, the construction of anti-salt dikes, anti-erosion diguettes, availability of fertilizers require the assistance of the state. Farmers do not have the means to undertake these activities alone without the assistance of the state.

8 *Some Reasons for Project Success or Failure*

- Given the general absence of on-farm resources to invest in agriculture, successful project or technologies must be accompanied by access to inputs and/or credit.
- Successful projects include an income-generating activity. This is particularly true for natural resource management activities that are to be sustainable.

I **Lessons Learned**

1 *General*

- The agricultural policy environment has had a great impact on the success and failure of USAID-funded agricultural projects. Lack of access to inputs, credit, and more recently extension services has negatively affected the outcome and impact of USAID's agricultural projects.
- Attaining self-sufficiency in cereal production, an objective of earlier projects (Cereal Production, Phase I and II, Casamance Regional Development), is not a realistic goal for Senegalese agriculture. Achieving food security, which may involve both food and cash crop production, is a far more realistic objective.
- The percentage of project funds allocated to technical assistance and GOS and other institutions is far too high. An insufficient portion of funds has been injected at the farm or beneficiary level.
- Major successes of USAID-funded activities in the agricultural, rural development and natural resources sector over the past 35 years have been
 - the development and extension of agricultural and natural resource management technologies,¹ many of which continue to be used,

¹ Many of these technologies are listed above in the conclusions section and in the body of the report.

- the training of farmers, extension agents, agricultural technicians, specialists and researchers, a significant benefit to the individuals and institutions involved and to Senegal,
 - the institutional development of GOS institutions in both development and research, and the private sector, including NGO's, GIE's and village groups
- Major failures of USAID-funded projects have been the lack of participation (until recently) of the beneficiaries in project design and implementation, which has resulted in the financing of many projects which have not corresponded to actual needs or have omitted on-farm constraints

2 *Factors Affecting Project Success or Failure of Agricultural Investments*

- Project goals and objectives are frequently overambitious, and are based on unrealistic assumptions
- Smaller projects, with realistically defined objectives are often quite successful (Africare Reforestation and the Appropriate Technology (ATI) sub-project of the Technology Transfer umbrella project)
- Projects which include an income generating component are generally more successful and sustainable
- The most effective agricultural and natural resource management technologies have been the low-input strategies While many agronomically successful high-input strategies have been developed, the significant increase in input prices and the elimination of subsidies have rendered those strategies non cost-effective for most farmers
- The lack of continuity in USAID strategies has often limited the impact of agricultural projects Agricultural development is a long-term process The five to seven year time span of most USAID projects is too short, especially given the years of delay in starting project operations It seems that strategies, such as FSR or IRD, are tried for five years, and then discarded, with no attempt to build on the accomplishments of former projects or accomplishments
- The lack of liaison or coordination among projects with similar objectives has reduced the sustainability of impacts

- The dearth of baseline and other monitoring and evaluation data does not permit a quantitative assessment of project impacts
- While USAID policies and strategies over the years have often corresponded with GOS policies, they have frequently not corresponded in many cases to the needs of Senegalese farmers. Participation of beneficiaries in project design is necessary to make projects relevant to farm-level conditions and constraints
- There is a need for more participation of beneficiaries in all aspects of project design and implementation
- A more realistic assessment of local institution's capability to manage development activities is needed before project implementation
- The large-scale integrated development projects started in the 1970's (and later) had many successes in extending new technologies, building institutions and infrastructure, and in providing training, but there were far too many components which were often not "integrated" at all. Project management of these numerous components was often beyond the managerial capability of the collaborating institutions
- Irrigation and water resource management projects need an agricultural component to be effective in increasing agricultural production and productivity
- Earlier projects were overly ambitious and all-encompassing, while those of a later generation have often been too restricted to reach intended impacts. (This is particularly true of irrigation projects)
- Certain USAID procedures are complicated, inflexible, and insufficiently adapted to local conditions and institutions

J Recommendations

- 1 USAID should continue to fund traditional agricultural and natural resource management projects. The beneficiaries (or clients) should be involved in project identification/design, implementation and evaluation. The project should be implemented and managed by the clients themselves, together with their chosen intermediary, whether it be PVO's or a system of co-management with private firms. GOS technical services can provide extension or other technical assistance, but should be in an advisory rather than a managerial role

- 2 Given the existing policy environment, agricultural projects should comprise a credit component This should increase the sustainability of project results
- 3 USAID agricultural projects should be aimed at farm level production of both subsistence and commercial crops Food security is still an important objective, and should be pursued Funding of projects aimed at the production and marketing of high value exports crops is also recommended
- 4 The technologies diffused should be finalized according to the needs defined by the producers themselves, and should be revenue generating
- 5 Project design should require that a high percentage of project funds actually arrive at the farm or client level Project evaluations should calculate precisely the extent to which funds are "injected" into the target area
- 6 USAID needs to simplify, streamline, and render more flexible it guidelines and procedures for working with NGO's, the private sector, and farmers' groups While maintaining strict financial accountability, simplified guideline for project proposals and a more flexible management need to be devised

I INTRODUCTION

A Background to the Study

USAID has undertaken 36 years of development assistance to Senegal (1961-1996), including the financing of nearly forty bilateral projects in agriculture, rural development and natural resources. Funding of these activities has totaled nearly \$180 million. In addition to the bi-lateral projects, USAID/Senegal also participated in a number of regional agricultural and rural development projects over the period. Activities ranged from seed and cereal production, livestock production and poultry research, and dune stabilization to integrated rural development, agricultural research, irrigation, reforestation, and investments in agricultural enterprises. Projects were conducted throughout the country from the Senegal River Basin and the North Atlantic Littoral to the Peanut Basin, Senegal Oriental and the Casamance.

The study of USAID/Senegal's activities in the agricultural sector is part of a comprehensive effort to develop the necessary documentation for the preparation of the sector analyses which will serve as the basis of the Mission's new strategy for the period 1997-2005. (In addition to the present study, sectoral assessments are also being prepared in health and population and in the private sector. A history of USAID/Senegal was also prepared in 1995.)

B. Objectives of the Retrospective Study

The principal objectives of the study are to review and assess the impact of USAID's agricultural, rural development and natural resource activities in Senegal during the past thirty-six years, with particular emphasis on the period of the last twelve years, when the Government of Senegal initiated its New Agricultural Policy (in 1984). The study focuses on the impact, sustainability, and replicability of USAID's financing of the agricultural sector, as well as the lessons learned from past and present projects successes and failures, and recommendations for future strategy. The study also analyzes the assumptions made in undertaking these activities and assess their relevance to meeting Senegal's agricultural needs. Projects are assessed as to their conformity with USAID/Senegal and GOS policies at the time. (The complete terms of reference are presented in Annex III.)

C Methodology

The team was composed of an agricultural economist/team leader, an agronomist, and a sociologist. The first two weeks were spent in Dakar reviewing documentation, meeting with relevant USAID and GOS personnel, and planning the study methodology. The documentation was vast, and included both project-related (Project Proposals (PP), evaluations, close-out reports

(PACD), and associated studies), in addition to more and general USAID and GOS agricultural policy documentation ²

The next three week were spent visiting past and present project sites, interviewing both officials and project beneficiaries (clients) When interviewing farmers or other beneficiaries, the team employed an informal survey approach, using an informal questionnaire (*guide d'entretien*), which was flexible enough to change as circumstances warranted The team was initially skeptical about the amount of information to be collected from earlier projects, but was generally surprised at the information and impressions (both positive and negative) still available about former projects

The team traveled first to the Casamance Region, where it met with current Southern Zone Water Management Project (SZWMP) (685-0295) personnel and collaborators and with former Casamance Regional Development Project (685-0205) personnel from the SOMIVAC, PIDAC and ISRA/Djibelor ³ Several days were spent visiting project sites and speaking with present and former beneficiaries In the Kolda Region we visited SZWMP valleys, and met with the Non-Governmental Organization (NGO), 7A, which collaborates with both SZWMP and the PVO/NGO Support Project (685-284), and AJAC-COLLUFIFA, which received support from the NGO/PVO Support Project to market sesame oil In Kaolack, discussions were held with Africare officials at the Kaolack Agricultural Enterprise Development Project (685-0302) and project sites visited ISRA/Kaolack and CNRA researchers at Bambey, who have collaborated in many USAID-funded projects, were visited

At the end of the second week of field visits, the team held a briefing of the progress to date The team next traveled to the Bakel area where officials and participants from the Range and Livestock Project (685-0202), Bakel Small Irrigated Perimeters (685-0208), and the Irrigation and Water Management I Project (685-0280) were interviewed The team also had discussions with SAED/Bakel and representatives of the *Federation des Paysans* In St Louis, SAED officials and other participants discussed the Bakel projects and the SAED training program (685-0218) The "Buffalo Project", which was funded under the Transfer of Technology Project (685-0281) was also visited

In Louga, discussions were held with CTL officials, the Canadian-funded follow-on project to the Dune Stabilization Project, funded by PL-480 In Thies, two NGO's working with the NGO Support Project were visited, ABASED and NCNW In Diourbel, ARAF, an NGO collaborating with the Natural Resource-Based Agricultural Research Project (685-0285) was visited

² Quite a number of project documentation was missing, particularly evaluations and PACD's The list of missing documentation compiled by A Acedo, while preparing a history of USAID/Senegal in 1995 was helpful, and saved the team time from searching for non-existent or hopelessly lost documentation

³ In all regions the team met also with representatives of the traditional services (Agriculture Water and Forestry, and Livestock, as appropriate)

The remaining weeks were spent preparing the draft and final report, meeting with GOS officials and other donors, and holding follow-up discussions with USAID/Dakar

D Choice of Representative Agricultural Project

Approximately 37 major bi-lateral agricultural projects have been funded over the past 35 years⁴ Because of limited time, the team identified a sample of approximately 20 USAID-funded agricultural projects which we found to be representative While not ignoring the other projects we concentrated our efforts on the 20 projects listed below

Several criteria were used by the team to identify representative projects, including

- **the policy environment** in the agricultural sector at the time of project design and implementation We felt it important to situate each project in the context of the policy environment of its particular era For example, the Casamance Regional Development Project, although it continued until 1986, was clearly a product of the era of the GOS' heavy involvement in the agricultural sector via the Sociétés de Developpement, which theoretically ended with the NAP Projects were chosen to represent all eras of agricultural policy in Senegal Our conception of agricultural policy eras is listed in Table 1 below
- **the type of project**, and the extent to which it represented a particular theme, such as integrated rural development (IRD), farming systems research (FSR), or policy reform Table 2 below lists the projects chosen, and the specific criteria used
- **the region** We felt it important to choose a sample of projects from all the regions in which USAID has heavily invested, although in recent years activities have concentrated on the higher rainfall zones with more than 500 mm of rainfall Table 3 presents the sample projects by region In total, four projects were chosen from the Bassin Arachidier, five from the Vallee du Fleuve, two from the Casamance, nine national or multi-regional level projects/programs, and one West African project (Integrated Pest Management)

⁴ There have also been regional West African projects such as the Integrated Pest Management Project, the Organization for the Development of the Senegal River Valley (OMVS), Regional Livestock Development Project, the West Africa Regional Poultry Project, and the Grain Stabilization Project.

Table 1
Agricultural Policy Eras in Senegal

1	1960-1979	The Period of Heavy State Involvement in Agriculture (administered institutionally through the traditional agricultural services in the 1960's and by the early 1970's increasingly through the Sociétés Regionales de Developpement)
2	1980-1983	Period of Transition
3	1984-early 1990's	New Agricultural Policy
4	1990-1994	Structural Adjustment Program (PASA)
4	1994-	Post-Devaluation Era

TABLE 2
LIST OF REPRESENTATIVE PROJECTS CHOSEN.

No	Name/Project No /Region/Total Budget
1	<u>Cereal Production, Phase I</u> (685-201), 1974-1979, \$3,735,000 <i>Prototype of technology transfer, agricultural production project</i>
2	<u>Range and Livestock Development</u> (685-0202), 1975-1985, \$4,882,000 <i>One of USAID/Senegal's few involvements in livestock sector</i>
3	<u>Casamance Regional Development</u> (685-0205), 1978-1986 \$21,413,000 <i>Representative of GOS heavy involvement in agricultural sector, also involved institution-building, IRD FSR and irrigation</i>
4	<u>Bakel Small Irrigated Perimeters</u> (685-0208), 1977-1986 \$7,815,000 <i>Prototype of irrigation projects</i>
5	<u>SAED Personnel Training (685-0218)</u> 1979-1986 \$3 812 000 <i>Institution-building</i>
6	<u>Africare Reforestation (685-0243)</u> 1979-1983, \$105 000
8	<u>Dune Stabilization Project (PL 480)</u> 1981-1987, \$6 900 000
9	<u>Agricultural Research and Planning</u> (685-223) 1981-1988, \$5,063,000 <i>Prototype of FSR and policy analysis projects</i>
10	<u>National Plan for Land-Use and Management</u> (685-0233) 1981-85 \$2 0 million
11	<u>Cereal Production, Phase II</u> (685-0235), 1980-1991, \$6,563,000
12	<u>AFRICARE Reforestation (685-0243)</u> 1979-1983, \$105,000 <i>Represents the shift to natural resource management and use</i>

Senegal Agricultural Sector Retrospective Study

- 13 Community and Enterprise Development
1984-1994, \$15 \$15 014,000
*Represents a shift away from GOS
to private sector involvement in
agricultural development*
- 14 Irrigation et Water Management I
(685-0280), 1985-1991, \$6,008,000
Medium-scale irrigation
- 15 Technology Transfer (685-0281)
1985-1995, \$9,963,000
"Projet Buffles"
- 16 Reforestation (685-0283)
1986-1995, \$14,000,000
Natural resources
- 17 PVO/NGO Support Project (685-0284)
1990-1998 \$20,125,000
- 18 Natural Resource Based Agricultural Research
(685-0285) 1991-1998, \$19,750,000
- 19 Southern Zone Water Management
(685-0295), 1988-1996 \$18 000,000
- 20 Kaolack Agricultural Enterprise Development
(685-0302), 1992-1997, \$8,000,000
Natural resource management and agricultural enterprise
- 21 Community-Based Natural Resource Development
(685-0305), 1993-2002, \$25 million
the "new approach" of sustainable development and participatory partnership
- 22 Agricultural Research and Planning, Phase II
(685-0957), 1984-1992, \$8,657,000

TABLE 3
LIST OF PROPOSED REPRESENTATIVE PROJECTS BY REGION

LE BASSIN ARACHIDIER.

- Reboisement AFRICARE (685-0243)
- Production Cerealier, Phase I (685-201)
- Production Cerealier, Phase II (685-0235)
- Developpement de l'Entreprise Agricole a Kaolack
(685-0302)

TAMBACOUNDA/VALLEE DU FLEUVE

- Elevage au Senegal Oriental (685-0202)
- Petits Perimetres Irrigues de Bakel (685-0208)
- Formation Personnel SAED (685-0218)
- Irrigation et Gestion de l'Eau I (685-0280)
- Recherche Agricole au Senegal, Phase II (685-0957)

CASAMANCE:

- Developpement Regional de la Casamance (685-0205)
- Gestion de l'Eau dans la zone Sud (685-0295)

PROJETS AUX NIVEAUX NATIONAL ET MULTI-REGIONAUX

- Stabilisation des Dunes
- Amenagement du Terroir
- Recherches et Planification des Systemes
Agricoles (685-223)
- Transformation du Mil (685-0250)
- Transfer de Technologie (685-0281)
- Reboisement (685-0283)
- Appui aux ONG's (685-0284)
- Gestion Communautaire des Ressources Naturelles
(685-0305)
- Recherche Agricole Basee sur les Ressources Naturelles (685-0285)

PROJETS INTERNATIONAUX (L'AFRIQUE DE L'OUEST):

- La Lutte Integree Contre Les Ravageurs (Integrated Pest Management)

II USAID-FUNDED AGRICULTURAL PROJECTS AND THE AGRICULTURAL POLICY ENVIRONMENT IN SENEGAL

A. Major Eras and Issues in Senegalese Agricultural Policy

1 Introduction

Senegal's macro-economic and agricultural policies during the past 36 years provide the background for understanding the agricultural sector, and the context in which USAID/Dakar's investments were made, and the projects themselves

The problems constraining Senegal's agricultural sector are not solely a result of GOS policies, however. Indeed many of the structural problems were inherited from colonial era policies, which included an urban bias in investment, chronic foreign trade deficits, declining food self-sufficiency, the concern for sustaining peanut production (to the neglect of alternative crops), and the overlooking of the considerable agricultural potential of regions outside of the Peanut Basin (Abt Associates, 1985)

The pre-eminence of peanut production and trade as the main source of foreign exchange for the economy, revenues for the state, and cash income for the rural population fostered the emergence of powerful rural elites whose source of power was their position as large-scale peanut producers, as well as the decline of an indigenous entrepreneurial class which flourished in the pre-colonial era, which were replaced by French commercial firms and Lebanese intermediaries (Amin, 1969)

During the 1960 through 1996 period five major agricultural policy eras have been identified: the period of heavy state involvement in agriculture (1960-1979), a transitional era (1980-1983), the New Agricultural Policy (1984-Early 1990's), when the state considerably reduced the level of financing and control of agriculture, Structural Adjustment (Early 1990's-1993), a continuation of the slow process of reform begun under NAP, and the post-devaluation era (1994-present)⁵

2 *The Post-Independence Period of Heavy State Involvement in Agriculture (1960-1983)*

Agricultural policy in the post-independence period was characterized by heavy state involvement in agriculture, with prices and marketing controlled by the state

⁵ Important sources for background information on Senegal's agricultural sector are *Plan Cerealier* (GOS/MDR, 1986), *Nouvelle Politique Agricole* (GOS/MDR, 1984), *Senegal Agricultural Policy Analysis* (Abt Associates, 1985), *Declaration de Politique de Developpement Agricole* (GOS/MDR, 1989), *Adjustment Postponed Economic Policy Reform in Senegal in the Eighties* (Berg, 1990), *Analyse du Secteur Agricole du Senegal* (USAID/Senegal/ADO, 1990), *Macro-Economic and Sectoral Adjustment Programs in Senegal* (Erickson, 1990) and *Impact de la Devaluation sur le Secteur Agricole* (Ndiaye, 1995)

Agricultural production grew at a faster rate (4.4 percent annually) than did the economy in the immediate post-independence years from 1959-1968. But, by the late 1960's agricultural production began to fluctuate sharply due to a combination of drought⁶ and low producer prices (Abt Associates, 1985). The stagnation of the agricultural sector in this period is attributed to periods of prolonged drought, exogenous international economic factors, and inappropriate GOS policies.

As a result of declining international peanut prices combined with the loss of the French peanut subsidy (as result of EC policy), the GOS reduced producer prices, which in turn led to reduced input use by farmers and lower production. The oil crises of the 1970's also significantly raised import costs.

Government policies also had a negative impact on the agricultural sector. These included price policies which favored the urban population, the bias toward peanut production, the development of numerous parastatals, and an expansion of the rural development bureaucracy.

Policies which favored the urban population at the expense of the rural sector included the maintenance of low producer prices to subsidize urban consumption, and heavy state investment in developing import-substitution industries. By the mid-1970's the GOS had formed more than seventy new parastatals, many of them to nationalize French firms involvement in the peanut economy. The continuing peanut bias impeded attempts to diversify the agricultural sector and to develop regions other than the Peanut Basin, such as the Casamance, Senegal Oriental, and the Fleuve. Agricultural extension efforts were concentrated in Sine-Saloum and agricultural research was mostly devoted to peanuts.

Rural institutions formed purportedly to assist the rural sector did not accomplish their mission, and indeed, often had negative effects on the sector. This was particularly the case of ONCAD (*Office National de Cooperation et d'Assistance au Developpement*) whose role was to control domestic peanut and cereals markets, and to implement a national agricultural credit program (which was largely concentrated in the Peanut Basin). An extensive cooperative system had been set up and controlled by the ONCAD to provide inputs and credit mainly to the peanut-growing areas. Replete with corruption, nepotism, and widespread mismanagement⁷, ONCAD became a means for the state to extract resources from the rural to the urban sector. Farmer's rapidly lost confidence in ONCAD because of its corruption and mismanagement, but ONCAD retained a monopoly over input supply, marketing and transport of peanuts and other cereals.

⁶ In the absence of the chronic drought which affected half the agricultural seasons between 1966 and 1980, experts feel that Senegalese agricultural production would have continued to keep pace with population growth.

⁷ At one point ONCAD had produced a deficit of 142 billion F CFA.

ONCAD is also blamed by many for the death of the nascent cooperative movement in Senegal, which was beginning to develop local initiatives in the rural sector

By the late 1960's regional development agencies (RDA's), such as SODEVA, SAED, SODESP, SODAGRI, SODEFITEX, and the SOMIVAC had replaced the under-financed traditional services which had existed since the colonial era. But the effectiveness of the RDA's was often thwarted by overcentralized decision-making, a tendency to disperse efforts by trying to provide too many services, a paternalistic and authoritarian approach to the rural population, and extension of technologies inappropriate to on-farm conditions

a Period of Transition (1980-1983)

By the late 1970's the agricultural sector (and the Senegalese economy) was in a crisis, with mounting balance of payments problems, a second oil "shock", an appreciating US dollar (which substantially increased the debt service burden owed in dollars), a decline in the world market price of peanuts, recurrent drought, political pressure to maintain subsidies for urban consumers, declining farmer confidence⁸ in GOS agricultural policies, as demonstrated by a general refusal to repay debts as farmers increasingly sold peanuts outside formal marketing channels where prices were higher, and the complete breakdown of the rural credit system

In 1979 an Economic Recovery Program (*Plan de Redressement*) was designed to stabilize the economy and re-dynamize the agricultural sector, with a hope of achieving the national objective of food self-sufficiency. The *Plan* was a first attempt to reform the Senegalese economy. In 1980, USAID's Joint Assessment of U S Assistance Program in Senegal concluded that the numerous development projects funded by donors had not been able to arrest the decline in agricultural production, and that only substantial reforms of agricultural sector policies (such as increased farm-gate prices to stimulate production, and an increased role for the private sector in input supply and marketing), would revitalize the sector

In 1980 ONCAD was dissolved, with its marketing functions taken over by cooperatives, and input supply and delivery by SONAR (*Societe Nationale d'Approvisionnement du Monde Rural*)⁹. The government promised to reduce and eventually eliminate consumer and input subsidies, and to restrict the role of RDA's to providing agricultural extension. In 1984, the reforms were further specified in meetings held under the auspices of the *Club du Sahel* between the GOS, World Bank, *Caisse Centrale de Cooperation Francaise* (CCCE), and USAID

⁸ Declining farmer confidence in agricultural policies was exacerbated by continuous shifts in producer pricing, as authorities often promised official peanut prices at levels which would later be lowered. The combination of reduced producer prices and increased input prices decreased incentives to produce

⁹ SONAR was subsequently dissolved in 1994 with debts of more than 27 million F CFA

The agricultural credit system was in disarray, however, as farmer' debts had been written off four times during the 1970's, and agricultural credit was suspended between 1980 and 1984 ¹⁰

In the early 1980's GOS pricing policies which had favored urban consumers by maintaining low producer prices were reversed for several years Peanut producer prices were increased by 43 percent in 1981, as international market prices were high, but had to be lowered when international prices again slumped The producer price for rice was raised from 80 to 105 F CFA/kg , but by 1985, it was back to 65 F CFA/kg ¹¹

USAID/Dakar and the GOS began a policy dialogue concerning agricultural sector reforms in the early 1980's, and through the Economic Support Fund (ESF) began providing assistance for the reforms or liberalization of first the peanut marketing system, and subsequently the rice and cotton markets

Early attempts to reform the agricultural sector failed in large part due to a series of years of low rainfall, and the lack of will on the part of the GOS to implement the reforms

3 *New Agricultural Policy (1984-Early 1990's)*

In 1984 the GOS announced the New Agricultural Policy (NAP), which was a major effort by the government to reduce state investment and involvement in the agricultural sector ¹² This would be achieved by severely decreasing the financing of RDA's, and increasing the efficiency of input delivery services The NAP heralded the gradual withdrawal of the state from activities which could be undertaken by farmer-based organizations or the private sector

The stated objectives of NAP were to

- promote local cereal production to achieve greater food self-sufficiency,
- restructure the peanut market,

¹⁰ Farmer debts were erased often after some farmers had repaid their seasonal debts Farmers interviewed in Selin in the Bakel area told of repaying more than 80 percent of total debt after an agricultural season in the late 1970's only to find that the state had annulled that season's debts As a result they resolved to never pay back debts so quickly

¹¹ Some analysts indicate that producer prices had a tendency to rise prior to electoral campaigns, and to decline shortly thereafter

¹² The NAP took place in the context of macro-economic policy reforms under the Medium-and-Long-Term Adjustment Program (1984/85-1992/93) financed by the IMF and the World Bank It is important to note that adjustment in Senegal was undertaken without recourse to one of the most important adjustment policy tools, currency devaluation

- eliminate subsidies on most agricultural inputs,
- reduce GOS involvement in agricultural sector institutions,
- increase opportunities for the private sector in input and output markets,
- reorient policies concerning agricultural inputs, research, extension and credit, and,
- foster a new strategy for crop diversification

(A Cereal Policy (*Politique Cerealiere*) was also formulated in 1986)

During this period USAID continued its support for policy reform via the ESF. The liberalization of cotton and rice marketing were again the focus of the reforms, as was the elimination of the *Caisse de Perequation* and the redefinition of SAED's role (including the elimination of its marketing, transformation and credit functions) ¹³

In 1989 the GOS published another policy paper (*Declaration de Politique de Developpement Agricole* (DPDA)) which again stated its intentions vis a vis the agricultural sector. The DPDA essentially reiterates the goals and objectives of NAP in rather broad and ambiguous terms. But it states that because of severe balance of payments problems, rising international debt and budget deficits, the GOS had no other alternative but to implement a harsh sectoral adjustment program, whose primary goals were to increase revenues for the government and to improve the balance of payments situation.

But where, one asks, are the farmers in all this? What is their plight? In short, they were facing a continuing situation of declining farm revenues, and little possibility of raising productivity because of the rising cost of inputs (which were increasing much faster than producer prices) and lack of access to credit. Economists are fond of saying that the elimination of subsidies on all agricultural inputs has resulted in a more *efficient* use of those inputs (Ericksen, 1990). But what it has really resulted in is the almost total *non-use* of inputs, which, of course, has a deleterious impact on both productivity and the natural resource base (particularly soil quality).

In 1990, the Agricultural Development Office (ADO) of USAID/Dakar undertook an in-depth analysis of Senegal's agricultural sector. The study found that Senegalese farmers were increasingly reducing cash crop production in favor of food production to attain food security in

¹³ USAID economists admit a partial success in achieving some reforms, it that it was really in the post-devaluation period that many reforms were fully implemented.

an environment of increasing population pressure on a dwindling resource base ¹⁴ It is estimated that rural income per person has declined by nearly 5 percent annually between 1975 and 1990 As a solution to the decline of the Senegalese agriculture, it was recommended that investments be made in the areas of highest potential, and should be concentrated on renewing the natural resource base

In 1990, Eliot Berg concluded in an aptly titled report, *Adjustment Postponed*, that most of the proposed agricultural sector reforms of the 1980's simply had not been implemented, and that the agricultural strategy remains "incoherent" Failure to implement policy reforms is found due to the erosion of GOS political will and capacity to implement reforms, in large part because of the large amounts of donor funds available

Food Self-Sufficiency Versus Food Security

In 1985, a USAID-funded analysis of Senegal's Agricultural Policy, undertaken by Abt Associates, concluded that if Senegal did not make significant changes in agricultural policy to increase food security in Senegal, cereal imports required would continue to rise precipitously They also found the GOS objective of achieving food self-sufficiency to be inappropriate for Senegal, because it is neither attainable nor economically viable (due to the high domestic resource cost of fulfilling consumption requirements with domestic cereal production)

A more appropriate objective would be the attainment of food security The concept of food security acknowledges the positive role to be played by agricultural trade as a means of satisfying a portion of consumption requirements in cereals by means other than domestic production (In 1985, the analysis concluded that given existing world market conditions, Senegalese farmers were better off economically producing peanuts and purchasing imported broken rice, although given long-term trends in international peanut prices that eventually peanut production should be replaced by other high value export crops, such as cowpeas, potatoes, onions, or horticultural crops)

The 1990 ADO study also concluded that self-sufficiency in food production was an unrealistic goal It would be better either to increase cash crop production and buy food or to increase production of local cereals (excluding rice production which is not cost-effective in most cases, in spite of the enormous investments made by the GOS in developing irrigated rice)

4 *Period of Structural Adjustment (Early 1990's-1993)*

¹⁴ Area planted per active agricultural worker decreased from 1.6 ha in 1976 to 1.0 ha by 1990, a decline of nearly 40 percent

Senegal Agricultural Sector Retrospective Study

By 1989 the NAP was effectively dead, and was replaced by a period of structural adjustment outlined in the Agricultural Adjustment Loan (ASAL, or PASA in French) Structural adjustment continued to be ineffective, in large part due to the continued overvaluation of the CFA

Discussions concerning the ASAL continued throughout the 1980's but the agreement was finally signed in 1990 The basic prescriptions in the ASAL included

- raising producer prices for both export and cash crops to stimulate production, lower levels of rural to urban migration, and remove the "urban bias" in income distribution,
- providing protection to local cereal production by restricting rice imports, and by maintaining rice prices at levels high enough to encourage consumption of competing coarse grains, and encourage rice production,
- reducing the role of the state while encouraging private sector involvement in agriculture, and,
- liberalizing agricultural markets by removing restrictions and distortions, such as subsidies

There was great disagreement within the GOS and within the donor community concerning the exact nature of the reforms Major sources of disagreement among and between GOS and donors included the removal of input subsidies, the need for floor prices for cereals and higher prices for imported rice, and the need for agricultural extension services

While most of the reforms discussed in the previous period were not implemented (or had only been partially implemented), several significant reforms had been enacted Commercial rice imports had been maintained at 1984 levels (340,000 tons) throughout most of the decade to protect local production Nominal official producer prices of peanuts, cotton, millet and rice had risen (although real prices did not rise, as producer price increases did not pace up with increases in inflation) In 1990, fertilizer subsidies were eliminated after several reductions in subsidy levels, and farmers were increasingly responsible for their own seed And cereals markets were substantially liberalized

There is little evidence, however, that structural adjustment has increased agricultural production The above-mentioned shift in production away from cash crops to food crops cannot be attributed to policy reform, as relative prices did not move significantly in favor of food crops There is also little evidence of increased productivity of land or labor attributable to structural adjustment

The proposed reforms contained too many conflicting objectives, and some were based on

incorrect assumptions about the GOS economy, or just employed faulty economic theory (Berg, 1990)

5 *Post-Devaluation Adjustment (1994-)*

Agricultural policy reforms were only fully implemented after the devaluation of the F CFA by 50 percent in January 1994, in the opinion of some

Post-devaluation agricultural policy was defined in an Agricultural Development Policy Letter (Lettre de Politique de Developpement Agricole (LPDA)), signed by the GOS and the World Bank. The LPDA recognized the need to undertake additional reforms with the objective of raising the level of productivity and international competition of the agricultural sector.

The strategy proposed in the LPDA includes many of the same reform objectives stated in NAP and the ASAL, including the liberalization of input markets, the reduction in GOS involvement in the agricultural sector, the granting of legal title to farmer's lands, and the promotion of private investment in agriculture. In other words, farmers must develop strategies for competing in the free market without any assistance from the state.

But it is still unclear how the private sector can replace the void left by the GOS retreat from input and output markets and extension and agricultural research, especially in those sectors or zones where it is not profitable for them to invest. While it is true that it will take time for private traders to develop and respond to investment opportunities, the evidence thus far is that the private sector has not replaced the GOS in many of these functions. As a result, there is a void, the farmers are on their own (at least those encountered by the study team), without extension, inputs, agricultural equipment, or access to credit.

In the absence of improved seeds, fertilizer, insecticides, extension services, and adaptive research to improve/restore soil fertility (without which yields will not be sufficient to justify the cost of improved inputs, assuming their availability), it will be impossible to attain the LPDA objective of increased agricultural productivity and competition. Improved inputs are necessary to increase productivity, but also to conserve an increasingly degraded natural resource base. At present prices, inputs are beyond the means of the vast majority of Senegalese farmers.

Economists theorize that the 1993 devaluation will improve Senegal's level of competition in agricultural export trade by lowering the price of its exports vis a vis competitor's prices. According to economic theory, a devaluation operates by increasing the domestic currency price of a commodity, or by decreasing the foreign currency price of exports. In other words, the devaluating country's exports become (theoretically) more competitive vis a vis competing exporters (assuming they have not also devalued), and imports become more expensive.

But economic theory also tells us that the impact of the devaluation on primary products is indirect and depends on the elasticity of export supply, the allocation of resources by producers, production capacity, the existence of adequate marketing structures, the cost of inputs, the type of agricultural trade policies and regulations in place (which may eliminate any price advantage emanating from the devaluation), and the sign of the cross-price elasticities

Given Senegal's generally low elasticity of export supply for agricultural commodities, the lack of on-farm resources to invest in agriculture, high (imported) input costs, and the lack of adequate marketing structures in many areas, it will be a long time before the average cash crop farmer in Senegal benefits from the improved competition of exports in international markets

While it is too early to judge the impact of devaluation on agricultural production, cereal crop production declined nearly 15 percent during the first post-devaluation season (1994/95) over the previous year's production, although area planted declined by only 2 percent. The impact of the devaluation was particularly felt in the Fleuve region, where input prices and the cost of imported spare parts for tractors rose substantially. A 1995 USAID-funded study on the impact of the devaluation on the agricultural sector did find that the devaluation made Senegal's domestic transformation industries, such as those of tomatoes, more competitive vis a vis European competitors (Ndiaye, 1995)

6 *Conclusion*

The situation at the farm level is not encouraging. Real farm income has been declining since the early post-independence years. Although aggregate agricultural production continues to rise slightly, there is declining production per person. In 1994, a joint ISRA/IFPRI Study found agricultural incomes to be so low that farmers had insufficient resources available to invest in agriculture, and that the natural resource base was severely degraded. The study also found that technologies appropriate to the situation of no or few available inputs in an environment of severely degraded soils did not exist at present.

Agricultural policies over the years have often favored the farmers. Import and producer price policies have periodically favored urban consumers and have discouraged the local cereal production (Although at other times the terms of trade have favored producer prices). And, in spite of all the price policy discussions between the GOS and the World Bank and USAID, real agricultural prices are not higher in the 1980's and early 1990's than they had been in the 1970's. Input prices are, of course, far higher.

Even in the era of heavy GOS involvement in the agricultural sector, most of the investments did not arrive at the farm level. A large portion of the funds went to highly centralized state agencies. While extension services were sometimes excellent, rural services such as input delivery were

often highly inefficient. Many areas of Senegal had only recently benefitted from extension services, however, before they were withdrawn.

But the impact of structural reform and the withdrawal of donors from more traditional project interventions has left most Senegalese farmers without access to inputs, credit, or extension services, in an environment of increasing natural resource degradation.

B USAID/Senegal Policies/Objectives/Strategies and Agricultural Projects

USAID/Dakar began operation in 1961, and was immediately involved in agricultural development. Over the next 36 years more than \$180 million was invested in 38 bilateral agricultural projects, regional programs (such as OMVS) and agricultural activities supported through PL 480 funds. To simplify discussion, six major periods or phases of U.S. bilateral assistance to Senegal's agricultural sector have been identified: the early years (1961-1970), regional development programs (1970-1975), integrated rural development (1975-1980), the transition (1981-1985), the structural adjustment (1986-1991), the natural resource management (1992-1997). Each period had one or more particular strategies. These phases often, but not always, correspond generally with the changes in the agricultural policy environment discussed above.

1 The Early Years (1961-1970)

The early years of USAID/Dakar's involvement in the agricultural sector were optimistic years for agricultural development. Rainfall was adequate, agricultural growth rates of up to 4 percent annually were obtained, and peanut exports were given preferential treatment in the French market. By 1967, however, there was a serious decline in rainfall, which negatively affected yields and production levels. It was during this period that the GOS began its heavy investment in agricultural institutions, such as ONCAD, which were to generate large deficits in the sector, without providing much support at the farm level.

USAID investments during this period were generally production oriented in such areas as seed improvement and agricultural extension, water resource development, and poultry research and extension. The projects were small-scale, funding levels ranged between \$21,000 to \$425,000. It was during this period that the comprehensive studies were undertaken in the Casamance and Fleuve regions which would provide the basis for the major regional projects undertaken by USAID/Senegal in the 1970's.

There was really no prevailing strategy for USAID agricultural investments at this time, it was, as Acedo (1995) states, a policy of "learn as you go." The underlying assumption, however, was that diffusion of available technologies would increase agricultural production.

2 *Regional Development Programs (1970-1975)*

It was during this period that most of the regional development agencies (RDA's) were created by the GOS, as well as numerous agriculture-related parastatals. There were mounting deficits in the agricultural sector. And the effects of a prolonged period of low rainfall were accumulating, as agricultural production was severely affected.

USAID did not finance any bilateral agricultural projects during this period, as USAID/Dakar became the Regional Development Office (RDO) for six West African countries.¹⁵ Among the regional agricultural programs funded during this period which had activities in Senegal were the Organization for the Development of the Senegal River Valley (OMVS), several OMVS sub-projects (Regional Livestock Development Project, the West Africa Regional Poultry Project, the Grain Stabilization Project), and projects undertaken in collaboration with the West African Rice Development Association (WARDA).

3 *Integrated Rural Development (1975-1980)*

USAID discontinued its regional approach to development assistance to return to bi-lateral assistance projects during this period. Massive relief efforts were also funded to alleviate conditions caused by the worst drought in West Africa in 60 years. In addition to humanitarian assistance, there were many small-scale agricultural projects aimed at mitigating the impact of the drought in rural areas.

But it was during this time that USAID financed several major integrated rural (and regional) development projects in the Fleuve, Peanut Basin, and the Casamance. This strategy reflected the prevailing development theory of the day, that meeting basic human needs is the first step in the development process. At USAID, this was called "New Directions." These projects were in accordance with reigning GOS agricultural policy, which was to promote agricultural development and achieve food self-sufficiency via the RDA's.

Major projects included the Bakel Small Irrigated Perimeters, the Grain Storage Project, Cereals Production (Phase II), the Casamance Regional Development, and SODESP Livestock Production.

¹⁵ The RDO covered Senegal, Mauritania, Mali, Guinea, Sierra Leone and Gambia.

These projects were generally institution-building in nature, with significant inputs of technical assistance ¹⁶ They were usually integrated in nature and included technology transfer, and agricultural extension and research

Joint Assessment of USAID Programs in Senegal

In 1980, a joint USAID/GOS evaluation of US bilateral assistance of the 1975-1980 period was undertaken. Most of the projects discussed were agricultural. Many of the general issues arising from the assessment were interesting, some of which have yet to be resolved satisfactorily today.

Among the conclusions were that

- USAID project assistance should emphasize increasing productivity in the rural sector rather than concentrating on increased production. Renewed stress should be given to improved management of Senegal's physical, natural, and human resources, and to training of project beneficiaries in the construction and maintenance of rural infrastructure and new productive assets.
- Although USAID assistance has been responsive to the objectives of food self-sufficiency and sustained development, there is a need to consider a program or sectoral rather than an individual project approach.
- There is a need to increase the participation of beneficiaries in project design, implementation, and financing, and to expand the role of non-governmental institutions in rural development. Many of the difficulties encountered in project implementation are due to the failure to involve the beneficiaries.

Other issues arising from the assessment included

- projects are too diverse, with WID, health, and Promotion Humaine often tagged on in a meaningless fashion,
- the need to consider a geographical concentration of USAID activities,
- the overly ambitious and unrealistic implementation schedules do not allow enough time to achieve results,

¹⁶ Oddly enough, given that these were institution-building projects which involved substantial amounts of technical assistance in many disciplines, there was little technical assistance in the area of general administration or financial management.

Senegal Agricultural Sector Retrospective Study

- the general lack of baseline and monitoring/evaluation data for assessing project progress,
- the appropriate role for technical assistants should they be in line positions, and what is the nature of their relationship to USAID, the GOS and the project?

It is with this assessment that the approach of undertaking development via public institutions such as the RDA's is first called into question, and the need to increasingly involve non-public local institutions in development assistance is recommended

The concept of the need for policy reform to reduce farmer reliance on public services, such as subsidized inputs, credit, and GOS extension services is also broached, with the proviso that the impact of unregulated input and output markets on the rural sector needs to be further studied

The assessment also criticizes the "insular, too inward-looking and self-contained" nature of USAID assistance. It is felt that the projects do not relate to either GOS or other donor strategy

3 *The Transition (1981-1985)*

These years also signaled the transition on the part of GOS agricultural policy from an interventionist (although often ineffective) provider of rural services to a gradual withdrawing of the state from many of its activities. This transition was occurring in a time of continuing financial crisis for the GOS, and a growing food deficit for the country.

USAID/Senegal developed a new CDSS which had the major goals of maintaining the long-range goal of food self-sufficiency (although the way in which food self-sufficiency was defined it is clear that it was the notion of food security, which was really the intended goal)¹⁷

The agricultural program had four main targets

- progressive decontrol of rural production, with USAID support to farmers' groups and agricultural enterprises, which would allow the GOS to withdraw from provision of many rural services,
- development of more effective agricultural practices,
- support for an increase in area cultivated, and,

¹⁷ In 1983, the CDSS was updated to more closely coordinate with the 1979 GOS *Plan de Redressement*. The four principal vehicles USAID would use to attain CDSS targets were policy dialogue, institutional development, private sector, and technology transfer. USAID again reassessed its strategy in 1984 after the publication of the NAP.

- achievement of a more effective management of resources

There was a greater emphasis during this period on non-project assistance, as USAID was transferring resources to the GOS to implement policy reforms. USAID activities were consolidated from five to three geographical areas, Sine Saloum, Casamance, and the Fleuve. Major agricultural projects included the Senegal River Basin Planning and Policy Development, Agricultural Research and Planning, National Plan for Land Use and Development, Community and Enterprise Development, Irrigation and Water Management I, and Transfer of Technology.

5 *Structural Adjustment (1986-1991)*

In 1985 USAID/Senegal published its strategy for the 1986-1990 period in a new CDSS. In the late 1980's, however, the CDSS was refocused according to USAID/Washington's new Strategy for Sustainable Development.

The CDSS for the 1986-1990 period maintained the overriding objective of supporting Senegal's goal of achieving self-reliance in food production. (Even though studies funded by USAID/Senegal maintained self-sufficiency was an unrealistic and economically inefficient for Senegal.) The short-term measurable goal was to achieve a positive per capita rate of increase in Gross Domestic Product (GDP) through the interaction of efforts to improve economic performance through policy reform, a 5 percent annual increase in cereal production from adequate inputs, water and marketing, and decreases in the fertility rate through family planning.

New strategic elements in the CDSS relating to the agricultural sector were:

- to remove constraints to agricultural production (rather than on area-specific projects),
- to promote income generation in the rural sector,
- to launch reforestation and soil regeneration projects, and,
- a reduced emphasis on development funding through public institutions and removal of constraints to a greater role for the private sector.

The NAP had made much of USAID's prior focus on regional rural development obsolete. The new agricultural projects were designed to develop technology, transfer those technologies to farmers and rural enterprises, and support increases in production through free market structures.

Major agricultural projects started during this period include Agricultural Production Support,

PVO/NGO Support Project, Southern Zone Water Management, the Reforestation Project, and the Natural Resource-Based Agricultural Research Project

In 1988, in accordance with USAID's Strategy for Sustainable Development the Dakar mission revised its goal to increase per capita growth and food security through an orderly process of financial stabilization, structural reform and projects in selected key areas (At last there was recognition the part of USAID/Dakar that self-sufficiency in food production was not attainable)

Three strategic objectives were defined by the mission

- 1 Promote a dynamic market economy
- 2 Increase cereals production
- 3 Improve Family Health

Project assistance in agriculture would emphasize

- extension of low-cost irrigation and water management techniques,
- expansion of reforestation and conservation activities,
- promotion of private production and marketing of agricultural inputs and outputs, and,
- strengthening of agricultural research and technology, particularly in cereals-based farming systems or both rainfed and irrigated agricultural

USAID continued its policy dialogue on reforms of the agricultural sector through the ESF (II-V) and PL480 Title I programs

6 *Natural Resource Management (1992-1997)*

In 1991 USAID/Senegal prepared a CPSP for the 1992-1997 period which acknowledged that the three strategic objectives defined in 1988 were too broad and were unattainable for the USAID/Dakar mission It was decided to concentrate on the fundamental problem in Senegal of reaching a balance between population growth and natural resources The policy reform dialogue between USAID/Dakar and the GOS would also concentrate in these areas

The CPSP also emphasized elements of the agencies "Strategy for Sustainable Development" which included support for sustainable and participatory development with a focus on developing partnerships and the need to develop a constituency for policy reform within the GOS But it was never specified precisely how participation and partnership would be developed

44

Four strategic objectives were defined

- 1 Decreased family size
- 2 Increased crop productivity in zones of reliable rainfall
- 3 Increased value of tree crop production
- 4 Increased liberalization of the market

The CPSP was developed in an environment of increasing financial uncertainty of USAID. The future of the agency was in doubt during 1992/93, and the agency has since been significantly downsized.

Currently, USAID/Dakar is developing the necessary documentation for the preparation of sector analyses which will assist in the preparation of the new strategy for the 1997-2005 period. In addition to the present study, a history of USAID/Senegal and in-depth sectoral analyses in health and population and in the private sector are being prepared.

Agricultural projects initiated during this period include the Kaolack Agricultural Enterprise Development Project and the Community-Based Natural Resource Management Project.

7 *Conclusion*

USAID policies and strategies over the years have often corresponded with GOS policies¹⁸. But they have not corresponded in many cases to the needs of Senegalese farmers. Many of the reigning strategies of the day were imported from Washington without sufficient consideration of the appropriateness of their strategies to farm-level constraints. (This has changed in recent years with the emphasis placed on partnership and the increased participation of clients in all aspects of development.)

There also seems to be a tendency for USAID to change strategies every few years. Development is a long-term process, success (or impacts) cannot realistically be expected in one or two years. Changes in USAID/Dakar strategy seem also to occur with changes in direction. While it is understandable that new USAID/Dakar personnel wish to make their mark, it is unfortunate that strategies which are only beginning to produce impacts are sometimes swept away in the interests of something new.

¹⁸ Many of the GOS agricultural policy reforms have been in some sense imposed by the multi-lateral and bi-lateral donors, including USAID.

III THE IMPACT OF USAID-FUNDED AGRICULTURAL ACTIVITIES DURING THE PAST 35 YEARS

A Project/Program Level Impacts

1 *Introduction*

In this section, the impact of USAID-funded agricultural projects is analyzed both qualitatively and quantitatively. Impacts are discussed at the individual project level and, where appropriate, at the technological, strategic, regional or national, and policy levels. To simplify discussion, the projects are divided into three groups: the earlier projects funded between USAID/Dakar's inception up to 1983, the 1984-1991 era, which corresponds to the NAP/policy reform years, and the most recent projects, which date from 1992, the year that the 1992-1997 Country Program Strategic Plan was inaugurated.

2 *Early Projects (1961-1983)*

As discussed in previous sections, these earlier projects corresponded with a period of heavy GOS involvement in the agricultural sector, with investments funded through RDA's, traditional services or research institutions. The four projects from this era chosen by the study team are reflective of the period. These projects comprised a medium-term response aimed to mitigate the effects of the Sahelian drought.

Cereals Production Phase I (1975-1979) was part of USAID's medium-term response to the drought and was a crop intensification project undertaken with the RDA, SODEVA, in the Thies, Diourbel, Louga, Kaolack and Fatick regions in the Peanut Basin. Range and Livestock development (1975-1985) was both a livestock and infrastructural development project undertaken in collaboration with "traditional services"¹⁹ in the Bakel area. The Casamance Regional Development Project (1978-1986) was an integrated development project, which also combined agricultural production and research with institutional development. The institutions involved were SOMIVAC, PIDAC and ISRA/Djibelor. The Bakel Small Irrigated Perimeters Project (1977-1986) involved the introduction of irrigated rice into the zone via the SAED. The SAED Training Project (1979-1986) provided institutional and logistical support to SAED. The Africare Reforestation (1979-1983) and the Dune Stabilization Project (1981-1987) were prototypes of future natural resource conservation and management projects.

¹⁹ Traditional services in agriculture, water and forestry, and in livestock, based at the regional levels, provided extension and other technical services to the rural population. These traditional services pre-dated the RDA's, which came to replace many of the functions of traditional services. These services continue to exist, however.

a Cereals Production Phase I (1975-1979)

The Senegal Cereals Production Project (685-201) was signed in 1975 and ended in 1978. The goal of the project was to increase the agricultural productivity of cereals in the groundnut basin area of five departments of the Thies-Diourbel Region. The project aimed to assist the GOS in achieving higher and self-sustaining levels of productivity through the institutional support of the SODEVA (*Societe de Developpement et de Vulgarisation Agricole*) and CNRA, the National Agricultural Research Center.

The regional development agency (RDA), SODEVA, was undertaking a program of crop diversification and intensification to combat the recurrent food deficits, particularly in staple cereals, which resulted from the years of drought in the early 1970's.

The program corresponded with the GOS agricultural strategy to increase peanut and millet production through the introduction of improved technical "packages", which included seed, fertilizer, and basic agricultural equipment, which were to be delivered by ONCAD (ONCAD was also to be responsible for grain marketing). Increased millet and groundnut production was intended to assist in achieving food self-sufficiency, which would in turn lead to a decrease in the level of food imports. Food security was also to be strengthened as cereal reserves from the increased production would be stocked for use in years of less than average rainfall.

An important assumption of the project was that price stability (to be encouraged by GOS intervention through ONCAD marketing) would encourage farmers to invest in the (higher cost) technical packages, and increase production and marketing.

Project Results

Major project activities included the extension of crop diversification packages which had been locally tested by ISRA, and which included improved seeds, fertilizers, and specific cultural practices.

Project results included

- the training and recruitment of increased numbers of village level extension workers,
- in-service training for extension teachers and existing extension agents,
- improvement of training and extension facilities and materials, and the

- establishment of an Economic Research and Evaluation Unit at the SODEVA to communicate production results to agricultural researchers

Impacts

A lasting impact of the project has been increased farmer knowledge and use of improved agricultural techniques. Farmers interviewed in the Kaolack region remembered the technologies extended by SODEVA, including crop rotation and planting techniques, input use and animal traction. The continued dynamism of millet and sorghum production in the Sine-Saloum (Durufle, 1996) is certainly attributable to the significant level of extension provided by the SODEVA via the Cereal Production Phase I (and other projects in the zone), which introduced animal traction, improved cultural calendar (planting, weeding dates), and the introduction of organic and chemical fertilizers.

Political and institutional changes altered the level of project impact. ONCAD did not provide an efficient system of input delivery or marketing. The economic feasibility of the SODEVA technical packages was called into question in a 1979 evaluation, which concluded that given relative price levels, it was not cost-effective for farmers to invest in the package.

Although productivity increases were obtained on research fields, these were not generally registered on farmers' fields. The project goal of achieving higher and sustainable productivity increases in cereals was not reached.

The 1980 USAID/GOS Joint Assessment concluded that the production systems, including the farmer, SODEVA and the marketing institutions were not producing millet at an affordable price. Given the problems encountered in millet marketing, millet could not compete with imported rice, the preferred staple cereal.

The project also overestimated the capacity and capability of the SODEVA to undertake a myriad of functions, including credit, farmer organization, and input supply and delivery. SODEVA was originally an extension service, with many of the above-cited functions provided by other services or institutions. But SODEVA was transformed into a RDA in the late 1970's without having developed the technical and managerial capability to undertake the added functions.

b. Range and Livestock Development (1975-1985)

This project was funded with the resources of the special fund for aid to the Sahel region, ratified by the American Congress in 1974. This fund, amounting to US\$85 million was managed by the USAID regional office in Dakar. The project set out at first to be what USAID called at the time a "non capital project".

The project is part of a group of projects funded by USAID within the framework of a mid-term programme, set-up by USAID to enable the Sahel zone to recover through the emergency programme for food distribution during the years of severe drought at the end of the 1960s and beginning of the 1970s. The project was implemented at a time when USAID's involvement was characterized by a subtended regional approach and had only one preoccupation to check and eradicate the negative effects of drought. On the part of the state, interventions in the field of agriculture were placed within the framework of the 20-year agricultural programme drawn-up between 1960 and 1966. This programme's main features gave priority to productivity and the administration of rural development by regional organizations for development (SRDR).

In 1974, when the project was initiated, the project goal was to protect pasture land resources and improve upon animal husbandry productivity in the regions of Sarré and Toulkedé to the south of Bakel. The specific objective, following the framework, was to provide integrated management of pasture land in a manner that would be socially acceptable and economically profitable.

Furthermore, the project was of an experimental nature. In fact, the project aimed at developing a model for improved husbandry and integrated management of pasture land and grazing fields that could be transferred to other regions in Senegal and in the Sahel zone.

Results

With regards to infrastructure, out of thirty (30) artificial ponds planned (according to the 1985 evaluation report), nineteen (19) were dug, and twenty-two (22) according to the village inhabitants. One hundred and eighty five (185) kilometers of firebreaks and three (3) control towers for fighting against bush-fires were built, as well as houses at the Mbaniou centre for project personnel and local inhabitants for the rural family house at Ndia.

Besides the infrastructure, complementary measures were taken. They centered on setting up a section for popularization, involved a functional adult educational programme in Pulaar, training in home economics for women, a childcare programme, sanitary facilities for cattle herds, and a programme to increase livestock and commercialize them. The adult education programme in Pulaar, the home economy lessons, as well as the infant care programme were provided by the rural family house or Ndia, which was under the jurisdiction of the service for human improvement at the time.

Impacts

According to the evaluation report of 1985, the control towers were not used and the firebreaks had little impact in the fight against bush fires. Meanwhile, what can be retained from discussions with the village inhabitants is that the armature effect of opening the villages to one another through the use of firebreaks was considered as an important innovation. The evaluation report

also confirms this. According to the inhabitants, except for the ponds at Mbaniou, Santhiou-hamady and Karanabe that have water all year round (allowing cattle grazers easy access to water and cattle to graze on the surrounding pastures) the rest of the ponds were dug "in the bush (Laade)" far away from the villages and roadpaths. Consequently, they were of no major use to the animals. This observation made by the villagers is confirmed in the 1985 evaluation report, which estimates that only 2.6 to 22% of the total volume of water stocked in the ponds is used by the cattle. The report adds that close to 90% of water in the ponds is lost by infiltration.

The project's impact on improving the health of cattle stocks was considerable, with the appointment of resident village technical agents in charge of sanitary services. The aforementioned evaluation report attributes the drop in cattle mortality and sickness after 1980 to the work and advice of these husbandry agents. It must be stressed that the decision to implant animal husbandry agents in the villages was taken following the joint evaluation of development projects (among them the development project) by USAID and the government in 1980.

Before this date, medical services for animals were provided by the divisional service for animal husbandry at Bakel. This caused delays because of the distance. Likewise, popularization activities in the fields of sensitization, home economics and adult education were termed inefficient. This inefficiency is tied partly to the fact that agents in charge of the popularization did not speak the local language (Pulaar) and also to the difficulties in coordinating activities for popularization at grassroots level because the agents of the human improvement service were from different ministries.

After this rectification in 1980, the functional adult education programme in Pulaar was enticing and had long lasting impacts. It still raises interest among young people especially. Meanwhile intravillage conflicts between high castes (torodo) and low castes (macendo) hindered the normal continuation of the programme, particularly in villages where people of low caste origin were not accepted to head adult education lessons.

With regards to revenue, the villagers still remember the sales programme set up by the project. The project bought cattle from the villages and sold them to SERAS or in the market in Dakar. At the beginning of this programme, the cattle raisers did not agree to all their cattle following the kilogram measures introduced by the project, because cattle sales in the village or at Bakel were done considering how old the animal was. The villagers were reluctant, but the project was for them, and represented the only chance to sell their cattle without traveling far and incurring transport costs.

What they regretted during our discussions was that the project never gave them the unit kilogram price and this way of sale often degenerated to haggling, which to them was not compatible with the initial idea. Unfortunately, this programme did not go after the project ended. The villagers are back to their traditional sale methods with the use of middlemen called "tefanke".

Lastly, the overall impact of the project on the area was to open up the village and facilitate movement particularly to Bakel headquarters of the district

c Casamance Regional Development (1978-1986)

The Casamance Regional Development Project (685-0205) was authorized by USAID in August 1978 for \$21.4 million. It is a project typical of the era of Senegal agricultural policy of heavy GOS involvement in all aspects of rural development, from extension to the provision and delivery of inputs and other technical and social services. The administering institution was the regional development agency (RDA), SOMIVAC, which intervened through its projects, PIDAC.²⁰

Casamance Regional Development was also an archetypal USAID project of its day. It was a large-scale integrated development project, with agricultural production and research components. The social service components were far less encompassing than the agricultural components, although adult literacy was an important project activity. (A health component was added near the completion of project activities.) The strengthening of local institutions (SOMIVAC, PIDAC, and ISRA/Djibelor) was a major objective of the project. Technical assistance was also provided.²¹ A collaborative mode of technical assistance was used in which each assistant was fully integrated into his/her institution or agency. The objective was to avoid the development of parallel structures, such as a separate U.S.-managed technical assistance unit which would vanish after project completion.

The goal of the project was to increase agricultural productivity and improve the quality of life of farmers residing in the Lower Casamance. The purpose was to develop the institutional capability of regional institutions to undertake rational development planning and the organizational capacity to implement those plans.

The project sought to overcome existing labor, technology, resource, marketing, institutional and weather constraints on agricultural production, particularly rice production in the Lower Casamance through provision of animal traction equipment, improved seeds, fertilizer, credit and extension services to farmers.

There was little, if any, participation of project beneficiaries (Lower Casamance farmers) in project design, nor did designers discuss proposed cultural techniques with farmers during the design phase. The design team included USAID personnel (as the final design team), consultants to USAID, and SOMIVAC and PIDAC personnel.

²⁰ The SOMIVAC also intervened in the Middle Casamance via PRS, the *Projet Rural de Sedhiou*.

²¹ At various times there were 11 technical assistants (not all at the same time) provided by the Southern Universities Consortium for International Development (SECID).

Senegal Agricultural Sector Retrospective Study

The project financed part of the operating costs and staff salaries of PIDAC and SOMIVAC and ISRA/Djibelor, provided technical assistance at SOMIVAC, PIDAC, and ISRA/Djibelor, training, construction of staff housing and office buildings, transport requirements and equipment

The project involved three ministries Rural Development, Promotion Humaine, and Public Health SOMIVAC was the implementing agency Major responsibilities were as follows

Organization	Project Function	Project Elements
SOMIVAC	Management and Planning	Infrastructure Studies, Training, Technical Assistance
SOMIVAC/PIDAC	Agricultural Extension	Extension Small Dams, Storage Facilities, Training, On-Farm Tests, Seed Multiplication, Plant Protection, Agricultural Credit, Technical Assistance, Adult Literacy (with <i>Promotion Humaine</i>)
ISRA/Djibelor	Research	Infrastructure Agronomic Research, Training, Technical Assistance
Public Health	Health	Health Surveys Rural Health Surveys, Training, Technical Assistance

Results

The project resulted in increased production, although not at the rate anticipated in the project design At the end of the project nearly 12,000 tons of cereals had been produced on 7,151 hectares Area planted in rice due to the project (876 ha) was far less than anticipated, although rice yields (2 67 tons/ha) were higher than envisioned Area planted in millet/sorghum (1,065 ha) and maize (638 ha) attained anticipated objectives, with higher than anticipated yields of 95 and 1 80 per hectares respectively Area planted (748 ha) and yields (1 3 tons per ha) in peanuts were slightly less than anticipated

The project is rare in that reliable data was available at the end of the project to document quantitative impacts A Monitoring/Evaluation Unit of PIDAC activities was in place at the SOMIVAC Studies, Evaluation, and Planning Unit (BEEP)

Other major results included

- increased vegetable production (40 ha. irrigated by wells dug by the project),
- greater use and availability of improved seed,
- provision of extension to 9,300 farmers,
- development (with ISRA/Djibelor) and dissemination of an extension package, which included
 - improved varieties of rice, maize, and groundnuts
 - more efficient time and method of planting techniques
 - kinds, amounts, and methods of fertilizer application
 - weed control methods, including use of herbicides
 - control of insects and diseases, and
 - use of animal traction
- construction of 25 small anti-salt dikes and repair of 2 earlier dikes,
- construction of 120 wells,
- short and/or medium-term credit extended to 281 farmer groups (2,711 individuals),
- construction of 19 warehouses (50 tons),
- provision of nutritional and health materials,
- provision of adult literacy training in local languages to more than 7,000 men and women,
- development of the first two phases of a Master Plan of the Lower Casamance, including a natural resources inventory and resource utilization plan²²,
- a functioning PIDAC Monitoring and Evaluation unit,

²² Unfortunately the contractor (HARZINT), originally contracted to provide three phases, never undertook the third phase which would have developed operational plans and development projects, as the contractor had depleted all contract funds while undertaking the first two phases. So the Master Plan was never operational. In retrospect, the first two phases were probably unnecessary, as the SOMIVAC, together with German technical assistance, had prepared a well-regarded and exhaustive Master Plan of the Casamance just a few years prior to the USAID-funded effort.

- a computerized system of data collection and analysis of regional agricultural production statistics at SOMIVAC/BEEP,
- construction of offices and staff housing²³ for SOMIVAC, PIDAC, and ISRA/Djibelor

Impacts

The Casamance did not achieve self-sufficiency in rice (nor has it at present) According to ISRA/Djibelor farming systems studies undertaken in the early 1980's, farmers in lower Casamance were producing less than 40 percent of total household consumption, as farmers were shifting increasingly away from rice production to dryland cereals to cope with chronically lower rainfall (Although production statistics by the Inspection Regionale de Ziguinchor did not identify this tendency)

The retrospective study team met with former SOMIVAC, PIDAC, and ISRA/Djibelor personnel, and with former PIDAC farmers in Djiginou and Ounck in the Bignona Department ²⁴

In Djiginou where the anti-salt dike constructed during the project is still in relatively good condition (although having problems with the water-gates), farmers indicate that water retained by the dike provides water for livestock and helps to raise the water table It has also reduced the level of salinization of surrounding fields This is generally true in the half-dozen dikes built by PIDAC that are still in good condition

Farmers continue to practice technologies extended by PIDAC, and continue to use the shorter cycle varieties developed by ISRA and extended by PIDAC (Although the closing of PIDAC since 1990 has halted the dissemination of improved seeds and other inputs) ²⁵ Farmers also continue to practice such yield-improving strategies as planting in line and crop rotations In Ounck, farmers still use agricultural equipment obtained during the project, and a project-trained farm implement repairer resides in the village (although much of the equipment is too old)

Farmers interviewed in Lower Casamance retain good impressions of PIDAC interventions In fact, in Ounck, villagers wanted to know when PIDAC was coming back The Casamance

²³ Staff housing was constructed due to a perceived housing shortage by the design team In actuality, the private housing market in Ziguinchor was perfectly able to meet housing demand

²⁴ Information concerning the impact of the Casamance Regional Development Project was also provided as we visited sites of the present Southern Zone Water Management Project

²⁵ Presently there is an agricultural project (DERBAC) funded by the African Development Bank, but it provides little credit for improved seeds and inputs

benefitted from fewer years of massive extension efforts undertaken in other regions of Senegal, as in the Sine Saloum with the SODEVA.²⁶ There are still areas in Bignona and Oussouye Departments where animal traction has still not been introduced (Djūmande), as producers still believe that it is mistreating to animals to use them for plowing. The introduction of chemical fertilizers was also difficult, as it was thought that chemical fertilizers killed the frogs, which bring rain. There is still a need for agricultural extension in the Lower Casamance, as the above indicates.

In conclusion, the closing of the extension agency, PIDAC, has reduced the continuing impact of the project.

Factors Critical to Project Success or Failure

The project was overly vast and complex. There were too many components and it was beyond the capacity of the SOMIVAC/PIDAC to manage. It was also a burden for USAID project management, which was based in Dakar. A total of eight logical frameworks were included in the Project Paper (one master logframe and three each for the three institutions-SOMIVAC, SOMIVAC/PIDAC, and ISRA/Djūbelor).

Lateness in start negatively affected the attainment of project goals and objectives.

Perhaps, the most glaring error by project designers was the overly optimistic assessment of the development potential of the Casamance used when the project was designed in 1977. Crucial natural and environmental constraints to increased agricultural production were not taken into account, most notably the significant decrease in aggregate rainfall by the late 1970's and the uneven quality of the soils (increasingly high levels of acidity and salinity in some areas). It was anticipated in the project design that rice exports from the Casamance would increase to 20,000 MT per year by 1990, a projection not at all based on a realistic assessment of existing agricultural potential in the area.

The project also assumed that medium-term agricultural credit would be provided by the government and planned to supplement existing government credit available to farmers. But between 1977 when the project was designed and the start of implementation, there had been significant changes in Senegalese rural credit policy. By the time project implementation commenced, there was complete disarray in national policy concerning agricultural credit, as the dismantling of ONCAD and the bankruptcy of SISCOMA disrupted the supply of both short-term input credit (ONCAD) and medium-term small equipment credit (SISCOMAA) to farmers. In 1980 medium-term credit was suspended for a five-year period, and debts for short-term credit

²⁶ The SOMIVAC was founded in 1976, although there were prior, less encompassing development projects in the past, including the Netherlands-financed ILACO, ONCAD for input supply, and Mission Agricole Chinoise (MAC).

55

were written off, adding to the confusion. Lower Casamance farmers have traditionally paid back loans, however.

The project design also overestimated the administrative and financial capacity of the SOMIVAC to implement the project and erred in not providing technical assistance to SOMIVAC/PIDAC in accounting and financial management. SOMIVAC, PIDAC, and ISRA/Djibelor employed highly centralized systems of management, which left little initiative or participation to intended beneficiaries.

Lessons Learned

- the need for more participation of beneficiaries in all aspects of project design and implementation
- a more realistic assessment of an institution's capability to manage development activities before project implementation, and the provision of technical assistance in financial and administrative management as needed,
- a more realistic assessment of host government's capability to support recurrent costs is required,
- more careful attention to the policy environment is required. Given the long-standing uncertainty concerning rural credit, a credit component is necessary to any project depending on the provision of improved inputs to increase agricultural production.

d Bakel Small Irrigated Perimeters (1977-1986)

This initial project (1977-1985) funded by USAID set out to provide irrigation techniques to farmers in 23 villages around Bakel in the Senegal river valley, check food shortages and curb emigration. Its execution coincided with agricultural policy changes. USAID- and State-funded projects started using the integrated approach. Farmers were in charge of some development activities to enable them adjust to resource management in the future.

According to the report on USAID's history in Senegal, 900 hectares were exploited, of the 1800 planned (50% of the objective). Farmer cooperatives were set up in 25 villages. It must be observed that these centered more on toucouleur riverside villages with Falémé, than on Soninké villages along the river Senegal. In effect, training for farmer in Goye (Soninké region) was initiated prior to the SAED cooperatives project. The project only reinforces the initiative and activities centred on internal reorganization of cooperatives into teams in charge of irrigation, group labor to set up hydraulic networks.

There is a water-pumping tower. Water is pumped from the river using pumps and pipes provided by the project. As regards rice-farm irrigation techniques, new crop varieties (Jaya, 1 kong PAO, SIPI, etc.) were popularized.

Row sowing, bedding out, apodal nurseries, techniques to spread fertilizers and spray herbicides were introduced.

Complementary activities set up include a 14 hectare experimental farm for cereal crops (rice especially), farmer training, health sector to monitor services and build health posts in 23 selected villages.

From 1978, a solar pumping system was set up on the site of the SAED project. In 1982, fish-farming was experimented with, following the experience in the mid-valley (Dagana and Podor) downstream from Bakel. In 1985, diverse agro-productive activities were set up, among them, the cultivation of fruit trees.

Impacts

The SAED statistics show that the project has contributed to the growth of the number of irrigated perimeters. The project has also increased the farmer's groups from twelve to thirty between 1977 and 1985.

Meanwhile, the main insufficiencies to which the project has not brought a solution is the dependency of these organisations on the noble class in the villages from which the Presidents were chosen even if they were not often good enough.

Thus the outbreak of conflicts between the nobles (hooros) and slaves (komo) hampered the workings of the farmer groups at Tuabou and Moudery for a while.

The constructed area increased from 114 hectares to 1261 hectares. But only 74% of the area was exploited²⁷. In spite of the introduction of new varieties of rice, paddy yield was not significantly increased. Yield was around 4 metric tons per hectare, which is less than the envisioned 7 metric tons. The mid-term evaluation report added that paddy yield more than 5 metric tons was questionable. According to the farmers, the perimeters were badly installed: the smoothing of the plots was not good, certain equipments for water control like the falls to break the speed of water in canals and drains were lacking, the soils of certain areas on which SAED recommended to cultivate rice were filtered. Finally, the yield of 7 tons per hectare presented by some project documents reflected more "propaganda" than the amount of yield measured by SAED.

Contrary to the initial ambitions of integrated development of the local production systems, the

²⁷ The land area exploited increased from 108 ha to 928 ha within that period.

project was exclusively focussed on irrigated rice growing and had no effect on rain-fed growing of the principal source of food for the population. USAID supported a state policy focussed on increasing rice production in a zone which has little land adapted to rice growing and where the staple food is millet. From this point of view, USAID made an error that a significant part of the producers did not forgive.

To see the way that new techniques (fish farming, solar pumps, fruit growing) were grafted at the same time as the execution of other activities, one can say that the project was not in fact integrated. In reality, that which was expected from integrated project at the time expresses the concern to satisfy the global needs of producers in different areas (health, agricultural production, fish farming, solar energy). The implicit concept was that the producer was the main focus. Then one understands why many activities involving different services and state ministries (services of water and forests, SAED, Ministry of Health, the University)²⁸ were implemented in the same project without internal coordination²⁹.

Therefore, an important group of activities were undertaken but some of them were not completed. According to the villagers met at selling, certain warehouses were not completely built or if they were, the roofing was not yet done right up to the end of the project.

In the same way, the fish farming was in competition with irrigated farming for water pumped by Gmp from the river. Then the continuity of the activity after the end of the project was not secured because of poor breeding of alevins, filterable basins etc. Fish farming has nowadays left nothing but traces of abandoned basins. By the same token, nothing is left of the five ponds which were operational in 1985. The major problem of this activity was the social manner in which to organize it. In some villages, the ponds previewed were to be managed by groups of producers but were given to village fishing families who sometimes were not members of the farmer groups and were not the best ones³⁰ to conduct the activity.

A year after its implementation the surface solar pumps had been stopped. It does not constitute a valuable alternative to irrigation farming with the gasoil pump system because not only was its

²⁸ The department for water and forestry matters was in charge of supervising the fish farming aspect, the direction générale de la recherche scientifique et technique on solar pumping, the university for sanitary supervision and the ministry of health for the construction of health huts and training of personnel.

²⁹ This conception will be different from the integrated project of the late 80s and early 90s which in fact, was a project model setting up a programme of activities that support one another and are managed within a framework coordinated and planned jointly without disparate intervention from supporting structures from either the government or elsewhere.

³⁰ The villagers' choice is understandable from the viewpoint of social distribution of activities. Fishermen, however, were necessarily not the right people and traditional fishing experience was not enough to run affairs.

capacity for irrigation weak³¹ contrary to what had been previewed, but the weakness of the sunnines during the cold period has constitute a serious problem over which neither the producers nor the project had any influence

Nevertheless, the villagers positively appreciated the diversification of the diet (régime alimenature) by the introduction of rice. The rice cultivated was mainly for consumption and not for selling. However, some people who succeeded to come out with sufficient surplus, women in lower goyer especially (e g , Moudéry), who don't have the responsibility to feed a family, derived income from the sale of a good quantity of harvest to SAED

The second impact having a positive effect on incomes was the introduction of fruit orcharding. Villagers who had accepted to invest in this area, namely villages like Aroundou, have now made very good benefits in the improvement of the quality of feeding as well as income

The project has trained and significantly improved the know-how of producers. In this area, one of the objective of SAED and the project which was achieved was making the small village irrigated perimeters areas be an occasion for producers to be trained on the techniques of rice farming in view of more important water schemes. In effect, the institution of watering teams (groupes d'irrigation) within the farmer's groups, peasant group visits to the Bakel trial farm, the training of pump attendants and the activities of demonstrators³² in the village have constituted as much opportunity for the producers to know the technical itinerary of production following the different types of rice varieties

At the institutional level, the installation of the trial farm of 14 hectares has facilitated the collaboration between SAED and WARDA in multilocal trials on rice varieties (essais multilocaux sur les variétés de riz). The construction and equiment of the SAED base in Bakel continue to constitute a visible impact

Finally, besides the encouragement of the development of private schemes in the Bakel Small zone, the irrigated perimeters project has had an impact on the federation of peasants organised in Bakel (FPOB). As a main lesson drawn from its conflicting relationship with SAED and the Project, the federation judges that the intermediaries³³ should be over stepped in the development of irrigation and let manage their own development process. In putting this lesson into practice,

³² hectares according to a report on the "history of USAID in Senegal, Volume II Summary of proejects"

Although, as was the case for PROGES, some of the recruited demonstrators did not have experience and fore knowledge on irrigated rice cultivation and land measurement

³³ The federation, by so saying, means SAED and further on the state regional organizations for rural development

the federation was able to autonomously negotiate and obtain funding for the rehabilitation of the irrigated perimeters for group members. This program started in 1994 with support from the agronomic University of Wageningen.

e SAED Personnel Training Project (1979-1986)

The objective of this project was to reinforce the operational capacities of SAED in the areas of management, maintenance and the repair of installation materials by means of training. From the point of view of State agricultural development, the project coincides with a period where SAED was given free hand to build irrigation infrastructure in the delta and valley of the Senegal River. The objective was to produce rice at all costs in view of reducing the importation of rice considerably. This 8-year project implemented in 1979 is in conformity with the general objective of food self-sufficiency defined by USAID within the first and second CDSS.

One can note three major achievements of the project: the provision of equipment in terms of machineries, the training of the personnel of the industrial department and the conception and implementation of managerial computerized documents.

Machineries were mainly installed in Ross-Bethio. The workshop built at Richard Toll was intended for heavy equipments. Training, demonstration and retraining on the field beside the delta were supported by a network of small workshops installed in Podor and Nianga.

Training benefited a total of 115 persons, including technicians, engine operators, mechanics and store keepers. It should be emphasized that this training only affected the two delegations of Dagana and Podor. For the other two delegations to Matam and Bakel only mechanics and store keepers were trained.

The accounting management documents include forms for spare parts stock management, entry/exit vouchers and the codification of the equipment.

Achievements of the project on training would have been more important if SAED did not assign a production objective to the project which was not assigned to it.

Impacts

The project has enabled SAED to be autonomous in relation to CSS and Dakar workshop for the making and/or rectification of parts and for the maintenance and repair of the construction material of the water agricultural schemes. Thus, the project has enabled the SAED industrial department to design a program for preventive operational maintenance of the equipments before each agricultural campaign.

However, project implementation problems associated with difficulties in collaborating with the technical assistance ensured by the American bureau d'étude ORT have not enabled the Senegalese part to sufficiently profit from expatriate competencies to operate certain machines³⁴ It should be recognized that the focus of SAED on production, to the detriment of training, was detrimental to accomplishing project goals

Besides the reorganization of the industrial department with the creation of workshops equipped with the adequate material, the computerized management system enabled the project to fix the parameters of material identification and facilitate research This, the procurement management was more rigorous

In sum, even if there is no indication of the surface and number of areas cultivated during the project (1979 to 1986), one can still say that the capacity and the rhythm of installations of SAED have been increased

f *Africare Reforestation (1979-1983) and the Dune Stabilisation Project (1981-1985)*

The objective of both of these projects is the rehabilitation of natural resources that are highly damaged and deteriorating due to unfavorable climatic factors and the failure of users to conserve resources through an overzealous cutting of trees

i Africare Reforestation (1979-1983)

The Africare Reforestation Project, financed in 1979 for \$105,000, continued for five years Project sites included Ngane, Latmingue (Kaolack) Keur Paté, Campement and Ndiosmone (Fatick), with a surface area of about 5 to 15 hectares each of village woodlands of Eucalyptus plantations

Results and Impacts

Visits to the Ngane site of the Africare Reforestation Project during the retrospective study indicated that the reforestation activities were sustained on two zones at the border of *tannes* (15 hectares), and, on slopes (7.5 hectares) Eucalyptus trees were planted on these sites on each side of the road from Dakar to Kaolack

The first plantation site constitutes an important vegetal screen against the dynamic advancement

This was the case of the electric trial band which seemingly has never functioned since it was delivered, due to the absence of a competent person to operate it

of tannes on the slopes due to its effects on the biophysical characteristics of the soil. This ecological impact, due to its indirect effects of protection against increased soil salinization, has enabled an increase of other agricultural activities in this area. It has also been an important source of control against the degradation of natural resources in this environment.

After the end of the Africare project, activities of the same nature were continued by the local population, as well as GOS-funded PRECOBA project (Projet de Reboisement et de Conservation du Bassin Arachidier).

Concerning the plantations located on the slopes or plateau areas, a recent operation of pruning falling trees has permitted the population to dispose of more than 2,400 trees of serviceable wood, most of which was sold for 1,000 F CFA, according to villagers interviewed. New trees are now sprouting from the remaining stumps, and are visible from the national road, which enables one to think that the plants will develop again and allow further cutting operations. Revenues gained by the local population from this cutting operation constitute an important source of income to villagers, and which should prove sustainable as the trees continue to regenerate. The population in the groundnut basin, having accepted to plant these trees ten years ago, have benefitted from the substantial revenues accrued from the cutting operation.

ii *Dune Stabilization Project (1981-1987)*

The (Kayar) Dune Stabilization Project was funded via PL 480 Title II. With a budget of \$6.9 million, activities began in 1981 and were completed in 1987. Major activities involved the implementation of actions geared towards controlling the effects of wind erosion and the advancement of sand dunes, which covered 25,000 ha of the Niayes region, and comprises the market garden region of the country. Plantations of 3,700 hectares were undertaken under state supervision to stabilize the encroaching dunes.

The project concerned is the littoral zone located between Kayar and Fass Boye. The planned actions were essentially for the protection of the market gardening basins of the Retba Kayar-Mboro sector, with a global budget of \$1.4 million dollars. Specific objectives were the stabilization of 1,800 hectares of maritime dunes, 1,400 hectares of secondary dunes, and 500 hectares of dunes stabilized for the protection of the area surrounding Lakes Tamna and Mbaoua.

Results and Impacts

Results of the Dunes Stabilization Project, as reported in 1988, were

- the planting of 2,705 hectares of maritime dunes, 790 hectares of secondary dunes, and 470 hectares of stabilized dunes, which corresponded to achievement rates of

150, 56 and 110 percent respectively (when compared to projected project outputs),

- the construction of 40 wells and the distribution of equipment and phytosanitary products for vegetable garden production

The ecological impact of these results has been the advanced level of transformation and conservation of land in this part of the littoral (which covers a width of 200 meters for more than 53 kilometers between Kayar and Fass Boye and protects against the advancement of dunes towards the market garden basins)

At the technological level, the project has developed techniques of dune stabilization which continue to be employed in succeeding projects, such as Canadian-funded project at Gandiole and the UNDP/UNSO project at Lompoul. These later projects have further developed the technologies begun with the Dune Stabilization projects, including

- the construction hedges of *Gueria senegalensis* (nguer) for the protection of *salanes*, dune stabilizing plants
- improved planting and spacing techniques,
- The techniques for accelerating the germination process of inoculated seeds, by means of nitrogen-fixing bacterias encountered within the root nodules of the filios older root systems, and
- the use of plantations of *Acacias australiennes* and *Eucalyptus* as windbreaks to protect vegetable garden basins

There have also been both social and economic benefits related to the restoration of favorable conditions for vegetable gardening due to the stabilization of dunes at the border of basins. Approximately 9000 villagers have benefitted from the dune stabilization surrounding vegetable garden zones (Unclassified Section of Dakar 03002). Emigration of local population from these areas has also been reduced, and both livestock and plant life have gradually returned to the area.

The sustainability of these results has been assured by the above-mentioned Littoral Soil Conservation Project (LSCP) Southern Sector, funded by the Canadian International Development Agency (CIDA) for the period 1987-92. LSCP contributes to the results obtained from the USAID-funded Dune Stabilization Project ³⁵

³⁵ Achievements of the present project (LSCP) include the planting of 15,400 ha of maritime and secondary dunes, 189.4 km of wind breakers, 392.9 ha of village woodlands

G Conclusion-Early Projects

The projects undertaken in these years shared many characteristics. The earlier projects were a medium-term response to the drought, and involved the intensification of agricultural production with the (unrealistic) objective of attaining food self-sufficiency.

By the 1970's, and in keeping with the GOS' policy of heavy state involvement in agriculture, the projects were large-scale integrated rural development projects, usually undertaken by RDA's. Agricultural production and intensification were the primary elements in these projects, but related components included input supply, rural credit, literacy training, livestock activities, and infrastructure development, among others.

The support and development of collaborating institutions (SODEVA, SAED, SOMIVAC, ISRA) were important parts of these projects, as was the training of participants at all levels (farmers, extension agents, and institution' personnel).

These projects were successful in developing and disseminating technologies to farmers, although the changing agricultural policy environment has rendered unsustainable (or non cost-effective) some of the more high-input technologies. Much of the infrastructure constructed during this period have remained in continued use, and include grain storage warehouses, wells, dikes, office buildings, residential dwellings, and roads.

The activities undertaken in early natural resource projects have served as a basis of future natural resource conservation and management policy strategy, which was later employed by USAID and the GOS to improve Senegal's heavily deteriorated natural resource base. Although located in specific geographical areas, the results of these two projects have had a wider impact as they have served as test sites for future natural resource conservation strategies, which continue to be used to gradually but significantly improve the Senegal's natural resource base.

3 *The New Agricultural Policy Era Projects (1984-1991)*

The agricultural projects funded during this period corresponded with the objectives of the New Agricultural Policy (NAP) and the Cereals Plan formulated by the GOS in the mid-1980's, which reduced state involvement in the agricultural sector, and promoted price and market liberalization, together with improved resource management.

Projects funded during these years were of two general types: those involving increased agricultural production and productivity and those involving institutional development and/or technology transfer. Production projects include Cereal Production, Phase II (1980-1991), Irrigation and Water Management I (1985-1991), Reforestation (1986-1993), and Southern Zone

Water Management (1988-1997)

Institutional support and technology transfer projects include National Land Use for Planning and Development (1981-1985), Agricultural Research and Planning I (1981-1988), Community and Enterprise Development, and Technology Transfer (1985-1995)

a Increased Production/Productivity Projects

1 Cereal Production, Phase II (1979-1991)

The Cereals Production Phase was funded in December 1979 for \$7.7 million. The objective of the project was to reinforce the extension and research efforts undertaken during the first phase of the project during the Cereals Production Phase I (1975-1979). The goal of the second phase was to contribute to increased agricultural productivity, particularly of cereals, through improved extension efforts. Areas of concentration were:

- extension of peanut and millet production,
- crop diversification,
- livestock raising,
- integrating women into agricultural extension, and
- provision of applied research at the farm level

The project intervened in the administrative departments of Thiès, Tivaoune, Bambey, Diourbel and Mbacké. The major implementing agency was the SODEVA, with ISRA collaborating in agronomic research activities.

In 1985 the focus of the project was re-oriented to include an agroforestry and soil conservation component.³⁶ The ISRA Forestry program, *Eaux et Forêts* and the Peace Corps were added to the list of collaborating agencies.

Results, Problems and Impacts

The major project result was the strengthening of SODEVA and ISRA/CNRA. According to a 1984 evaluation SODEVA evolved into a more professional and effective extension agency. A feedback system was developed between SODEVA and ISRA/CNCA in which results of on-

³⁶ By 1985, it had become increasingly clear that increases in agricultural production and productivity could come about through the inclusion of technologies which protect the natural resource base, maximize the use of rainfall, and assist in meeting population needs for food, fuel, forage and other products.

station research are tested in on-farm trials and farmer reactions and input transmitted back to researchers via the SODEVA

Other project achievements include the promotion of activities of women's groups to increase revenue and reduce labor time, including vegetable production, use of millet mills and improved cookstoves, cattle fattening, and the continued extension of packages of improved technologies to area farmers

In spite of these results, there was little appreciable progress in increasing cereal yields. Crop diversification was only partially successful. The lack of results was attributed to unfavorable climatic conditions and policy environments. The agricultural policy environment had changed over the course of the project. Inputs (improved seed, fertilizer, and pesticides) were no longer available (from ONCAD) and agricultural credit had been suppressed. Government pricing and marketing policies also acted as a disincentive to production.

As a result of these problems it was decided in 1985 to re-orient project activities concentrate on agroforestry and soil conservation activities. A participatory approach was employed as village-level management committees were established in 57 villages to set objectives and manage agroforestry and soil conservation plantings. Project activities included community woodlots of 1 to 2 hectares, community orchards of 1/2 ha, windrows surrounding woodlots and orchards, individual and village compound plantations, and the planting of *Acacia albida* at wide spacings in fields. Associated activities included village nurseries and well construction for nurseries and vegetable gardening.

Approximately 250,000 plants were distributed over the 1985-1987 period. By the end of the project 75 and 31 ha of community woodlots and orchards respectively had been planted, with 104 ha of individual plantings.

Project management was complicated by the numerous agencies involved in execution. Delays in well construction which involved conflicts between the SODEVA and the contractor caused a nearly two-year delay, and as a result the wells were not completed until the end of the project.

ii *Irrigation and Water Management I (1985-1991)*

This second project follows the Bakel small irrigated perimeters from 1985. The objectives were to broaden and improve irrigation in villages by

- building new areas measuring 800 hectares and restoring existing constructions on 400 hectares ,
- supporting new agricultural policy defined by the government
- encouraging the private sector to participate in the building of small irrigated

schemes repeatable in the Senegal River valley

The whole effort should contribute to improving agricultural production in the area, particularly for paddy and maize

During implementation the obvious political and economic features were SAED's withdrawal from supplying input, reduction of supervisory staff and the start of a programme to transfer hydro-agricultural schemes to farmer cooperatives which will start in the delta region

As concerns USAID strategy, the project is in keeping with the CDSS framework from 1986-1990. Its orientation includes, among other things, the objective to attain food self-sufficiency in the long term, lifting of "structural constraints" that hinder the implementation of NAP, and providing appropriate technology to "local farms and entrepreneurs"

Results

Although the financing agreement was signed in 1985, work started in 1988. As a matter of fact, the project's real life span did not exceed three years. This reduced the executing scope considerably. The irrigation was to cover 800 ha but only 239 (30%) of the objective was attained. Similarly, only 50 ha of the 400 initially planned (13%) were restored. The private sector did not participate in the development activities because it was done by companies from Saint-Louis or elsewhere. A preparatory study would have indicated this.

As concerns institutional support, the project strengthened the capability of the farmer's cooperatives and SAED.

Approximately 185 farmers were trained, among them cooperative leaders, during group visits to experimental farm, observation visits to Niger, and class sessions on specific topics. The domains and topics examined include farm produce management, dressage and cattle handling, water resource control, water-pump maintenance, and supply controls (for inputs). The renovation of the 14 ha experimental farm and setting up of a demonstration programme have enabled the continuation of training on agronomy. These courses gave young farmers the opportunity to learn, and the older ones the chance to revise. In this connection, plough farming with cows was introduced and bulal haulage (with buffalos) tested with a few farmers under the Makhana farm's "Buffalo Project". With respect to SAED, apart from renovating offices, reinforcing implementation capabilities using motorized equipment (cars, motor-cycles, boat), a computerized system to monitor, evaluate and analyse paddy yields, irrigation costs and farming methods were set up. The SAED delegation in Bakel set up its first database, thanks to this model.

Impacts

Reinforcing the capabilities for SAED and farmers cooperatives, building schemes, and restoring farmland have had no positive impacts on food production capacity

Three main reasons can explain this relative stagnation: absence of realism in project data, difficulty in implementation and the poor quality of the schemes

According to the 1991 mid-term evaluation report, it was impossible to extrapolate 7 tons of output from data on the first project. This is justified, considering the depreciated condition of equipment and poor irrigation facilities. Consequently, internal profit rates (economic and financial) calculated using these data are incorrect. Similarly, competitions for manpower in the agricultural calendar between rainfed agriculture and irrigated agriculture were only sufficient to realize that the farming intensity of 1.5, particularly for the maize, was not possible.

The overall orientation that set the commercial objectives for output on small irrigated perimeters, particularly in Bakel, have had to be challenged. This orientation postulates that it is possible to attain food self-sufficiency and meet maintenance and repairs costs for equipment using rice profits. Meanwhile, the underlying principle for construction activities (to build irrigated schemes at low cost by using farmer contribution for most of the work) contradicts the orientation. Furthermore, farmers conceived of irrigated perimeters as supportive measures towards food self-sufficiency. As a cooperative leader remarked, only women sold their produce to SAED because they did not have to feed their families.

Difficulties in implementation also hampered far-reaching impacts. These relate to inadequate communication and collaboration between SAED and the contractor, Harza engineering company. To quote a staff-member we met: "SAED did not have decision-making autonomy - Harza depended more on USAID than on SAED". Another one adds: "Harza ran everything". The major problems people talked about centred on difficulties with decision-making on financial and technical issues, difficulties for technical advisers to fit into SAED's administrative set-up, inflexibility and complexity of management procedure³⁷, means of transport and the fact that SAED personnel had other duties and participated only 50% in the project implementation. All these difficulties caused

- Gaps in providing important services to farmer cooperatives (popularization of technology, monitoring and maintenance of irrigation systems)
- Inadequate technical assistance to Senegalese counterparts and SAED

³⁷ One of our interviewees gave an example of the difficulty encountered transferring money between the equipment and installation line.

The third difficulty focuses on the accumulated errors in the two projects relative to the building of schemes. In fact, the implementation of the perimeters was entirely executed by SAED without HARZA participating. But SAED failed to learn from past mistakes and did not prevent technical inadequacies. There was no supervision, land area was not planned, canals were not compacted, this affected construction and restoration activities. Farmer kept on complaining about the same problems.

The project ended prematurely due to these difficulties. Given that the evaluation report had recommended changes in project objectives and implementation methods, the question is: was the project stopped because it was not profit-making, or because USAID decided on a change in strategy? The CPSP (1992-1997), set-up on the eve of the evaluation report that caused USAID to pull out from the irrigation sector, lends credibility to the second option.

It should be acknowledged, however, that the project put forward many good ideas on how to set up and promote a private sector in Bakel. Some of these ideas are being implemented: the privatisation of the productive activities of the experimental farm of 14 hectares and the setting up of a wing to maintain GMP.

iii *Reforestation (1986-1993)*

The Senegal Reforestation project was funded for \$14 million dollars for the period 1986-1993. The project was undertaken by the South East Consortium for International Development (SECID).

The objective was to increase incomes in agriculture through the development of tree plantations and the large-scale mobilization of villager participation, as well as local and private resources. There were six major types of activities, including

- the co-investment agro-forestry activities (windbreaks, living fence, in field trees), undertaken by individuals as well as groups
- roadside planting in villages, to promote better relations between the state and the private sector in the endeavor to plant trees along roadsides
- Other activities concerned included training for the technical and institutional reinforcement of the services and organizations concerned, the involvement of the private sector in forestry sector economic development activities, and a media campaign for the promotion of forestry activities, including the institutional and statutory aspects that go with them.

Principal Results and Impacts

According to the March 1995 evaluation, result of activities up to 1991 were as follows

For the co-investment component, the results include the signing of 9,282 contracts (for approximately 100,000 participants, 5 percent of whom are women), with 5,569 contracts executed on about 4000 hectares, which corresponds to 3 5 million trees (of which more than 50% survived) Reimbursements over the six years reached \$260,000

The environmental impact of the tree-planting exercises undertaken allowed a restoration of important arboricultural potential, which will be seen in coming years Improvements include the regeneration of soil fertility at the project sites, more efficient conservation methods of farming, and the reduction of wind erosion by the planting of windbreaks The impact of these activities will be seen as increases in agricultural production and in the revenue of target rural groups or individuals involved

Another impact of the program, highlighted by the evaluation mission, was the spirit of motivation developed by project beneficiaries in the co-investment program, as they mobilized the resources necessary to their involvement in the program

The major constraint, however, was the conservation techniques and practices were completely, which did not permit the anticipated impact in the area of natural resource management

In the roadside tree-planting component, 140 km of plantings including 30,754 trees were planted, and more than one hundred individuals diversified their resource base (USAID internal document drafted by PRM M Bèye - 7 May 93 successes) Another important impact of roadside plantations are the ecological and aesthetic improvement provided to users who benefit from the shade and beauty provided by the trees

Results of the private sector development sector component include the identification and promotion of opportunities for private sector involvement which developed from the 16 studies undertaken on the marketing of forestry products A data base on knowledge, attitudes and practice was also developed from a related study (KAP Study)

The training component provided scholarships at the M Sc level for five agents in various areas

The media campaign obtained important results in the *sensibilisation* of the population on technical and institutional issues of the forestry policy Assistance to policy review has mainly concerned the implementation of a new forestry code and the CONSERE (Conseil Superieure de l'Environnement et des Ressources Naturelles)

iv *Southern Zone Water Management (1988-1997)*

The Southern Zone Water (SZWMP) was authorized by USAID/Dakar on August 19, 1988. The goal of the eight-year \$18 million project is to increase cereals production in the southern zone of Senegal, comprised of the former Lower and Middle Casamance (the Departments of Oussouye, Ziguinchor, Bignona, and Sedhiou). The purpose of the project is to improve farmer utilization of water and recovery of fertile valley lands for agricultural purposes.

The project design addressed a major problem which had been overlooked by the designers of the prior Casamance Regional Development project, the lack of adequate water resources and management. The deteriorating potential of agricultural development in the Casamance was chiefly due to a decline in average rainfall since the early 1970's, which resulted in loss of arable farmland and reduced yields in valleys due to insufficient rain and increased salinization of the soil.

At the time of project design, the general consensus on the part of USAID/Senegal was that the SOMIVAC-PIDAC-ISRA/Djibelor project was overly diverse and complex. It was thought that by concentrating on one particular activity, irrigation and water management, that project impacts would be far greater. But, in retrospect, it was erroneous to assume that the lack of water resource development was the sole constraint to agricultural development in the area.

Major project components/outputs include

- Water Management Plans and Designs for 60 valleys,
- Anti-Salt and Water Retention Dike Installations to reclaim 10,000 ha and improve 5,000 ha of land,
- institutional strengthening,
- operational and applied research,
- private sector involvement in infrastructure development,
- training of NGO's and village organizations in operation and maintenance, and
- environmental studies

By 1999 it was anticipated that 10,000 ha of land would have been reclaimed and 5,000 ha would have been improved. Annual cereal (mostly rice) production would increase from 54,000 tons of paddy (in 1986/87) to 81,000 tons in 1999, assuming yields of 1.8 tons per hectare.

The Ministry of Rural Development was originally planned to be the major implementing ministry, but a presidential decision after project approval changed the lead GOS actor to the Hydraulics Ministry. Louis Berger International (LBI) was the primary U.S. contractor, with Louisiana State University (LSU) and Tech International as sub-contractors. The LBI contract was signed in June 1990 and expired in December 1995. The project's PACD is June 30, 1997.

Intended project beneficiaries are farmers, GOS technical services, private contractors, and the nation as a whole, who will benefit from reduced import requirements

Results

The project has intervened in 22 valleys (including 14 in the Sedhiou Department and 8 in Bignona) and has constructed 24 anti-salt dikes, 21 retention dikes, and 57 ouvrages evacuateurs de crues. Approximately 10,000 ha have been protected.

The project uses a participatory approach, as project beneficiaries are organized into village and inter-village committees that play a larger part in decisions concerning the implementation of activities than in prior USAID-funded projects. It is the villagers themselves who request that the project intervene in their village/valley. Villagers from the Djimande, Bona, and Bougnadou valleys confirmed this process to the study team. Villagers also participated in dike construction by carrying quarry stone, and in other construction activities.

The project has invested much effort in village and inter-village organization to develop a system of collective water management. This is a difficult and time-consuming task. Approximately 176 village water management committees have been formed in 183 villages.

Demonstration plots were undertaken in 13 valleys over three agricultural seasons where area farmers were trained in improved cultural practices and use of improved inputs.³⁸

More than 1,000 compost pits have been dug by villagers in 11 valleys after training by project agronomists to provide organic fertilizer for rice and other crops. There is little data on actual utilization, but project staff indicate that the compost has been mostly used on dry season crops.

The project is currently working with nine NGO's, which have placed agents (*animateurs*) in the valleys to organize village and inter-village water management committees, and to encourage villager participation in project activities and in the management and maintenance of the dikes and accompanying structures.

The applied research component which was to be undertaken in collaboration with ISRA/Djibelor has not resulted in improved methodologies and approaches to water management. It is the opinion of ISRA/Djibelor researchers that Louis Berger International (LBI), the U.S. contractor, was not interested in collaborating, and preferred to work with ORSTOM, although ISRA's participation was stipulated in the PP. Years were spent devising the research *Protocoles*, but not much was accomplished. But it is also true that the station at Djibelor, with many of its senior

³⁸ Improved seeds and fertilizer were supplied by the project to the demonstration plots, but were not generally available to area farmers.

researchers away on long-term training did not have adequate resources to successfully complete the applied research component

The dike structures are also rural roads used by villagers to cross valleys and are thus extremely important to them for both commercial and personal reasons. Many of the villages in the valleys are inaccessible during the rainy season, so these *pistes rurales* are highly appreciated. Officials both at ISRA and the project have commented that it seems that the villagers appreciate the dikes more for their transport function than for stopping salt incursion.

Training in marketing, and micro-project and women's group management has been provided to more than 3,000 villagers. Both short and long-term training was provided to project staff (Four SZWMP staff member received long-term training at the M Sc level in the United States)

Impacts

The major impact over the medium and long-term will be the reduced level of soil salinization, which will lead to an increasing amount of arable land available for production and thence increased aggregate production from these lands.

Technical innovations include the introduction of water-gates made of polyester, which are available in Dakar, at the relatively reasonable price of 360,000 CFA per unit.

Because the project is on-going and it takes years to reduce the salt content on fields, there is yet no discernible impact on agricultural production in the project valleys. Regional agricultural officials in Kolda state that there is no significant difference in cereal production between project and non-project valleys. Project valleys have had three or less agricultural seasons since dike construction, and last year there was an abrupt and premature end to the rains in both Sedhiou and Bignona. It will take time to evaluate the medium and longer-term impacts.

Farmers interviewed during the retrospective study had not yet produced any rice on valley lands surrounding the dikes. In the Djumande and Bona valleys farmers attributed last year's lack of irrigated rice production to the premature end of the rainy season. In Bounadou, farmers indicated that the salt content was still too high for rice production.

In order to achieve maximum effect, projects need to have *amenagements secondaires* to be completed. By the end of the project secondary works will be completed in four of the twenty-two valleys. This will limit the impact of the dikes on agricultural production.

Indirect impacts include the benefits of available water on the surrounding environment, including the rejuvenation of valley palm trees, the return of fish to valley waters, and the availability of water for livestock consumption. In Djumande, farmers interviewed mentioned the positive impact

of the dike on the level of the water table. Before the construction of the dikes, there was only one all-season well in Djimande, and presently there are 5 in Djimande (and 4 in Balingor, another valley village)

The failure to collect baseline data or to provide quantifiable monitoring and evaluation data will greatly hinder any assessment of project impacts.³⁹ The quantitative data necessary to measure the impact of the project on area planted, yields, and production do not exist. Project staff have no reliable data on area planted and production in the valleys. Basic information does not exist regarding area planted in rice before dike construction, the area planted after dike construction, or the extent to which rice or other (upland) production has declined due to the reallocation of on-farm resources to return to aquatic rice production.

Factors Critical to Project Success or Failure

The absence of an agricultural component is the major reason why the project will not increase cereal production by 50 percent from 54,000 to 81,000 tons of paddy rice, as specified in the PP. PP production projections were assuming yields of 1.8 tons per hectare which is not possible in the absence of improved inputs used in optimal amounts. It was a faulty assumption of the project design to assume that improved water management alone would increase yields. Regional agricultural authorities and agronomists agree that yields of not more than 500 to 800 kg/ha can be expected in the absence of improved inputs. The lack of extension services and rural credit to farmers is a major constraint.

Village groups interviewed during the retrospective study concur that the lack of an agricultural component of the project, particularly concerning inputs availability (improved seeds, agricultural equipment, pesticides, and fertilizers) presents a limiting factor to the full use of the irrigation structures, and to reaching the project goal of increasing cereal production.

The mid-term evaluation undertaken in late 1992-early 1993 found that the project would not be able to the goal, purpose, and objective quantifiable indicators in the PP, and recommended that these amounts be revised, and that an agricultural component be added to the project.⁴⁰

The political unrest in the region had a negative impact on project activities, causing numerous delays and altering intended project sites.

³⁹ A baseline survey of the third generation (Program III) project valleys was conducted in late 1993 by SENECA, but results were not satisfactory. The production data is highly questionable; fields were not measured and farmers were asked to "recall" area planted. These highly dubious estimations were then used to extrapolate production levels in the valley (The socio-economic questionnaires planned in the ISRA research *protocoles* were never undertaken.)

⁴⁰ It was recommended that the number of valleys be reduced from 60 to 35, the number of hectares of reclaimed and improved land be reduced from 10,000 and 5,000 ha to 7,500 and 8,500 respectively.

Senegal Agricultural Sector Retrospective Study

The PP severely underestimated costs and time required for dike construction. The PP assumed that village labor would provide much of the labor, including the compacting of the dikes. This proved inefficient, as the work was both time-consuming and really too arduous to undertake with manual labor. According to the mid-term evaluation, construction costs were 240 percent higher per valley than originally estimated, although costs per valley have been reduced of late. The increased costs were in part due to the substantial delays and disruptions caused by the civil unrest in the project area and to underestimated labor costs (as initial costs estimates which assumed the use of village labor for compacting were found to be unrealistic for the construction of durable structures).

The change of lead institution from the Ministry of Rural Development to the Ministry of Hydraulics was an unfortunate choice for a project whose goal was to increase agricultural production. The lack of a viable agricultural component continues to constrain the attainment of the project goal.

There were considerable delays in fielding the LBI team, with many personnel changes, particularly in the chief of party position, which caused delays to the start of project activities.

The GOS failed to meet commitments concerning allocation of personnel to the project, and in paying salaries and expenses (*indemnites*) to personnel transferred to the project.

Project personnel interviewed by the study team indicate that they have not felt integrated in project decision-making in either technical or managerial matters. They were there to execute decisions made by LBI. They feel that there was little transfer of technology between technical assistants and counterparts. Indeed project documentation and engineering training manuals were not available in French until recently. They indicated, also, that many of the engineering plans were designed at LBI US and Paris offices. Project staff consensus is that the Senegalese National Project Director often had little authority or influence regarding project direction or implementation decisions.

There is frequent conflict between those cultivating upstream from the dike and those having plots located downstream concerning the management of the water-gates (i.e., when to open and close).

An ISRA hydrologist who has many years experience in SZWMP (and PIDAC) valleys maintains that the village and inter-village committees do not appropriately manage valley water resources because the committees are composed almost solely of farmers with plots located upstream, and hence water management decisions overwhelmingly favor upland fields.

Conflicts between villages in the Bougnadou valley were apparent to the study team⁴¹ The village of Bougnadou disagreed with the location of the anti-salt dike As a result, they resigned from the intervillage committee, only to rejoin upon the request of the SZWMP national director There are still problems between the valley villages, with open resentment on the part of Bougnadou village at what they perceive to be the special treatment accorded by the project by Taiba, a neighboring village

b. Institutional Support and Technology Transfer Projects

1 National Land Use for Planning and Development (1981-1985)

The National Land Use for Planning and Development Project was authorized in 1981 for \$200,000 and terminated in 1985 The project was executed by the Remote Sensing Institute of South Dakota State University

The objective of the project was to provide technical assistance to develop the capacity of local researchers to use remote sensing as an evaluation and resource management tool The project also provided land use maps to identify potential development areas, and prepared a national plan for the optimal use of available resources

Another objective was to set up a pilot agency to identify and evaluate Senegal's long-term needs in the remote-sensing and in the interpretation of aerial maps

Results and Impacts

The principal results of the project were

- Development of 1/500,000 survey maps on soil, vegetation, land utilization, soil capacity, and surface hydrologic and geological structures
- Only three of the six long-term training scholarship were achieved for GOS personnel Due to the transfer of many trained staff members, the project benefitted little from the training
- The provision of two long term technical assistants and consultants from the Remote Sensing Institute (RSI)

⁴¹In the other two valleys (Bona Djimande) no conflicts between villagers were apparent. Indeed, there was no evidence of either inter or intra-village conflict In both valleys farmers spoke of a new *esprit* of collaboration started by the project.

- Acquisition by RSI of Landsat maps and technology, including equipment and material

The maps and other documents developed under the project constitute one of the rare sources of natural resource inventory and maps. They are still highly used as reference documents for planners, decision makers and technical staff for follow-up and evaluation of resources. Several technical services use them for defining activities, most notably in natural resource management plans.

Nevertheless, insufficient field supervision and an insufficient quantity of technical assistance provided did not enable an adequate transfer of remote sensing and Landsat technologies.

The project suffered from its design which had two separate objectives to be reached using the same strategy. The first objective was to provide institutional support to a Remote Sensing Bureau at the University of Dakar. The second objective was to develop National Land Use Plans for Land Use and Development, while providing institutional support to the GOS Land Use Agency (*Direction de l'Amenagement du Territoire*).

u Agricultural Research and Planning I (1981-1988)

The Agricultural Research and Planning Project was funded in 1981 for \$5 million. The goal of the project was to increase GOS capacity to effectively plan and evaluate agricultural development policies and projects in the areas of food and agricultural policy, and in farming systems research. The collaborating agency was IRSA, the U.S. contractor was Michigan State University (MSU). The ISRA/MSU/USAID project was part of a joint World Bank/French/USAID program to reorganize ISRA and decentralize agricultural research.

Specific objectives were to

- develop ISRA's agricultural research capacity through both long and short-term training and through participation in the design and execution of production systems research and macro-economic research programs,
- conduct farming systems research in major ecological zones to identify social, economic, technical and institutional constraints on existing farming systems, and to develop improved technical packages, and,
- undertake macro-economic research on food, nutrition and agricultural policies to provide guidance to policy-makers

Results and Impacts

A 1985 mid-term evaluation found considerable progress in meeting project objectives. The Macro-Economic Analysis Bureau (BAME) was found to have played a key role in introducing macro-economic research as a significant contributor to agricultural policy formulations in Senegal. Short and long-term training of BAME personnel to address complex policy issues is ongoing. The 1985 evaluation acknowledged, however, that there was limited staff capacity at BAME for certain macro-economic analysis, disagreement over priority research areas, and weak linkages between BAME and other ISRA divisions.

The Production Systems Research (PSR) was established in three regions with varying degrees of success. The Casamance program⁴² had been most successful in terms of data collection, technical studies undertaken, on-farm and on-station trials and linkages with other projects. The Fleuve and Kaolack programs had made less progress at the time of the evaluation, but production systems were identified in the three agro-ecological zones to identify constraints. The PSR teams have suffered, however, from the lack of availability of sufficient personnel and financing to implement their programs, and there has not been much coordination between PRS staff and the area extension agencies (RDAs).

The Agricultural Policy and Planning project was unique at the time in combining micro-analysis (farming systems research) with macro-economic analysis. This was especially important as the constraints frequently faced by farmers are related to macro-policy. Later projects have continued the micro-macro approach, including NRBAR and the second phase of the Agricultural Policy and Planning project.

Another lasting impact of the project is the interdisciplinary approach to agricultural research which has continued at ISRA. Prior to the project the agricultural research conducted by ISRA was thematic in nature, and was heavily agronomic in nature, with scant input from the social sciences, particularly as to the cost-effectiveness of proposed research strategies.

The long-term training provided by the project has had a lasting impact on the ISRA. In total 21 researchers obtained M.Sc.'s in U.S. universities (seven of whom had left ISRA by the end of the project). ISRA Researchers at Bambey, Djibelor, Kaolack, and Kolda interviewed during the USAID Retrospective Study find that the training provided by the project has had a lasting impact in raising the capacity of ISRA personnel in undertaking research in many disciplines.

⁴² The Casamance PSR team at ISRA/Djibelor also benefitted from the presence of an expatriate farming systems agronomist, who provided by the Casamance Regional Development Project (685-0205), as was a full-time technical assistant in macro-economics and marketing.

Many of the working papers undertaken by project personnel in the area of cereals marketing, agricultural input use, and food security modelling have been used by policy-makers in Senegal

The impact of project research results at the farm level was constrained by the change in GOS agricultural policy in the post-NAP era. The extension agencies with which ISRA was developing and testing technologies had been significantly cut back or abolished so channel between ISRA and the farmers were significantly diminished

iii Community and Enterprise Development (1985-1993)

Funded for \$15 million, the objective of the Community and Enterprise Development Project was to enhance the capability of village groups and small enterprises to independently manage and maintain development activities. The management of the project was entrusted to a management unit (MU), with technical assistance provided by the New Transcentury Foundation

The project had two major components: PVO/NGO development and support, and support to (mostly agricultural) small businesses (*micro-enterprises*). Both components included the allocation of credit and training

Grants were provided to both Senegalese and U.S. NGOs to ensure their support to village organizations (VOs) in technical assistance, credit, planning and implementation of income generating activities. Grants were also provided for infrastructural support to villages. Credit funds were allocated to small enterprises in the regions of Kaolack, Fatick, Thiès, Diourbel and Dakar. The regions of Ziguinchor, Kolda and Tambacounda were also added later in the project

Results and Impacts

According to the December 1990 project close-out report, a total number of 8 NGO's supported 58 village organisations (*micro-enterprises*). Caritas Senegal was the first NGO approved in August 1986. Second generation NGO's, certified in December 1986, included Africare, Padec and OEF/MFR. Third generation NGOs, certified in 1987 were Caritas Senegal, SOS-Sahel, AISA and ABACED

Village-based micro-enterprises comprised six types of agricultural activities for credit was received: market gardening (26 percent of total activities), livestock raising/fattening, cattle (40 percent) and poultry (26 percent), beekeeping, fishing, and cereal banks

By the end of the project, the results of the training of village-level organizations included

- literacy classes for 948 villagers trained to design their own projects,

- farmer organizations capable of identifying their needs, managing inputs, and in selecting technical assistance from local sources,
- the use of credit in pilot village projects with reimbursement levels according to fixed objectives

Constraints to project implementation included the lengthy period of time taken by the GOS to certify some of the NGOs such as ASISA. Project management was rendered difficult by the joint undertaking of both the NGO and the micro-enterprise components, which had separate objectives and functions. NGOs also experienced difficulties and delays in preparing project proposals in the beginning, as only one proposal was ready for consideration within the deadlines for the national project committee in August 1986. The first credit was only allocated during the NPC meeting in August 1987, almost one year after the project started. The duration of the approval cycle for proposed projects is another reason for the lateness observed in early loan grants.

Credit Component

By the end of the project, 246 loan grants amounting to 340 million F CFA had been granted to 58 village organizations, 72% of them being short-term loans and 28% for the long term.

By December 6th 1990, a total of 106 loans (43% for a sum of 207.7 million F CFA) had been fully reimbursed at a repayment rate of 61%. Meanwhile, according to NGOs involved, this rate was highly variable. It was realized for instance, that one NGO working with 18 village organizations had a reimbursement rate of 84%, while another one with two village organizations had a 0% rate.

The availability of grants for infrastructure or for equipment necessary for the implementation of activities enabled villagers to participate more readily in the project program.

Village Education and Micro-Enterprise Component

According to indications of the "close-out report" for the first year of implementation, more than 276 persons (75%) participated regularly in the program sessions in *wolof* set up in 24 centers with participants who were either illiterate or were beginning the lessons with no prior knowledge. After a training period of 7 months, 54% of the regular participants attained level 3, meaning that they could correctly read and write sentences, do arithmetics and solve problems. In addition, 245 villagers participated in teaching *serere* in 14 centers, 53% of the villagers only participated regularly owing to collecting seasonal activities during the rainy season or travelling. Approximately 32% of the participants attained level 3 in arithmetics, as did 19% in adult literacy.

Two years after the training program was launched, more than 1000 villagers had been educated to a significant extent, surpassing what had been planned in wolof and serere, as well as methodological guides in both languages and a guide on project management in wolof only

Within the framework of overall impact, the most important sustainable result was the relationship of trust that developed between the village groups and the NGOs in the zones concerned. But, the impacts of the project were reduced by numerous difficulties with execution, connected mostly with

- the difficulty in undertaking two distinct components (NGO development and small enterprises),
- the inflexibility in the selection process of activities for sub-projects in villages in comparison to the availability of funds for rural development,
- recruiting and certifying participating NGOs, and,
- the project's short duration (3 instead of 6 years) owing to a late start (2 1/2 years)

iv Technology Transfer Project (1985-1995)

The Buffalo Sub-Project

The Buffalo project was one of the many sub-projects funded under the umbrella of the Technology Project funded for \$9.9 million. The objective was increasing farm income through the introduction of appropriate technologies, which were an intermediate step between mechanized and manual methods.

The project involved the introduction, adaptation and use of buffalos for animal traction on the irrigated perimeters of the Senegal and Casamance river basins. Its use was justified on the grounds that heavy mechanization necessitated high capital investments and maintenance costs, which were not cost-effective for small farmers in the Delta area and the Senegal River Valley. There are also constraints associated with manual farming (in land preparation, for example) which is practiced in about 80% of the land cultivated in the lower valley of river Senegal. Manual plowing limits the productivity of manpower mobilized considering the high labor input required and the low revenues gained.

Project activities took place in two phases

The first phase of 3 years was meant as a test of the adaptability of the water buffalo in Senegal by the introduction and adaptation of 20 domestic buffalos at the Makhana station with components including provision of animal health and breeding services. The second phase of 2 years involved the expansion of the program to selected area farmers, with extension services provided to introduce the buffalo into the farm environment and their insertion as means of traction in agricultural activities. Farmers were trained, and a socio-economic follow-up of participating was undertaken.

Results and Impacts

The project provided on-farm access to 90 percent of the imported buffaloes, and the registration of 27 births with the procurement of a mean daily gain (MDG) of 840 grams and animals of an average weight of 500 Kg with a peak weight of 870 Kg in its trial phase.

During the extension activities phase undertaken between 1989 and 1994, 46 water buffaloes were distributed to 18 localities within 6 Departments and 4 regions with an average of 7.6 buffalo per year. The training of 24 livestock extension agents and 36 farmers was also accomplished, in the use of the buffalo in animal traction as an alternative to mechanized or manual technologies.

At the level of impacts, these results were represented in the field by the registration of about 400 requests for buffaloes, the current use of buffaloes for plowing and the construction of small dams and for transportation. Extension was also provided to farmers concerning the use of buffaloes in production, and in care and management.

From the economic point of view the use of buffaloes for animal traction is more cost-effective on larger farms. Estimates indicate that annual profits of 28,650 F CFA are estimated for farms of less than 1 hectare, assuming an initial cost price of 50,000 CFA, and use over a 6 year period. For farms of three hectares (on which 2 hectares are used for double cultivation of rice and 1 hectare for the cultivation of water melon), profits of 1.27 million F CFA are estimated.

Appropriate Technology International Sub-Project

Funded for \$999,500 the Appropriate Technology International sub-project (of the Technology Transfer umbrella project) was comprised of three main components: pedal pumps, coal stoves and technology development.

Training was undertaken

- of local artisans to manufacture and maintain pumps, and,

- of irrigation technicians to maintain and demonstrate the operation of pumps

Project activities included the manufacture, installation and marketing of new technologies, particularly pedal pumps and coal furnaces. Tests were undertaken to determine the comparative benefits and costs of similar technologies, while supporting the development of a private enterprise in manufacture and market of new technologies.

The project should have included a pilot phase with a Senegalese organisation in charge of the future direction for the transfer of technology to the private sector, and in identifying manufacturers, vendors and maintenance technicians.

Results and Impacts

Pedal Pumps

The introduction of pedal pumps allowed an increase in area planted for vegetable producers, who had previously watered manually. A project participant interviewed during the Retrospective study visit, who had used a motorized pump before, indicated that the main gains acquired with the equipment of a manual pump are the reliability and the lower purchase and operation costs. The annual maintenance costs is only 6,000 CFA annually for vegetable producer's cultivating 0.50 hectares, compared to costs of 15,000 to 75,000 F CFA (depending on the age) for motorized pumps. In addition, the diesel expenses for motorpumps amount to approximately 32,000 F CFA monthly plus labor costs. Labor costs linked to pumping and watering are estimated at 30,000 F CFA per month (when two people are assigned to this task). It is to be noted that the motorized pumps, which had been used up to 1991 had been bought at 255,000 F CFA in 1985 compared to 45,000 CFA for the manual pump bought in 1992. The farmer interviewed indicated that due to reduced operation and maintenance costs, his present average annual profit has increased to 500,000 F CFA compared to the 350,000 F CFA when he was using the motor pump.

Pedal pumps seem to be readily adaptable to the environment, and their reduced costs (in comparison to motorized pumps) have greatly favored their adoption by vegetable producers outside the project. A vegetable producer in Pikine who adopted a pedal pump after seeing it used by a neighbor, indicated that 5 other area vegetable producers who saw his pump decided to install their own.

At the institutional level, the project has allowed the private sector the opportunity to adopt and use new ideas and technologies introduced by the project. The project has supported the training and installation of 18 artisans who have manufactured and sold about 1600 pumps for more than 72 million F CFA.

At the strategic level, the diffusion of pedal pumps has demonstrated that the problem of

technology adoption does not depend solely on its technical efficiency, but also its cost-effectiveness

The technology also had an impact on lessening women workload. The introduction of pedal pumps where the traditional manual pumps were previously used, has reduced the burden of women who had to draw water from the wells despite the fact that these pumps necessitate physical force for their operation.

Diambar Coal Stoves

The 1995 evaluation report indicated that women felt the use of Diambar coal stoves had greatly reduced their work load. In addition, the Diambar coal stoves, which cost an average of 3,000 F CFA last longer than the traditional stoves and constitute a substantial saving for their users. The evaluation also indicated that 27,000 stoves were sold by 53 locally trained artisans. The evaluation also estimated that each one thousand stoves save approximately 141 hectares of forest.

Distributors regret, however, that they do not have sufficient capital to stock more stoves and set up stores to sell them.

According to indications, the replicability of these stoves is ensured by their adaptability to the local environment and the local needs. However, cost limitation are to be noted.

c Conclusion NAP Era Projects

The agricultural projects funded during this period corresponded with the objectives of the New Agricultural Policy (NAP), which reduced state involvement in the agricultural sector, and promoted price and market liberalization, together with improved resource management.

The projects were less integrated in nature, and often concentrated on one particular component, such as water resource development and management (Southern Zone Water Management Project, Irrigation and Water Management I Project), reforestation or land use planning. There were also umbrella projects, which financed a multitude of smaller interventions.

In accordance with GOS policy which was to reduce the role of the state in agriculture, USAID projects started to collaborate more fully with NGO's, and farmers' (and other private sector) groups, as in the Community and Enterprise Development Project. This was also in keeping with the increased awareness on the part of USAID of the need to increase the participation of project beneficiaries in project identification and implementation.

The Senegal Reforestation Project also reflected the existing policy environment of reduced state

services in the forestry sub-sector. A major impact of the project was in its collaboration with the private sector and village groups in reforestation activities, which served in many ways as a model for future projects, as was its participatory approach to project implementation.

Due to the sudden and premature closing of the Irrigation and Water Management Project and the Agricultural Production Support Project (685-0269), they did not achieve their objectives and thus had little positive impact. Other projects, such as the "Buffalo" sub-project had such weak results that it is difficult to assess the impact.

4 *Recent Projects (1992-1997)*

The most recent agricultural projects correspond with the 1992-1997 Country Program Strategic Plan developed by USAID/Dakar in 1991. The strategic goal was to increase private incomes derived from natural resources. Four strategic objectives were defined, three of which are related to agriculture:

- Increase Crop Productivity in Zones of Reliable Rainfall (Strategic Objective N° 2),
- Increase the Value of Tree Production (Strategic Objective N° 3),
- Increase Market Liberalization of Agricultural and Natural Resource Products (Strategic Objective N° 4),

Projects funded during this period include the NGO/PVO Support (1990-1998), Natural Resource-Based Agricultural Research (NRBAR), 1991-1998, Kaolack Agricultural Enterprise Development (KAED), 1992-1997, and Community-Based Natural Resource Management (CBNRM), 1993-2002.

Several of the projects funded correspond with USAID/Senegal's Strategic Objectives, including NRBAR, KAED, and CBNRM, and whose activities concern research and implementation of natural resource-based technologies, projects serving as the sectors:

Sub-objectives of the strategic objectives concern the increase of soil productivity with increased use of improved technologies, such as windscreens, living hedges, field trees, use of fallow, chemical and organic fertilizers, crop rotation, water resource management, improved seeds, erosion control, etc.

a **NGO/PVO Support Project (1990-1998)**

This project sets out to improve the living standards of the poorest groups in Senegal by strengthening the organizational and institutional capabilities of NGOs, NGO unions and

communal organizations that coalesce with them. It was set up at a time when the agricultural sector in Senegal was undergoing economic and political reforms to correct imbalances (such as low producer prices given to farmers) to create an environment conducive to agricultural production. The Structural Adjustment Program in the agricultural sector, better known as SAPA (or PASA, as it's referred to in French), was initiated during this period. Some estimates maintain that the NAP collapsed when SAPA was born. Food self-sufficiency remains the priority, but the new orientation accords more importance to natural resource management and greater farmer involvement in all aspects of agricultural development.

Project objectives tally with USAID's CPSP (Country Program Strategic Plan) covering the period 1992-1993. Two major changes are worth noting in USAID's strategy: the strategic objective approach replaces the project approach and a concentration of future USAID activities in areas with higher rainfall. The CPSP accords priority to "promoting group interests from all social classes to support reforms." The project was redesigned in April 1994 to suit the new CPSP strategy.

The project is on-going and it is premature to draw lessons and conclusions. Nonetheless, the Retrospective study assessed its impacts through the support tendered to two NGOs in Casamance: AJAC-COLLUFIFA and 7A.

Results and Impacts

The ONG AJAC-COLLUFIFA An example of "A small farming industry"

The association of young farmers in Casamance area COLLUFIFA (Commission for the Fight against Famine) is comprised of more than 300 villages organized in farmers' groups and unions. It seceded from the mother-organization AJAC and engages in sesame production and processing. The choice of activity was determined by the drought and resulting food insecurity which arrived in Mid-Casamance in 1984. The association obtained a manual press and an industrial production unit for sesame oil.

Within the framework of the sub-project funded by the NGO/PVO support project, AJAC plans to provide material to 50 of the 350 groups making up the association. Presently, the funding obtained in the first phase of the project has provided agricultural equipment for thirty farmer groups. The material is given to the groups on credit. Credit loans are refundable in 5 years with no interest. Complete equipment is comprised of 2 cows, sower, a plow, a sine hoe, and a cart. The use of this material has favorably improved planting methods, notably soil tilling and sowing.

The introduction of improved technology has not stabilized sesame production, however, due to poor rainfall, which causes a large variability in yields, estimated between 250 and 500 kg per

hectare Production dropped from 200 tons in 1994 to 95 tons in 1995

Besides training on participatory planning techniques (MARP), the sub-project provides institutional support to the NGO by providing salaries and benefits to 15 agents (field coordinators and managers), in supplying computers and in establishing a revolving credit fund

At the level of the individual farmers and farm households, the sub-project has

- improved the quality of food to area resident by making sesame oil available,
- increased revenues for individual sesame cultivators,
- increased area planted for sesame and other crops, and,
- increased production by leasing agricultural equipment to individual farmers

The NGO 7A

The NGO 7A was officially certified in 1988. It was set up by a native of Casamance and concentrates its activities in the Kolda area in Upper Casamance. Their strategy revolves around five year development programs in two major fields: provision of primary health care and supporting food self-sufficiency. Other activities such as adult education programs, planning for building, and generating revenue are executed within the framework of these two fields.

Activities supported by the project involve the development of revenue generating activities, which also promote food security. Activities include village cereal shops, animal fattening, palm-oil production/processing and vegetable production and marketing.

The presence of these cereal shops in two villages had led to price competition (with itinerant traders (*bana-bana*)) resulting in lower consumer cereal prices, particularly for rice. Furthermore, the availability in the village of the main foodstuffs (rice, millet, other cereals and condiments) saves time for villagers, who would otherwise would have spent two days travelling to Kolda. It also saves transport costs and increases the amount of time available for farm and other activities.

Women's groups have been the main clients of the 7A NGO. In total, 84 women received credit for the extraction and sale of palm oil. Without counting labor time, a bunch of palm nuts costing between 75 and 100 F CFA yield a litre of oil, which is then sold for 500-650 F CFA.

In addition, 45 women initiated sheep fattening activities and vegetable production. Sales are good, since there are many weekly markets in the area, particularly the big Diabé weekly market, which is nearby.

As with the NGO AJAC-COLLUFIFA, 7A has received funds for operational costs and personnel salaries and benefits for NGO personnel. Other project activities include a MARP participatory

planning program, and the provision of computer equipment, vehicles, and motorbikes

b. Natural Resource-Based Agricultural Research Project (1991-1998)

Project activities began in 1992 and were implemented within the framework of ISRA with a total budget of \$23.5 million, \$19.75 million of which was contributed by the government of the United States, and 3.5 m by Senegal

The activities implemented concern institutional reorganization, the natural resource management program, research and development, and training of ISRA personnel

Results and Impacts

The proposed action plan for the reorganization of ISRA the management and financial system was never implemented, due to inappropriateness. The American firm responsible for the plan never completed its contract, and ISRA is presently testing their own decentralized management system at Bambey

In addition, a manual for an action plan of procedures for ISRA station management has been finalized, but the results have not been used because of the reforms carried out in ISRA. Thus, the impact has been small. As regards the issue of personnel planning, a long-term training programme for researchers was set up and five researchers were beneficiaries of a project grant to prepare a Ph.D. respectively in the fields of agricultural economics, agricultural engineering, forestry management, livestock sciences and water and soil sciences. Their work is scheduled to be ready by 1997. Ten other researchers have also been sent to American universities to pursue Masters degrees in soil and aquatic sciences, veterinary science, Agronomy, and meteorology. According to the group to which they belong, these researchers should be finishing their studies in 1996 but not later than 1998.

One should also note that a database was developed within the framework of the INFORM system to manage the manpower resources of ISRA administrative unit. The development of these methodological tools has enabled the NRBAR project to achieve great success with institutional and organization reinforcement at ISRA, although all the goals have not been realized. It should be noted, particularly, that the results the training programme will attain will probably leave a mark on the institute's performance in years to come.

The natural resource management component, designed to develop ISRA's capacity to generate low-cost technologies in sustainable natural resource management, was never really implemented due to the fact that the funds budgeted for ISRA's core NRM program are blocked by the non-certification of ISRA accounts. Other constraints which limited ISRA's interest in this program

88

were related to the limits placed on USAID intervention to areas of sufficient rainfall, as well as the limitation of research to four target cereal types

The project's Research and Development program granted funding on cooperative research to NGO's, farmers' organization and to researchers. Activities carried out were mostly related to fertilizer techniques using compost, agroforestry technology, planting schedules, and economic potential of livestock

The programme's main impact has been to contribute to reinforcing ISRA's institutional capacity, particularly through the promotion of participatory evaluation of test results for each season, improving relations between ISRA and its partners (NGOs, organizations, producers) and the establishment of more efficient diffusion which has been validated by extension

It should however be noted that the NBAR project goals of generating and adopting 15 NRM ready-for-use technologies has not been accomplished, with less than 10 being used

c Kaolack Agricultural Enterprise Development (1992-1997)

The project is implemented within the framework of the Cooperative Agreement signed with USAID Senegal on September 25, 1992 for the sum of \$8 million and is expected to last 5 years. The project objective is to contribute to increasing food sufficiency in the Kaolack region and to provide supplementary activities and opportunities for earning revenue to the people in the agricultural and agro-industrial sectors

This project sets out to develop viable agricultural and agro-industrial enterprises using sustainable production methods by facilitating accessibility to loans and facilities for the enterprises and also by giving them the means of using improved NRM methods that are necessary for increasing crop yields and revenue on sustainable bases

Results and Impacts

Relative to agricultural production and management of natural resources aimed at improving agricultural productivity through better natural resource management (strategic objective numbers 2 and 3, combined) Africare has set up communal farms for demonstration (CFD) of about 4 hectares where members of ABEs are responsible for popularizing techniques for production and sustainable management of natural resources

All the farms for demonstration have been fenced with salanes (*Euphorbia baslsumifera*). According to available figures of the project (March 1996) the total length of built-in fencing for

56 CFDs was close to 32 500 meters, with an 82% survival rate. The length of windbreaks built-in on all the demonstration fields covers a total of more than 31 500 meters. The survival rate was close to 69%.

Some ABEs also undertook action to curb water erosion by planting rows of *Andropogon Gayanus* (624 m) on the contour lines of water paths identified on some CFDs, and by setting up stone blocks (229 m).

The amount of compost pits and mounds numbers 57. The acceptance situation for the involved producers is as follows: 53 for live hedges, 181 for windbreaks, 260 for field trees, 18 for anti-erosion dikes, 74 for compost, 22 for nursery, and 122 for improved housing.

To date, 15 of 56 ABEs, with actual female membership of 80%, have started up lucrative activities for a global amount of 39 200 000 francs. These activities were generally identified through a participative approach and most often meet the needs of the people. An important achievement has been the obtention of advantageous credit facilities for ABE merged into companies by the project from the NCAFS (reduced interest rates, diligent attendance to documents, implicit period of grace in case of failure to return loan on supposed payment date). The project is also in charge, by way of total funding, of the cost of infrastructure, of equipment and machines (*valeur évaluée en Mars 1996 à 149 198 868 francs, soit une moyenne de 4 662 465 francs par ABE*), preventing, by so doing, the major difficulties tied to cost of investment which would have hampered the setting up and launching of lucrative activities.

Another important achievement for the project has been the implementation of market and feasibility studies for the various lucrative activities identified. This has allowed decision-making bodies to critically examine the choice of activities based on objective criteria with regards to viability and profitably.

The ABEs develop a sense of initiative, via these lucrative activities, as well as a spirit of involvement for the sustainability of the system of revolving loans.

The food crops earned through lucrative activities (*12 608 015, pour une moyenne par ABE de 225 143 francs*) help satisfy the food requirements of the people in the zone of activity, thus improving their food security. Revenue earned from the farms helps to increase opportunities by way of training offered by the project to members. In this way, they can assume responsibility of these activities within short periods of time and contribute consequently to their sustainability.

As concerns training the members of ABEs were taught several issues between July 1993 and August 1995.

These involved

- management of natural resources (nursery, compost/fertilizing, quick-set hedges and wind breakers, fencing and contour lines etc) ,
- group dynamics
- agricultural techniques (sowing techniques, tilling, weeding etc)
- management and accounting (bookkeeping, accounting etc)
- techniques of making soap ,
- grating techniques, the cereal bear, market gardening (staking) cereal windmills

With regards to functional literacy, classes were opened in all villages within the range of the project. The inhabitants themselves took part in identifying their needs, as well as implementing training courses. It is worth noting the people's interest and the considerable impact in villages.

The progress made by trainees is well monitored and the project endeavors to combine training courses with activities by carrying out the production of manuals and appropriate messages. The fact that a monitor is chosen from within the village itself and placed on a low salary is one of the favorable conditions that allows the ABEs to pursue the activities and ensure their sustainability.

As concerns the information system set up by the project, the project achievements center on inquiries to monitor weekly markets, various investigations (MARP), market and business plan studies. With regards to technical management, an elementary investigation was carried out to serve as reference for the area, as well as periodical data for monitoring activities on the field, and various reports.

The project, by so doing, has an information bank that allows for project needs to be effectively addressed. The various reports written for the project facilitate monitoring of technical and administrative execution. The equipment and computer attributed to the project have been judged adequate in the light of what has to be done and the actual requirements of the information system.

On the issue of women in the project, measures have been taken to make their work-load lighter.

- cornmills have been set up as lucrative activities ,

- members of the female gender have taken part in training courses for local soap fabrication
- improved living quarters have been built in 3 villages

Different training subjects have been carried out with direct impact on working conditions and the socio-economic living standard of women. There also have been exercises geared towards making women's work involvement less. Meanwhile, many socio-cultural constraints, including difficulty in owning property, difficulty of means production and excessively heavy work load still hamper female participation in these activities.

d Community-Based Natural Resource Management (1993-2002)

Community-based natural resource management was initiated within the framework of policies to decentralize environmental management. It is executed with the assistance of the three American organizations: the Southeastern Consortium for International Development, the Virginia State University and Polytechnic Institute, and the Agricultural Institute for International Development.

The specific goal of the project is to enable people to increase their income by reinforcing the intervention capacities of responsible local organizations and letting them address the viewpoint of overall farm and planning. The real question is to ensure sustainable and participatory management of natural resources by local inhabitants in the rural areas.

Main Results and Impacts

Results obtained in the five rural areas of the trial phase concern

- Setting up committees for natural resource management in rural areas benefitting from technical assistance and from aid dispensed by the rural center for multipurpose growth to implement a plan to manage natural resources in rural areas. Committees received support in administrative affairs.
- Appointing an executive bureau for the management committee in charge of the day to day running of affairs, assisted by a communal coordinator who is responsible for support in defining and assuming managerial duties and coordination, and who also participates in collecting data, formulating and monitoring sub-projects.
- Drawing up plans for land management is under way. The land management plan will constitute the committee's work-base. It will take stock of the present state of natural resources and define appropriate means for action in view of sustainable

Senegal Agricultural Sector Retrospective Study

management The micro-projects identified within these land management plans are financed by the project, with some contribution from the rural area

- Studies for selecting 10 additional rural areas for a second phase are in the process of being finalized

IV SUSTAINABILITY AND REPLICABILITY OF IMPACTS

A Projects Relating to Increased Agricultural Productivity

The projects examined within the framework of this study include USAID projects such as those involving reforestation (e g , the Senegal Reforestation Project), irrigation (e g , the Bakel Project), and desalinization of land (PROGRES project) For most of these projects, once the project end or termination of project support occurred, farmers stopped doing the targeted activities because farmers often participated in projects because of the availability of financial resources for establishing the activities, and not to increase agricultural productivity

The activities undertaken in most of the projects of this period focused on strengthening already existing practices The reinforcement aspect of the projects no longer occurs, but the activities themselves go on, following methods familiar to the farmers and using existing resources and technical facilities For example, in the reforestation of Senegal project, the orchards funded with the framework of joint-ventures had already existed in the different areas of the country and will continue to exist Activities funded so far in this domain which are of a really sustainable nature relate to the development of basic infrastructure for implementing activities and for training in appropriate technologies Relative to this infrastructure, sustainability can only be guaranteed if the GOS pledges to support their consolidation or maintenance

The impact of USAID projects in Casamance relative to the desalinization of farmland would have been greater if the projects had consolidated and built on achievements of previous projects For instance, if the Djiguinoun dike, built within the framework of the PIDAC project and which actually obtained the best results in the rehabilitation of salinized farmland, had been reinforced (as well as four PIDAC structures), the rehabilitated land area for rice cultivation available would be greater today

Casamance Regional Development

Several aspects of the Casamance Regional Development project have been sustainable, including increased production and revenues for vegetable gardening and some livestock activities Several of the anti-salt dams constructed by PIDAC are still in working condition and village warehouses are still in use In addition, farmers continue to employ some of the technologies introduced by PIDAC and adult literacy programs continue in the villages

Vegetable gardening has continued to prosper around the approximately 120 wells dug by the project Former SOMIVAC personnel still active in area rural development indicate that 250 perimeters are still in use and that planting techniques extended by PIDAC are still employed The revenues from vegetable production are an important source of income to the mostly women farmers This has been especially true given the vicissitudes of annual rainfall levels and rainy

season production. Vegetables are consumed on-farm or sold to buy cereals. Farmers in Bignona, however, indicate that they encounter marketing, particularly transport, constraints.

A local livestock official indicated that beekeeping, one of the PIDAC livestock program sub-projects, is still pursued by participants and is an important income-generating opportunity to younger people who would otherwise need to migrate.⁴³

Of the 22 anti-salt dikes constructed, only five are still in working condition, although many did last five to seven years, and would probably have lasted longer if PIDAC/GR were still in existence.⁴⁴

Farmers still retain the knowledge gained in improved techniques and employ them whenever possible. The availability of improved seeds is a constraint, as is the age of the agricultural equipment obtained through credit during the project.

The zonal and village warehouses are still in good condition. The village warehouses are still in use, but the zonal warehouses used by PIDAC *chefs de zone* have been locked and not available for use since the closing of the SOMIVAC and PIDAC. They cannot be released until a final report is submitted by the SOMIVAC liquidator. In Ounck, farmers told us that they still had seeds and agricultural equipment in the warehouse when it was sealed several years ago.

Village-level literacy training in PIDAC villages continues through the efforts of the project-trained village-level volunteers. According to a DERBAC official, who was the head of the PIDAC adult literacy program, the training in adult literacy has proved sustainable, as people continue to read and write in local languages.

Local agencies and projects still use the training center at Guerina, which was refurbished by the project.

The changed macro-economic and agricultural policy environment in Senegal has contributed to sustainability problems regarding continued use of all the project's technological innovations. The technology package developed by ISRA, extended by PIDAC, and used by more than 60 percent of PIDAC farmers has not proved sustainable, at least as far as input use is concerned. The technology package recommended the use of improved seeds, fertilizers, and other inputs (e.g.,

⁴³ One of the former participants in the PIDAC beekeeping activity has become specialized in beekeeping over the years and reports revenues of 3 million CFA annually from sales of honey to Saudi Arabia, according to the former head of the PIDAC livestock program.

⁴⁴ Farmers in Djiginou have applied to ENDA to undertake repairs of the water gate.

insecticides, pesticides), which is not cost-effective in some cases. Even where it is cost-effective, farmers rarely have access to input credit. The lack of improved seeds remains a major constraint to increasing agricultural production in the area.

A major constraint to the sustainability of project activities was the closing of the SOMIVAC and PIDAC in 1990. It was the only RDA to be closed by the government and was the latest to be incorporated (in 1976). The significant project resources invested in developing the institutional capacity of SOMIVAC and PIDAC were all for naught. The databases that contained regional statistics and PIDAC monitoring and evaluation data have disappeared (although one can find copies with some individual researchers, and at the Documentation Center still housed at the former SOMIVAC offices).⁴⁵

While the often inefficient and overly centralized management of both SOMIVAC and PIDAC gave ample room for criticism, farmers regret that the extension agency serving the region was closed. It also sent a powerful political message concerning the central government's interest in the economic development in the region. Area farmers also feel betrayed by the government because they never were reimbursed the 1,000 CFA that each member of PIDAC farmers' groups contributed when receiving credit, with the promise that it would be reimbursed when credit was repaid. When the SOMIVAC and PIDAC were closed, the government used the farmer's money to pay the dismissed civil servants.

The changing agricultural policy environment has negatively affected the replication of project activities. Changes in input prices and the closing of the regional extension agency have certainly not assisted a wider application of project activities.

Farmers in Ounck, which was a village training area (*aire d'apprentissage*) indicate that farmers still come from neighboring villages to solve on-farm technical problems with former PIDAC model farmers (*paysans pilotes*).

Bakel Irrigated Perimeters

The construction of village irrigated *schemes* has not been a success. The hypothesis underlying their installation was false and did not produce good perimeters. The sustainability of the rice farming option proposed and supported by the project has been compromised by three main factors: the poor quality of the perimeters, the old state of the motor-pumps, and the changes in agricultural policy.

To mitigate the insufficiencies of the water-agricultural installations, farmers have made

⁴⁵ The Southern Zone Water Management was providing a small amount of funding to keep the documentation center open, but funding ended as of July 31 1996.

adaptations either individually or in groups. The square parcels proposed by the project have been replaced by ones which have been judged more equitable by the producers because they allow access to different types of soils existing in the perimeter, and thus more choice for cultivation. To reduce the degradation of the irrigation network due to water erosion, falls were constructed with bags of sand. Parallely, the use of the plots enabled farmers to reach the horizon of less permeable soil and the level of water in the sprinkler beneath the plots to be able to irrigate. At the same time the height of the embankment is increased and compacted to be able to confine rain and irrigation water for a long time.

The age of the pump has further aggravated the problem. Some which were anticipated to last for some years have not been changed since their installation 10 or 15 years ago. Maintenance and repairs have not been done since after the end of the project because the first wave of trained pump attendants no longer work there.

Despite short-comings in quality and time, repairs had been guaranteed by SAED. The main constraints on the pump sustainability was the lack of funds (caisse d'amortissement). SAED started the idea near project end (1985). The producers did not establish transparent processes for the management of such funds or guarantee their regular provisioning by the producers at the end of each campaign.

Another factor is that new policies have suppressed subsidies and the supply. Consequently, the price of fertilizers, oil, and the cost of pump maintenance and repair has been increased. Raw materials have become expensive and inaccessible. The productivity of seeds brought by the project become low. After the withdrawal of SAED, private people tried to invest in the commercialisation of seeds and fertilizers. Not only did these private people not have enough funds to circulate, but the inputs were not delivered on time and their quality left much to be desired⁴⁶. Furthermore even if the demand is high for quality fertilizers and seeds in the Bakel zone, the road which links Bakel to Ourosogou and Matam is in poor condition and the cost of transport (on time, fuel, and the state of the vehicle) is too high to be attractive for the private sector of the mid-valley and the delta region.

CNCAS, created to relieve SAED in the area of credit in the Senegal River valley, does not have the capability to encourage production of rice in the village irrigated perimeters (VIP) of Bakel. The economic interest group (GIE) and the village sections are preferred forms of peasant organisations for credit to the exclusion of other types of organisation. Contrary to the delta region, the formation of village groups in the Bakel zone has not been easy. Often, the difficulty, especially in the women's group, involved the fact that they did not understand the procedures and the necessary administrative papers for constituting a GIE. In addition farmers feel themselves

⁴⁶ These private entrepreneurs were mostly from villages, some being group members without experience. Finally the farmer's groups themselves managed supplying inputs via CNCAS credit facilities, without much success.

more comfortable with the producers group than with the village sections. This stems from the restructuring of cooperatives in 1980. In addition, groups with little success in forming credit organizations are confronted with difficult conditions for loans (contribution⁴⁷, credit costs, expenses of documents and displacement) at a short term (not more than 9 months) and at a high interest rate (13.17%). The risks in irrigated rice farming in the Bakel zone are too high to justify seeking credit.

In fact, numerous farmers (especially men) were no longer interested in rice farming. According to the mid-term evaluation report in 1982, the percentage of men in the groups dropped from 78 to 54% between 1979 and 1981. The few farmers who still practice irrigated rice farming finance it from incomes obtained from market gardening or other means. At Balou, for example, the farmers talk of their preference for buying imported rice rather than producing rice locally.

The training component was a success. It has left behind sustainable impacts. Nine years after the withdrawal of the project, producers from 5 random samples of perimeters in the Goye region (Bakel zone) revealed that they learned irrigated rice production techniques (variety, fertilizer dose, technical itinerary) from the project⁴⁸. Village technicians had also been trained by the project.

However, certain rice farming technologies such as producing apog rice have not been continued because they require too much work and compete for manpower for crops cultivated during the rainy season. They also require large, controlled amounts of water.

Despite its imperfections, the village irrigation model interested other groups outside the project's implementation zone. At the confluence of the Senegal and Falémé Rivers, not far from the project area, the Malian village Gouthioubé drew from the Senegal River experience to develop a small irrigated perimeter. The diffusion of rice farming technologies in this village has been made easier by follow-up and support from the (FPOB) Federation, notably for the supply of seeds and fertilizers.

Range and Livestock Development Project (1975-1985)

The major infrastructure developed under this project includes vaccination parks, firebreaks, artificial ponds, and buildings. Aside from the buildings of the Rural Family House of Ndia (which are nearing decay) the Centre at Mbaniou, the vaccination parks and some artificial ponds are still

⁴⁷ This contribution can attain 30% of the loan if the group is contracting the loan for the first time.

This concerns a research conducted in 1994 within the framework of a study funded by WARDA and ADB. In this respect, the villagers make the difference between what they studied from SAED and from the project. They cite the names of expatriates who worked on the project as technical advisers, to their explanations.

in use. The project site at Mbaniou houses the primary school, where adult education lessons occur, and also functions as the village castle.

Furthermore, this infrastructure has had a considerable impact on subsequent projects and served as a center for field personnel at PEDESOC and the UNDP/FAO pilot project on agricultural development and animal husbandry. However, continued use of the buildings will require renovation, installation of pipe-borne water, and electricity.

PEDESOC completed and consolidated the animal husbandry project's training accomplishments. At the end of the project, the husbandry agents based in the villages returned to their original centers without training auxiliary village veterinarians to provide follow-up services. The auxiliary staff was trained at PEDESOC's centre in Tambacounda. Veterinary services are presently provided in the village by these auxiliary staff. In the opinion of one of them, whom we met in Mbaniou, this medical facility service has become haphazard. Vaccinations that used to be done within the framework of the project have ceased. Cattle owners take the animals for medical attention only when they are sick, and most often it is too late.

With regards to domestic energy techniques, it is almost impossible to find traces of tripod stands introduced by the Rural Family House Ndia. When these were introduced, they did not suit the women because wood was not a constraint either in quantity or in terms of accessibility.

Analytically, project designers failed to consider two determinant factors on sustainability. The first concerns the sites for artificial ponds, and the second, participation of village inhabitants in project objectives. The project was located in two regions with differing geological substrates: the Mbaniou region is predominantly composed of continental terminal and the Ololdou-Santhiou Fissa region of the old precambrian pedestal is made up of rocks as hard as schists. The artificial ponds, an important step in the project, were for the most part sunk in the Mbaniou region, thus, on permeable geological substrate made up essentially of sand. That explains the high loss of water by infiltration and by evaporation, or 35% of the total volume of water stocked in the ponds. According to the 1985 evaluation report, water losses by infiltration alone accounted for 2/3 of the volume stocked. The villagers we met stated that the ponds had not been re-dug since the project was called to a halt. Many of them contain sand and sediments, and this reduces their depth. Infiltration and sedimentation considerably reduced the length of time during which water could be retained, besides the fact that a good number of ponds (17 out of 22 according to the villagers) had been sunk in areas far removed from the village and from road paths. For three ponds (Mbaniou, Sinthiou Hamady and Karanabé) the length of time for water retention is under 4 months, as apposed to the 9 months stipulated in the project document.

As the evaluation report states, there were no hydrogeological studies prior to sinking the ponds. Such studies certainly would have identified the difference in substrate features between

respective areas Hydrogeological studies would have led to different options for safeguarding water resources

An important factor affecting sustainability was the absence of participation of cattle raisers The audit exercise in 1975 underlined that cattle raisers did not identify with or manage project activities The experimental nature of the project, combined with the requirement to attain sustainability, should have lured the project designers to design an approach that included traditional animal husbandry methods and the general socio-cultural context in which they operated Because this did not occur, there were disagreements with farmers The first issue of discord relates to proposals made by the project to sell part of the cattle stock, bulls particularly, and retain part, heifers (a score) per herd The objective was to guarantee continuity and obtain healthier and more productive stock The second issue concerned the marketing strategy, earlier mentioned As we noticed, the cattle rearers gave in on this second point, but not the first

At an intervillage level, the project brought about the creation of pastoral units (PU) The PUs were set up to ensure back-up for communal management of infrastructure (notably with respect to the artificial ponds) as well as for tree-planting in bare landscape areas However, these PUs never really worked some villages were not reached by the these PUs Some believed that the villages should cater only to the ponds close-by The tree-planting campaign developed to halt water erosion was unsuccessful because the specific techniques required for this exercise were put forward only at the end of the project

Furthermore, groups in charge of supervising fire controls stopped working after food supplies to them were called off The few fire-fighting exercises that are undertaken during the dry season remain within the confines of village territory These exercises are implemented when crop farms face fire threats

In general, project achievements were not sustainable because neither USAID nor the state addressed the issue of sustainability The infrastructure (artificial ponds and firebreaks) was made by the administrating body without regard to the technical and organizational capacities of the beneficiaries Little consideration was accorded to the viewpoint, needs and priorities of farmers and farmer organizations

In 1996, 10 years after the project ended, infrastructure is considerably depreciated The road to the Mbaniou region has not been maintained, which has isolated the villages

The concept of replicability can be found in certain project documents in the mid-70s, as opposed to the notion of sustainability, which is quite recent Even where state agencies or other organizations in Senegal or other Sahelian countries were interested in the animal husbandry exercise, replicability would have been hampered for three main reasons

- The project lacked an effective monitoring and evaluation system to identify and rectify implementation problems
- Although the project set out to increase traditional cattle rearing by supporting stock-breeders pastureland management, it did not, however, set up the right approach to involve beneficiaries
- The cost of building and maintaining infrastructure would have been out of reach compared to the advantages for stock-breeders and their cattle

Irrigation and Water Management I

Initiatives for developing a private sector capable of taking charge of the construction and rehabilitation of irrigated areas in a sustainable manner has not succeeded SAED was more preoccupied with increasing the number of schemes by private companies from outside the zone The diverging positions between USAID, HARZA and SAED on the strategy of promotion for the private sector has remained irreconcilable Even the peasant federation (FPOB) was not taken into consideration ⁴⁹

The organizational potentials of the group of producers and their capacity to fill the gap created by the withdrawal of SAED would have been greatly reinforced if SAED had created liaisons between these village structures and the private sector

The idea of supporting the costs of irrigation development and the building of perimeters was hampered by the problem of identifying and mobilizing sources for investments from private resources However, the potential exists in the area with important financial availability from emigration remittances, big traders and village common funds managed from France

Nevertheless, to palliate the inexistence of the self-funding farmer group, private actions are undertaken from time to time to help the producers repair the GMPs For these repairs, producer associations not affiliated with FPOB have come to depend on SAED ex-mechanics These associations were unable to control the quality of spare parts and repairs done The GMP maintainance in the villages continue to suffer due to the migration of trained pump specialists

In regard to infrastructure, areas built and rehabilitated currently exist but have some technical problems The monitoring and evaluation system which was expected to generate continuous

The federation succeeded through private initiative in obtaining tractors, setting up a garage and a shop for spare parts, and procuring local representation from MATFORCE a firm specialized in selling agricultural equipment.

information on yields and pumping costs stopped when the person responsible for it left for training. The database posed problems because only very few persons mastered the information management software used to create it. The trial farm is in the process of becoming an agricultural enterprise managed by a GIE of ex-employees. In addition, at the level of commercialization, income-generating activities (market gardening, aviculture) that were undertaken seem viable because they do not suffer from sales constraints.

Animal traction has not been adopted on a large scale (at least in the Soninke zone) with buffalos or cows. For buffalos, the introduction was a pilot test. However purchasing costs were relatively high⁵⁰.

Farmers faced constraints in purchasing cow breeds that could withstand the climate because of their high cost. There was a subvention on prices by the project. The purchase price of a 2-year-old buffalo was 50,000 CFA and 80,000 FCFA for an adult one. But even more than the costs, the absence of experience gained with time in bovine traction was a limiting factor. The Bakel zone is different from the peanut basins in that it has a capacity for cereal farming and produces very little peanut yields. Consequently, no monitoring occurred in this domain. Animal husbandry is of extensive type and is more of a symbol of social prestige than a means for the improvement of agricultural productivity. In addition, due to its proximity to the border with Mauritania, livestock theft--spawned by political conflict between the countries--occurs.

Southern Zone Water Management Project

The dikes themselves are well-constructed, but sustainability will depend on the continued operation and maintenance of the dikes.⁵¹ (Many of the PIDAC-constructed small anti-salt dams did not continue to be operational due to problems with the functioning of the water-gates.)

The sustainability of water resource management practices will depend on the village groups organized by the project. There are mixed opinions concerning the continued viability of the Village and Inter-Village Water Management Committees (VWMC's and IVWMC's). The mid-term project evaluation team found that villagers interviewed did not seem to have a clear idea of the roles, responsibilities and functions of these committees. It is not clear whether these groups are viable and sustainable entities.

Villagers from the Djumande valley find that the most important project impact involves the inter-

⁵⁰ There was a subvention on prices by the Makhana farm's project. The purchase price of a 2 year old buffalo was 50 000 CFA and 80 000 CFA for an adult one.

⁵¹ The availability of polyester water-gates in Dakar at reasonable prices is excellent for the future sustainability of water-management activities. (But not all of the project-constructed dikes have polyester water-gates. In Balingor, the gates is of wood (ronier), and there are already experiencing problems of seepage.)

village cooperation and communications networks developed⁵² The opinion of project staff is that the village and inter-village committees will require further support after project end to be sustainable

The sustainability of continued improved water resource management probably require the continued presence of NGO's in the valley Project personnel believe, however, that only a few of the NGO's would be strong enough to continue after project funds are no longer available There is a higher chance for sustainability of activities in the valleys when the NGO representative resides in the valley (NGO's interviewed during the study agree that they will indeed require funding to continue in the valleys after the end of the project)

There is a question, however, about whether the agents in place in the valley have the appropriate background or experience in agriculture to effectively advise the villagers It seems that farmer organisations (*organisations paysannes*) are more qualified and will certainly be more sustainable after the project completion

The failure of the contractor staff to adequately integrate Senegalese partners in the design, construction and management aspects of the project did not improve sustainability and replicability It is only with the departure of his organization in late 1995 that many Senegalese personnel believe they began to actively participate in project management decisions

Sustainability

SZWMP staff indicate that villagers from non-project area have travelled to both Djimande and Samine-Escale valleys to learn composting methods In addition, requests for dike construction arrive from numerous valleys, but given the high costs of dike construction any replicability without an additional source of funding is out of the question

2 Projects for Institutional Support and Transfer of Technology

SAED Personnel Training

The training documents for information management are still being used by SAED However, the knowledge acquired would have been more sustainable if the project had integrated the training plan developed by SAED at the onset This plan included training agriculturalists on irrigation techniques (funded by French cooperation) These were to be managed within the National Center CNAPTI (National Center for Apprenticeship and Perfection of Irrigation Techniques)

⁵² The Djimande valley intervillage committee has amassed more than 407,000 CFA in their revolving fund to pay for dike maintenance and repair

The agricultural advisers trained by this center would have certainly been more prevalent in their support task to farmer's groups. The impacts of the project would have survived with much more to offer in the current CIFA (Interprofessional Center for the Training of Agricultural Professionals). The CIFA is a restructuring of the old CNAPTI opened to other agencies of agricultural development⁵³

Three years after project end, SAED has suddenly disengaged itself from the construction of installations following implementation of directives of the new agricultural policy

Due to lack of viable purchasers, project materials had been resold to a group of SAED ex-employees. The problem of this group (GIE), namely SIMAS, is that it cannot tender for a market which does not bring money to pre-finance the activities. Due to lack of juridical information, the agreement signed with SAED guaranteed only the GIE usufruct right on the materials. The machines-tools then cannot be displaced from Ross-Béthio even if they were not profitable there. The nature of the contract does not enable them to get Fundings from banks. Now, according to the terms of the contract, the GIE should pay 15 million FCFA per year of which 3 million is for the building and 12 million for the equipment.

Recently, arrangements have been made with SAED and part of the material have been transferred to the industrial Franc Zone of Saint-Louis, but the lack of market demand continues to be a handicap. The GIE continues to suffer from the difficulties arising from lack of entrepreneurial spirit.

In the light of this experience, it is the SAED strategy to constitute a private sector, particularly for the maintenance and repair of installation and irrigation equipments, that is to be questioned. SAED expects to address this by promoting enterprises and GIE organized by its ex-agents. Such a strategy excludes the producer group, the GIE, and enterprises are not always competitive, nor capable of providing quality services to clients. The example of the mechanics of the Bakel Zone serves as an illustrative example of this.

PVO/NGO Support Project

Sub-projects for AJAC and 7A under this project have no problems regarding the participation of beneficiaries and sustainability. Most target activities for beneficiaries had previously been in practice. The NGO support has rendered these subprojects more sustainable, more profitable, and able to provide more thorough training and working capital at grassroots level.

⁵³ Unlike CNAPTI, CIFA is open to NGOs and governmental structures for development. It provides training in various domains, including management. The material and expert advice acquired within the framework of the project would have constituted considerable support towards improving capability for repairs and maintenance of heavy duty agricultural equipment.

The length of time afforded to the economic and social feasibility studies of the program and the discussions held with beneficiaries encompassed a wide range of activities. The MARP (intensive participative research methods) served as tools in identifying priorities. In effect, MARP has been instrumental in promoting the participation of all class levels in a collective exchange program where ideas and experiences on activities are shared.

The support project benefited from the experience gathered during the project involving local group development and private enterprise in rural areas. The selection of activities to be implemented was also more flexible. However, beneficiary NGOs still complained about the complexity, inflexibility and slowness of administrative procedures⁵⁴.

Problems related to sustainability and replicability relate to outside factors over which beneficiaries had no control. For example, such problems for AJAC-COLLUFIFA were rainfall and competition. Variations in production levels due to fluctuations in volume and distribution rainfall caused the association to lose a lot of sesame.

The problem of supplying the transformation unit with adequate quantities of sesame arises. This is furthered aggravated by competition for sesame purchases. Farmers prefer selling their crop to buyers from the private sector at 125 francs CFA per kg than to the associations at a standardized price of 100 f. Problems relating to difficulties in providing sufficient grain quantities to the transformation unit can jeopardize sustainability owing to lack of profits.

Presently, the transformation unit is functioning under capacity and generates no profits. This example illustrates the problem. Three kilograms of sesame are required to make one litre of sesame oil. One kilogram costs 100 f, so 3 kg cost 300 francs. For each kg 75 f goes for service charges, making a total of 225 francs. The cost of producing 1 litre of sesame oil, therefore, is 525 francs, which is the market price.

The association is trying curb competition through discussions on the possibilities of offering better prices to farmers, instituting markets run by the association, and exchanging oil for grain in these markets (to pull customers). This will not be easy because the nearby Gambia market may offer better prices.

With regards to the diffusion of the crop production technologies, sesame is easier to cultivate than groundnuts. After planting one weeding exercise suffices, and the commodity grows well without fertilizers. It also generates a profit. This explains why many villages out of AJAC's

⁵⁴ For example, NGO 7A mentions that the support project did not accept to fund the building, equip the new "health huts" and train matrons because there was no provision for them in the subproject. Besides refusing the idea of a provisional fund (caisse de fonctionnement) which would have saved them from going to Sedhiou very often, AJAC-COLLUFIFA complains of delays in the initiation of sub-project's second phase. They presently pre-fund the transitional phase and are not sure of being reimbursed because this goes contrary to management rules of the support project.

100

sphere grow it. Furthermore, activities undertaken by the commission for sesame cultivation in Casamance can significantly influence the cereal distribution in this southern region in Senegal.

As regards 7A NGO, palm oil production is an entirely female activity but is heavily reliant on men⁵⁵ for harvesting the nuts. The labor costs for these men vary. The recent CFA franc devaluation has caused an increase in the cost of the nuts. In addition, these activities lack coordination and farmers continue to face competition from other farmers. These factors may render sustainability more difficult.

It is difficult to feed animals in the dry season. Cotton grains sold by SODEFITEX are expensive and scarce, and they constitute an important food component. If alternative food sources at lower costs cannot be found, cattle rearing will be jeopardized. The processing of leguminous plants presently underway at CRZ by ISRA and funded by the NRBAR (USAID, 685-0285) project may provide an alternative to this.

3 Projects Involving a Part of Natural Resources (NR)

The main components NRM projects examined within the framework of this study were implemented using different implementation strategies. In this respect, the project involving dune stabilization was managed by the local council, while the Senegal reforestation and the NRBAR demonstration farms were involved in either individual or group participation joint ventures. The implementation strategy for the community-based NRM project (CBNRM) and to some extent, for Africare's KAED project, involved communities. It is worth noting that all projects presently in being implemented endeavor to use a participative approach in implementing their activities. This guarantees greater community and target group participation and promotes sustainability to ensure the appropriateness of activities and results.

In this respect, it may be too early to draw valid conclusions on certain projects such as the CBNRM project relating to sustainability of the results, given that the projects are quite recent. For other projects, however, observations can be made. For the dune stabilization project, for instance, the methods for implementing planting activities were in fact, abandoned as soon as the project ended. Linked to the overall design of the project, this form of implementation was unadaptable owing to the nature of investment required and also owing to its unsuitable nature.

Meanwhile, the results obtained with roofing and fixing on a width of 200 m for more than 53 km of dunes were far-reaching, from the viewpoint of improved impact on biophysical resources and

⁵⁵ What is striking is that wherever the team went, whether in Casamance for PROGES, in the kaolack zone with KAED project or in Bakel area for the two irrigation project, women, either individually or in groups, were more numerous than men in project-supported activities. However, they depend almost everywhere, on men for access to technology (plough cultivation, irrigation, ridging against salt intrusion etc.) and decision making.

also on economic and living conditions of riverside inhabitants. Furthermore, the fact that these exercises, at the end of the project, are taken up and continued by other funding bodies (ACDI), strengthens the nature of sustainability for results achieved. The dimensions of various fixing activities along the coastal region as well as excavation, are a guarantee of the replicability of results achieved in this domain.

As concerns the KAED project, the communal farms for demonstration of NRM techniques unite all the project's conditions for setting up the enterprise. At the present phase in the course of the project, the enthusiasm to obtain and set up farms at group level does not necessarily lead to the idea that the activities will continue after the project. The project's sustainability will be assessed only after it has ended. Collective farming, regularly practiced in Senegal as a means of generating communal revenue, constitutes a factor of sustainability in itself and in the manner in which the people concerned define it. It is therefore possible that the KAED approach of collective farming will in the end embrace the local idea of a revenue-raising enterprise as the people continue to encounter it. Under these conditions, if all techniques initiated produce the desired effects, it would be right to think that the subsequent crop yield would best speak for sustainability and replicability on the 56 "trial" sites teaching NRM techniques.

With regards to results obtained on the KAED demonstration farms, some individuals are already copying some management techniques. These relate to hedges, wind breakers and forest trees. This initiative should bring about important ecological changes in the near future and should set the stage for the restoration of fertile land on farms benefiting from this type of action. These results will add to those of the previously mentioned projects. These results include salinization, dune fixing, improved production in the market garden basin, woodcutting fruit production, and accumulation of funds from collective farm products domains.

USAID's current strategic objective, which supports the increase of crop productivity (whose main indicator is an increase in crop yields) has not been attained.

There is reason to question the weak output resulting from light growth in harvests and increased soil productivity activities. To effectively address this issue, we should question what resources have been allocated to increase soil productivity, what share of resources has been used in the field, and what implementation methods have been used to execute project to clients' benefit and satisfaction.

V CROSS-CUTTING ISSUES

A Participation of Project Beneficiaries

A positive development (over time) has been the increased participation of project beneficiaries (farmers, clients etc) in the implementation and selection of project activities. There remains room for improvement, however, in the degree of customer participation in the project design. Clients/farmers are often only consulted (and indeed targeted) after the project has been designed.

In the joint assessment undertaken by USAID/Dakar and the GOS in 1980, the need to increase the participation of beneficiaries in project design, implementation, and financing was first recognized. In subsequent strategy statements (CDSS and the present CPSP), the notion of increased participation is stressed.

In recent years, the on-going projects, the Southern Zone Water Management Project (SZWMP) and Kaolack Agricultural Enterprise Development (KAED), have made significant strides in involving village associations in selecting and managing project activities. With SZWMP, the villagers themselves request that the project intervene in their village/valley, as confirmed in study team discussions with villagers from the Djimande, Bona, and Bougnadou valleys. Although the villagers state that the lack of an agricultural component to the project, involving inputs (improved seeds, agricultural equipment, pesticides, and fertilizers) presents a limiting factor to the full use of the irrigation structures and to reaching the project goal of increasing cereal production, the project does provide support to village agriculture.

In the KAED project, villagers select the type of income-generating micro-enterprise activity to invest in (although they must first generate funds through participation in communal field/natural resource training and management, as a pre-condition to receiving credit for the micro-enterprise). In Umagnagueme, the women's association has invested in vegetable production and marketing. And it is they, not Africare, who have chosen which vegetables to grow. This is a marked improvement over prior methods in which the extension agent or the PVO/NGO decided which crops would be the best to produce.

In projects of an earlier generation project beneficiaries were rarely consulted before project implementation. Farmers in Selin, a village which worked with the Petit Perimetres de Bakel

project, regretted that projects were "always designed in air- conditioned offices in Dakar," and thus had little relation to their needs. Farmers interviewed in villages in the Bakel zone, both Selin (*Falame*) and Ballou (*Goye Supérieur*), felt that both the SAED and American technical assistance had "betrayed" them by making unkept promises.⁵⁶

At present, farmers in both villages have stopped cultivating irrigated rice (because of cost inefficiency due to the high cost of inputs and the high labor input required). The poor quality of the irrigated perimeters, due primarily to poor land leveling, also produces sub-standard yields even with the use of recommended inputs. This has necessitated a return to rainfed cultivation of millet, maize, and peanuts.⁵⁷ In both villages, however, the irrigated perimeters are presently used for vegetable production, banana plantations, and some cereal production.

The failure to consult with potential beneficiaries before project design and implementation was an almost universal comment on the part of project beneficiaries interviewed in the Casamance, Kolda, Kaolack Regions, and particularly in Bakel. As part of the study team's informal questionnaire, beneficiaries were asked their recommendations for future projects, and almost all individuals or groups replied that they wished to be consulted prior to project design and implementation.

The concept of participation has evolved over the years. In regarding USAID/Senegal documents from the 1980's and early 1990's it seems that "participation" meant the involvement of the Government of Senegal, the Ministry of Agriculture, regional development agencies, extension services and research institutes. Certainly, using earlier definitions of participation, many of the 1980-era projects were indeed "collaborative", if not participative.

The notion of participation has evolved from that of involving government officials, civil servants, researchers, or extension agents to that of the beneficiaries themselves, often using PVO's or local NGO's as intermediaries, as do KAED and SZWMP.

Ironically, though, the management of some on-going projects are criticized by the Ministry of Agriculture, ISRA officials, and host country project personnel, as not being "collaborative" in

⁵⁶ Villager groups interviewed stated that they were promised five years of free inputs to encourage them to cultivate irrigated rice, they were also promised that heavy equipment would be provided to construct canals in Selin, but it never came and all the labor was undertaken by the farmers themselves. Ballou farmers state that they were promised a fish farming project (which never arrived) by an U.S. technical assistant if they villagers would consent to produce irrigated rice.

⁵⁷ SAED management concurs that these first irrigated perimeters were hastily undertaken using farmer labor to reduce costs in canal construction, and often have problems of unlevelled land, and faulty irrigation works and canals. (Both of these perimeters had been scheduled to be up-graded during the Irrigation and Water Management I Project, but were left undone after the premature closing of the project.)

nature and are being totally implemented by U S firms or universities (who have signed contracts with USAID), and have restricted the involvement of Senegalese project personnel in project management and decision-making. It is perceived that this poses a problem for project sustainability once the technical assistance team withdraws.

B Differing Models of Project Organization and Use of Technical Assistance

Many of the large-scale agricultural projects of the 1980's contained institution-building components, which included significant inputs of technical assistance, and both short and long-term training. There seemed to be two separate models of technical assistance (TA) teams (whether they were consulting firms or universities). Explanations of these two follow.

The first model included TA teams which were well integrated into the local structures (traditional services, regional development agencies or research institutes). The technical assistant worked as a part of an existing structure, and usually collaborated with a counterpart or team of counterparts. The technical assistant frequently had Senegalese supervisors, who had some input in choosing the technical assistant and in evaluating his/her work. At the completion of the project the institution continued. Representative of this type of TA model are the Casamance Regional Development Project, and Agricultural Research and Planning.

A second model of TA involves US contracting teams which worked together as a unit, and were responsible for most technical and financial decisions concerning project implementation. While technical assistants often had counterparts, they were not on equal footing, and were counterparts in name only. At the end of the project there were reduced chances of project sustainability because of the lack of participation in project decision-making of Senegalese counterparts. Examples of this second model of TA are SAED Training, Irrigation and Water Management I.

There seems to be a general satisfaction on the part of Senegalese collaborators with the first model, and distinctly less so with the second. Many interviewed felt that the American contractors were not interested in genuine collaboration. They also felt that they had no input into choice of technical assistants, who they feel not qualified to transfer technology, or who had difficulties communicating in French.

The continued utility of traditional technical assistance is called into question by most Senegalese (and some Americans) on both technical and financial grounds. While expatriate technical assistance may be necessary in certain isolated cases, it would seem that there exists sufficient qualified Senegalese, many trained at the M Sc and Ph D levels in U S universities, to undertake technical positions. Senegalese technicians and researchers understandably also have a far greater knowledge of local agriculture and farming systems. And, on economic terms alone, it is difficult to justify the huge costs of fielding expatriate technical assistants.

C Projects are either too all-encompassing or too restricted to achieve intended impact

The Casamance Regional Development Project was an archetypal large-scale integrated rural development project and institutional support. The institutions involved were the SOMIVAC, its extension and implementing agency, PIDAC, and ISRA/Djibelor. It combined technical assistance (eleven in total, although not all at the same time), agricultural production activities (seeds, plant protection, extension, fruit and vegetable conservation techniques), livestock, anti-salt dam construction, monitoring and evaluation of PIDAC, agricultural statistics, agricultural research S(marketing studies and farming systems research), Women in Development activities, a health component added near the end, and short and long-term training. Needless to say, although many of these sub-components were intrinsically successful many of them did not contribute directly to the stated project goal of increasing rice production in the Casamance.

As a result of the lack of focus of the prior project, the design of the follow-on project, which became the Southern Zone Water Management (SZWMP), concentrated on the construction of irrigation structures, the one component of the former project which seemed to have direct implications for increasing rice production in the Casamance. SZWMP project is essentially an irrigation project, but without any accompanying agricultural component. Although the goal of the project is to increase cereal (mainly rice) production by obtaining yields of 1.8 tons per hectare, agronomists agree that no more than 500 to 800 kgs per hectare can be realistically expected in the absence of amenities secondaires and improved seeds, fertilizer, and such basic agricultural equipment as animal traction units, seeders, etc. In this case, the project design was too narrowly conceived to attain project goals.

D The Need to Simplify USAID Procedures to Encourage and Facilitate Partner Collaboration

The assertion that USAID procedures are often complicated and insufficiently adapted to local conditions was a general comment heard from nearly all of USAID/Senegal's partners and collaborators, including government officials, researchers, and PVO/NGO's. One experienced financial officer for an NGO participating in the PVO/NGO support project felt that USAID expected the NGO's to be highly developed professional agencies, which he feels is an unreasonable request. A highly placed SAED official who has worked with several USAID-financed projects felt that even with his prior knowledge of USAID, the process of completing PIO/T or PIO/C requests was daunting, and would be impossible for those with little prior experience of USAID procedures. It is felt that USAID gives insufficient training in its bureaucratic methods and procedures. One applicant to the PVO/NGO project, a holder of a Ph.D. from a prestigious European university, said that she could barely figure out the complicated instructions for writing proposals for financing, and wondered how difficult it would be for someone without any university degree.

While USAID certainly cannot demand anything but full financial accountability, it would seem that there would be room for streamlining procedures and rendering the system more user-friendly, and less complex and time-consuming, while of course maintaining strict financial accountability

Another frequent comment was the inability to address problems which arise during project implementation. These can arise from flaws in the project design, flawed assumptions or exogenous or totally unexpected events, such as the political unrest in Casamance. There needs to be more flexibility in dealing with these issues in a timely manner without always waiting for evaluations, as the project may have inexorably continued down an unfortunate path. Is closing a project the only solution? There must be some medium ground between blindly following the project design and closing a project because it isn't meeting intended objectives. Project implementors and USAID facilitators need to embrace greater flexibility in making needed modifications (removing or adding components)

E The Need for Greater Collaboration in Developing Programs that Address Host-Country Needs

In the past, projects have frequently not corresponded to beneficiaries needs, but rather to prevailing donor or Government of Senegal (GOS) strategies. Both donors or GOS believe that they are correctly diagnosing the problems of the rural peasant and how best to remove agricultural constraints. They have recommended many different solutions (which have changed from era to era) including the need to increase production, attain self-sufficiency in food production, increase incomes or reduce environmental degradation and improve management of natural resources

Much discussion over the 35-year period of the study has focused on meeting farmers' needs, but experience has it that these discussions have not always been effectively incorporated in project design and implementation. Indeed, parts or components of the projects studied have been interesting to the farmers, but usually not the projects as a whole. As indicated to the study team, farmers desire that the designers of future projects come see them during the project design phase to more fully integrate the projects to their needs

USAID strategies over the years have often supported GOS agricultural policies. However, there is often disparity between the beneficiaries of these policies--the agriculture sector as a whole or the farmers. Changes in government policies bring winners and losers, this is especially true in structural adjustment programs. In instances where it has been necessary for GOS policies to reduce and eventually remove inputs for the long-run benefit of the agricultural sector, farmers are worse off in the short- and intermediate-runs. Extension and credit services are affected, and input prices have risen more than consumer prices

VI CONCLUSIONS, LESSONS LEARNED AND RECOMMENDATIONS

Major conclusions, lessons learned, and recommendations are presented in this section

A Conclusions

1 *General*

- USAID funding of the agricultural sector should not be considered a failure because of declining production per capita and productivity levels. Given the significant drop in rainfall and worsening agro-climatic conditions over the past 25 years, the situation would have been far worse in the absence of funding.
- Significant portions of project funds do not reach the intended beneficiaries and do not arrive the village or farm-level. Large percentages of total funds have been allocated to technical assistance or GOS administrative structures.

2 *Policy Environment*

- Changing agricultural policies have not provided an enabling environment for most farmers.
- In the Pre-New Agricultural Policy (NAP) years of heavy GOS involvement in agricultural sector, there was a poor performance of RDA's and traditional services of input delivery.
- Post-NAP Policy Reform Years
 - little, if any, positive impact of reforms on agricultural production or productivity,
 - farmers have been the "losers", at least in the short-run,
 - the sustainability and replicability of project results have been negatively affected by policy changes vis a vis input prices (rising far more than producer prices), and limited access to credit (at draconian terms),
 - subsidies were significant to even low levels of fertilizer use (necessary for both increased yields and conserving soil quality),
 - farmers in several regions need continued access to extension services (it is

not clear that NGO's have the capability to replace GOS technical services)

3 *Project Design, Implementation and Management*

- Project designs are frequently overambitious, use unrealistic or incorrect assumptions, and often do not take into account farmer's resource constraints (poor soil, inadequate water, labor shortages at peak periods, or lack of capital to invest in agriculture)
- Project results and impacts would generally be more sustainable and replicable if beneficiaries and collaborating institutions had been associated from the beginning (design phase)
- There needs to be greater continuity among USAID projects. Instead of implementing each project as an isolated entity, we need to build on the results of prior projects. (This is particularly striking when projects in the same region with the same goals, as with PIDAC and PROGES)
- The lack of viable baseline and other monitoring and evaluation data impede quantitative measures of impacts
- The life of projects is often too short. Implementation begins slowly and often ends as results and impacts beginning are just beginning
- An evolution of increased participation of clients in choice of activities and implementation approach (if not in design) is observed in recent years during the CPSP period (1992-1996). The participative approach to the identification of needs and activities will result in project more responsive to clients needs (PROGES, KAED, PGCRN)

4 *USAID Strategy and Management*

- Certain USAID procedures appear complicated, inflexible and insufficiently adapted to the client's needs and capabilities
- There appears to be a lack of flexibility necessary to respond to changing environments or circumstances once projects have been initiated
- There are frequent changes of USAID policy, often due to modifications from AID/Washington or changes in USAID/Dakar direction

5 *Local Institutions*

Local institutions are characterized by

- insufficient organizational and planning capability,
- little quality control and supervision of personnel and activities,
- overly centralized management style and decision-making, and,
- inadequate financial management

Greater attention to these weaknesses needs to be addressed

6 *Technical Assistance*

- Expatriate technical assistants are often insufficiently integrated into local institution. This results in little transfer of skills between assistant and counterparts
- When projects are managed by TA teams, there is little collaboration with local counterparts in financial and technical decisions undertaken. It would be advisable to include counterparts in the management of projects to ensure sustainability in management after the end of the project
- A greater percentage of Senegalese TA should be used as a highly qualified cadre of Senegalese professionals exists

7 *Technologies*

- Technologies successfully developed and/or extended by USAID projects include those related to
 - productivity of land (agro-forestry, anti-erosion, organic and chemical fertilizers),
 - water resource development for rice production (technologies de vannes adaptees aux contraintes du sel et d'utilisation operationnelle comme planches en polyester et a manipulation cremailliere PIDAC/ISRA, bec de canard, digues compactees, diguettes en courbe de niveau) And village

115

- organization and provision of training to village and intra-village groups (PROGES),
- the introduction system of cultivation "en billons" in low-lying rice fields to mitigate impact of salt on rice (PIDAC/ISRA), and,
- methods of intensification of rainfed rice (plateau) semis en ligne, input use (fertilizers, insecticides, etc), animal traction (PIDAC), use of compost (PROGES)
- Productivity increases expected from the introduction of these technologies have often not been sustainable due to the lack of access to inputs and agricultural equipment in some projects, the lack of farmers resources, or lack of secondary infrastructures As a result, in spite of the often significant results achieved, increased yields are not sustained
- There is a need for continued GOS and donor investment in the agricultural sector Although small investments can be undertaken by farmers or through access to credit, the construction of ant-salt dikes, anti-erosion diguettes, availability of fertilizers require the assistance of the state Farmers do not have the means to undertake these activities alone without the assistance of the state

8 *Some Reasons for Project Success or Failure*

- Given the general absence of on-farm resources to invest in agriculture, successful project or technologies must be accompanied by access to inputs and/or credit
- Successful projects include an income-generating activity This is particularly true for natural resource management activities to be sustainable

Table VI 1
OVERVIEW OF SAMPLE PROJECT BUDGETS
ALLOCATION OF FUNDS BY MAJOR CATEGORY
(in percentage of total budget)

Category/Project	CEREAL PRODUCTION I AND PLANNING	AGRICULTURAL RESEARCH
Technical Assistance	14	56
Training	5	25
Support to SODEVA/ISRA (including procurement, operating costs, construction, and local manpower)	61	
	CASAMANCE REGIONAL DEVELOPMENT	SZWMP (PROGES)
Technical Assistance	26	33
Training	5	05
Construction	8	21
Equip/Commodities	8	11
Baseline/M+E/Other Studies	9	6
Credit	6	-
Operating Costs	24	7

B Lessons Learned

1 General

- The agricultural policy environment has had a great impact on the success and failure of USAID-funded agricultural projects. Lack of access to inputs, credit, and more recently extension services has negatively affected the outcome and impact of USAID's agricultural projects
- Attaining self-sufficiency in cereal production, an objective of earlier projects (Cereal Production, Phase I and II, Casamance Regional Development), is not realistic goal for Senegalese agriculture. Achieving food security, which may involve both food and cash crop production, is a far more realistic objective
- The percentage of project funds allocated to technical assistance and GOS and other institutions seems too high. A greater portion of funding should be directed at the farm or beneficiary level
- Major successes of USAID-funded activities in the agricultural, rural development and natural resources sector over the past 35 years have been
 - the development and extension of agricultural and natural resource management technologies,⁵⁸ many of which continue to be used,
 - the training of farmers, extension agents, agricultural technicians, specialists and researchers, a significant benefit to the individuals and institutions involved and to Senegal, and,
 - the institutional development of GOS institutions in both development and research, and the private sector, including NGO's, GIE's and village groups
- Setbacks to the success of USAID-funded projects has involved the lack of participation (until recently) of the beneficiaries in project design and implementation, which has resulted in the financing of many projects which have not corresponded to actual needs or have omitted on-farm constraints

⁵⁸ These technologies are listed above in the conclusions section and in the body of the report

2 *Factors Affecting Project Success or Failure*

- Project goals and objectives are frequently overambitious, and are based on unrealistic assumptions
- Smaller, more focused projects, with realistically defined objectives, are often quite successful
- Projects which include an income generating component are generally more successful and sustainable
- The most effective agricultural and natural resource management technologies have been the low-input strategies. While many agronomically successful high-input strategies have been developed, the significant increase in input prices and the elimination of subsidies have rendered those strategies non cost-effective for most farmers
- The lack of continuity in USAID strategies has often limited the impact of agricultural projects. Agricultural development is a long-term process. The five to seven year time span of most USAID projects is too short, especially given the years of delay in starting project operations. It seems that strategies are tried for five years, and then discarded, with no attempt to build on the accomplishments of former projects
- The lack of liaison or coordination among projects with similar objectives has reduced the sustainability of impacts
- The dearth of baseline and other monitoring and evaluation data does not permit a quantitative assessment of project impacts
- While USAID policies and strategies over the years have often corresponded with GOS policies, they have frequently not corresponded in many cases to the needs of Senegalese farmers. Participation of beneficiaries in project design is necessary to make projects relevant to farm-level conditions and constraints
- There is a need for more participation of beneficiaries in all aspects of project design and implementation
- A more realistic assessment of local institution's capability to manage development activities is needed before project implementation

- The large-scale integrated development projects started in the 1970's (and later) had many successes in extending new technologies, building institutions and infrastructure, and in providing training, but there were far too many components which were often not "integrated" at all. Project management of these numerous components was often beyond the managerial capability of the collaborating institutions.
- Irrigation and water resource management projects need an agricultural component to be effective in increasing agricultural production and productivity.
- Earlier projects were overly ambitious and all-encompassing, while those of a later generation have often been too restricted to reach intended impacts. (This is particularly true of irrigation projects.)
- Certain USAID procedures appear complicated, inflexible, and insufficiently adapted to local conditions and institutions.

C. Recommendations

- 1 USAID should continue to fund traditional agricultural projects. The beneficiaries should be involved in project identification or design, implementation and evaluation. The project should be implemented and managed by the clients themselves, together with their chosen intermediary, whether it be PVO's or a system of co-management with private firms. GOS technical services can provide extension or other technical assistance, but should be in an advisory rather than a managerial role.
- 2 Given the existing policy environment, agricultural projects should comprise a credit component. This should increase the sustainability of project results.
- 3 USAID agricultural projects should be aimed at both subsistence and commercial farmers. Food security is still an important objective, and should be pursued. Funding of projects aimed at the production and marketing of high value exports crops is also recommended.
- 4 The technologies diffused should be finalized according to the needs defined by the producers themselves, and should be revenue generating.
- 5 Project designs should require that a substantial percentage of project funds arrive at the farm or client level. Project evaluations should calculate precisely the extent to which funds reach the target area.

Senegal Agricultural Sector Retrospective Study

- 6 USAID should look for ways to simplify, streamline, and render more flexible its guidelines and procedures for working with NGO's, the private sector, and Farmer's groups. While maintaining strict financial accountability, simplified guideline for project proposals and a more flexible management system needs to be developed.

k/afr_west.fil/senegal/agret wpd/10/15/96

I Other Sources

- Abt Associates 1985 *Senegal Agricultural Policy Analysis* For USAID/Senegal
- Acedo, A 1995 *History of USAID/Senegal* Two Volumes Dakar USAID/Senegal
- Africare 1996 "KAED Monthly Reports" April, May Kaolack Africare/KAED
- Amin, S 1969 *Le Monde des Affaires Senegalais* Paris Editions de Minuit
- Berg, E 1990 *Adjustment Postponed Economic Policy Reform in Senegal in the 1980's* For USAID/Senegal
- Ericksen, J 1990 *Macro-Economic and Sectoral Adjustment Programs in Senegal* For USAID/Senegal
- Goreux, L 1995 *La Devaluation du Franc CFA- Un Premier Bilan en Decembre 1995* Prepared for the World Bank
- MOA 1996 *Programme d'Investissement du Secteur Agricole 1995-2000* Three volumes Dakar Ministere de l'Agriculture
- MDR 1984 *Nouvelle Politique Agricole* Dakar Ministere du Developpement Rural
- MDR 1986 *Plan Cerealier* Dakar Ministere du Developpement Rural
- MDR 1989 *Declaration de Politique de Developpement Agricole* Dakar Ministere du Developpement Rural
- MEPN 1993 *Programme de Co-Investissement-Region de Kolda* Kolda Inspection Regionale des Eaux et Forets
- MEPN 1995 *Rapport Annuel Conservation des Terroirs Sud (CTL-Sud)* Dakar Ministere de l'Environnement et Protection de la Nature
- Ndiaye, M 1995 *Impact de la Devaluation sur le Secteur Agricole* Prepared for USAID/Senegal
- SAED 1991 *Bakel, Vivement Demain* Bakel SAED/Bureau de Survi-Evaluation

SOMIVAC/PIDAC 1984 Evaluation du PIDAC, Campagne 1983/84 Ziguinchor
SOMIVAC/BEEP

SOMIVAC/PIDAC 1985 Evaluation du PIDAC, Campagne 1984/85 Ziguinchor
SOMIVAC/BEEP

SOMIVAC/PIDAC 1986 *Planning de Depot de Bancs des Centre d'Alphabetisation*
Ziguinchor SOMIVAC/PIDAC/Section Alphabetisation

Senagrosol-Consult 1996 *Mise en Oeuvre du Sous-Projet Buffles* Matam Projet de
Developpement Agricole dans le Departement de Matam (PRODAM)

SENECI 1994 *Enquetes Socio-Economiques et Agricoles dans Trois Vallees de la Moyenne*
Casamance Prepared for Southern Zone Water Management Project ((685-0295)

USAID/Senegal 1980 *Joint Assessment of U S Assistance Programs in Senegal*

USAID/Senegal *Senegal Country Development Strategy Statement* FY 1981, 1982, 1983, 1984,
1985, 1987 and 1989

USAID/Senegal 1991 *Country Program Strategic Plan for Senegal, 1992 to 1997*

USAID/Senegal *Assessment of Program Impact* 1991, 1992, 1993, 1995, 1996

USAID/Senegal/ADO 1990 *Analyse du Secteur Agricole du Senegal* Two volumes

II. USAID/DAKAR PROJECT-RELATED DOCUMENTATION

PROJECT	DOCUMENTS
<u>Cereal Production, Phase I</u> (685-201)	Project Paper (1975)
<u>Eastern Senegal Range and Livestock Development</u> (685-0202)	Project Paper (1975) Final Evaluation (1985)
<u>Dune Stabilization Project</u>	PL-480 Title III Progress and Financial

	Reports (1980)
<u>Casamance Regional Development</u> (685-0205)	Project Paper (1978) Evaluation (1981) Mid-Term Evaluation (1983) Project Assistance Completion Report (1986)
<u>Bakel Small Irrigated Perimeters</u> (685-0208)	Project Paper (1977) Project Evaluation (1982)
<u>SAED Personnel Training</u> (685-0218)	Project Proposal (1979) Mid-Term Evaluation (1982)
<u>Agricultural Research and Planning</u> (685-223)	Project Paper (1981) Mid-Term Evaluation (1985) Contract Completion Report (1988)
<u>National Plan for Land-Use and Management</u> (685-0233)	Mid-Term Evaluation (1983) Final Evaluation (1985)
<u>Cereal Production, Phase II</u> (685-0235)	Project Paper (1979) Project Evaluation (1985) Project Paper Supplement (1985) Final Report Agro-Forestry Component (1987) Project Assistance Completion Report (1991)
<u>Community and Enterprise Development</u> (685-0260)	Final Report Evaluation PVO Component (1990) Final Evaluation PVO Component (1991) Final Evaluation Small-Scale Enterprise Component (1994)
<u>Agricultural Production Support</u> (685-0269)	Project Assistance Completion Report (1991)
<u>Irrigation and Water</u>	Project Paper (1985)

Tropical Research and Development, Inc

Management I (685-0280)

Project Paper Supplement (1989)
Mid-Term Evaluation (1990)
Project Assistance Completion
Report (1991)

Technology Transfer
(685-0281)

Project Paper (1985)
Evaluation (1993)
Project Assistance Completion
Report/Water Buffalo Pilot Activity (1993)
Final Report/Northern Senegal Water
Management Project (1994)

Senegal Reforestation
(685-0283)

Project Paper (1986)
Mid-Term Evaluation (1991)
Project Paper Supplement No 2
(1992)
Final Evaluation (1995)

PVO/NGO Support (685-0284)

Project Paper (1990)
Project Paper Supplement

Natural Resource-Based
Agricultural Research
(685-0285)

Project Paper (1991)
Mid-Term Evaluation (1985)

Southern Zone Water
Management (685-0295)

Project Paper (1988)
Mid-Term Evaluation (1994)
SENECI Study (1994)
Final Contract Report/Applied
Research Component (1995)

Kaolack Agricultural
Enterprise Development
(685-0302)

Mid-Term Evaluation (1995)
Semi-Annual Performance Report
(1996)

Community-Based Natural
Resource Development
(685-0305)

Draft Project Paper (1990)

Agricultural Research and

Evaluation (1986)

Tropical Research and Development, Inc

Tropical Research and Development, Inc

Planning, Phase II
(685-0957)

k/afr_west fil/senegal/8000 015/annexes txt10/15/96

Tropical Research and Development, Inc

Statement of Work for the Agricultural Sector Retrospective Study

I BACKGROUND

1995 marks the 35th year of USAID's development assistance to Senegal. According to Agency data from 1961 through 1995, USAID/Senegal participated in at least 34 bilateral projects in agriculture, rural development and more recently, natural resources. Funding for these activities totaled nearly US\$180 million. In addition, the Mission participated in a number of regional agriculture and rural development projects during this time frame. Activities ranged from seed and cereal improvement, poultry research and livestock production to agricultural research, irrigation, fisheries research and reforestation. Projects were conducted throughout the country from the Senegal River Basin and the North Atlantic Littoral to the Peanut Basin and the Casamance.

II. STUDY OBJECTIVES

The study of USAID/Senegal's activities in the agricultural sector is an integral part of a larger effort to develop the necessary documentation for the preparation of sector analyses which will lead to the development of the Mission's new strategy for the period 1997-2005. In addition to this study, a history of USAID/Senegal as well as other in-depth sectoral assessments in health and population and in the private sector will be prepared during 1995 and 1996.

The principal objectives of this study will be to review and assess the impact of USAID's agricultural, rural development and natural resources activities in Senegal. Thus, the study will focus on impact, sustainability, and replicability as well as lessons learned and recommendations on the future strategy.

This information will help to shape our future USAID program in light of the overall objectives of the reengineering of USAID/Senegal. The reengineering is based on four core values: (1) customer focus, (2) result orientation, (3) empowerment and accountability, and (4) teamwork and participation. Working within this framework, the challenge is to design a future program strategy best suited to assist Senegal in meeting its developmental needs. This study will provide analytical insight to assist USAID/Senegal and Senegal partners develop this new program strategy.

III SCOPE OF WORK

A General Description of the Study

- 1 The Contractor shall submit a study which will
 - (i) Evaluate USAID's 35 years of assistance to Senegal in the agriculture sector with particular emphasis on the period of the last GOS New Agricultural Policy which was established in 1984,
 - (ii) Document activities supported by USAID and assess their impact, sustainability and replicability,

Page 2 of 7 pages

(iii) Analyze assumptions for undertaking these activities and assess their validity to meet Senegal's agricultural needs,

(iv) Analyze the conformity of activities with USAID/Senegal policies, as stated in documents such as Country Program Strategic Plan (CPSP), Country Development Strategic Statement (CDSS), Action Plans and relevant Africa Bureau guidance as well as USAID/W and GOS policy documents,

(v) Provide a brief overview of other donor activities in the agriculture, rural development and natural resources sector during this period,

(vi) Provide lessons learned which will serve to document project successes and failures, and guide our future strategy development; and

(vii) Make recommendations based on the study findings and analysis

2 *The principal audience for the study will be development specialists, including USAID/Senegal's partners in the GOS and NGO communities and USAID/Senegal staff members. Thus, it should be written in an appropriate professional and analytical style and organized in a clear and understandable format*

3 *In order to meet the requirements of this statement of work, the contractor shall,*

(i) Meet with GOS representatives in the Ministries of Agriculture, Environment and Protection of Nature, CONSERE, ISRA, DISA and UPA to ascertain and review studies and data on agriculture, rural development and natural resources management

(ii) Meet with major donors World Bank, UNDP, FAO, CIDA, FAC IMF, Caisse Française de Développement (CFD), to discuss past strategies, activities, studies, current and planned strategy and project activities or analysis

(iii) Meet with relevant staff in the Mission, and review existing data and studies on agriculture, rural development and natural resources available in the USAID Library (including those obtained pursuant to section B 1 and 2 below)

B Specific Content of the Study.

The Contractor shall provide the following information and analysis in the study

1 *A comprehensive summary of USAID-funded agriculture activities during the past 35 years. This summary will assess impact and discuss sustainability and replicability in the context of Senegal's agricultural sector needs*

(i) Impact - Will be assessed and discussed in both quantitative and qualitative terms at.

(a) an individual project level (e.g., Senegal Cereal Production project),

(b) a technological level (e.g., agricultural research, seed improvement, water management),

Page 3 of 7 pages

(c) strategic level (e.g., crop productivity, reforestation),

(d) regional and national levels (e.g., increased crop production),

(e) the policy level (e.g., USAID sponsored policy reform in fertilizer, rice and groundnut privatization).

(ii) Sustainability - Key issues to be examined will include

(a) To what extent have interventions to increase agricultural productivity been sustainable? This analysis will examine both crop and livestock activities. Such issues as providing viable returns to individual farmers and farm industries, as well as contributing to the quality of life of the rural population will be analyzed

(b) Have these same interventions been environmentally sustainable? Such issues as reduced crop productivity, soil erosion, loss of soil nutrients and water management problems will be addressed

(c) Have the activities supported the long-term economic and environmental policies of Senegal and vice-versa?

(d) Have GOS policies & strategies contributed to sustainability problems? USAID policies/strategies?

(e) Have the GOS & private sector (including associations, collectivities, etc) made reasonable efforts to contribute their agreed support to past USAID funded activities and sustain them after USAID funding terminated.

(iii) Replicability - Important issues to be addressed will include

(a) Have USAID agricultural activities been widely adopted or adapted by the non-targeted rural population?

(b) To what extent has external assistance (GOS, NGO/PVOs, Private Sector) contributed to replication?

(c) Has adoption rate been substantially influenced by unforeseen socioeconomic or environmental factors? If so, how, where and when have these factors affected replicability?

(iv) Crosscutting - The study will also examine crosscutting issues such as

(a) Have there been certain common threads, among activities USAID supported, which determine success or failure?

(b) What have been the explicit or implicit assumptions that were made to justify supporting an activity and were these assumptions correct?

(c) What assumptions were made in the selection of target groups, technologies, or strategies and were these assumptions correct?

(d) Have the activities supported/complemented the activities of the GOS, NGOs/PVOs, other donors and the perceived needs of the agricultural private sector?

(e) Have the activities generally supported GOS policies as well as USAID policies as stated in CPSPs and Africa Bureau guidance? Has this necessarily been beneficial?

(v) Institution Building - The study should look at which major institutions (public, private or NGO/PVO) we have worked with (and tried to strengthen) over the years in our activities and our relative ascertainable success, or lack thereof, in such institution building. This should lead to an opinion as to what institutions might be worth strengthening in the future, which might not, and why.

2 Lessons Learned and Recommendations *This section will summarize the most significant overall findings of the study into two key areas, lessons learned and recommendations*

(i) Lessons Learned *The lessons learned section will highlight the major successes and failures of USAID-funded activities in the agricultural, rural development and natural resources sector over the 35 years, with emphasis on the period since 1994. Here general trends, strategy shifts, budgetary adjustments, other critical factors will be assessed to identify implications of information gathered during the study for application, replication or avoidance, in addressing similar problems in other settings or in developing new strategies, programs and approaches. Some key issues to be examined would include*

(a) From an economic and natural resources perspective what have been the most appropriate agricultural production strategies supported by USAID in Senegal over the past 35 years and why?

(b) High input agricultural production technologies, low input NRM based technologies,

(c) Emphasis on commercial farmers, focus on subsistence based growers? or core commercial with satellite subsistence contractors, etc

(ii) Recommendations *The study will conclude with a recommendations section. This section will be limited to general recommendations useful in determining future program direction. The recommendations section shall address, but not be limited to such issues as*

(a) What activities funded in the past by USAID would support GOS planned policies in the ANR sector and would be directed at our comparative strength as donor (e.g., NRM technologies and training)?

(b) Given our shrinking resources, where could we best focus our efforts based on past success in Senegal and elsewhere? In this context geographic range, ecological regions, crops, institutional and policy frameworks, and technologies should be considered in development of future recommendations

Page 5 of 7 pages

3 Methodology *The study methodology will include but not be limited to*

- (i) reading relevant documentation at USAID/Senegal and GOS offices (e.g., project paper, evaluations, Country Program Strategic Plan (CPSP),*
- (ii) conducting briefings with relevant USAID offices,*
- (iii) interviewing appropriate GOS officials, participating private sector organizations, local populations and village groups, both in Dakar and at project sites and (iv) preparing the study report*

A tentative schedule should be developed by the Team Leader during her/his first week and submitted to USAID for review. A six-day work week is authorized and time should be divided between the field assessments and work in Dakar, as necessary.

C Level of Effort

The study team will be composed of three members, of which two (agronomist/NRM specialist and the sociologist) should be cooperating country nationals. The technical expertise of each member is described below. The team will spend eight weeks in Senegal to research, collect required data, analyze and write the retrospective study. The first week will be devoted to obtaining necessary documentation for the study and advanced planning. Weeks two through seven will be spent doing field work and site visits. The eighth week in Senegal will be devoted to editing and incorporating comments into the report, and the Team Leader will spend the ninth week in the US working on report finalization. Accordingly, the level of effort will be

- 1 Team Leader (Agricultural Economist) - 9 person-weeks (8 weeks in Senegal, 1 in US)*
- 2 Team Member (Agronomist/Soil Scientist) - 8 person-weeks*
- 3 Team Member (Rural Sociologist) - 8 person-weeks*

1. Composition of the Study Team

a Team Leader/Agricultural Economist

***Responsibilities** He/she will be responsible for team management and coordination, writing assignments, study preparation and briefings. This person will ensure that the study is completed on schedule. Working in conjunction with other team members, he/she will be principally responsible for assessment of impact and lessons learned/recommendations aspect of the study.*

Qualifications

- * A minimum of 5-7 years of overseas experience is required and at least 2 years in the Sahel is desired*
- * USAID Project evaluation experience*
- * Proven Team Leader experience*
- * French language capabilities @FSI S3, R3 level*
- * Excellent English writing skills*
- * At least a Master's degree in agricultural economics*
- * Typing and word processing skills*

b Agronomist/Soil Scientist

Responsibilities Working with other team members, he/she will be principally responsible for developing the sustainability and replicability aspects of the study from an "appropriate technology" perspective, including such topics as varietal improvement, farming/cropping systems, agricultural research and NRM based crop production. In this regard, he/she will review all pertinent documents and write relevant sections as instructed by the team leader. Incumbent should be a cooperating country national.

Qualifications

- * Minimum of 10 years experience working in agronomy, soil science or related field, in Sub-Saharan Africa
- * Fluent in French and at least the equivalent of a FSI S3, R3 in English
- * At least a Master's degree in agronomy, soil science or related field
- * Typing and word processing skills

c Rural Sociologist

Responsibilities Working with other members of the study team, he/she will be principally responsible for the sustainability and replicability assessment aspect of the study from a "rural sociology" perspective, including such topics as degree of popular participation, involvement of local organizations and collectives (i.e., rural councils, farmers, women) and people-level impact. In this regard, the person will review all relevant documents and write appropriate sections of the report as instructed by the Team Leader. Incumbent should be a cooperating country national.

Qualifications

- * Minimum of 10 years experience working in Senegal in rural sociology or related field
- * Fluent in French and at least the equivalent of a FSI S3, R3 level in English
- * Typing and word processing skills

4 Logistical Support USAID/Senegal will provide one vehicle for the transportation of the team from Dakar to project sites, and the Contractor will be billed for the driver's per diem, overtime and vehicle mileage. Local (ground) transportation from residence to office will be furnished by the Contractor. The study team will provide their own word-processing equipment and software. Office space will be provided to contractor's team members by USAID/Senegal.

IV Report

A Format of the Report The report will contain the following sections:

1 Executive Summary This section will include a summary statement of the:

- (i) objectives and approach of the study,
- (ii) general impacts of USAID's assistance in Senegal over the past 35 years,
- (iii) sustainability and replicability findings,
- (iv) lessons learned, and
- (v) recommendations

2 Table of Contents

3. Body of the Report This section will include a description of the context in which the study was developed and provide a detailed analysis of information required in paragraph III B 1 of this statement of work

4. Lessons Learned and Recommendations This section will provide the information required in paragraph III B 2. of this statement of work.

5. Appendices The appendices will include, but not be limited to the scope of work, project sites visited, people interviewed, bibliography of materials reviewed, and description of the study methodology used

B. Report Requirements. An outline of the report will be submitted to USAID/Senegal during week three of the nine week contract.

The contractor will provide an oral briefing to the COTR and other relevant USAID staff at the end of the fourth week of work concerning progress and problems to date as well as plans for the remainder of the study

The first draft will be submitted to USAID in English during week six of the nine week contract and an oral presentation of the report will be made to relevant USAID staff

USAID's feedback on the first draft will be incorporated into the final draft which will be submitted during week eight of the contract Team Leader The Team Leader will have an additional week for editing and finalizing the report in the US, once final USAID comments are received

Twenty (20) copies of the final report in English and twenty (20) copies in French will be submitted to USAID/Senegal within four weeks of receiving USAID comments on the final draft report

Report will be provided in word perfect format