

1. PROJECT TITLE SODES <sup>2</sup> Livestock Production  PD-AAN-259		2. PROJECT NUMBER 685-0224	3. MISSION/AID/W OFFICE USAID/Dakar, Senegal
		4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY)  <input type="checkbox"/> REGULAR EVALUATION <input checked="" type="checkbox"/> SPECIAL EVALUATION	
6. KEY PROJECT IMPLEMENTATION DATES		8. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY _____	B. Final Obligation Expected FY <u>81</u>	C. Final Input Delivery FY <u>84</u>	From (month/yr.) <u>December 78</u> To (month/yr.) <u>December 82</u> Date of Evaluation Review <u>May 10, 1983</u>

**B. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR**

A. List decisions on /or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., program, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
<p><u>A. Decision</u></p> <p>Continue the project to the present PACD of Dec. 31, 1983, under the condition that a socio-economic study of project impact on beneficiaries be done. This is to be completed by Nov. 83 in time for review of progress and socio-economic impact so that a decision can be reached concerning possible extension of the PACD.</p> <p><u>Unresolved issues</u></p> <p>An economic analysis of the project based on results achieved was recommended by the evaluation. This requires additional data from the socio-economic study (see Decision above). If the PACD were extended beyond 1983, an economic analysis would be done during the extension.</p> <p>Objectives of the range management activity of the project were unrealistic according to the evaluation. If a decision is made to extend the project beyond 1983, new objectives would be set for this activity.</p>	<p>B. Project Manager Larry Harms</p> <p>Project Director Ibrahima Sory Gueye</p>	<p>C. Socio-economic report, Nov. 1, 1983</p> <p>Progress and report review Nov. 30, 1983</p> <p>Decision on PACD, Dec. 1, 1983</p> <p>Grant Admendment as required, Dec. 30, 1983</p>

<p>9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS</p> <table> <tr> <td><input type="checkbox"/> Project Paper</td> <td><input checked="" type="checkbox"/> Implementation Plan e.g., CPI Network</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Financial Plan</td> <td><input type="checkbox"/> PIO/T</td> <td>_____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Logical Framework</td> <td><input type="checkbox"/> PIO/C</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Project Agreement</td> <td><input type="checkbox"/> PIO/P</td> <td>_____</td> </tr> </table>	<input type="checkbox"/> Project Paper	<input checked="" type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____	<input checked="" type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____	<p>10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT</p> <p>A. <input type="checkbox"/> Continue Project Without Change</p> <p>B. <input type="checkbox"/> Change Project Design and/or <input checked="" type="checkbox"/> Change Implementation Plan <b>Priorities</b></p> <p>C. <input type="checkbox"/> Discontinue Project</p>
<input type="checkbox"/> Project Paper	<input checked="" type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____											
<input checked="" type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____											

<p>11. PROJECT OFFICER AND HOST COUNTRY OR OTHER BANKING PARTICIPANTS AS APPROPRIATE (Name and Title)</p> <p>James L. Roush, Economist Professor NDiaye, Livestock &amp; Veterinary Specialist Leroy Rasmussen, Range Management Specialist Dr. Philip Boyle, Sociologist Larry Harms, Project Officer, USAID/Senegal</p>	<p>12. Mission/AID/W Office Director Approval</p> <p>Signature David Shear <i>[Signature]</i></p> <p>Type: Name Director</p> <p>Date <u>5/31/83</u></p>
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## Project Evaluation Summary (PES) - Part II

### SODESP Livestock Development

#### 13. Summary

The evaluation concluded that of four major components of the project, the major activity (livestock production) had been aggressively implemented and project objectives would likely be met. Progress in a second activity, herder support, had been made and benefits were reaching the population, but the implementation mode varied somewhat from that envisioned in the project paper. The evaluation concluded that for a third activity, range management, fundamental differences in conception and orientation between American trained & French trained scientists existed, and original objectives had not been realistic. In the fourth activity, research and monitoring, only animal production data has been collected. Studies of socio-economic impact on beneficiaries have not been accomplished as projected.

#### 14. Evaluation Methodology

The in-depth evaluation, planned for year 3, was done in the fourth year of the project. The original purpose (that of the PP) was to assess progress and data collected to formulate the base for a longer term Phase II commitment. Given certain implementation problems and a change in mission strategy, the objectives for the evaluation were to reconfirm or change the design as needed, evaluate progress, and plan the remaining time and funds in the project. The evaluation was done in Nov - Dec, 1983, by a four person, joint Senegalese-American team. The report was translated and submitted to the GOS in February 1983. Discussions were held in April and early May, 1983.

#### 15. External Factors

GOS financial problems precluded making their projected share of operating costs. These were covered by grant funds, which was possible within the grant agreement because of the favorable exchange rate as compared with the rate in project design.

#### 16. Inputs

Commodities, construction, operating and revolving fund inputs have generally been made in a timely way. Arrival of technical assistance was delayed slightly so that construction (including housing) could be completed. Subsequently, the four person technical assistance team disbanded (three resigned and the services of the fourth was discontinued at the request of SODESP). Training funds, especially for U.S. and third country long term training have not been used to date. Revisions in technical assistance inputs will be made (reduced) as a result of the evaluation.

## 17. Outputs

See item 13, Summary.

## 18. Purpose & Goals

The purpose will be "to develop a cost-effective and implementable resource management system and a livestock production and marketing program which (a) are suitable to the physical characteristics of the Sylvo-pastoral zone, (b) recognize and conform to economic exigencies, and (c) allow for a pattern of socially acceptable evolution from present traditional grazing patterns and practices to a more productive system of livestock raising and resource management." (from Africa Memo to AA for Africa).

Most progress indicators have been made in developing an acceptable, more productive livestock production system. The economic questions and resource management system remain less clear at the present time.

## 19. Beneficiaries

The primary beneficiaries are private, traditional livestock herding families of northern Senegal, numbering about 300 herders (3000 family members) enrolled with the SODESP program. An estimated additional 200 families (2000 family members) live permanently in the zone and receive partial benefits of the project.

## 20. Unplanned Effects

In the range management activity, repair and maintenance of deep bore wells has assured the water supply in the project zone. Wells surrounding the project zone are in a lesser state of repair and maintenance. As a result the project zone has become a safety zone for herds and herders suffering from interrupted water supplies at their own wells. This is a negative impact on the zone for which SODESP has proposed a solution to the GOS.

## 21. Lessons learned

Range oriented livestock projects are expensive, low output per hectare activities even when significant gains in production can be achieved. Investments must therefore be directly related to production with particular attention given to controlling infrastructure investments and reoccurring operating costs if favorable economic performance is to be achieved.

An assumption of range management as applied in the US is that animal numbers will be controlled by the farmers to achieve optimum production. This is a false assumption in Africa at the moment and resource management must find a solution to gaining herder support to help limit demands on resources of the project zone.

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EVALUATION REPORT

SODESP LIVESTOCK PROJECT  
(685 - 0224)

PREPARED BY :

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DECEMBER 1982

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**EXECUTIVE EVALUATION SUMMARY  
ON TECHNOLOGY TRANSFER**

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**SODESP LIVESTOCK DEVELOPMENT PROJECT  
NO. 685-0224, SENEGAL**

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(1) What constraint did this project attempt to relieve?

Per capita red meat consumption in Senegal has declined from 21 kg to 13,5 kg per year, and Senegal is a net importer of cattle and small ruminants. This project attempts to move Senegal towards self-sufficiency in red meat supplies by increasing production in the pastoral areas of northern Senegal while simultaneously managing the range resources to assure long term productivity.

(2) What technology (knowledge, skills or practices) did the project promote to relieve this constraint?

The project promotes a system of regional specialization in which pastoral areas will become the source for young high quality calves, and farming and higher rainfall areas will become more specialized in growing and fattening of livestock. The project also promotes the use of purchased inputs to raise livestock production parameters.

(3) What technology did the project attempt to replace?

The project attempts to replace the traditional method of livestock production in the zone, based on minimal use of purchased inputs, keeping male animals beyond the useful growth period, and transhumance for feed and water in the dry season.

(4) Why did project planners believe that intended beneficiaries would adopt the proposed technology?

The Sylvo-pastoral zone is presently stocked to capacity, even with 22% decline in livestock numbers that has accompanied the continuing drought cycle. This decline in production accompanied with a rapidly increasing human population has resulted in very rapid increases in the price of beef, in spite of the sharp decline in per capita consumption. The rapidly increasing price of red meat to historically high levels for all of the Sahel favors investments and changes to increase production, and thereby, herder income. Increasing production cannot be achieved by expanding the traditional system to under exploited areas. A new technological package is required.

The long standing belief that herders are bound to tradition has proven naive. Livestock technicians, sociologists and other have detailed positive herder response to economic incentives and to possibilities for increasing production. Annual livestock vaccination campaigns are avidly taken advantage of, market animals are being sold at younger ages rather than being held in the herd, and herders have sifted labor resources from crop production to livestock activities in response to the economic incentives of recent years.

(5) What characteristics did the intended beneficiaries exhibit that had relevance to their adopting the proposed technology?

The same SODESP program had already been tried in a neighboring area and was proving successful, in the sense that herders were joining the program. The herders are shrewd specialists in livestock raising and were expected to grasp quickly the economic advantages of the project.

(6) What adoption rate has this project achieved in transferring the proposed technology?

After a late start of about two years, enrollment of herders began in the Fall, 1980. Approximately, 80-100 herders signed up in the first year and over 200 the second year. At present, there are 323 enrolled herders with about 7,500 head of cattle in the program. This far exceeds the goals in the Project Paper, where after two years of enrollment, only 20 herder families and 2,000 head of cattle were expected in the program. However, herders are enrolling an average of about 25 head, rather than the expected 100 head per family.

(7) Has the project set forces into motion that will induce further exploration of the constraint and improvements to the technical package proposed to overcome it?

The time frame for adoption of change imposed by the biological cycle of livestock production is relatively long. Thus, it is too early at this point to tell whether herders will attempt to improve or modify the technical package.

(8) Do private input suppliers have an incentive to examine the constraints addressed by the project and to come up with solutions?

An objective of the project is to widely introduce the use of purchase feed and mineral supplements to raise production. Senegal is an important world supplier of protein supplements for livestock in the form of peanut oil cake. Until this project, neither herders nor middlemen entrepreneurs had sought to promote an internal demand for these feeds. Present price structures favor investment in livestock, and the project gets all of its own supplies through private suppliers within Senegal. The necessary supplies and supply channels are extant, but evidence of the project having created a generalized demand for protein supplements and mineral salts to be furnished by a broad network private suppliers has not surfaced to date.

(9) What delivery system did the project employ to transfer technology to intended beneficiaries?

The sylvo-pastoral zone is presently stocked to capacity and increased livestock production required a new technical package. Higher livestock prices since the Sahel drought favored herder investment in their herds. An incentive price structure designed by SODESP encourages off-take of young male calves and conversion of herds to cow-calf production units. Subsidization of feed and mineral supplements supplied to herders on an annual credit basis, and upkeep of dependable water resources (deep wells), promotes acceptance by herder families.

(10) What training techniques did the project use to develop the delivery system?

The project did not require the development of a formal training program. Extension agents attached to each well center contact herders to explain the SODESP program. Calculations of self-interest have induced herders to enroll their animals, although they have tended to enroll only a portion of their herds, on a wait-and-see basis.

(11) What effect did the transferred technology have upon those impacted by it?

This project has led to certain verifiable outcomes, while others remain unmeasured and generally unknown. Socio-economic research and monitoring by SODESP has tended to focus on production parameters to the neglect of effects on herder quality of life. There is evidence of increased animal production performance from supplemental feeding and higher fertility rates. Some herders point to higher revenues and indicate satisfaction with the SODESP program; some are not sure and are waiting to pass judgement. It is not known in general what the socio-economic effects of this project are on herder families, in particular the effects of conversion of herds to cow-calf units and sedentarization around wells.

Continued rapid enrollment by the herders, however, is a measure of their acceptance of project interventions and effects.

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## EVALUATION REPORT

### SODESP LIVESTOCK PROJECT (685-0224)

#### I. BACKGROUND TO THE PROJECT AND TO THE EVALUATION

##### A. Project Background.

The SODESP Livestock project (685-0224) was authorized by the Agency for International Development (AID) on December 28, 1978 in the amount of \$ 8 million for the life of the project (five years). The Grant Agreement was signed with the Government of Senegal (GOS) two days later -- December 30, 1978. The project was to be implemented by a GOS parastatal organization created to carry out projects in the livestock region of northern Senegal: Societe de Developpement de l'Elevage dans la Zone Sylvo-pastorale (SODESP).

In 1971-1972 the European Development Fund (FED) financed a feasibility study for livestock production in the Ferlo (livestock area of northern Senegal). In 1973, FED financed a pilot livestock production project in one of the zones of the Ferlo area (Zone 1). Based on the results of the pilot project, the GOS requested that FED continue and expand the project in Zone 1 and requested the U.S. AID Mission in Senegal (USAID/S) and the Canadian International Development Agency (CIDA) to finance similar projects in Zones 3 and 2 respectively. USAID responded favorably to the request, but CIDA did not--contrary to the expectations of the authors of the Project Paper for the AID project.

The USAID project was to be implemented within the overall livestock production policy established by the GOS, the implementation of which

was delegated to SODESP by law in June 1975. The essential element of the policy is the promotion of a stratified system of livestock production based on the complementarity of ecological zones of the country. Thus, livestock production activities are divided into three production stages:

- a. Naissage or co.-calf operation carried out on the rangelands of the Ferlo. Male calves would be purchased at premium prices between the ages of eight and 12 months. Herders would also be encouraged to dispose of older nonproductive animals.
- b. Réélevage or growing-out of the young males destocked from the range and raised together under improved feeding systems further south (presently at the Doli Ranch).
- c. Embouche or terminal fattening of animals for the market--to be carried out in the outskirts of Dakar, the principal market.

In the naissage operation, SODESP invites herders to participate in a system of encadrement in which SODESP will make available supplemental livestock feed and health care on credit and maintain the watering points in the zone in return for the herders' agreement to sell off old nonproductive animals and all male calves, including selling sufficient male calves to SODESP to pay the herder's debt to SODESP. SODESP also promises to assure the availability of grain during the dry season and medical care for the herders and their families.

## B. Evaluation Background and Methodology

Article IV (Special Covenants and Conditions) of the Grant Agreement provided in Section 4.1. for a continual evaluation program to be conducted by the research and monitoring group assigned to the project and for an

in depth evaluation to be conducted at the end of year three of the project by a multidisciplinary team working over a period of three months in the project zone with the participation of the research monitoring group. The goals established for the evaluation were:

- assess progress in the project zone;
- evaluate problems with project implementation;
- note and describe variations between project design and implementation;
- determine the degree to which the number of animals in the project zone and the amount of water pumped was being controlled so as to balance with the availability of forage;
- assess the long-range prospects for SODESP's financial viability; and
- make recommendations for a second five-year project.

Given an approximately two-year delay in initiating project activities in the zone, it was decided in early 1982 to postpone the in-depth evaluation. Subsequently, the technical assistance team was disbanded (one was fired by the Directeur General of SODESP and the other three resigned). Thus, there was no research and monitoring unit, and it was not clear that SODESP intended to use technical assistance personnel to establish such a unit-- as had been foreseen in the Project Paper and Grant Agreement. USAID/E requested that no new technical assistance personnel be recruited until the project was evaluated. In the meantime, a new USAID/S strategy for assistance to Senegal has been developed and approved, and it does not foresee continued activity in livestock.

Given the foregoing developments, and the fact that the research and the monitoring function was never established, the terms of reference for the present evaluation are considerably different from that provided for in the Grant Agreement. The evaluation team's terms of reference are as follows:

- a) evaluate the continued appropriateness of project objectives;
- b) evaluate differences between SODESP activities and plans and the Project Paper and Grant Agreement, their importance and relevance to project objectives; propose modifications, if required, to alleviate related problems;
- c) evaluate project inputs and their timeliness and contribution to meet project objectives, including a specific review of the role of technical assistance as designed and implemented and recommendations for its use in the remainder of the project;
- d) review project activities and evaluate progress toward objectives;
- e) review the financial status of the project and the relationship of the financial status to the rate of implementation and to the project assistance completion date; and
- f) plan and rebudget the remaining years of the project, taking into account projected cash flows.

On November 17, 1982 the evaluation team assembled in Dakar to begin its evaluation work. Three American experts were provided by Experience, Inc. under an indefinite quantity contract with AID/Washington, USAID/S contracted with Professor Ahmadou Lamine NDIAYE, the Director of the Regional School of Veterinary Science and Medicine (l'Ecole Inter-

Etats des Sciences et Médecines Vétérinaires) of Dakar, to be the fourth member of the team. Thus, the team is composed of:

James L. Roush, economist (team leader)  
Professor Ndiaye, livestock and veterinary specialist  
Leroy Rasmussen, range management expert  
Dr. Philip Boyle, sociologist

The team held meetings in Dakar and visited the project site (Zone 3), the FED project site (Zone J), the Doli Ranch and the embouche at Keur Massar near Dakar. The team leader drafted the overall report, while the other team members prepared technical reports. All team members had the opportunity to comment on other members' reports. There were frequent discussions by the full team. Chapters II, IV and V were prepared in draft, translated, and distributed to the USAID and to SODESP. Meetings were held with both organizations to permit them to provide oral comments upon the preliminary findings. The meeting with SODESP was 10 hours in length over two days. The team then completed its report in English and arranged for its translation into French. Messrs. Roush and Rasmussen departed Dakar December 12th; Mr. Boyle departed Dakar December 16th.

A general outline of the team's schedule is provided as Annex A. A list of the people and organizations consulted is included as Annex B. Technical reports prepared by Professor Ndiaye and Messrs. Rasmussen and Boyle are attached as Annexes C, D, and E.

## II. PROJECT OBJECTIVES

The objectives of the SODESP program were set forth in the GOS request for AID assistance (Annex D of the Project Paper):

- a) increase the productivity of the traditional livestock herds through conversion to cow-calf herds;
- b) integrate agriculture and livestock raising;
- c) increase the level of autoconsumption and income of herders; and
- d) sedentarize the herders and establish a network of herder pre-cooperatives to take charge of basic activities and of modern economic processes.

AID was concerned about the deterioration of the range that had been taking place throughout the Sahel, particularly in the vicinity of permanent watering points. Sedentarization of the herders, an objective of the SODESP program, would make the herders very vulnerable if the watering point was not maintained and controlled or the range became overgrazed. With the sedentarization, it would also become important to insure that the herders' food and medical needs are met. There was concern also whether the SODESP system was economically sound and socially acceptable. Thus, the project as established in the Grant Agreement provided for establishing a resource management program, a research and monitoring program, and revolving credit funds for the purchase of food grains and medicines.

SODESP management states that it was in full agreement with the objectives of the project set forth in the Grant Agreement. However, action to date on the resource management and research and monitoring components have been minimal. Neither of the two project components are even mentioned in the 1980-81 annual report. In the original briefing of the team, SODESP management made it clear that it had not felt either of these activities were of high priority. The team was told that the herders know range management best, and no bureaucrats will teach them anything. Furthermore, any research activities should be carried out by other GOS entities.

Given the foregoing, the team concludes that, as a minimum, there is a substantial difference in the priorities given to the different components of the project by USAID and SODESP. SODESP's priority is to extend its stratified livestock production system throughout the sylvo-pastoral region, arguing that sufficient studies have been made and experience gained from the activities in Zone 1 to insure that the system is economically viable, sustainable in terms of water and pasture availability, and socially acceptable to the herders. Any activities not directly supporting the first priority are of minimal interest. For AID, on the other hand, it is clear that the development of a resource management plan was considered at the outset of equal priority with the extension of the livestock production program. Furthermore, the research and monitoring was to have been instituted quickly so as to provide baseline data for subsequent evaluation of the program plus a continuous flow of data that could be used in adjusting the program as needed. In sum, the SODESP concern is expansion of livestock and meat production; AID's concerns are the impact of the project on the resource base and on the herders and their families. Based on its findings, which are discussed in subsequent chapters and in the technical annexes, the team concludes that AID's concerns are justified and that AID's continued participation in the project should be conditioned upon a higher priority being given to actions addressing AID's concerns.

### III. IMPLEMENTATION OF PROJECT COMPONENTS

#### A. Livestock Production and Productivity

##### 1. Objectives

The objectives of this project component, as set forth in Annex I of the Grant Agreement, are:

- a. creation of a zone center and four production centers equipped with facilities for watering and handling livestock;
- b. development of a marketing system for livestock and small ruminants. Approximately 4,000 cattle and 1,250 sheep units will be marketed and 2,250 calves and 3,700 rams will pass through the growing and fattening centers;
- c. improvement in livestock production within the Project zone through increased fertility, increased birth rate, improved milk production, increased calf and lamb birth weights, and decreased mortality of calves and lambs and a shortening of reproductive intervals. Approximately 12,500 cattle units and an equal number of sheep will be improved during the life of the project.

##### 2. Progress to Date

A zone headquarters and centers at the four permanent well sites have been constructed and equipped. The four well sites were completely refurbished and their operation taken over by SODESP personnel. Operations began in the Zone at all four centers in November-December 1980. the principal activity being meetings with herders to explain the SODESP encadrement program. Registration of herders into the program was initiated during the first quarter of 1981. This was a little over two years after the signing of the Grant Agreement. Delays in construction were primarily responsible for the delay.

As of June 30, 1982, 7,358 units of production (cow-calf) were enrolled. This was 74 % of SODESP's target; however, an ambitious target had been deliberately established to make up for the delay

in initiating operations. In fact, the June 1982 enrollment represents 59 percent of that planned for the full five years of the project. Thus, even if the project were to end as its initially planned termination date (December 1983), it is quite possible that project targets for this component could be met.

The commercialization of cattle from Zone 3 is proceeding more slowly. As of June 30, 1982, only 732 head of cattle had been purchased from herders, or 17 percent of the target. However, purchasing has had to be suspended for two months because the scales provided by an American supplier were defective.

Information on the quality improvements in livestock mentioned in l.c. above is available only in anecdotal form or in unanalyzed raw data. SODESP is in the process of contracting for the computerization of the data so that it can be analyzed.

Statistics on the small ruminant program and more information on this component are provided in Annex C. The most significant conclusions and recommendations are included in Chapter V below.

## B. Range and Water Resource Management

### Background:

The USAID/GOS agreement for the SODESP Livestock Project commits \$2.5 million in USG funds for the purpose of developing a comprehensive resource management plan. Within the context of the project, Resource Management refers to the rangeland, water and forest resources of Zone 3 of the SODESP theatre of operations.

### Objectives:

The project description identified three sub-activities to be financed within the framework of the resource management proposal. These are listed below as they have been described in USAID documentation.

1. Development of a cost effective and implementable plan for management of the range and water resources;

2. As part of the strategy for range and water management, a program for reforestation in the worst affected areas around the deep-bore wells, and for promoting tree planting by the zone inhabitants in and around their villages;

3. Research and evaluation activities to monitor the impact of SODESP's operations -- and to collect social, economic and agro-pedological and other data necessary to formulate a sound management plan.

#### Implementation Strategy - Range Management

The USAID strategy foresees the development of a range management plan taking into account the information obtained from short-term and long term studies in Zone 3. From this information the carrying capacity of the rangelands could be calculated and these in turn compared to the actual stocking rates. Training and technical assistance were to be broadly used in the development of this management plan, and included training in the United States and technical assistance in Senegal to help to conduct the field studies.

The SODESP implementation strategy is predicated on an assumption that annual forage production on the rangelands is a function of the quantity and the distribution of the summer rains. In this context there are good years and bad years (true) and nothing can be done to change the range condition (false). The SODESP strategy further relies upon the feeding of peanut cake and a mineral supplement at the end of each dry season as natural forage reserves disappear. The SODESP has not seemed to see the need for special rangeland studies nor for a management plan.

There have been no changes in the basic implementation strategy by either party to the agreement since the signing of the accord.

#### Implementation Actions taken to date:

The basic infrastructure necessary to conduct operations in Zone 3 is in place. The project staff (local-hire) has been recruited and are living in the area. A good start has been made

on enrolling herders in the program.

There has been no progress toward reaching the three range management outputs which are:

- a) trained cadre in range management and forage production;
- b) a comprehensive program of range management and forage utilization;
- c) development of a course for training project technicians in range management and forage evaluation.

The technical assistance component has not developed as planned, and there is currently no range management expert working within the framework of the project.

Given the gap which exists between the USAID's implementation strategy and that of SODESP the outputs listed were probably unrealistic. Even so, should the project life be extended, a great deal may still be accomplished, but only if this difference in perception can be accommodated. A list of recommendations to this end, as well as additional details of the other aspects of the sub-activity are to be found in Annex D of this evaluation report.

### Stockwater

The water resources of the area and their relationship to the projects objectives are deserving of special mention. Project operations are centered around four deep wells which have been rehabilitated and which are being operated by the SODESP. This reliable source of stockwater is a powerful inducement for herders to gravitate towards Zone 3.

It would be possible to coerce herders to become participants in the beef production program using water as leverage, but fortunately this has not been done. The ever-increasing numbers of herders who are reliant on the water are taxing the existing facilities to the extreme, and for that reason the report (Annex D) contains a more detailed analysis of the problem as well as some recommended actions.

Consideration must be given to the amelioration of the water resources of the zone if the short-term and the long-term objectives are to be attained.

### Reforestation

The objectives of the USAID/SODESP forestry activity for this project were compatible. In brief they aim at protection of the soils from erosion, improving the well-being of the population by providing them with sources of firewood, construction materials, income from gum-arabic plantings as well as shade and aerial forage for the grazing animals. The project provides for the purchase of tree planting equipment, nursery supplies, short-term technical assistance and training.

The strategies developed by USAID and SODESP were likewise in equilibrium. USAID gave priority to the planting of approximately 300 hectares of mixed indigenous species around the well heads. SODESP's priority (and USAID's also) was to encourage village and campement reforestation.

### Accomplishments

About 400 hectares of plantings around two well sites have been completed and an estimated 45 hectares of campement plantations of gum-arabic have been done. A credit program with concessional terms has been developed for herders wishing to continue a reforestation program.

Unfortunately the program has been less effective than envisaged because (a) the species planted has been limited to gum-arabic which has little utility for construction wood or for livestock, (b) the Forest Service intends to control the use of the reforested areas around the well heads in order to exploit these plantings commercially, and (c) the GOS has not taken advantage of the funds allocated for long term training in the United States nor of the technical assistance.

### C. Herder Support

#### Objectives

The Project Agreement, responding to the concerns of the Project Paper about effects of the SODESP project on herder quality of life, stipulates in Article III that there be a program to "improve the quality of life for herder families through a cooperative credit program for supply of critical foodstuffs, medical supplies, and other necessities of daily life".

Annex II states that there will be "the creation of two small revolving credit funds for the purchase of foodgrains and medicines". A "social workshop" to address the question of herder quality of life was also to be one of the project outputs. This workshop (atelier) already existed in the SODESP organizational structure and is presently operating in Zone 3.

#### Implementation

Implementation strategy for the funds was not prescribed in the Project Agreement, the assumption being that the SODESP organization would take care of necessary implementation steps at the appropriate time.

To date only the medical fund is operational, and that in minimal forum. Medical supplies are stored at Zone 3 headquarters (Mbar Toubab center) but herders need prescriptions to buy. These are obtained from the nurse when he visits well centers, but visits to any one center can be infrequent and irregular.

There is no herder participation in the management of the medical store, and no non-prescription drugs are available on demand. The supply of simple medicines intended in the Project Paper and the Project Agreement is not available in Zone 3.

The store of critical foodstuffs is presently being constituted, according to SODESP officials. A delivery of 100 metric tons of millet to Zone 3 is expected within days, to be followed by another 100 tons next year. All four centers are to receive a portion

of this supply for sale at cost to needy herders. Payment is to be asked in the form of livestock evaluated at usual SODESP prices.

#### Future

What is required in terms of medical supply is the construction of stocks of simple, non-prescription drugs in all four centers. These should be managed by herders chosen by the local community and supplies could include aspirin, nivaquine, eye drops, and anti-diarrheal products. A simple, herder-style hut would be sufficient as store-house. Herders should be encouraged to organize themselves and manage these medical supply activities with a minimal amount of supervision from SODESP personnel.

Food supply activities should also be placed in the hands of herder cooperatives as soon as feasible. Payment should not be limited to exchange for animals as presently envisaged.

#### D. Socio-economic Research and Monitoring

##### Objectives

Both the Project Paper and the Project Agreement stress the need for a research and monitoring unit to study the effects of SODESP activities on herder quality of life. The Project Agreement, in Article II, Section 2.1 - Definition of Project, lists as one of the objectives the development of a "comprehensive data base for future project design and improved resource management through a research and monitoring unit".

In Article IV, Special Covenants and Conditions, the Project Agreement provides that a "continual evaluation program will be conducted by the research and monitoring group assigned to the Project and an annual report will be prepared". This same monitoring unit was expected to participate in the three-month evaluation at the end of the third year of project activity.

Section ID of the Project Agreement Annex elaborates on the role of the research and monitoring unit by saying that "quantitative and qualitative information will be gathered on how SODESP programs

affect the people within the zone".

#### Implementation

American technical assistance was to be used to constitute the research and monitoring unit. The Project Agreement Annex (Project Inputs) states that the technical assistants will "provide studies to aid in Project evaluation and provide a research and monitoring role".

To date this research unit has never functioned. The American sociologist supplied to SODESP by the technical assistance contractor was dismissed before baseline or monitoring data collection could begin systematically. The Senegalese replacement has not performed any research role as head of the social assistance division of Zone 3.

SODESP management has preferred not to engage in any systematic socio-economic research or monitoring activity in Zone 3. USAID is thus totally without information on the effects of SODESP activities on the herders of the zone.

#### Future

The long-term research and monitoring program proposed by Dr. John Sutter, former head of the SODESP Studies and Programs Directorate, should be implemented as soon as possible in Zone 3 (See Annex E), if USAID is to evaluate socio-economic effects of the SODESP production system. The positions of Director of Division of Studies and Programs and Director of Division of Training and Social Action should be filled by personnel supplied by the American contractor firm. Awaiting this, short-term experts should refine the research program to be carried out.

## E. Training and Extension

### Objectives

Administrative personnel and extension agents of SODESP Zone 3 were to receive training at all levels, both in the United States and in Senegal. The benefits of this new knowledge were to be passed on to the herders, for, according to the Project Agreement, "subsequent training of the herders is the principal goal of this training".

According to the Project Agreement funds were provided for "U.S. training of approximately fourteen SODESP technicians and local training for 66 additional cadres". The objective of this "non-degree academic and practical training", in the words of the Project Paper, was to assist the new SODESP Zone 3 staff to effectively operate the zone.

Training extension to herders was to be in the form of "short demonstration courses in livestock production, range management, and reforestation", in the words of the Project Agreement. These courses were to be "reinforced by field visitations by extension personnel". The Project Paper also refers to transportation of herders from Zone 3 to a training center in Zone 1

### Implementation

The only SODESP officer to benefit from U.S. training to date has been the Director General of SODESP, Dr. Ibrahima Sory Guèye. He has made 3 short visits to the United States under PIO/P funding. These were: an observational tour of managed grazing reserves organized by USDA for high Senegalese officials in May 1979; participation in a workshop on Sahel livestock projects held at Harper's Ferry, Virginia, in September 1979; and interviews with potential contracting firms in the context of technical assistance to the SODESP Zone 3 Project in Washington, D.C., May, 1980.

Zone 3 staff took up functions in the spring and summer, 1981, and were given on-the-job training, with observational tours of on-going operations in Zone 1 (Lalgar) and at Dolly. Herders have not received any group training sessions in the topics indicated

in the Project Agreement or Project Paper. On an individual basis, herders have received, when joining the SODESP program, instruction in peanut cake and mineral salt feeding from the extension agents attached to each center. These field visits by agents also have attempted to interest individual herders in planting gum arabic trees. A few have done so and have received, individually, training in their planting and care.

#### Future

Much more can be done in the domain of training and extension in the context of this project. Personnel of Zone 3 are bright and well-educated, but short-term training in Senegal or the United States in management principles and techniques would be very useful. Many of the problems of contact with and organization of herders in the zone could be reduced if Zone 3 personnel were well trained in areas other than veterinary science.

Herders should receive the projected "short demonstration courses" in livestock production, range management, and reforestation

#### IV. PROJECT ADMINISTRATION

##### A. Project Direction (SODESP) and Project Monitoring (USAID)

The Director General of SODESP, under the general guidance of SODESP's Board of Directors (Conseil d'Administration), is responsible for the implementation of the project. The Director General has created a Management Board (Conseil de Direction) to provide him with advice on technical or management matters upon his request. The latter board includes representatives of the principal contributors to the SODESP program (FED, USAID and FAC - a french aid agency) as well as chiefs of SODESP directorates (two of whom are expatriates financed by FAC and FEF respectively).

The overriding priority for SODESP management is a rapid expansion of the SODESP stratification program in Zones 1 and 3 and its extension to the other zones of the Ferlo. Other components of the project have received minimal management attention and priority. This has contributed to frictions between SODESP, USAID and the Contractor. Technical assistance personnel recruited by Chemonics under its host country contract have been assigned by SODESP to operating positions and given responsibilities that go beyond that included in their contracts. The duties specified in their contracts were those included in the Request for Proposals (RFP) and the Chemonics contract and reflected the priorities established in the Project Paper and the Grant Agreement. Under such a situation, the technical assistant can end up in an assignment for which he or she is not totally suited and run the risk of being fired or at least not receiving favorable recommendations for their period of service. In addition, they become frustrated from not being able to carry out the tasks for which they were hired. Of the four Chemonics team members, one was fired and three resigned.

The spirit of the Grant Agreement, and the Project Paper on which it is based, has not been followed with regard to the priority given to project components other than livestock production. In addition, certain specific provisions of the Grant Agreement have been ignored or responded to only partially:

1. Section 4.1. of the agreement provides for a continuous evaluation program conducted by the research and monitoring group and the preparation of an annual report. It also calls for an in depth evaluation of three months duration by a multi-disciplinary team working with the research and monitoring group. No research and monitoring group, as such, was ever established; no annual evaluation report has been prepared. SODESP prepares annual reports (July-June fiscal year), but these are related to SODESP operations in general and not specifically to the USAID project. In fact, some of the project components were not even mentioned in the 1980-81 report; the 1981-82 report is not yet out. The current evaluation has neither the terms of reference nor the time frame to meet the requirements of the in-depth evaluation cited above.
2. Section 4.2. a) Calls for the GOS to provide personnel and financing adequate to assure the continuation of the project at the level achieved when AID financing terminates. No plan has been worked out for doing this; the team found no evidence that this provision had even been discussed.
3. Section 4.2. b) provides that the GOS shall review annually with AID its pricing policy for livestock production inputs for the project and for livestock and red meat on the local market. The USAID project officer said that he was aware of the prices being utilized for the project's inputs and for cattle purchases

from the encadré herders, but there had been no consultation with USAID when these were established. The SODESP management said that the prices were provided in the annual budget document that the USAID Director signed off; thus, USAID was given the opportunity to provide its input before decisions were made. However, the document provided by the SODESP accountant to illustrate this had no pricing information in it. In any case, without the information that was supposed to be generated by the research and monitoring unit, it is difficult to see how USAID would be in a position to make much input into the GOS pricing decisions.

4. Section 4.2. c) Provides that the GOS shall ensure that SODESP restrict the numbers of animals around each water point and amount of water pumped to the levels set forth in the Project Paper. This presumably refers to the table on page 10 of Annex K. There is no evidence that this provision was ever discussed, although SODESP is concerned about control of the number of animals watering at each point. Its proposal is to charge for the water, and to charge a higher price to herders not part of the SODESP program. The GOS has this matter under discussion, but it is unlikely that any decision will be made before the election scheduled for February 1983. Based on the team's conversations with herders, a discriminatory price would seem reasonable for those herders not normally in the zone, but a discriminatory price based on enrollment in the SODESP program implies a level of coercion which does not seem appropriate. The SODESP program should be able to sell itself on its own merits.

e. Related to Section 4.2. b) (Item 2 above), provision III of Annex 1 provides that AID would defray operational expenses, salaries of lower echelon employees, and indemnities for the

entire staff over the first 18 months of the project. Thereafter, the GOS was to provide the funding for the operational costs of SODESP as well as salaries and indemnities for upper echelon employees. These costs are still being paid by USAID. Apparently, a decision was taken to finance operating costs in a number of AID projects as part of a special effort by donors to provide budgetary assistance to the GOS. A Project Implementation Letter should have been prepared to indicate that the specific section of the Grant Agreement Annex was being modified by the overall decision and to state for what time period.

SODESP has a very elaborate system of financial management, with a tremendous amount of information computerized. Unfortunately, the computer printouts are not available on a timely basis. Much of what is printed could better be analyzed by computer programs and printed out in more useful and less bulky form. Donor requirements are being met by hand tabulated and typed reports rather than machine printouts even though the information eventually printed is the same as that provided by hand. The team suggests that USAID, in concert with FED, attempt to ease the workload on the SODESP financial staff. This would appear feasible without loss of needed information.

SODESP decentralized financial record keeping to the zones as of July 1982. This may help zone operations; it increases the need for periodic financial oversight visits to the zone.

#### B. Project Implementation Planning

There is no project implementation plan worthy of the name in the Project Paper or the Grant Agreement. Section V of the Project Paper is entitled Implementation Plan, but part of it is missing from the document. The part existing is a listing of some of the inputs and a description of some of the relationships anticipated between technical assistance personnel, SODESP staff and herders.

Annex P of the Project Paper (Implementation Plan for the Project) focuses on the procurement and waivers needed. It does provide a listing of critical performance indicators by anticipated date of accomplishment, but there is no network indicating the inter-relationship of the different actions. This may explain in part why a number of the proposed dates were unrealistic.

Annex I of the Grant Agreement lists the project components and what they are supposed to achieve and lists what inputs are to be provided. Here, also no attempt is made to integrate all of these into a network, using PERT or critical path techniques, so that the interrelationship of activities and a realistic timetable could be developed. Such a network could also indicate that too many actions were being expected from a small staff.

During implementation of the project, there was also minimal implementation planning. SODESP established annual targets for encadrement, animal purchases and reforestation in the zone and a listing of other activities that would require funding. These were provided to USAID as part of budget documentation. However, no integrated work plan was prepared. No plans have been presented by SODESP to USAID/Senegal for range management or research and monitoring.

### C. Project Finances

The project budget by project component, as set forth in Annex I of the Grant Agreement, was as follows:

	US\$ (000)	%
Livestock Production	4,846	61
Range & Resource Management	1,546	19
Reforestation	972	12
Research	556	7
Herder Support	80	1
	<hr/>	<hr/>
	8,000	100

The following table allocates the budget by inputs and provides obligation and commitment data as of September 30, 1982.

	(US \$ 000)			
	Original Budget <u>1/</u>	As % of Total	Obligat- ed <u>2/</u>	Committed <u>3/</u>
Technical Assistance	-2,025	25	1,200	450
Equipment	1,413	18	1,311	783
Training	622	8	219	19
Revolving Funds	1,954	24	1,454	746
Construction	986	12	1,600	1,391
Operating Costs	1,000	13	1,246	1,004
	<u>8,000</u>	<u>100</u>	<u>7,030</u>	<u>4,393</u>

It will be noted from the foregoing table that there has been a 40% overrun on construction, and commitments for operating costs have already reached the budgeted level for the life of the project. The low level of commitments of funds for the revolving funds reflects the delay in initiating operations in the Zone. This delay affected the utilization of technical assistance funds, but the latter also reflects the disintegration of the technical assistance team and the suspension of recruitment pending the outcome of the evaluation. The lack of use of training funds is particularly disappointing.

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1/ Attached to Annex I of Grant Agreement, adjusted for errors in table.

2/ Only the total was officially obligated. The distribution by input is from the table attached to the Amendment n° 5 of the Grant Agreement, except that Technical Assistance has been increased to the amount of the contract signed with Chemonics, even though only \$450,000 has been issued through Letter of Commitment.

3/ Calculated from worksheets of the Assistant Project Officer.

V. MAJOR CONCLUSIONS

A. Current Status of Project

1. The livestock production and productivity component is in place and functioning well. The encadrement program is running ahead of schedule, in spite of difficulties with a construction contractor which caused delays in the initiation of operations in the Zone.
2. No significant action has been taken to develop a resource management plan for the Zone, as called for in the Grant Agreement, covering water, range and forestry resources. Some reforestation has been carried out, but it is marginally related to the reforestation goals set forth in Annex I of the Grant Agreement. The lack of effective technical assistance in this area has been a special problem.
3. The research and monitoring unit called for in the Grant Agreement has not been put in place; the technical assistance personnel recruited for the unit were placed in operating positions with duties different from and in addition to those in their contracts. They were unable to carry out the research and monitoring duties for which they were hired and they resigned (one was dismissed).
4. Although a research and monitoring unit as apparently envisioned by the project AID participants in the drafting of the project, SODEP does have a Directorate of Studies and Programming with a charter to carry out studies and collect and analyze statistical data. Since the departure of the technical assistant assigned as director of the office, the post has remained vacant. A sociological study was carried out in Zone 4, but none has yet been arranged for Zone 3.

SODESP keeps elaborate records on the livestock registered in its program, but little use of the data is possible until they are computerized. SODESP is in the process of contracting for computerization with FAC funding.

5. A cooperative credit program for supply of critical food stuffs, medical supplies and other necessities of daily life, as called for in the Grant Agreement, has not been accomplished. However, there has been some improvement in the availability of health services, and some medical supplies are available for sale in the centers of the Zone.

6. It seems clear from the Project Paper and related AID documentation that AID was prepared to assist the GOS expand the stratification system of livestock production into Zone 3 on the condition that programs were put in place or studies undertaken that could demonstrate clearly that the system was sustainable over the long term. The capacity of the range and water resources and the impact of the program on the herders, as well as the economic viability of the program, were of concern. The team shares those concerns. Furthermore, it appears that some significant modifications in the system are likely to be needed if the program is expanded into additional zones.

7. The team feels that it is especially important to have more data on the changes taking place as the herders become sedentarized and to make it available to the SODESP field personnel. Many herders are enrolling in the SODESP program, but there are still many who are reticent about joining. Even those who join the program only enroll part of their herd. There are a number of reasons why they might wish to enroll

only a part of their herds. Nevertheless, based on conversations with a large number of herders in varying circumstances during our visit to the Ferlo, the team feels that SODESP should take seriously some of the concerns expressed by the herders:

- a. They would like to participate more effectively in the management of the watering point and in SODESP actions which directly affect their well-being.
  - b. They feel that SODESP has not fulfilled all the promises made when it was recruiting herders into the program, particularly with regard to personal health care, availability of basic food grains, and in some cases health care for their animals.
  - c. They complain about some of the more radical features of the SODESP program, such as the change in herd structure and the marketing of the herders' cattle. An increase in the amount of time devoted to explaining the value of the program to the herders seems justified. More socio-economic studies of the herders' situation could help develop improved extension techniques.
  - d. Some felt that SODESP personnel treated them as adversaries. The introduction to the 1980-81 annual report is not helpful in inspiring the right attitude among the field staff.
  - e. Some said that they were not yet convinced that the feeding program and livestock marketing arrangements were economically beneficial to them.
8. Both herders and SODESP personnel in the Zone said that they felt that a degradation of the range was taking place. The range management specialist on the team felt that this was borne out by research results obtained from ISRA, although

the researchers may have a different view. The team feels that more research, experimentation and action programs are needed to try to reverse the trends. The team was also concerned about the management of the water resources. Increased knowledge about the structure of the herd and the movements of the herders needs to be known to ensure that any proposal for control of water output is feasible. Also greater effort is needed to get herder cooperation and understanding.

B. Future of the Project

1. Few, if any, of the objectives of the project can be attained by the scheduled project completion date of December 1983. Nevertheless, the project is bringing tangible benefits to the herders of the zone, particularly in ensuring the functioning of the water points. Furthermore, the cost of the operation in the zone is heavily subsidized by AID. Therefore, it is important that the parties start planning for the GOS to pick up the costs when the AID project terminates - December 1983 unless extended.

2. There are two compelling reasons why the project should be extended and completed largely as originally designed:

a. The SODESP operation is unique in the Sahel and the project provides an excellent opportunity to test the "stratification strategy" of livestock production.

b. The resources management component of the project could provide an opportunity to test and demonstrate resource management techniques which, if successful, could be very beneficial in Senegal and throughout the Sahel. The memorandum to the Assistant Administrator of AID for Africa requesting approval

of the project states about the range management component: "This component is perhaps the most important one of the project since, without a system for balancing numbers of animals with available amounts of water and forage, the gains in productivity attained through the first component (lives-tock producing and marketing) would have scant chance of being sustainable over the long run".

3. However, given project progress to date in the range management and research and monitoring components, there would appear to be little justification for substantially extending the December 1983 project termination date unless immediate action is taken to activate these components in a serious manner.

4. The foregoing is feasible only if there is a significant change in the priorities of SODESP management or the responsibility for the AID-funded range management and research and monitoring activities are assigned to some other GOS entity(ies)

5. Even if agreement is reached to carry out all of the main components of the project, and to extend the project life accordingly, a revised work program should be developed and some of the minor activities scaled back or eliminated. Technical assistance funds should be used to bring in experts to help prepare the program.

6. This project had, and probably still has, the potential for developing information and testing concepts that could have extremely beneficial long term impact on Senegal's livestock region and its inhabitants. If the GOS does not share the team's vision of the potential of the other components of

the project, then the project should be terminated on schedule or perhaps June 84 to tie into the GOS budget cycle. However, USAID should ensure that the signatories of the Grant Agreement focus on the issues raised since they have ramifications well beyond the operations of SODESP. Policy levels of the GOS should be aware of the opportunities being foreclosed by not carrying out all the major elements of the project.

VI. RECOMMENDATIONS

1. USAID/Senegal discuss this report with Ministry of Rural Development and other GOS officials, as well as SODESP, to determine whether there is:

- a. a willingness to put in place a research and monitoring program which could over time provide a proper evaluation of the SODESP stratification program and its impact on the herders, herds, and resource base of the Zone; and
- b. an interest in developing and testing a range management plan in the Zone.

2. If there is a positive response to 1 above, USAID should concur if SODESP requests the Contractor to recruit to fill the positions of Director of Studies and Programs and Training and Social Action in the Dakar headquarters of SODESP. There should be agreement that the incumbents would work across the board, not just in relation to the programs in Zone 3 specified in the Grant Agreement. However, in return, the Director of SODESP would agree to submit quarterly work plans for the incumbents to USAID for review and discussion as appropriate. It should also be agreed that one of the duties of the Director of Studies and Program would be to prepare for SODESP and USAID within 120 days of arrival in Senegal a work plan for carrying out any socio-economic studies needed in Zone 3 and that such studies would be inscribed in the 1983-84 work plan program and budget.

3. If there is a positive response to 1 above, it is recommended that SODESP request the Contractor to provide a short term team to review the data available and prepare the scope of work for undertaking a thorough economic study of the

stratification program, including the feasibility of some modifications to the program that might make it more economic or permit it to have a more positive impact on the Ferlo and its occupants. So e additional information is provided in Annex G.

4. If there is a positive response to 1 above, it is recommended that SODESP request the Contractor to provide an expert for six weeks to two months to do an in depth study of current GOS actions in relation to resource management in the Ferlo and recommend a pr.gram, if appropriate, for responding to the terms of the Grant Agreement. See Annex F for further details.

5. If the foregoing are carried out in a cooperative manner, and action taken to implement recommendations that may flow from the short-term studies, it is recommended that USAID, at the appropriate time, request AID/Washington to approve a further extension of the project (bevond the year that probably will be necessary to permit recruitment of the technical assistance personnel) and allocate to the project the balance of the funds originally programmed (approximately \$1 million).

## SCHEDULE FOR SODESP LIVESTOCK PROJECT EVALUATION TEAM.

Nov/Dec	
Nov 17	Balance of team arrives from U.S. at 04:00 14:30 - 18:00 USAID meetings W/Director, Agriculture Dev. Officer, Project Leader, others as required.
18	Review project documents. Finalize work plan.
19	With Director SODESP and his staff for full briefing of activities.
20	Visit SODESP "Embouche" operation near Dakar
21	Sunday
22-24	Review project literature and meet with various GOS agencies, FED, FAC, etc.
25	American Holiday
26	Depart Dakar for M'Bar Toubab, Zone III headquarters PM - Briefing by staff
27	Visit Zone 3 centers, interview staff and herders (participants and non-participants in SODESP program) Visit forestry projects.

## SCHEDULE FOR SODESP LIVESTOCK PROJECT EVALUATION TEAM

Nov/Dec	
28	Travel from Zone III to Zone I (Labgar) via forestry projects at Mbidi & Wendou Thingoli watering points (Zone 2). Interview herders not associated with SODESP program.
29	AM - Briefing by Zone I staff PM - Visit watering point, herds and herders, etc.
30	AM - Travel to Doli Ranch, via Livestock Research Center at Dara PM - Briefings, visit ranch, see livestock from Zone III
Dec 1	Return Dakar
2-7	Team completes interviews and works on evaluation report; completes 1st typed draft by COB 7 Dec.
7	Team debriefs USAID
8	Team debriefs SODESP and Contractor (Chemonics)
9-11	Team prepares and submits final report in English and an executive summary in French.

ORGANIZATIONS AND INDIVIDUALS CONTACTED

I. SOCIETE DE DEVELOPPEMENT DE L'ELEVAGE DANS LA ZONE SYLVO-PASTORALE (SODESP).

A. Headquarters, Dakar

Ibrahima GUEYE, Director General Fields Operations  
André LECLERCQ, Deputy Director of Marketing  
Yves LE GRAND, Director of Agent Comptable Principal  
Ibrahima YADE, Principal Accountant  
Abdoulaye GUEYE, Accountant for USAID Project

B. Feed Lot and Holding Pens, Keur Massar

Demba CISSOKO, Manager

C. Zone 3 (Mbar Toubab)

Dr. Omar Samuel GOMEZ, Zone Director  
Dr. Malick FAYE, Chief of the Naissance Division  
Dr. Algar THIAM, Chief of the Production Division  
Bourama FOFANE, Chief of the Mechanical and Infrastructure Division  
Abdoulaye SALL, Chief of the Assistance and Social Affairs Division  
(on vacation, interviewed subsequently in Dakar)  
Alassane CAMARA, Chief of the Center of Mbar Toubab  
Alioune THIAM, Chief of the Center of Niassanté  
Idrissa KAMA, Chief of the Center of Boki Divé  
Abdou GAYE MBAYE, Chief of the Center of Kothiédié

A number of herders, individually and in groups.

D. Zone 2

De Toubab Inna GIGUE, German Reforestation Project at Wendou Thingo  
Mamadou DIONE, Gum Arabic Reforestation Project at Mbidí  
Malamy DIATTA, Gum Arabic Reforestation Project at Mbidí  
Two groups of herders, one at Wendou Thingoli, and one at Mbidí.

E. Zone 1 (Labgar)

Dr. Aly SARR, Director of Zone

Dr. Papa MIME, Chief of the Naissage Division

Dr. Biram NDONG, Chief of the Production Division

Cheikh NIANG, Chief of the Machinery and Infrastructure Division

Thierno NDAO NDIAYE, Assistant Chief of the Center of Labgar

Ibrahima NIANG, Chief of the Center of Namarel

Madio KANDJI, Assistant Chief of the Center of Namarel

II. USAID Mission, Dakar

David SHEAR, Director (in Washington, D.C.)

Carole TYSON, Deputy Director

Samuel REA, Program Officer

Lance JEPSON, Acting Chief, Agriculture Office

Larry HARMS, SODESP Project Manager

Mamadou DIALLO, Evaluation Officer

III. CHEMONICS

Thurston TEELE, Director, International Consulting Division

John SUTTER, Ex-Chief of Party, Chemonics Team

Grace HEMMINGS, Ex-Sociologist, Chemonics Team

IV. Direction de la Santé et des Productions Animales (DSPA)

Théophile D'ERNEVILLE, Director

Samba SOW, President of the National Union of Herder Cooperatives

A delegation of the heads of the regional herder cooperatives from Louga, Sine-Saloum, Sédégou Oriental, Casamance.

V. Institut Sénégalais des Recherches Agricoles (ISRA)

Papa THIONGANE, Director General of ISRA and President, Conseil d'Administration of SODESP

Jean VALENZA, Range Expert in ISRA

VI. European Economic Community Delegation

Robert DELLERE, SODESP (Zone 1) Project Manager

VII. Mission Française de Coopération

Philippe FOURGEAUD, Conseiller aux Investissements

EVALUATION OF THE USAID FINANCED  
SODESP PROJECT

TECHNICAL REPORT BY AH. LAMINE NDIAYE  
PROFESSOR OF ANIMAL SCIENCE

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Project n°. 685-0224 - Zone III - MBAR TOUBAB

I - PROJECT BACKGROUND

Considerable cattle loss wrought by the 1972-1973 drought caused annual meat consumption in Senega to plummet from 11.5 Kg per person to 13 Kg.

It must be noted however, that even before the drought, when consumption levels were considered acceptable, one fourth of the meat consumed was imported at a rate of 22,000 tons per year.

Overall, from 1970 to 1980, consumption rates for meat in Senegal, as well as meat imports, have been reduced by 40 percent. The decrease in imports has been due to:

- on the one hand, the reduction of available cattle stocks in the producer countries (Mali, Mauritania);
- on the other by the fact that better prices have been offered by other meat importing countries such as Lybia and Nigeria.

This political situation as well as the food self-sufficiency policy defined in the Lagos Action Plan, justify the GOS'efforts to develop livestock production.

The sectoral objective of the Vth Quadriennial Economic and Social Development Plan (1981-1985) is to bring annual meat consumption to the

level of 15.7 Kg per person.

In the strategy adopted to reach these objectives the Agency for the Development of Livestock in the Sylvo-pastoral zone, SODESP has an important role. SODESP is a state owned commercial industry created by Decree N°. 75-61, dated June 2, 1975 to implement the project in the sylvo-pastoral zone.

It is within the context of this program, that the United States of America, through the Agency for International Development (AID) has signed with the Republic of Senegal (GOS) the agreement on the "SODESP Livestock Project 685-0224".

## II - PROJECT DESCRIPTION

The project's objective is to help Senegal to develop the sylvo-pastoral zone through a program designed to:

- a) - increase livestock productivity through financing of stratification activities, extension, production and marketing operations by SODESP in zone 3 of the sylvo-pastoral zone within the framework of an integrated livestock production system (cattle and small ruminants);
- b) - to develop a cost effective, socially acceptable and implementable plan for the management of range, water and forestry resources;
- c) - to build infrastructures required by the project;
- d) - to improve herders' quality of life through a cooperative credit program for supplying foodstuffs, medical supplies and other necessities;
- e) - to collect the maximum amount of baseline data in order to extend

the project and to improve resource management through the creation of a research and monitoring unit.

AID agreed to provide financing in the amount of 8 million US Dollars to implement the project. Funds are disbursed, as they become available, and on the basis of project evaluations and proposed workplans approved by AID. Further disbursements will also depend on counterpart funding from the GOS for project implementation. The project will last five years and funds were allocated as of December 1978.

### III - OBJECTIVES OF THIS CONSULTATION

This evaluation consultancy is part of the project implementation, and the terms of reference are as follows:

- a) - to review all documentations, activities and plans of SODESP;
- b) - to review AID documentation on the project, specifically, the Project Paper, the Project Agreement and all project reports. To evaluate the continued appropriateness of project objectives;
- c) - to evaluate differences between points (a) and (b) above, their importance and relevance to project objectives; propose modifications if required to alleviate related problems;
- d) - to evaluate project inputs, their timeliness and their contribution to meet project objectives;
- e) - to review project activities and evaluate progress towards objectives;
- f) - to review the financial status of the project and the relationship of the financial status to the rate of implementation and to the

project assistance completion date;

- g) - to plan and rebudget the remaining years of the project, taking into account projected cash flows.

The evaluation team comprised:

James L. Roush, Economist - Team Leader

Leroy H. Rasmussen - Range Management Expert

Philip W. Boyle - Sociologist/Anthropologist

Ahmadou Lamine NDiaye - Livestock and Veterinary Specialist.

#### IV - CONTRIBUTION TO THE OVERALL REPORT

The task was accomplished as a team but it had been agreed at the start, that each member of the team would write a technical report which would be attached as an annex to the general report.

This is why this report will consider in particular the livestock production aspect before giving a point of view on other project components.

##### A. ANIMAL PRODUCTION

This project component fits within the framework of the SODESP strategy of stratifying beef cattle production as well as ovine production.

##### 1. OUTLINE OF BEEF CATTLE PRODUCTION SYSTEM

The beef cattle production stratification, comprises three stages for the production of meat they are:

- "naissance" - Cow-calf units

- Réélevage - Growing out of young males
- Embouche - Terminal fattening of the animals.

a) - Naissage

The "naissage" or cow-calf operation is designed to produce calves; in this domain, SODESP's objectives are:

- to sign an assistance contract with participating herders. The herders agree to sell off all non productive animals and all male calves to replace them with animal traction oxen and breeders. The remainder of the herd is composed of females which are branded and registered in special ledgers in production and livestock centers of SODESP. SODESP's extension agents visit the herders' camps in order to insure compliance with the program and to give animal health services.

- to give participating herders an advance to purchase feed, medicines and equipment at cost. The amount of this advance is estimated on the number of reproductive females in the herd. SODESP guarantees to the herders, the buying price of calves and other animals in the herd.

The herder reimburses SODESP with sufficient male calves from their herds, the rest is sold to other buyers.

b) - Réélevage or Growing Out

At the end of each yearly campaign, the livestock bought by the project is sent to the growing out center, currently in Doli, through which system, the young calves grow out at the center. This program is for calves born into the program or for animals being reconverted.

c) - Fattening - Processing and Distribution

The livestock purchased by the project is either sent to the growing out

center to the fattening center in Keur Massar, or to the slaughterhouse. The animals processed in the growing out centers have the same fate. SODESP finances the processing and distribution of the livestock system.

2. IMPACT OF THE OPERATIONS

a) - Participating Bovine Production Units

Production activities in Zone 3, MBar Toubab started during FY'81 and involve three other centers, they are at:

- MBar Toubab
- Boki Dive
- Niassante
- Kothiédite

To June 30th, 1982, at the end of the second campaign for Zone 3, participation in the stratification project is as follows:

STATUS AT END OF 1982 CAMPAIGN

<u>Centers</u>	<u>: MBAR TOUBAB</u>	<u>: BOKI DIVE</u>	<u>: NIASSANTE</u>	<u>: KOTHIEDIE</u>	<u>: TOTAL</u>
Number of Participating BPU (Objectives)	: 2 500	: 3 000	: 2 500	: 2 000	: 10 000
B.P.U. Actually Participating	: 1 484	: 2 512	: 2 315,5	: 1 046,5	: 7 358
Achievement Rate Percent	: 59,4	: 83,7	: 92,6	: 52,3	: 73,6
Population of Participant Herders	: 82	: 97	: 90	: 54	: 323

At the end of the 1st semester of the current campaign, 1982-1983, the status is as follows:

STATUS AT THE END OF THE 1ST SEMESTER OF THE 82-83 CAMPAIGN

CENTERS	: MBAR TOUBAB	: BOKI DIVE	: NIASSANTE	: KOTHIEDIE	: TOTAL
Objectives BPU	: 3 000	: 5 000	: 4 000	: 3 000	: 15 000
Participating BPU	: 1 467	: 2 592,5	: 2 302,5	: 1 043,5	: 7 405,5
Achievement Rates Percent	: 48,9	: 51,8	: 57,6	: 34,8	: 49,4

Review of these two tables shows essentially:

- the increase in the objectives to attempt to catch on the delay of starting; please note the final objective that will progressively be reached, involves approximately 20,000 BPU and 5,000 centers;

- the slow increase in the number of participating BPU, between the end of the 1981-1982 campaign and the end of the first trimester 1982-1983 caused by the suspension in branding during the rainy season (July, August, September).

b) - Participating Ovine Production Units (OPU)

For the 1980-1981 campaign, the participation objectives involved 4,000 OPUs.

The following table demonstrates the results of this campaign in four centers of Zone 3.

CENTERS	MBAR TOUBAB	BOKI DIVE	NIASSANTE	KOTHIEDIE	TOTAL
Objectives -					
Participant OPU	1 000	1 000	1 000	1 000	1 000
OPU Actually Participating	582	1 011	90	104	1 787
Achievement Rate in percent	58,2	101,1	9,0	10,4	44,7

With the exception of Boki Dive, results are far behind from the objectives to be reached. This is due to several causes including:

- the fact that herders are adamant about having to pay for branding participating animals;

- the obligation imposed to them to reimburse campaign loans from their sheep herds since SODESP prices are not competitive with traditional prices for small ruminants. The herders prefer not to register their herds in order to sell on the customary market. This situation was also observed in Labgar, Zone 1.

As a solution, SODESP has proposed to herders to pay small ruminant loans with calves.

c) - Campaign Loans

At the end of the 2nd campaign, it was observed that borrowing rates, compared to projections, reached 72.5%, since herders used almost all the funds allocated for credit, as opposed to the bovine stratification program.

Credit has been allocated as follows:

Real Credit in Percent

- Animal Feed .....	79.5 %
- Veterinary Supplies .....	.5 %
- Agro-Pastoral Equipment .....	20 %
	<hr/>
T O T A L .....	100 %

Please note:

- Overall, real borrowing is not higher than theoretical borrowing;
- Regarding credit allocation, animal feed figures prominently: 79.5% of total lending;
- Rates of recovery remain low for feed and veterinary supplies; recovery rates for veterinary supplies are 63.1% and satisfactory at 86.3% for Agro-Pastoral Equipment. Overall credit recovery rates are 73.4%.

d) - Livestock Marketing in SODESP Zones

The delayed start-up of Livestock Marketing Activities in Zone 3 (Nov. 1981) and a two month interruption (Jan. - Feb. 1982) due to defective scales, can explain, in part, but not totally, the gap between projections and results which can be summarized as follows:

Marketing Activities	N°. Marketed	Total Weight	Average Weight
Projected	4 150 Heads	630 000 Kg	151.8 Kg
Sold	732 Heads	108 336 Kg	148 Kg
Achievement Rates in Percent	17	17.2	97.5

Contrary to the low number of cattle weight objectives for marketing cattle sold, weight objectives for marketing cattle have been achieved.

However, this objective for destocked calves varies from center to center.

CENTERS	Number of Animals	Total Weight	Average Weight	% of destocked calves per OPU Participating
MBar Toubab	167	27 750	166.2	11.2
Boki Dive	242	33 186	137.1	9.6
Niassanté	241	34 722	144.1	10.4
Kothiédie	82	12 678	154.6	7.8
TOTAL	732	108 336	148	9.9

Given the aforementioned elements and those collected during interviews with project staff and herders, the following remarks are applicable.

### 3. REMARKS

a) - Operation of watering facilities in the four centers is an important input for the herders. In the non participating watering points very often the herders single-handedly finance the fuel used for the well. The participating herders were in the same situation before the project. However this operation can give totally positive results, only if:

- the wells surrounding participating zones will operate normally. Whereas the herders can help purchase fuel, we must deplore the numerous pump breakdowns which may last for months;

- the herders follow regulations on using well facilities;

- a policy decision is made on management of watering facilities.

In fact, at the level of non participating wells, herders who cooperate to operate the wells can intervene with others so that passing herds do not remain in the zone for prolonged periods. This is no longer possible the deepore wells managed by SODESP where there is a larger affluence of cattle.

b) - Next to this general remark which is applicable to all SODESP managed wells it must be noted that in MBar Toubab, one third of the total volume of pumped water is used for the vegetable gardening component of another project. The cost effectiveness of this operation and its impact on the local population elicits serious reserves on its appropriateness since it does not directly involve the project being evaluated (1/3 of all water pumped is used for vegetable gardening).

c) - Objectives of the stratification program involve 5,000 BPU and 1,000 OPU per center. Determination of such objectives must be based on a framework of factors where the balance between feeds and watering

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resources for animals must be the essential factor. This implies that the project have a practical component for range management that will generate all the baseline data needed to estimate charges. If the current project has such a component in its objectives, achievements and particularly implementation strategies must be re-examined.

In fact research has been conducted on the range management, forage crops and harvesting; results have been disappointing. Not only is the zone poorly suited for forage crops, with pumped water, but extension of such themes is difficult because of low receptivity in traditional livestock production areas, not counting the important material and financial resources that are required from involved local populations.

d) - Conditions, modalities and current results of the stratification program are such that even the most receptive herders only involve part of their herds in the program. If in Zone 3 there are not enough objectivity to judge, data gathered in Lagbar (Zone 1) can be considered significant.

P.U Number	Number of Participating Herders			Total
	Lagbar	Namarel	Yaré Lao	
00 to 10	19	21	14	54
10 to 20	39	55	30	124
20 to 30	19	24	16	59
30 to 40	01)	--)	02)	---
40 to 50	)14	) 16	) 02	)32
50 to 100	06)	--)	--)	---
50 to 100	09	05	01	15
Plus 100	03	--	--	03
<b>TOTAL</b>	<b>101</b>	<b>121</b>	<b>63</b>	<b>287</b>

If for the Lagbar Center for example, the number of participating herders is considered satisfactory compared to the ones who are attracted to the deep bore wells (90%) it should be noted that only 30 to 40 percent of the total number of BPU are registered at best. This situation makes the task of stratification even more difficult because for, if feed is to be properly used, it must be distributed only for registered animals. In turn, their owner must be more accepting of the program so that the feeding program can be rigorously controlled and feed used adequately. This second eventuality is illusory.

Also, it is a fact that the herders are quite interested by the feed distribution (peanut cakes as well as mineral salts); the proof being that they have a tendency to also distribute them to non registered herds. The herders feel that animals which consume this feed:

- are protected against deficiencies (particularly against botulism which was caused by phosphoric deficiency);
- produce more milk;
- produce more calves because they become more fertile when there is a reduced interval between calving;

This situation must be analyzed in more depth to find a solution to motivate the registered herders to give concentrated feed to all the animals in their herd.

This situation should not detract from the fact that herders must pay for the feed and other credit used.

e) - In marketing, the herders have a tendency to limit their sales to 10% of their registered animals, to pay for their debts.

To explain this attitude, these herders alledge that the (SODESP) prices are not remunerative enough, to allow them, after selling 8 to 12 months old calves, to pay their debt and feed their family. They have a tendency to keep the calves for a longer period, to sell them in the traditional market.

This situation which could, in part explain the satisfactory weight of destocked calves (the herders selling SODESP calves whose weight correspond to the highest prices - that's logical). However this presents a double inconvenience for the project:

- it delays the destocking of calves with the obvious long term consequences on range management;

- it offers to the herder the option of not reimbursing loans to SODESP.

f) - For marketing as well as all other SODESP operation, it would be desirable, even if there is no contestation, to associate the herders. The herders would select competent representatives who would participate in weighing the animals, the feed, etc; they would serve as guarantor to others and that would develop confidence. This element is so important that herders in both Zone 3 and Zone 1 feel the same way.

Overall, the Zone 3 herders feel that there are very positive impacts from the SODESP activities therefore the project's impact is positive even if the duration of operations is not yet very long. However, the aforementioned remarks, demonstrate that in order to reach all the objectives, so readjustments must be made.

## B. OTHER PROJECT COMPONENTS

For each of the other project components, we will recall the objectives and make notes on the achievements and analyses.

We will not go back on the range management component which belongs under animal production systems which we have already analyzed. We simply insist on the necessity to give more impetus to this component and to do away with artificial feed production and harvesting of hay because these two operations require much work, are very expensive and the perspective of their extension among the herders are slim.

1. REFORESTATION

This component of the project aims at protecting the micro-environment of the deep bore wells. Specialized staff will be detached by the National Service for Water and Forests of Senegal.

The direct benefits of this activity are:

- shade provided for people and cattle;
- moderation of climate near the wells, in the villages and camp sites;
- a supply of air dried feed;
- a supply of firewood and other wood by products.

Four demonstration plantations of 300 hectares each will be divided into five blocks of 60 hectares around each participating deep bore well. The first plantation will take place in 1980. To accomplish this, sites must be prepared and the nursery should be completed by 1979. Acacia Senegal which produces gum arabica will be among the tree species that will be planted.

The 60 hectares blocks to be used as windbreaks will facilitate access to the well for the cattle.

When they mature, (15-10 years) the trees can be regenerated by coppice. Cutting will be done in such a way that only 20 to 40 percent of the blocks will need to be protected at a given time.

This program is of course at its beginnings, which explains the low levels of current achievement. Climatic constraints add to the problems.

Nevertheless, it is a fact that the plantations use Acacia Senegal which produces gum arabica whose economic value makes it more acceptable to the populations and opens a perspective for reimbursement of the loans given for the plantation. The question which must be asked is to know if this species is the answer to all the project requirements, namely:

- shade for people and cattle;
- a supply of air dry forage;
- a supply of firewood.

At this point, there is a need to review with the appropriate technical services, the objectives of the reforestation component, or if the initial objectives must be maintained or, even if the species to be planted must be diversified.

## 2. ASSISTANCE TO THE HERDERS

This project component aims at improving the quality of life for the populations participating in the project. It involves creating two small revolving funds for the purchase of foodstuffs and medical supplies to allow the herders and their families to survive the dry season without damage, therefore to encourage them to sedentarize this being a necessary condition for good project implementation.

Although the revolving fund for medical supplies has been created, the herders are still waiting for the store where they can purchase foodstuffs, something which interests them very much. Not only do they see in it the possibility of a local regular supply of food, especially during the dry season, but also an efficient means to fight against price speculation which makes them the victims of traders.

As for health services, the current system, as well as its achievements, are way below the needs and the hopes of the populations who are willing to participate very actively.

The unit in charge of this component may need to be restructured but most importantly the material and financial resources allocated to it must be reinforced.

### 3. RESEARCH AND CONTROL

These two operations are designed to collect baseline data, to monitor the project in order to facilitate its evaluation at the end of the third year. Qualitative and quantitative data will be collected on the impact of the project on the zone's populations. This information will also help to solve the technical problems that may occur. Finally, the research component will produce the data needed to develop a detailed plan for range management.

It is advisable to reformulate the objectives of this component in order to facilitate its implementation.

In our opinion, as the project progresses, data is collected that should be analyzed for:

- information to develop a detailed plan for managing and developing ranges in the Sahelian zone,

objective data on the performance and costs of production, which would be the base for establishing simulated models for growing out and fattening of cattle, in order to interest the private sector, including the herders in these linkages of production, compared to the traditional production system.

The analysis of data accumulated by SODESP which will start, with FAC financing, could be orientated in that direction in order to issue in larger use of these data results.

In this perspective, it would also be interesting to study a lighter system to collect data, within the framework of the indispensable controls of the Society for a more rigorous control.

Regarding the survey on herders' motivation and the proposals to create herders organizations which could benefit from ownership rights, this component seems essential. Therefore, we propose that it should be envisaged within the framework of the unit responsible for helping the herders. It must be remembered that this unit should be restructured and reinforced. Herders organizations whose creation is proposed, should participate in, and in the long run, take over all SODESP's operations that is the primary role of that assistance unit.

#### 4. TRAINING AND EXTENSION

Training in the U.S. as well as in Senegal will be monitored by the agents of the executing agency assigned to the project. Subsequent training of the herders will be the main aim of this training. The herders and farmers who live in the project zone will benefit from demonstration seminars on animal production, range management and reforestation. These demonstrations were to be reinforced with field visits of the extension agents.

It seems that one could never insist too much on this aspect of development

projects because many do not reach their objectives because it has not been possible to transmit to and to have the participating populations adopt the proposed innovations.

We have met a team of dynamic and available technicians with abundant resources but whose field results are, in many project components, still quite far from the objectives.

If, on the technical level, these agents have been well trained, they lack experience (for the most part, they are young civil servants, just beginning) their insufficient knowledge of the society and the psychology of the herders they assist, are an obstacle to their work.

It is then essential:

- to reinforce the teams with professionals who are more specialized in sociology in general and in the pastoral environment in general;
- to provide professionals, especially field staff with training outside of the country. To give them the opportunity:
  - . to have other experiences that they can compare to their work and be better prepared;
  - . to have a better perspective of their daily life, to reflect on their work, and of course use their previous experience.

Thus, in some technical areas, the technicians will be best informed of their training needs.

Finally, in areas where we do not have qualified technicians and where we do not have a sufficient number of professionals to carry on work, then technical assistance could be called upon in ensuring though that a Senegalese counterpart will be trained.

RESOURCE MANAGEMENT - TECHNICAL REPORT ANNEXI. INTRODUCTIONA. Background

The SODESP Livestock Project was originally planned to be executed in two phases. Phase I was to be the research and development phase, during which a cost-effective and implementable resource management system was to result. Phase 2 activities would assist in applying the resource management system to an area generally defined as the Sylvo-Pastorale Zone in Northern Senegal. This report is concerned with an evaluation of the progress to date towards realizing the goals of Phase I.

SODESP is the management and implementation body responsible for the achievement of the projects' purpose. Within the context of this project, resource management alludes to water, rangeland and forestry resources.

The USAID has committed nearly one-third of the total USG projected costs towards the development of a resource management system. Budget estimates for the related activities taken from the tables in Annex 1 to the Grant Agreement show the following amounts:

Reforestation work	\$ 832.0 thousands
Range Management Work	\$ 1,321.0 thousands
Contingencies and Inflation	\$ 341.0 thousands
Total	\$ 2,493.0 thousands

or approximately 31% of the total estimated USAID costs which are \$ 8.0 million.

B. Identification of Components to be Addressed:

The project description identified six specific sub-activities to be financed within the framework of this undertaking. Three of

these pertain to the development of the resource management system and are listed below as they have been described in USAID documentation.

1. Development of a cost-effective and implementation plan for management of the range and water resources so as to halt the process of resource degradation and permit the natural defenses to reassert themselves wherever possible;

2. As part of the strategy for range and water management, a program for reforestation in the worst affected areas around the deepbore wells, and for promoting tree planting by the zone inhabitants in and around their villages;

3. Research and evaluation activities to monitor the impact of SODESP's operations --- and to collect social, economic and agropedological and other data necessary to formulate a sound management plan and refine the contents and delivery system of the technical production package.

## II. PROJECT COMPONENT N°3 - DEVELOPMENT OF RANGE AND WATER MANAGEMENT PLAN.

### A. Objectives

The objective of the range management sub-activity from the USAID point of view is simply, "to assist the herders in utilizing the range while at the same time avoiding its degradation". The objective of the range management activity expressed by SODESP is "promote the rational use of pasture lands by the herders". On the surface the two objectives appear to be nearly the same, however as we shall shortly see, the means to reach the end result are widely divergent.

### B. Implementation Strategy

The USAID strategy foresees the development of a range management plan taking into account the information obtained from both

short and long-term studies of Zone 3. Such studies might include, but would not be limited to such things as a census of the herders and livestock numbers in the zone; range site and condition class studies; seasonal grazing patterns; the plant composition of the natural areas; annual forage production; and the growth habits of the annual grasses and legumes populating the zone.

From this information, the carrying capacity of the rangelands could be calculated and these in turn could be compared with actual livestock numbers. Water availability and the stocking rates together would provide a basis for working with the herders to effect a balanced livestock grazing program. In addition, the range management component provides equipment for the control of grass and brush fire; and, also provides for an introductory study of the problems of land tenure in the zone and their potential effect on the resource management proposal.

Training and technical assistance are to be broadly used in the development of the management plan. B.S. degrees in Range Management for up to four SODESP technicians as well as shorter term training is to be provided. Technical Assistance will be used during the LOP to guide and to conduct the many studies.

The SODESP implementation strategy is predicated on an assumption that annual forage production on the rangelands is entirely a function of the quantity and the distribution of the summer rains. In this context there are good years and bad years (true) and nothing can be done to change the range conditions (false). SODESP is aware of potential degradation of the rangeland base and has therefore prepared a conservative calculation of the number of tropical bovine units (U.B.T.) that can prudently be supported on the approximately 17,000 hectares that fall in a 7 kilometer radius of each bore-hole. Their calculations indicate that 5,000 UBT or about 6,700 head of mixed-age cattle can be supported near each well.

The strategy relies upon the supplemental feeding of peanut cake and a mineral supplement near the end of each dry-season to supplant the lack of natural forage. The range management plan then, is to keep the wells working throughout the dry period, and to increase or decrease the supplemental feed for the animals in a direct relationship to the annual production of natural pasture.

As far as can be determined SODESP foresees no need for rangeland studies or for the development of a management plan. In their view the herders will take their stock to areas supporting natural vegetation, wherever it may be, as long as this vegetation lasts, and as long as it is sufficiently near a bore-hole where the animals can be watered. It follows therefore that the SODESP strategy requires neither technical assistance nor training.

There have been no changes in the basic implementation strategy by either the USAID nor by the SODESP since the signing of the grant agreement.

## 2. Implementation Actions taken to date

The basic infrastructure necessary to conduct operations in Zone 3 has been put in place. Housing, warehouse space, pumps and generators etc... have been provided. The project staff has been recruited and they are living and working in Zone 3. A good start has been made on enrolling small and larger herders into the program. There has, however, been no progress to date towards attainment of the three range management outputs which are:

- a) trained cadre in range management and forage production;
- b) a comprehensive program of range management and forage utilization. This program will be applicable to SODESP's entire project area. The program is expected to be the forerunner of a national range and resource management scheme;
- c) development of a course for training project technicians in range management and forage evaluation.

Project inputs are far behind schedule. The reasons for this will be discussed in Section III which follows.

Technical Assistance has not developed as planned and there is presently no range management expert working on the project. Pumps and generators have been provided as part of the Government of Senegal contribution. Vehicles and aerial photographs have been provided by the USAID. Aside from an introductory tour to range management installations in the Southwest of the United States by four high-level Senegalese officials, little or no training has been performed.

Although we hope that the following action does not herald a change in the basic USAID implementation strategy, USG funds have been used to purchase supplemental feed for cattle on a onetime basis which was categorized as an emergency.

USAID funds are being used to pay the salaries of several SODESP staff in the Zone and in Dakar. USAID funds are also being used to pay premiums over base salary for all of the staff of SODESP in Zone 3. All operating costs relating to this activity (principally vehicle operating charges) are supported in their entirety by the USG.

The infrastructure that has been provided, both material and local staff, is adequate for the job and of apparent high quality. The provision of these resources closely follows the original project plans. The absence of technical assistance for the project and the failure of the SODESP to nominate candidates for training programs has effectively blocked any progress towards the achievement of the sub-activities purpose and goals.

### III. OBSERVATIONS AND CONCLUSIONS

#### 1. Re. Objectives

The objectives of the project, insofar as the USAID is concerned, e.g..., to establish a technically sound, socially-acceptable, cost-effective and implementable system of resource management

was probably not realistic. There are two reasons for this: (1) the general reluctance of the SODESP management to accept the implementation strategy of the USAID in favor of its own production oriented concepts; and (2) the existence in Senegal of an unorthodox perception of the Science of Range Management by personnel of the Senegalese Institute for Agricultural Research (ISRA). This latter problem requires special handling and will be discussed in more detail under the heading recommendations.

Nor, may it be added, is it realistic to foresee the full attainment of the project's objectives by the end of December 1983, which is the current contemplated completion date. Should the project life be extended until December 31st 1984, progress would be made towards reaching the objectives. Much more could be achieved by extending the project life through 1985, provided of course that an understanding can be reached with the SODESP regarding the implementation strategy and that the necessary inputs, particularly technical assistance and training, can be quickly provided.

Whatever can be done towards improving the rangelands of the Sylvo-Pastoral zone must be in place by the beginning of the annual rainy season each year. All plant growth is concentrated in the period June 1st through the end of September. Any changes in the composition or the quantity of vegetation on the natural pastures will occur during that 120-day period.

Studies, evaluations and observations of the changes that occur during the rains may be accomplished during the eight months which follow. Each year that the project might be extended, adds one more growing season to the total that are required to begin the process of developing sound range management principles.

Even should the project life be extended, the project objectives should be restated to indicate that a preliminary cost-effective, socially-acceptable range management plan for Zone 1 (only) will be developed. Given the large numbers of unknowns, such as herder

attitudes, the potential difficulties in returning more perennial grasses to an area that has been long depleted of same, and the degree to which the Government of Senegal will succeed in regulating transhumant herders from outside of the Zone, it would be hazardous to declare that a comprehensive range management plan could be established in so short a time.

The objective needs only be reformulated to the extent that the results obtained may be viewed as conditional pending further research, and not final.

Adequate resources have been provided within the total project budget to provide for development of the sub-activity.

#### B. Implementation Strategy Plan

The implementation strategy which relied entirely upon training and technical assistance is sound. We know of no other way to acquire the detailed data which are required in order to arrive at the conclusions from which to develop a management plan. One may consider the area comprising Zone 3, as a laboratory of great size and subject to strong external influences. The zone's reaction to these external forces must be carefully measured and then analyzed prior to the making of decisions regarding its use.

It is possible that SODESP will still see little reason for proceeding in this fashion. Not only is this institution totally committed to the production of animals, to the exclusion of what it considers extraneous considerations, but the range management philosophy espoused by the ISRA reinforces this position. This position, in brief, is as follows: the rangelands of the Sylvo-Pastoral zone once supported perennial grass and herb forage species; however, under grazing pressure these perennial species have been replaced with annual grasses and herbs. There is nothing wrong with this ecological accident since ample forage is still being produced to support the animals in the zone. The annual grasses are at the mercy of the amount and the distribution of rainfall that falls each year. This is the only factor that must

be considered when making a decision regarding the numbers of animals that the rangeland will support.

The position of the United States, and many other major livestock producing nations with large areas of rangeland is, in brief, as follows: the vegetation on native rangeland is a dynamic force constantly changing to adapt to new conditions. When perennials are grazed too closely they give way to other species perennial or annual, but which are better adapted to withstand the external forces which have destroyed the original vegetation. Such changes continue to occur until the rangeland produces only species which tolerate the outside forces, or until erosion and loss of plant cover has rendered the site incapable of further plant growth. In this latter case we have denuded areas typified by erosion pavements, dunes, or exposed parent materials devoid of organic matter. The most important aspect of this perception of range management is that man can direct the external forces in such a manner as to improve or destroy the range. In order to do this he must have the fullest understanding possible of the ecology, the micro-ecology, the climate and the reaction of the vegetation to the intended use.

If the project is to continue with a range management activity, this conflict in perception must be accommodated. A suggestion to this end is included in the section on recommendations.

It is also recommended that if the project life is extended beyond 1983 that the following action should be added to the implementation strategy.

- 1) An area of approximately 20 hectares should be planted to perennial grasses adapted to the climate of Zone 3. Indigenous species should be given precedence over introduced species. Five species, in four-hectare blocks are recommended. This seeding, which will require two growing seasons to mature, should be near the project headquarters at Mbar Teubab and be fenced. The grass will

provide a seed stock for future range improvement work. If this seems feasible, it may, with careful management provide some hay. In addition a small 0.25 hectare demonstration nursery should be established with a wide variety of grasses and legume species as an observation plot.

The project currently has on hand four farm tractors and equipment that was purchased for the forestry activity, that would provide for the plowing and cultivating of the nursery site.

Seed and fencing materials are required. There is reason to believe that the Laboratories Hann might provide most of the seed. They should be consulted about varieties. If the decision is to extend the project, at least until December 1984, and better yet until the same date in 1985, implementation of the old strategy plus the proposed addition should be initiated by March 1st, 1983. If the decision is made to terminate the project on schedule there is too little time to get much underway in this work area.

#### D. Implementation Performance

Little has been accomplished of the original plan due in major part to the failure of the implementing institution to follow the project plan as outlined in the Project Paper and the Grant Agreement. Surely if one lesson has been learned it is that there must be a full and frank agreement with the SODESP regarding the implementation strategy if the project is to continue.

Another lesson learned regards the training and the qualifications of U.S. Technical Assistance personnel who may eventually be used in the range management program. We believe that the one technician so assigned to date was singularly unqualified to hold this post and should not have been used in this position.

We have also observed during the course of the evaluation that insufficient attention has been paid to the needs of the herders. They are vitally interested in the range management problem and should be brought into the planning at the start. They should be encouraged to practice simple range management schemes and contacted frequently in order to hold their interest.

We believe that the production goals of the SODESP are commendable and that the cow-calf plan for Zone 3, as a tool to increase production, may be of interest to other African countries if it proves to be economically feasible. The early separation of calves from the mothers and their replacement to a more productive area may also be of great interest to Sahelian countries with similar situations.

The use of peanut cake and minerals supplement feed during the final weeks of the dry season also appears to be a positive output of this project. Peanut cake or cottonseed cake are available in most of the neighboring states. We do not consider this feeding as a viable alternative to range management, but we do believe it is a major step forward in the management of Sahelian cattle herds. Economics of this practice require additional study before it may be generally recommended.

Finally, and as previously stated, there is a good working organization in place in Zone 3, as a result of the project's implementation, and this organization and the improved infrastructure can be quickly put to work on a re-directed program.

#### IV. RECOMMENDATIONS FOR THE RANGE MANAGEMENT ACTIVITY

1. If a full and amiable understanding of the implementation strategy to reach the project's objectives can be negotiated between the SODESP and the USAID, the range management sub-activity would benefit from an extension through December 1985. It would appear that sufficient funds have been authorized for such a time span, and no new funding beyond that authorized in the original agreement is needed.

2. If an understanding as outlined (in one) above cannot be negotiated, the range management component would not benefit from an extension, and the project could be terminated as planned in 1983.

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3. The Director of Zone 3 should be discouraged from his attempts to produce cowpea hay in the project zone. This has a negative effect, since he may encourage the residents of the zone to try the same thing. Zone 3 is a very high risk area for cowpea. The stations results in 1982 were nil, yet he appears to be determined to try again. In addition the equipment used was not purchased for that purpose, nor is there any line item in the USAID approved budget to support this cost.

4. The problem of the ISRA perception of rangeland management deserves special attention. If the project goes forth, Laboratories Hann should be consulted frequently and made aware of progress with this sub-activity. In addition, the Technical Assistance component should be used to enter into an agreement with a senior academic in the Science of Range Management, who would come to Senegal for two or three weeks at least two times a year. His visits would provide an intellectual bridge between the project and the Grassland Research Unit within ISRA. The Director will be "more-at-home" with an individual of equal stature and probably more-recepture. Working at ISRA is at least one world-known authority on the taxonomy of sub-saharan vegetation. There are several such individuals in the United States, such as Dr.E.J. Dyksterhuis and Dr. Alan A.Beetle.

5. A commitment is needed from the Government at the National and the prefectural levels that Zone 3 will be protected from the invasion of "outside" herders and their animals. It is unrealistic to believe that the herders can handle this situation.

6. If new life is given to the project, all professional technicians and "Agents Techniques" should be given a new orientation into the objectives of the project and the implementation strategy. This could best be done by a seminar or retreat for a week somewhere far removed from Zone 3.

7. SODESP should prepare a training plan to include proposed dates when selected individuals may undertake short term and long term training both in Senegal and in the United States.

8. If Technical Assistance is provided, considerable thought must be given by the USAID and the SODESP for the best mechanism for insuring that the professionals have an opportunity to perform. This may require re-evaluating the host-country contract arrangements.

It may also mean working out totally new working arrangements with the SODESP, such as attaching the individuals to ISRA or some other arrangement. The time spent in discussing this problem and negotiating an acceptable solution will pay off when and if the T/A people arrive.

STOCKWATER DEVELOPMENT

Background:

The concept of herd management in Zone 3 centers on the availability of livestock water. Four deep-bore wells are the foci of the program. An imaginary line extending as a radius from each well of approximately 10 kilometers, defines the perimeter of grazing land associated with the SODESP development program; 10 kilometers representing a reasonable distance for grazing animals to pasture and at the same time have good access to drinking water.

Objective of the Activity:

The management of the wells is a key element in the U.S. Implementation strategy. The strategy implies that water will be used to control the numbers of livestock on the range. Following are quotes from the Project Paper: "SODESP will control cattle numbers at each well-site through the contractual relationship with the participating herders. Only participating herders will be given exclusive grazing and water rights. This program will take effect after maximum herd size has been reached. The pumping of water must be restricted to satisfy the needs for a determined number of animal consumers on the range. This limit has already been set at 5,000 productive units per watering hole. USAID agrees to fund operations on that very basis".

The SODESP implementation strategy statement reads as follows: (translation from Notes Techniques n°1, dated October, 1981) "Several wells have been drilled in the Sylvo-Pastoral Zone to meet the requirements of man and animals. Rare are those that have been equipped with pumps, and among those only a few function correctly. For this reason -- the Project will assume responsibility for any equipment needs as well as for the cost of operating the wells in the zones where the project is implanted".

Implementation Actions Taken

The Grant Agreement provides for the purchase of pumps and motors by the GOS and budgets AID funds for operating costs of pumping the water. The Government of Senegal purchased the equipment at a cost of slightly more than \$ 250,000. USAID has permitted the SODESP to use AID funds for repairs to the stock water troughs and drinking facilities and for operating costs of pumping.

The four wells in Zone 3 were placed in operation in a timely manner and seem to be functioning to the satisfaction of all concerned. Breakdowns are infrequent, and when they occur they are quickly repaired. Of paramount importance to the herders is the fact that they (the herders) no longer have the problem of assessing individuals for the cost of fuel and oil, or for repairs to the machinery.

There is however much room for improvement. The facilities often appear to be inadequate for the numbers of animals being watered. The design also leaves something to be desired. The bore at MBar Toubab is attached to two "antennae" which carry water several kilometers from the main well to two sub-stations. Neither of these auxiliary water points are presently in operation. Should they be repaired and operated on a limited basis they would reduce pressure on the troughs around the main well and also reduce pressure on grazing lands adjacent to MBar Toubab.

Conclusions and Observations

The USAID and the SODESP strategies seem to imply a measure of coercion, using the water as leverage to force herders to either participate in the SODESP program, or relocate outside of Zone 3. This is not lost on the herders for there seems to be a lack of understanding and respect for the program overall. There was evidence of sabotage at one of the watering points we visited. The reasons were unclear. The evaluation team spoke

at length with many herders, both participants in the program and non-participants; in the project zone and outside of the project zone; and in the presence of SODESP personnel, and out of their hearing . From these meetings the following points evolved:

The weakness of the implementation strategy is three-fold. First and foremost is the weakness referred to above -- the failure of SODESP field personnel to develop herder participation and understanding of the program by bringing them into the decision-making process. There is likewise a continuing lack of interest by SODESP in the herders' current preoccupations, many of which could be dispelled with frequent and sympathetic consultation.

A second weakness of the implementation strategy was limiting the well improvement program to only those wells located in Zone 3. When a well outside the zone fails, the herders appear to move quickly into the SODESP zone where water is free and reliable. Likewise the transhumants head for the SODESP zone like desert prospectors head for the oasis.

Finally, a weakness of the program is the failure to develop natural water-sources within the zone itself. During the rains there are many "mares " or natural low places which accumulate water and which are the source of livestock water during the summer months. If these could be deepened or otherwise enlarged to hold more water they would hold livestock away from the main bore-wells for several months following the rain. The water presently pumped for the stock from the deep wells is fossil water. It is being mined just as though it were any non-renewable resource deep underground. Good sense dictates that these waters be used conservatively and also that they not be squandered.

The original objectives then were realistic, but the implementation strategy was too restricting. Should the three weaknesses of the strategy which have just been mentioned be addressed promptly,

we believe that there would be a dramatic change for the better in the grassland resources, and also in the herders' attitudes. Non-participating herders would feel less dependence on SODESP water, transhumant herds might never appear, or if they did be guided elsewhere, and the participants in the program might benefit from less congestion and better ties with the implementing institution.

The inputs required are principally material. Equipment to pull and replace well casings; well casings; pumps and motors local currency for construction costs and for eventual operating costs for wells surrounding Zone 3. Engineering assistance is needed to study the problems of the two antennae at Mbar and to redesign many of the stock tanks and troughs at the four main wells. A heavy duty front-end loader is needed to dig out mares which can be identified by a range management consultant as both feasible to work on and strategically located. TDY assistance of a well and pump expert may be required to prepare a complete list of equipment and materials needed to rehabilitate the surrounding bores.

There are important implications for the SODESP in the experiences they have had in both Zone 1 and Zone 3. First of all is the lesson that time spent with the herders is time well used. The herders must no longer be viewed as a constraint (a view expressed verbally by the SODESP) but as an asset. They are partners in this enterprise. Another lesson learned is, that reliable watering holes attract livestock from outside the zone, and that one should plan in the very beginning for this eventuality and undertake some measures to counteract these forces. The value of developing natural watering places within the zone to supplement the principal wells appears not to have been considered but would measurably assist in distributing grazing pressure.

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Recommendations

The basic implementation strategy should be revised to provide for the rehabilitation and the operation of deep-bore wells adjacent to Zone 3. These wells should be surveyed and placed in operation as soon as possible.

The two antennae leading out from Mbar Toubab should be repaired and a plan developed for their limited use. Herders should be advised of the season when water will be available at these outlying areas, and the reasons for it.

The Gouvernement of Senegal should request the German Technical Assistance people to relocate their vegetable garden, via drip irrigation project, away from the Sylvo-Pastoral Zone. The project serves no purpose since the resident population cannot practice irrigation. In addition the project presently consumes about 10 cubic meters of water per hour from the deep-well, or one-third of the output. Use of fossil water for this purpose is an extravagance and serves no viable demonstration purpose.

USAID should provide engineering assistance to the SODESP to redesign the watering facilities as required at the four central watering points. Existing facilities may need to be enlarged and paved. Separate troughs for small ruminants located several hundred meters from the cattle tanks may be of value. USAID should also agree to the use of project funds to realize the necessary construction.

A heavy-duty track type front-end loader for mare development should be procured if the project is extended through December, 1984.

HERDER QUALITY OF LIFE AND PROJECT SOCIO-ECONOMIC IMPACT

I. INTRODUCTION

The SODESP Livestock Project consists of 6 major activities as described in the Project Paper: livestock productivity, range resource management and water development, forestry, herder family support, research and monitoring, and training. While the primary emphasis of the project was livestock production and productivity, two other activities were of great concern to USAID—range management and herder quality of life. A research and monitoring team was to provide baseline and longitudinal socio-economic, data which would permit USAID and SODESP to evaluate the effects of the project on herder quality of life and to redesign certain components as necessary. It was also planned to establish two revolving credit funds for project herders, one for simple medicines and one for essential foodstuffs.

II. HERDER SUPPORT ACTIVITIES

A. Objectives and Implementation Strategy

1. Project Paper

The activity envisaged to improve the herders' quality of life, beyond the provision of more dependable sources of water and higher revenues from milk and male calf sales, was the credit facility for medicines and millet. Two revolving funds were budgeted at \$ 5,000 for medicines and \$ 63,000 for millet.

Annex K of the Project Paper describes in some detail this project component. In it the problems of lack of availability and high price of food and medicines are considered. There it is stated that "SODESP's interest in these problems stems from its desire to promote the sedentarization of local herders through the improvement of living conditions".

The medical portion of the herder support activity was to be "essentially curative" and aimed to "provide a constant supply of basic drugs at low prices for project participants". The food component of the plan saw SODESP seeking to "ensure against famine through supplying a portion of millet needs to its herders again at cost prices".

The basic program of Zone 1 (Labgar) was to continue with 3 modifications: concentration on a "few widely needed simple medicines"; more provision of health education to herder families; incorporation of "research on health and nutrition into the research component of the Zone 3 project".

This research in turn was supposed to address itself to the following concerns: the optimal distribution system for medical supplies within Zone 3, the way in which "local groups could be trained to establish local Boîtes de Pharmacie for minor illnesses"; the best way in which to "establish buying cooperatives for food staples among the zone's herders", the means by which SODESP could be helped to promote new agricultural methods, and the best method for running "small programmes of health education and nutrition in the area".

## 2. Project Agreement

The Project Agreement with the Government of Senegal lists in Article II a program to "improve the quality of life for herder families through a cooperative credit program for supply of critical foodstuffs, medical supplies, and other necessities of daily life".

Annex I of the Project Agreement states that there will be "the creation of two small revolving credit funds for the purchase of food grains and medicines allowing the herders and their families to better survive periods of drought and encouraging their sedentarization, an essential element in the development of the Project". Another project objective is the "development of a social workshop in Zone 3 which will address the quality of life

of herders and their families". Annex I stipulates that a "fund of approximately \$ 68,000 over the life of the Project will finance the purchase of food and medicines to assist participating herders".

### 3. SODESP Request for Proposals

The SODESP request for proposals refers to only one herder support revolving fund in the job description for social science expert, who is to work in collaboration with the head of the social advancement and assistance center (atelier d'assistance et de promotion sociales) and be charged with assisting the Chef de Zone in a number of areas including the "monitoring of the use of the revolving fund for social assistance actions".

SODESP's own program for herder assistance is found in Annex I of the SODESP request for proposals, where one finds under the title of "Social Advancement and Assistance Program" mention of "the constitution of food stocks" and "hygiene and public health-- the stocking of pharmacy supplies". These are referred to again under "Means to be Employed", which lists among others " a social action fund for the purchase of food products, medicines, or the establishment of other social services furnished to producers on a paying basis".

### 4. Technical Assistance Contract

The Annex of the technical assistance contract between Chemonics International Consulting Division (Washington, D.C.) and SODESP presents the same list of social welfare activities and study topics for the sociologist as does the SODESP RFP. Although the official French version refers only to one revolving fund, the English text reads: "Monitoring and control of the use of revolving funds used for social assistance". As in the RFP, the sociologist is to work in collaboration with the "Social Welfare Chief" and to assist the Chef de Zone.

### 5. Position Description (Ordre de Service)

As prescribed in the technical assistance contract, position descriptions (ordres de service) were to be issued by the Director of SODESP to each technical assistant within 30 days. The position description for the sociologist was issued on September 28, 1981, over 4 1/2 months after her arrival.

The position duties, issued by the Director differ substantially from those in the R&P and the TA contract. There is no mention of a revolving fund for either medicines or foodstuffs. The technical assistant is directed only to engage in "the struggle against price speculation on critical or commonly consumed foodstuffs".

Another duty directs the technical assistant to take charge of "the programming and carrying out of all social advancement and assistance actions, requested and financed with the involvement (concoirs) of the populations concerned". This would also seem to allude to the possibility of a revolving fund for food or medical supplies, or at least allow for such a contingency.

In the position description, the sociologist is named "Head of the Division of Social Advancement and Social Action (Chef de la Division de la Promotion et des Actions Sociales) of Zone 3. No mention is made of working in collaboration with the head of a social advancement and assistance center; in fact, the technical assistant has apparently been put in charge of it. Furthermore, the sociologist was apparently placed under the supervision of the Director of Enrollment (Directeur de l'Encadrement) in Dakar. However, the position description specifically refers to Zone 3 and the duties are those in the SODESP table of organization for the zonal social assistance chief.

### 6. Summary

The two header support revolving funds, specified and budgeted in the Project Paper and the Grant Agreement with the Government of Senegal disappeared entirely in the position description issued by SODESP to the American sociologist. This person, furthermore,

was placed in a line administrative position, with duties considerably changed from those in the Chemonics contract. USAID/Senegal made no objection to these changes.

## B. Implementation Actions Taken

### 1. American Technical Assistant

The American sociologist supplied by Chemonics International Consulting Division filed her first activity report at the end of August, 1981. It covers activities from May 7 to August 29, 1981. Before her dismissal from the SODESP project, at the request of the SODESP Director, on December 4, 1981, she produced several other reports, which indicate the content and direction of her field activities in Zone 3. These reports, the first quarterly report, a proposal to establish a health delivery program, the summary of a meeting to organize a revolving fund and store for millet, and a mission report on a meeting with the Chief Physician of Louga to establish a dispensary, indicate that the American technical assistant attempted to establish a number of services for herders of the zone, including a dispensary, revolving funds for medicines and foodstuffs, health education and training programs, and collective purchase of non-prescription drugs. Collections were apparently begun among herders toward building a dispensary. None of these activities had progressed very far at the time of her dismissal from the SODESP project.

### 2. Present Herder Support Activities

Since November, 1981, the Head of the Social Advancement and Assistance Division of Zone 3 has been a Senegalese, appointed by SODESP to fill the vacancy created by the dismissal of the American technical assistant. This man's job duties are the same as those for the American sociologist; that is, they are taken from the SODESP table of organization. His activities since arriving in Zone 3 from Zone 1 (Labgar), where he held the same position between November, 1980, and November, 1981, have primarily centered on health care. He supplies medicines to herders at cost, upon presentation of a prescription issued by the nurse based in Keur Momar Sarr outside the zone.

The nurse and the head of social assistance make infrequent visits to the four well centers of Zone 3. Each center receives their visits, usually two, in a one-month period, followed in succeeding months by the three other centers. Thus, there is a four-month delay before the team returns to begin its pair of visits in any given well center. Two visits in a two or three week interval permit follow-up of patients.

Visits to well centers are made on market day, and herder representatives are informed in advance. On average, the two-man health team sees about 30 patients a day, more in the rainy season than at other times. Emergency medical evacuations to fairly distant hospitals (e.g., Louga) are made rather rarely, only about 10 having occurred during the last year.

The medical visits began in April, 1982, and up to the present 139,500 FCFA of medicines have been sold to herders, 5,000 FCFA to SODESP personnel, and 18,000 FCFA have been collected from enrolled herders or their relatives as medical visit fees. Each fee is 50 FCFA, and the total number of herders examined since April, 1982 (ca. 7 months) is about 360. These fees are used to pay the nurse a wage supplement of 3,500 FCFA per day in the zone, and to pay the medical doctor from Louga 25,000 twice a month when he examines SODESP staff and herders at Mbar Toubab. The shortfall is presumably made up from the SODESP operating budget for Zone 3.

The second herder-support activity engaged in by the social assistance chief has been the continuing attempt to set up functioning millet stores to protect enrolled herders from exorbitantly high prices toward the end of the long dry season. SODESP may be near to achieving this, for they have informed the evaluation team that 200 metric tons of millet are to be delivered to Zone 3 during the present dry season, half of which is scheduled to arrive in the zone about mid-December.

All four zone centers are to sell millet to any needy herder, regardless of whether he is enrolled in the SODESP program or not. Herders are expected to exchange animals for food grain, although this will not be obligatory.

It is important for USAID/Senegal to verify whether this program is put into action in the coming months, and whether all herders have equal access to this food as claimed by SODESP. USAID should also decide formally whether it wishes to abandon the concept of a revolving fund to extend inexpensive credit to herders as specified in the Project Paper and Grant Agreement.

### III. SOCIO-ECONOMIC RESEARCH AND MONITORING

#### A. Objectives and Implementation Strategy

##### 1. Project Paper

One of the major activities of the USAID-SODESP project, as stated in the Action Memorandum for the Assistant Administrator for Africa was to "provide the project with economic, social, agronomic and other technical baseline and evaluation data". According to the Project Paper, this research and monitoring component of the project was to develop a "comprehensive data base for future project design"; control for a "socially acceptable evolution from present traditional grazing patterns and practices to a more productive system of livestock raising and resource management"; and verify that this economic evolution would provide for "increased incomes and quality of life for herder families".

Annex N of the Project Paper, entitled "Project Research Component", is very explicit and detailed in its presentation of this facet of project activities. As stated there the overall goals of research and monitoring were:

- "(1) To provide concrete knowledge about how things actually work in Zone 3 and why.
- (2) To provide knowledge about how SODESP is affecting change in the zone.

- (3) To examine the possibilities for the local management of range resources. This will entail an in-depth study on land tenure practices.
- (4) To initiate planning and action to meet the needs of the Zone's population - both human and animal - on a long-term and continuing basis".

Three types of activities were to be undertaken by the research team: "baseline data collection, project monitoring, and action research".

Baseline taken collection, in addition to information on the natural environment and animal populations, was to cover the following domains:

- "(a) Settlement patterns, grazing areas, cultivation areas.
- (b) Human populations by ethnic group, age/sex, caste and occupation.
- (c) Patterns of intrazonal movement and transhumance.
- (d) Patterns of ownership of animals and goods, and the distribution of these.
- (e) Intrafamily work patterns.
- (f) Overall strategies for coping with drought.
- (g) Patterns of conflict/cooperation among herders and between herders and cultivators".

The project monitoring activity was to "include quantitative and qualitative information on how SODESP is affecting the people in the zone". The following types of data were to be collected during the 3 years leading to the formal project evaluation:

- "a. How SODESP actually operates in the zone, including data on problems encountered - e.g. social, financial, technical, logistical, etc.

- b. How herders react to the program - e.g. differences between adopters and non-adopters, spread effects, attitudes, etc.
- c. What effects SODESP has on herders, including such things as economic benefits and their distribution, non-economic benefits, changes in herd size and composition, the growth of differences between adopters and non-adopters both socially and economically, what is done with the economic benefits of the program, how time/resource allocations are changing, and whether the program is attracting herders from other zones.
- d. What effects the program has on the environment, including changes in animal numbers and types, changes in water consumption, changes in vegetation, and changes in pasture utilization".

The third component of project research and monitoring according to the Project Paper, Annex N, is action research. This is "research and action to determine how best to undertake improvements in herders' lives which relate both directly and indirectly to what SODESP is doing".

This is a very interesting research component, because it was quite clearly meant to gather extensive demographic, social, economic, and psychological data on herders during the course of the project. The intention was to look at "how local social organization can be effectively mobilized for change by herders themselves".

The results of action research were to consist of: (a) detailed information on herder attitudes, and (b) a series of recommendations for setting up herder organizations". The main action research questions were:

- "- What are the main needs and priorities of local groups.
- How do these coincide and conflict both between groups and between herders and SODESP.

- How local herder groups can best organize themselves to meet their own needs.
- What outside inputs might be required for this.
- What outside organizations might be involved in this effort, and what their precise role would be.
- How SODESP could become more involved here.
- What functions presently carried on by SODESP might eventually be handled by herders themselves, and how.
- What inputs are required for a successful program of range management".

The rationale behind the research and monitoring activities envisaged in the Project Paper (Annex N) is that of providing data of use to USAID and SODESP in improving upon the SODESP activities in Zone 1 and in correcting any problems arising in Zone 3. USAID was to use these data to monitor closely the SODESP livestock program and "its effects on the local population and the environment". This was to permit more effective evaluation of the project after the third year of operation in Zone 3, and to permit redesign for a subsequent phase.

SODESP was to benefit from the program of research and monitoring "to the extent that deficiencies or difficulties in their operation could be pointed out to them". The fact that SODESP might be unable to generate such data on its own was recognized, for Annex N says that SODESP "would gain a great deal of information on both old and new methods of herding which they are not able to collect themselves due to a lack of time and sufficient personnel".

Another explicitly recognized benefit of the research and monitoring activities was to be the creation of a "core of Senegalese researchers who will have gained considerable knowledge of conditions in the Ferlo". One of the two principal investigators and all of the 5 to 10 enumerators were to be Senegalese.

The local herding populations of Zone 3, however, were considered to be the principal beneficiaries of the research and monitoring effort. On the one hand, any negative socio-economic effects of the SODESP program would be picked up and corrected before going too far. On the other hand, "the project's interest in their situation should make possible the beginnings of group efforts to better their lives, beginning with the management of natural resources in the zone, and extending into other areas such as health, nutrition, agriculture, and commerce".

## 2. Project Agreement

The Project Agreement also stresses the role of socio-economic research and monitoring. In Article II, Section 2.1 Definition of Project, one of the objectives is: "to develop a comprehensive data base for future project design and improved resource management through a research and monitoring unit".

This same unit is to be involved in on-going evaluation as defined in Article IV (Special Covenants and Conditions), Section 4.1. Evaluation, which states that "a continual evaluation program will be conducted by the research and monitoring group assigned to the Project and an annual report will be prepared". This same monitoring unit was expected to participate in the three-month evaluation at the end of the third year of project activity.

The Annex to the Project Agreement, section ID - Research and Monitoring, elaborates:

"These two activities are designed to provide baseline data, assure the coherent implementation of the project and to prepare for the project evaluation scheduled for the end of the third year. Quantitative and qualitative information will be gathered on how SODESP programs affect the people within the Zone. Resulting data are expected to assist in solving any technical problems which may occur. Finally, the research element will provide data for the development of a comprehensive range management plan. Herders' attitudes will be surveyed and recommen-

dations will be developed for setting up herder organizations with specific land use rights".

It is clear from the Project Agreement that technical assistance from the United States, in addition to whatever specialized information it could provide in substantive areas, was expected to generate the data necessary for project monitoring and eventual evaluation. In the words of the Project Agreement Annex (III - Project Inputs), technical assistance would "provide studies to aid in Project evaluation and provide a research and monitoring role". To this activity, the Government of Senegal would "contribute technical assistance, as necessary".

The Project Budget, Table 4, provides for a research team, including one American and one Senegalese researcher, which would function for three years, although apparently reduced to one person in the third year. A total of \$ 325,000 was to be provided for the research unit. Table 4 also provides funding for a total of 12 person-months of short-term expertise, including rural sociology, land rights law, forest management, and range ecology.

### 3. SODESP Request for Proposals

In the SODESP Request for Proposals, the only one of the four technical assistant positions which could be called a primarily research-oriented post is that of social science expert. The two-person research team has thus been reduced to one American sociologist/anthropologist. USAID apparently concurred.

Five of the 9 tasks enumerated for the sociologist involve research or research and application, while four are primarily organizational and administrative in nature. The 5 research or applied research tasks are: study of the social environment; action research on the social environment; study of the problems

posed by the sedentarization of herders; research and action leading to the creation of a model organization (groupement fonctionnel) of enrolled herders; research leading to solutions to hygiene and health problems of the local population.

It would appear that most of the socio-economic research concerns of the Project Paper and the Project Agreement are reflected, if somewhat vaguely, in the RFP position description for social science expert.

#### 4. Technical Assistance Contract

As already mentioned, the job duties of the sociologist technical assistant are identical to those enumerated in the SODESP RFP. Social research and monitoring are combined with social welfare activities in one position. The sociologist has as mission to assist the Zone Chief in collaboration with the head of social assistance.

#### 5. Position Description (Ordre de Service)

Notably gone from the SODESP position description (ordre de service) is any mention of research or monitoring activities of any type. There remains only the mandate to engage in social welfare activities.

The removal of all socio-economic research activities from the functions of the American technical assistant was either not noticed or concurred in by USAID/Senegal.

#### B. Implementation Actions Taken

##### 1. American Technical Assistant

The American technical assistant began efforts in her first field trips to collect socio-economic baseline data. These efforts do not seem to have gone very far before her dismissal.

According to her quarterly report, the sociologist developed a short and long-term research program to gather baseline data on the social structure and micro-economics of the zone. She prepared a preliminary survey questionnaire and began to formulate a training program for enumerators.

In the field, she visited between May 7 and August 29, 1981, more than 10 enrolled herder camps (spending 1 to 3 days in each), learning the Peul language and observing the way of life. Preliminary socio-economic data gathering also was undertaken on family economic patterns, such as sale of milk, sale of livestock, size and composition of the family labor force, and non-commercial exchange of livestock (brideprice, gifts, inheritance). No further qualitative or quantitative data gathering of a systematic nature seems to have occurred since the summer of 1981.

## 2. Present Implementation Activities

There is not now, nor has there been over the last year, any socio-economic research or monitoring activity in Zone 7 according to the present social assistance head. He has limited himself to the job duties in his position description, which contains no mention of research on the impact of the SODESP project on the quality of life of the herders.

#### IV. CONCLUSION

Adherence by Peul herder families to the SODESP program requires sedentarization around deep wells. That this might bring with it significant changes in the traditional society and economy of the herders was recognized by USAID project designers and reflected in the Project Paper.

Two major herder support activities were built into the design of the SODESP project. One was the establishment of revolving credit funds to supply medicines and critical food-stuffs to herders. The other was the provision of a research and monitoring team to study the effect of the SODESP program on herder quality of life.

The bilateral Project Agreement specifically provides for the creation of two revolving credit funds in the project zone. To date neither of these funds is operating as intended by USAID project designers. A supply of medicines exists at Zone 3 headquarters in M'Bar Toubab, but herders can buy only by presenting prescriptions issued by a nurse or doctor. There is no stock of simple, non-prescription medicines available to herders in any of the Zone 3 centers. Furthermore, medical visits by the nurse to the well sites are infrequent, several months often passing between opportunities to obtain prescriptions in any given center. There is need to establish simple medical stocks in all four centers, where herders may purchase aspirin, nivaquine, eye drops and anti-diarrhea products at any time.

SODESP has provided a minimal level of medical care in Zone 3 by supplying the occasional services of a nurse and doctor. What was specifically intended in the Project Agreement was the provision of simple medicines at cost to sedentarized herders. This project activity has not been carried out as planned.

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With respect to the revolving fund for critical foodstuffs, SODESP has informed the evaluation team of the imminent arrival of 100 metric tons of millet in Zone 3. This millet will be supplied to herders in exchange for their animals. Apparently this service will be available in all four centers and a further delivery of 100 tons of millet is projected for next year to replace the first stock as necessary. USAID must assure that this fund is used equitably and efficiently in the zone centers.

Monitoring of the socio-economic impact of the SODESP project on herders was also recognized explicitly in the Project Agreement. A research and monitoring team composed primarily of technical assistants provided by USAID to the SODESP organization was to conduct a continual evaluation of project activities and prepare data for the project evaluation scheduled for the end of the third year.

To date no research and monitoring activities have occurred in Zone 3. SODESP sees no value in socio-economic monitoring, and it is unlikely that any baseline or longitudinal data on herder social structure, microeconomics, or quality of life will be collected unless USAID acts to assure compliance with this component of the bilateral Project Agreement.

#### V. RECOMMENDATIONS

USAID must monitor the SODESP project closely to assure that herder support and project monitoring activities are carried out as specified in the Project Paper and Project Agreement. The most important action to be taken immediately is the creation of an effective research and monitoring unit within the SODESP organization. If it appears that SODESP management will not let such a unit function to collect the data which USAID considers vital for project evaluation, then project termination should be considered.

It is recommended that the long-term research and monitoring program proposed by Dr. John Sutter for Zone 3 be implemented as soon as possible (see attachment). American technical assistance should be supplied to SODESP to carry out the program — specifically, the positions of Director of Studies and Programs and of Director of Training and Social Action should be filled to carry out this work for Zone 3 and other SODESP zones as appropriate. Short-term assistance can be brought in to refine the details of the Sutter program while recruitment of long-term personnel is under way. It is to be stressed that until data are systematically collected in Zone 3, USAID will have no way to judge whether or not the SODESP project is having a beneficial effect on herder quality of life.

USAID must also assure that the herder support activities specifically provided for in the Project Paper and the Project Agreement are implemented satisfactorily. There must be adequate and easily obtainable supplies of medicines and food grain throughout the project zone.

Draft Proposal for the Implementation of the Resource Management (Range Management) plan proposed in the SODESP Livestock Project.

Background: The potential degradation of the natural resource base of the Sylvo-Pastorale Zone has been a major preoccupation of the U.S. technicians who have had the opportunity to work both on the planning and the reevaluation of the SODESP Livestock Project. Long-term production goals cannot be sustained under a system that systematically reduces the productivity of the natural pastures. Such evidence is available both from observations and from reports of the Grassland Research Division of the ISRA, can be interpreted to mean that the ranges are deteriorating. This is particularly true in an area circumscribed around a 10 kilometer radius of the functioning deep wells.

The SODESP organization has no range management expertise and no means of monitoring the changing range conditions. The ISRA Grasslands Research Office has monitored the composition of the plant population and air-dry forage production at three locations within the Sylvo-Pastoral Zone. Their interpretation of the meaning of the rapidly changing plant composition may be erroneous, e.g. that is "that the rather dramatic changes that have been observed are due to the distribution of the summer rains and not to either the quantity of rainfall received nor to the effects of heavy grazing use". Aside from changes in plant composition, total air dry bio-mass weight also continues to decrease year after year.

There are other problems relating to the resource base that require attention. One of these is the need for additional watering points to better distribute the livestock.

Another is the promotion of reforestation to provide fuel and construction wood in the savannah area that is being rapidly raped of its forest cover.

Actions Taken to Date

The original implementation plan for the SODESP project provided for technical assistance in these resource areas as well as training for the purpose of developing an overall range management plan that could be replicated throughout the Sylvo-pastoral region. So far this strategy has failed to produce any results for several reasons, paramount of which is the opposition of the SODESP management to focus on the problems. SODESP personnel are unlikely to accept any proposals relating to resource management unless such suggestions will further their objective of increasing the production of beef through their stratified growing program.

Observations

If the project is to continue to receive USAID financing, the resource and range management problems must be identified and the Government of Senegal must be made aware of future implications, if any, of the effects of the SODESP program on the natural resources.

Proposed Action

We suggest therefore that the following step-by-step approach be taken to launch an initiative in this important work.

1. USAID should arrange for a follow-up natural resource study mission of six to eight weeks duration. The mechanics of this are left to USAID/Dakar. It would seem that the CHEMONICS contract would provide the proper vehicle for financing this study; however one notes also that this will need the acquiescence of the Minister of Rural Development. This study will require the services of a single individual charged with the mission of developing a viable alternative range management strategy as compared to the existing plan which is contained in the project paper and repeated in the Grant Agreement and Annexes thereto.

We suggest that such alternatives include the possibility of establishing a small USAID funded range management activity attached to the ISRA Grassland Project and/or a cooperative arrangement with the ISRA group at DAHRA.

Whatever the final arrangements may turn out to be, even to the unlikely eventuality of organizing a special group within SODESP, the individual conducting this assignment must determine that the arrangements are workable and have the full approval of the Government of Senegal institutions concerned.

In addition to developing the arrangements discussed above, a revised implementation plan will be developed aimed at undertaking a full assessment of the potential range productivity in Zone 3; the conduct of field studies for the purpose of determining range condition and trends; the future for perennial vegetation in the zone (grasses); the development of management practices to include stock trails, rotation and deferred grazing schemes etc...

The implementation plan will include such steps as need to be taken to study the feasibility and economics of developing additional watering points and making improvements to stockwater tanks both within and in areas adjacent to Zone 3.

The implementation plan will include the steps to be taken to assess the relative value of the SODESP reforestation program practices, and possibly to commence a program of evaluating the effect of improved range management practices on the woody species within the Savannah-Grassland complex.

A budget providing for technical assistance, support costs, materials and supplies to realize the time-phased implementation schedule would also be submitted.

It is recommended that this study be undertaken as soon as practicable, and if at all possible by mid-February 1983.

WORK PLAN FOR THE SOCIO-ECONOMIC RESEARCH AND MONITORING PROGRAM

Introduction

The Directorate of Studies and Programs should be responsible for the overall analysis, evaluation and reporting of data collected specifically by this division as well as that collected by the teams in range management, animal production and socio-economics. SODESP should re-activate the Directorate in accordance with the agreement with USAID, which should include or be amended to include the following technical assistance to be contracted no later than July 1983. Some short-term actions will have to be initiated as early as March 1983.

SODESP should adopt and activate the Sutter study plan by September 1983.

Actions

I. Contract long-term U.S. technical assistance for Directorate of Studies and Programs by July 1983.

A. Director of Studies and Programs

Should have advanced training and experience in African Livestock and Range Economics, Rural Sociology, or Economic Anthropology.

Duties:

- 1) Serve as Director of the Directorate of Studies and Programs;
- 2) Coordinate field work being done by the field technical staff;
- 3) Help design surveys in accordance with the Sutter Plan;
- 4) Work with and/or contract other organizations such as ISRA to accomplish associated studies;
- 5) Analyze, interpret and report results obtained.

Location:

Dakar (with free travel access to zones to coordinate studies and normal data collection).

Starting Date: July 1983.

B. Director of Division of Training and Social Action

Advanced degree in Socio-economics. (Probably with minimal family obligations to facilitate his living and working in the zone full-time).

Duties:

- 1) Serve as advisor to team leader of the field data collectors (socio-economic research and monitoring team);
- 2) Help with design and testing of survey questionnaires;
- 3) Train personnel in the use of the surveys;
- 4) Assist with collection of data as necessary;
- 5) Verify data being collected;
- 6) Assist SODESP management with the analyses and interpretation of data;
- 7) Oversee social assistance activities in all SODESP zones, particularly revolving funds for millet and medicines.

Location: Mbar Toubab (with free travel access to other zones needed to collect data).

Starting Date: July 1983.

II. Contract short-term U.S. technical assistance to help SODESP management as well as the Directorate of Studies and Programs.

A. Management Systems, Data, Computer and Computer Program Consultation. 3 weeks TDY

This person (or these people) must be trained and experienced in Systems Management and/or Computer Science and Programming.

Duties:

- 1) Review the SODESP Management Computerized Data System;
- 2) Review the evaluation capacity for SODESP of computers and systems;
- 3) Review collection/recording of other relevant data;

- 4) Propose possible improvements of additional data or deletion of data;
- 5) Design a computer program to summarize data into a more useful form for management;
- 6) Review and make suggestions for the work plan of the Livestock Production and Marketing Economic Study;
- 7) Recommend possible data collection improvements to SODESP Management and the Director of Studies and Programs;
- 8) Assess computer capacity to accomplish the Livestock Production and Marketing Economic Study. Recommend any additional computer capacity which may be needed to facilitate the study (possibly a mini-computer).

Location: Dakar.

Date: Jan and Feb 1983.

B. Livestock (Cattle) Production and Marketing Economic Study 3 months TDY.

This team should be made up of a Livestock Economist and a Marketing Economist with advanced training and experience in West Africa.

Duties:

- 1) Review all data available on SODESP (FED and USAID) operations to date and all related studies and/or other documents concerning: input costs; production parameters; SODESP prices; traditional market prices; subsidy costs; capacity and cost of cow-calf areas, réélevage areas, and fattening areas; feed cost and availability (including transportation); marketing cost; and degree of competition with the private traditional marketing system;
- 2) Set up a simulation model to study these data under various alternatives, that is, with and without subsidized feed and animal prices, stratification, marketing, credit, etc.,

to predict the best economic alternatives. This should evaluate as thoroughly as possible the "Stratification Theory". (It may be necessary to purchase a mini-computer to support this TDY or analysis might be done in U.S.);

- 3) Results should include recommendations to the Studies and Programs Directorate as to what type data are missing and/or could improve the ultimate analysis if collected during the remaining year of the project.

C. Animal Production Consultant - 2 months TDY

- 1) Consultant should be contracted to work one month with the production and marketing team to review and possibly modify the data collection procedures for animal production;
- 2) He should return the following year for one month to assist with interpretation of the analyses.

D. Socio-economic Consultant - 3 months TDY

- 1) Consultant should be brought in to refine socio-economic research and monitoring plan pending selection of long-term personnel and field data collection team (2 months);
- 2) He should return the following year to assist with interpretation of data (1 month).

SECTEUR DE DEVELOPPEMENT  
L'ELEVAGE DANS LA ZONE  
SYLVO-PASTORALE  
(S.O.D.E.S.P.)

46, Zone A  
P. 10.282 - Tél. 21.54.72.

D A K A R

PROPOSAL FOR A LONG TERM STUDY PROGRAM

John W. SUTTER  
Directeur des Etudes et  
des Programmes

Juillet 1982

## OBJECTIVES

The overall objective of this program is to generate accurate, comprehensive, and comparable data on pastoral production, consumption, and marketing within non-encadred and encadred herding families within SODESP's zone de naissance.

The objective of the program is to make possible systematic monitoring and évalution of SODESP's interventions within the pastoral economy by providing baseline data, <sup>an</sup> understanding of critical transformations, and working hypotheses about development options.

The specific objectives of the project are as follows :

- to provide a quantitative description of the main features of non-encadred and encadred herding populations, in particular : patterns of labor use, rights to water and pastures, herd dynamics, output and productivity, the distribution of animals between families, and household budgets;
- to describe the transition from elevage traditionnel, to elevage naisseur, how it occurs, and the changes set in motion in terms of use of land and labor (including woman's labor), in herd composition, management, and output, in distribution of animals between households, in individual household strategies and in ability to resist disaster such as drought.

## ORGANIZATION OF THE LONG TERM STUDY PROGRAM

This study program, which responds to the necessity for a systematic monitoring of SODESP's interventions as identified in Note Technique n° 11, will be carried out with the collaboration of all the operating services of SODESP ; the coordination and supervision of the program will be assured by the Direction des Etudes et des Programmes.

Data will be collected by a team of field assistants who will complete basic questionnaires concerning labor use, herd dynamics and productivity, and marketing for a selected sample of households over a period of about 15 months. The role of the Directeur des Etudes et des Programmes and the Senegalese sociologist who will be hired under the program will be to prepare and test the questionnaires,

to select, with the collaboration of the SODESP Chefs du Centre, the herder sample, and to provide regular supervision of field assistants in order to verify and control the data as they are gathered. The Directeur des Etudes et des Programmes and the Senegalese sociologist will also conduct more intensive participant observation on questions less amenable to quantification, in particular differences in the economic and social organization of production between encadred and non-encadred herding sub-samples.

### THE HERDER SAMPLE

To permit an intensive study providing the broad and comprehensive types of data required by the study, and given present budget and staffing constraints, a sample of 60 herding families will be selected within each of SODESP's present operating zones de naissance (Labgar et Mbar-Toubab). A sample of this size (total of 120 herding families) will be chosen to reflect the great diversity within the pastoral economy, particularly as regards herd size between families, and to ensure that there will be a statistically adequate number of socio-economic profiles within each sub-class at the end of the study year.

Within each zone de naissance, 2 C.E.P. will be selected, and a stratified random sample of 30 herding families will be selected at each C.E.P. as follows :

- 1 - Zone 1 (Labgar) : Given the relatively high percentage of encadred to non encadred herders a sampling ratio of approx 70 % - 30 % is proposed. The sampling priority given to encadred herders is intended to provide SODESP with detailed information on SODESP's major priority in the zone, which is making its encadred system work more efficiently.
- Zone 3 (Mbar-Toubab) : Given that SODESP's program in the zone is still in quite early stages, and that a major priority is to keep up (or accelerate) the pace of encadrement, an equal percentage of encadred to non encadred herders is proposed.

Within each sample household a separate interview will be conducted with the household head and all other married but dependent males resident in the galle. In addition, in recognition of the vitally important role of women in the social and economic reproduction of the household economy, at least one woman (probably the household head's senior wife) will be regularly interviewed.

### SELECTION AND TRAINING OF ENQUÊTEURS

At the outset of the study four enquêteurs will be recruited and will undergo an intensive training session. Each enquêteur will be placed within each of the four CEP's chosen for study, and will be responsible for the 30 herder family. Among his other duties, each assistant will interview 1 or 2 herding families per day.

### DATA COLLECTION METHODOLOGY

Two main data collection procedures will be adopted throughout the study depending on the types of data required. The first is intended to measure phenomena of a "flow nature" in which a frequent interview approach is desirable due to high rates of memory loss. The major aim of interviewing frequently is to lower the reliance on memory recall.

Given the marked seasonal variations in all aspects of domestic activity, it is proposed that each herding household be interviewed once a month over a minimum of a one year time period. Time studies of a shorter duration are liable to present an incomplete picture of the annual economy of the household.

In contrast to "flow data" a certain number of phenomena, which may be called "stock" or "single point data" are susceptible to collection at less frequent intervals. Some of these data are sensitive (such as the size of livestock holdings) and can only be collected with any hope of accuracy once the relationship between the project staff and the rural community has been solidified and a base of confidence and security established.

#### Data collected once a month

Household Budget survey : All expenditures and earnings since the previous visit will be recorded, the enquêteur employing detailed lists of possible purchase items and income earning activities as memory aids.

Livestock entries and exits : A questionnaire will be specifically designed to record all livestock entries (births, purchases, gifts, loans) and exits (sales, slaughter, deaths, losses, gifts, loans) from the total household herd during the one month period. For all entries and exits, the owner of animals within the household, and the species, age and sex characteristics will be recorded. For purchases and sales, additional information will be collected, specifically the place of the transaction, the marketing participants involved, the price paid or received, and the reason for acquiring or parting with the animal.

Household activities : Allocation of energy and time, labor expenditure in different types of activity (herding, milking, watering, farming, gathering, marketing, travelling, festivities, leisure).

Seasonal herding practices : Movements of animals and peoples, availability and use of water, fodder, graze and browse (plotted on maps).

Herd and flock dynamics : Liveweights and seasonal changes, sex ratio at birth, seasonal distribution of births and deaths, weight gain by young animals, mortality (with cause) by age and sex class, domestic slaughter, milk yields... Most of these data will be collected for each family every month. However, for certain items (such as milk yield and weight gains by young animals) a subsample of animals will be selected and closely monitored at more frequent intervals.

Data collected infrequently

One of the advantages of the frequent interview approach is that additional substudies can be progressively integrated into the monthly interviewing schedule as the study unfolds. The following list (which does not claim to be exhaustive) is presented as an example of certain data that are susceptible to collection at less frequent intervals.

Family historical information : The origin of the herding family, pre-forage transhumance patterns, post-forage transhumance movements.

Description of social organization : Lineage, residential age, ethnic, sexual ; authority patterns.

Livestock ownership : Animal ownership within the household ; species, age, and sex composition of household herds and flocks ; cattle entrustment ; use of animal by-products ; costs of maintaining animals, non market distributive mechanisms.

Measurement of cropped area and agricultural yields

Reproductive history of cows in the herd and information pertaining to the cows descendants.

The following data will be collected for a statistically significant sample of cows : name of cow, origin, age, total number of calves produced, interval between calving, and what has happened to each calf produced from that cow.

Summary Table of Data Collected Monthly  
and Data Collected Infrequently

Data collected monthly

Household budgets  
Livestock entries and exits  
Household activities  
Seasonal herding practices  
Herd and flock dynamics

Data collected infrequently

Household historical data  
Social organization  
Livestock ownership  
Measurement of cropped area and  
agricultural yields  
Reproductive histories of cows

USE OF THE DATA

Household Labor Data : This data will be used to compare the household labor requirements of encadred and non encadred herders, and will attempt to identify the :

- changing labor requirements resulting from SODESP's various interventions and from the changing species composition of household herds ;

- constraints and thresholds where herd size or recommended management strategies may be limited or constrained by labor shortage.

Evidence on herd and flock dynamics : These data will be used to evaluate the differences in herd size, structure and composition between encadred and non-encadred herders. The data will permit the calculation of basic zootechnical parameters of 'élevage traditionnel' and 'élevage encadré' such as fertility, mortality and offtake rates ; these fundamental parameters can then be used to model herd and flock dynamics in encadred and non encadred herds. The models can then be used to experiment with changes in vital rates, for example, changes in fertility, mortality, and offtake. Output of meat and milk will be calculated from these models, and this, in conjunction with labor use data, will enable labor productivity to be calculated and the conditions for changes in labor productivity to be explored.

Evidence on the distribution of animals between households : These data will be used to explore issues of economic stratification between and within encadred and non encadred herding populations. Lorenz curves will be constructed for the latter two population groups (for all household animals together and for each species separately). Correlations will be explored between household herd size and such variables as household size, the categories of animals sold, overall offtake rates, the sex and age composition of cattle herds, and the acceptance and application of improved livestock management practices.

Evidence from family budgets : These data will be used to calculate the annual revenues of encadred and non encadred herding populations (both monetary and subsistence revenues), the structure of their household budgets, the seasonality of cash expenditures, and the capacity to invest in improved livestock practices.

Data on the species composition of animal sales and animal prices : These data will be analysed to highlight the main determinants of livestock prices (such as seasonal variation in liveweight and in demand), to monitor evolving prices for different animal categories in the traditional marketing circuits, to test for correlations between seasonal variations in sales and in prices, and to explore the expectations that herders have about future prices and their beliefs about sale of animals in general.

#### PROJECT OUTPUTS

The main outputs on the project will be :

- 1) - The training of a SODESP team capable of carrying out a detailed and ongoing program of project monitoring ;
- 2) - Detailed quantitative and qualitative information pertaining to the functioning of traditional and encadred herding populations, and better understanding (which is essential for detailed and successful planning) of the ways in which livestock production systems change with increasing market production and development interventions. The results of this study program will be fed directly into SODESP's planning and decision making structure.
- 3) - Policy recommendations for SODESP's various programs, concerning such subjects as organization frameworks for development, the seasonal scheduling of operations, pricing and credit policy.

Rubriques	Montants (CFA)	
	Par mois	Par an
<b>I. - PERSONNEL</b>		
a) - Directeur des Etudes et des Programmes	-	-
b) - Chef de la Division des Etudes et de la Statistique	-	-
c) - Sociologue, Superviseur d'enquêteurs :		
. Salaire de base (catégorie 5-1)	133.456	
. Indemnité de logement	12.000	
. Indemnité de déplacement	12.000	
. Indemnité de sujétion	12.000	
Sous-total .....	219.456	2.633.472
d) - 1 Statisticien		
. Salaire de base (catégorie 3-6)	103.230	1.238.760
e) - 4 enquêteurs (plein temps sur le terrain)		
. Salaire de base (catégorie 3-4)	92.062	
. Indemnité de logement	12.000	
. Indemnité de déplacement	12.000	
Sous-total .....	108.062	
	x	4
	424.243	5.090.976
f) - 1 enquêteur : études court terme (marchés de bétail, études à la tâche) : 6 mois par an	106.062	636.372
<b>II. - TRANSPORT</b>		
. 1 véhicule et 150 Litres d'essence/mois déjà acquis dans le cadre du contrat d'entretien technique (poste sociologue) ou à acquérir auprès de l'USAID		
. Supplément d'essence : 100 litres/mois .....	26.500	318.000
<b>III. - EQUIPEMENT DE TERRAIN</b>		
. Balances, matériel topographique		350.000
<b>IV. - CARTOGRAPHIE</b>		
		200.000

Rubriques	Montants (CFA)	
	Par mois	Par an
V. - <u>FRAIS D'ANALYSE D'ORDINATEUR</u>		1.500.000
VI. - <u>FOURNITURES</u> (éditions, tirage)		350.000
Sous-total .....		12.317.580
VII. - <u>DIVERS ET IMPREVUS</u> (10 %)		1.231.758
<b>TOTAL GENERAL .....</b>		<b>13.549.338</b>

Le Directeur des Etudes et Programmes

