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Discussion Paper on Agricultural and Rural Development Strategy for USAID/Senegal

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A. Introduction and Summary

This discussion paper represents a first step in development of a strategy for USAID/Senegal in agriculture and rural development. In an ideal world, we would have unlimited resources to do all things at once. But, in reality our resources are limited. A strategy is our plan to use these limited resources to achieve what we want to or should accomplish. What gives our strategy shape and form are the things we don't choose to do.

Our strategy is based on an analysis of Senegal's agriculture. This analysis highlights two important points: (1) the first is the recognition of the need to create a growing class of efficient small scale commercial farmers in Senegal. This paper argues for moving away from the present fixation on the subsistence level peasant and toward an emphasis on greater monetarization of the rural economy. This argument is based on the nature of the production/consumption patterns in Senegal, the pressing macroeconomic needs of the country, and the desire to increase rural welfare.

(2) A second point we stress is the necessity of creating greater reliability of the agricultural production system. This includes the related factors of input supply, marketing and supportive institutions. Greater reliability and the resultant lowering of risk are also necessary conditions for the monetarization of the rural economy.

In the area of rural development our analysis stresses the need to recognize the urban/rural interdependency of Senegal's population, to encourage it and to direct it. It also stresses the importance of human resource development in achieving increased productivity in the rural sector and the difficulty of passing skills and knowledge to the grass roots producer.

We also undertake a review of other donor activity in agriculture and rural development and an analysis of AID resource and management capabilities in this area. In our strategy we propose a basic project model. This model is an inverted "T" with vertical linkage from macro-economic needs of the country to the producer/beneficiary, and horizontal linkage from the producer/beneficiary to those elements which support and reinforce his ability to utilize and benefit from the resources of our projects. The focus of this model is the producer/beneficiary. The context of the project is determined by the macro-economic needs of the country.

We have developed three general investment selection criteria for our projects. In order of priority these are:

1. a. Select investments which have the greatest marginal productivity returns,

   b. Select activities which build on existing capabilities and skills,

2. Select investments which conserve or replenish existing productive capacity.

3. Select investments which will restructure the economy or its productive institutions in such a way as to insure future growth potential.

Using these criteria we propose that AID focus its activities on three regions : Casamance, Peanut Basin and the Fleuve. In the Casamance we suggest that AID should modify its present project in the Lower Casamance toward greater income and productive output. At the same time we should expand our programming into the middle and upper Casamance, the region we view as having the highest marginal productivity in both dryland and irrigated agriculture.

In the Peanut Basin we propose an extension of the present fuelwood activities as a first step in a longer range program to conserve the resource base of this productive region. Finally, in the Fleuve we support a long term commitment to building the necessary infrastructure and institutions of this region of enormous long term potential. We suggest that AID should concentrate its implementation effort in the Bakel region to build on its experience in the area.

We begin our detailed analysis with a review of the agricultural characteristics of Senegal.

B. Agricultural characteristics of Senegal

In this paper we define agriculture in its broadest sense as the production and/or harvesting of food, fiber and non-mineral combustible material for human or animal use. This definition includes activities in crops, livestock, fisheries and forestry.

A realistic development strategy must be defined in terms of the characteristics of the country where it occurs. It is important, therefore, to have an analysis of the food and agricultural characteristics of Senegal as a basis for AID's strategy for agricultural and rural development.

Food Crops

Senegal's food needs are of two types-day to day food requirements under normal conditions and emergency food relief. Most of the comments here are related to the first of these. Emergency food relief is a special case that is, and should be, handled apart from normal AID planning.

The day to day need for food is the constant concern of the population and is the proper concern of our strategy. Of course, the long range consequence of our development efforts should be to reduce the need for emergency food relief.

Senegal has a dualistic food system. The rural population produces and consumes most of its food. The bulk of this food is millet, with rice locally produced and consumed in the Casamance and to a limited extent in the Fleuve. For all practical purposes, almost no food is consumed outside of the region where it is produced.

The urban population on the other hand, consumes mostly imported food of a type that is different from that consumed in the countryside (rice and wheat). Thus, in general terms, we see a rural population producing and consuming mostly millet and an urban population consuming mostly imported rice and wheat with little connection between the two population groups.

At the moment, about 30% of Senegal's population is urban. The urban sector is the fastest growing segment of the population. It is estimated that by the year 2000 from 40 - 50% of the population will be urbanized. Ross has shown that the urban population is highly resistant to substitution for rice of products such as millet. In his study of preferences of urban consumers he found that millet was not preferred because of its lengthy preparation time and its taste (heaviness). It has been pointed out that if preparation time were a major constraint on millet consumption, it would be likely that an informal trade would develop on the local street corner to prepare millet for consumption as is seen in the preparation of cassava in o er West African countries. Since this preparation is not seen in Dakar, it could be assumed that taste is the major restraint on millet demand by the urban consumer. In another study Ross has shown that as much as 20% of the diet of the rural population in the Peanut Basin is imported rice and that the rural population will trade millet for imported rice to improve the variety of their diet.

In addition, studies on migration (Colvin) indicate large interchange between urban and rural areas and great mobility within the society. Many urban values tend to be adopted by the mobile rural population and food taste is one of them. This leads to a prospect of rapidly growing dependency on imported food. It is paradoxical that while millet has comparatively low urban consumer demand, it is the only major crop in Senegal to show increasing yi and production. Millet has had higher average yield and production in the drought period since 1969 than in the previous pre-drought period. Given normal rainfall, Senegal is, at present, self-sufficient in millet production.

While millet production is comparatively good, the situation with rice production is a disaster. Since before independence, Senegal planners have talked about and made plans to increase rice production.

But in the 20 years since independence, rice production has increased less than 0.2% a year. One is led to question the seriousness of Senegal's commitment to increasing rice production. All of the necessary supportive institutions are just not there. Research, engineering and construction infrastructure, adaptive production implements, marketing mechanisms, milling facilities, and pricing structures are still inadequate to carry out an active rice production program.

The rice production regions of Senegal (Casamance and Fleuve) are distant from the main consumption area. These regions are some of the poorest of the country. Both experience considerable out-migration and generally suffer a labor shortage. Women play a disproportionately large role as labor in rice production.

Rice production in general has high costs. Later we will look at some of the specifics of this production cost as they relate to regions, crops and production methods, but it is sufficient here to note that these high costs are generally the result of inefficient use of land and water resources, limited manpower, high transportation costs, institutional problems and the learning curve of farmers growing a new crop under new conditions.

Let's look at some of the specifics of the two rice growing areas The Casamance produces about 70-80% of the rice grown in Senegal. Almost none of this rice is marketed outside of the region. The major form of production (60,000 ha.) is traditional swamp rice. This is mostly from the estuaries of the lower Casamance. Production of swamp rice is falling. The amount of land under cultivation is also falling. These soils (saline/acidic "cat soils) are increasingly difficult and risky to cultivate, and prospects of increasing land under cultivation or production on that land are extremely dim until a major breakthrough occurs in techniques for handling this type of soil. Such a breakthrough may be a long time in coming. Thus, one cannot expect significant increases in rice production in the Lower Casamance. There are, however, major production possibilities in rice and other crops in the middle and upper Casamance, regions presently not substantially exploited.

The Fleuve region produces about 10 - 15,000 tons of marketed paddy rice on 8 - 10,000 ha of irrigated land. This figure should be compared with the 250,000 tons of imported rice (415,000MT paddy). Great expectations have been stated for rice production, mostly from the Fleuve region. The National Food Strategy estimated tons by 1980 and by 1985. The Vth Plan speaks of 255,000 tons by 1979; actual production in 1979 was 121,000 MT.

The GOS talks of putting 5,000 ha of new irrigated land a year into production in the Fleuve. The World Bank estimates that a possibility of less than 2,000 ha is more realistic. Past performance would indicate that even that may be very optimistic. There are major institutional problems that must be resolved before rice production will begin to increase. An indication of these problems can be seen in figures of rice hectarage harvested as a percentage of that planted. This figure has been as low as 30% in recent years. The causes of the problem have been inability to get water to the crop when needed, pumps breaking down, lack of fertilizer or insecticide when needed, no marketing facilities, infestation with weeds, lack of labor availability, and so forth.

Seeing the ever increasing need for imported rice as the result of increasing urban-based demand and poor local production, a rice fixation has developed among donors and GOS officials. Everyone seems to be looking for a rice bowl. Massive programs of irrigation in the Fleuve and the Casamance are based almost solely on the need for rice production. But AID and the GOS should not be fixed on the production of a single product -- rice -- but on the broader question of economic and agricultural growth. The most important question for planners is where is the most potent area for this growth : what is the best use of existing and projected land, labor and capital.

While not denying the paramount importance of rice, one should also note that there are a number of other food crops that have major possibilities for impor[illegible]ttution. Of these, corn seems to be the most important. Unfortunately, we don't know much about corn production, marketing and consumption in Senegal. Corn should be a priority area of research for AID. In theory, corn has a greater possibility as substitute for rice in the diet of the urban consumer that other locally produced foods. Wheat is another largely unknown crop, Senegal imports about 100,000 tons of wheat a year at a cost of 25 million dollars. There is a possibility of producing it as a winter crop in the Fleuve.

There are other important import substitution crops. Senegal imports about 10,000 tons of onions a year from Holland (value (1976) 882 million CFA $3,6 million). It also imports 10,000 tons of potatoes (value (1970) 888 million CFA $3,7 million). Eight million dollars a year of bananas are imported. All of these crops are producible in Senegal. Some would need irrigation. Production of these crops would create local farm income and have a direct effect on saving foreign exchange.

The production of food for import substitution assumes a surplus being generated on Senegalese farms that somehow or other can be moved to the mostly urban consumer. The reason for doing this should by now be apparent. With 30% of its population urban, Senegal is one of the more highly urbanized societies in Africa. At the present rate of urbanization, the majority of Senegal's population will be urban in 30-35 years. If Senegal's farmers will not or cannot produce the food these urban consumers require, the country will be faced with an impossible food import bill. The result will be economic disaster or massive malnutrition or even starvation of the urban population's poor.

Senegal needs commercial farmers, Unfortunately the term "commercial farmer" often brings forth visions of capital-intensive, large scale farms which seems inconsistent with AID's goal of working with the poor majority. But these visions are wrong. A large group of commercial farmers already exists in Senegal in the peanut basin. They are neither large scale nor capital intensive. Commercial farmers in such Asian countries as the Philippines, Taiwan and South Korea are all small, labor-intensive and highly efficient. At the moment, commercial farming for food crops outside of vegetables does not exist in Senegal but it could and should be created. Such a development is required to help the welfare of the poor majority.

Development of commercial farming will require a whole new look at agriculture in Senegal. New institutions will have to be developed directed to the local farmer and using such capitalistic ideas as fair price and marketing supply and demand. There is still much thinking to be done on how to implement this idea. In the strategy section we will give a few initial ideas on how this commercial farming could be instituted.

If small farmer commercial agriculture is to succeed, the cost of food production has come down. Senegal, like some of its neighbors, is in danger of institutionalizing a high cost fodd production system. Too often the reflexive answer to food production problems has been to raise the price paid to the farmer. While the supply response to price increases may produce a certain abundance of food, if that food is produced by inefficient, high cost production systems, the effects on the economy, and particularly on the poor, may be extremely negative. In our study on the possibility of selling excess millet from Senegal to Mauritania, we found that the cost of millet production in Senegal was already $50 a ton higher than that of U.S. sorghum shipped from the Gulf.

Too often policy makers, planners, and often farmers themselves think in terms of production and turnover rather than of profit and marginal returns. For example, research for the extension packages which SODEVA was pushing was based on potential yields rather than use of a production function to look at economic yields. This type of thinking leads to the folly of prices for products being set by variables other than cost. There is a need to reeducate those at both the policy level and the production level on the need to think in economic terms. Efficiency needs to be rewarded. Farmers must begin to perceive potential economic gains from increased productivity rather than only form a jumped increase in farm gate prices.

A final point needs to be noted on food crops. Our focus tends to be only on food production. But the question of food is basically a nutrition question. Nutrition is more than jus having food available. It has to be the right food at the right time, consumed by the right people who are healthy enough to be able to use the value of that food.

Nutrition has all sorts of implications for marketing, storage, processing, income distribution, and nutrition education. Even though AID may not be able to deal with all of these aspects, we need to be aware of all these possible ramifications of our agricultural and rural development strategies since this nutrition element is the raison d'être of it all.

Cash Crops

Cash crops should not be discounted in our agricultural strategy as both the farmers and the economy need the income that they generate. Production of cash crops is consistent with both AID mandates and with our aims of supporting the macroeconomic goals of the country. The major cash crops in Senegal are peanuts and cotton. The history of the production of both of these crops is not good. Cotton production had been increasing rapidly until 1977 when both production and area planted began to drop off sharply due to institutional problems and poor prices. Peanut production, the mainstay of the economy, has been falling about 1% a year over the last 20 years. Production has been dropping primarily due to declining yields resulting from lack of rain and institutional problems. Farm gate prices have also been too low. The poor performance of these cash crops, particularly peanuts, has been a major concern of the GOS and is one of the major issues addressed in the Plan de Redressement. If the reforms of the Plan work, there should be an increase in peanut production when normal rains return.

Stability in the production of peanuts is needed to keep the crushing facilities operating at full capacity and maximum efficiency. Stability in peanut production also produces a certain stability in the economy as a whole. The chain effect of peanut crop variations has thrown the Senegalese economy into topsy-turvy gyrations which make forward planning extremely difficult. The prospects for the oil seed market is such that Senegal should not expand its peanut production but should seek greater stability of production at about 1,000,000 tons, an amount that would keep existing crushing factories working at full capacity.

As small farmer commercial agriculture is developed, a number of present food crops could become income producers along with the traditional cash crops. These include onions, potatoes, tomatoes for paste, bananas and other fruits, and general garden vegetables. Once rice, corn and millet production and processing is developed, they too could become major income earners for the small farmer.

For both food and cash crops, the major problem at the moment is the lack of reliability of the production system. Reliability in engineering terms is isually assured by redundancies in the system. Thus, if one part of the system fails, a second, back-up, part will take over its job, thus preventing the failure of the system as a whole. Traditional farmers do much the same thing when they plant a number of different crops at different times so that if one crop fails they can fall back on another to keep from starvation.

In terms of reliability of a system, the worse situation is to have a number of critical operations linked together in a series with each dependent uniquely on the success of the others. If one of those links fails, the whole operation fails. Odd as it may seem, until recently this series system was the arrangement of the government's agricultural support system. Thus, when ONCAD failed to provide farmers with fertilizer, or tools or good seed, there was no back-up system the farmer could turn to and agricultural production plummetted. The same was true of other unique sources of credit, marketing and information to which the farmer had access.

What is needed is a parallelism of services in the agricultural system. The GOS has been reluctant to allow this parallelism out of a distrust of the private sector "middlemen" and a desire to have control of a basic part of the economy though a single, supposedly efficient structure. But they have been wrong. The cost in last agricultural production and unreliability of the agricultural system has been too great. In our discussion with the government and in the development of our program, we should try to encourage an active role for a legal parallel private source of credit, inputs, information, processing and marketing for agriculture to compete with the existing public sector. This should create not only greater reliability but also greater efficiency in both the public and private delivery of services to the farmer. Such a situation would help to lower the risks of farming. Lowering these risks is a critical need before major farm innovations can be accepted.

Senegal needs not only to improve the reliability of its agricultural institutions but also to improve the reliability of the physical resource base -- specifically the plant/water relationship. The reason for this rather clumsy terminology is that too often we think only of irrigation in this context. There are many ways short of irrigation, to increase reliability (stability) of agricultural production in dry climates such as the Sudano-Sahelian. Plantvarieties can be selected or be bred for shorter maturation times, less transpiration and for other water saving features. Cultivation and fallow systems can be designed to utilize to the maximum available water. While these and other techniques are useful in increasing production possibilities, irrigation is still the final resort.

No one would question the need for Senegal to seek to utilize to the maximum the water resources available to it over the long term. The question is not to choose between irrigation or dryland agriculture but to determine how to use both types of agriculture in the most efficient and beneficial manner.

Senegal has three types of water resources -- rainfall, surface water and ground water. Both the Colvin and the Carvin reports stress the desire of the rural population to have wells put into their villages for water supplies and as sources of irrigation. Unfortunately, the exploitable potential of Senegal's ground water supply is still unknown. Because of this lack of knowledge no wells are allowed for irrigation purposes without express permission of the government in order to prevent depletion or degradation of the present water system. Even with this control, it is known that use of the ground water supply near the coast has caused salt water to move inland, raising a threat to some existing wells. From the information we could gather, it appears that only in the lower Sine Saloum is there much possibility for exploitation of the ground water system for irrigation.

Not only is the availability of the ground water supply uncertain, but the study Garrity did on the recurrent cost implications of wells indicates that their cost may be too high when they are used for drinking purposes, let alone for use to irrigate crops. With the continual expected rise of petroleum prices, this situation will get worse rather than better. We can conclude that ground water will play a very limited role in irrigated agriculture in Senegal.

There is a growing collection of studies on the trade-off between various forms of irrigated and rainfed agriculture. These studies tend to give differing and sometimes conflicting results. The one point that they all agree on is that rice cultivation under the present capital intensive method in the Delta of the Senegal River is not economical. Beyond this point, things become a bit unclear. Tuluy feels that only improved swamp rice cultivation in the Casamance is possibly competitive with imported rice. Jabara has shown that, given risk averse reactions of national planners about food needs, local production cost can be discounted to a certain degree depending upon the amount of risk aversion the planners have. Under her calculations irrigated rice in the middle Fleuve is competitive with imported rice. Rigoulot shows that under changed milling and marketing conditions rice from the Casamance would be cheaper than imported rice. These results don't give us a clear cut single answer on where and what type of irrigated agriculture, let alone the amount and type of dryland agriculture, we should support. They do however provide a start on materials necessary to begin to make the investment decision needed to support the areas of greatest potential growth. The GOS, AID, and other donors all face the problem of investment and development planning on the basis of very skimpy data. It is a lamentable fact that even after all the projects that have gone on in this country we still have little idea of what works or doesn't work and why. This lack of information is due to a large extent to limited data collection. Just collecting "data" is not the answer, of course. What we need is greater emphasis on solid, rigorous, well designed research and data collection incorporating the basic methodology of hypothesis, model, data, analysis and documentation.

One last point is needed concerning our investment and development strategy in rural and agriculture development. Many of the investment decisions tend to be based on some criteria of "return on investment" (ROI). Agricultural development is very poorly adapted to most ROI techniques. This lack of adaptation is primarily a function of the length of the gestation period between the time of the initial investment and the time when quantifiable and taxable returns on that investment become evident. A low ROI may or may not indicate a bad investment. Much depends on potentials, time frames and alternate investment options.

Livestock

The total revenue from livestock production is about the same as from cereals (rice, millet, corn). Not only is livestock economically important, it is of paramount social and cultural value to the herders Much of the livestock sector has the same problem as that of rice production in that the production areas are distant from the major consumption area. This means that marketing and transportation are major concerns for the sector.

The AID program in livestock is in the principal production area of the Ferlo. We still have much to learn from our two programs. There has been a major question raised on the social consequences of the offtake policies of the SODESP Project. The economics of the stratified system has been questioned by a number of observers, Stryker being only one. There appears to be a large possibility for the private sector in livestock, but, outside of two large fattening farms, nothing has yet materialized.

Besides the production of meat, one of the most important roles for livestock is in the area of mixed farming. The possibility of greater mixed farming in the Fleuve with the development of irrigated forage crops, confinement of herds and intensive use of manure is of particular importance. The Middle and Upper Casamance also have great potential in this regard, as does the Peanut Basin.

Fisheries

Fisheries is often pointed out as the major, if not the only, bright spot in the Senegalese economy. On closer examination this assessment needs to be toned down. While it is true that fishery exports has risen dramatically in recent years, most of the catch that is exported comes from non-Senegalese boats. Senegalese industrial fishermen account for only 15% of the total catch. This sector of the fishing industry is in trouble. While a number of important projects have gotten underway in port facilities and storage, the fleet is still outdated and inefficient. The traditional fishing sector has been more successful, particularly with the motorization of traditional pirogues. After remarkable gains in production, rate of growth has declined in recent years and production seems to have reached a plateau. Competition from foreign vessels has been partly to blame.

Almost all of the catch from the traditional sector is sold as fresh fish on the local market. At the moment little is being done to improve the drying and local processing of this catch.

Inland fishing has been the biggest disaster of all. Because of the drought both the number of fishermen and the catch from the Senegal River has fallen dramatically. It is now so low that it is not even measured. The same has happened in the Casamance but not on the same drastic scale as in the Fleuve. AID's inland fish project may be extremely important in reversing this downward trend.

C. Rural Development

In this section of the analysis we would like to look at two thoughts that relate to overall rural development rather than to production of agricultural crops. The first of these thoughts concerns the urban/rural interdependency within Senegal, particularly concerning the secondary cities and rural commercial centers. The other thought relates to the role of human resource development in overall rural development.

Urban/rural Interdependency

Lucy Colvin's study on migration patterns in the Senegambian Basin highlighted the fluid and interdependent nature of the rural and urban population of Senegal. Secondary cities, in particular, play a vital role in the development of the rural society. It is clear that peasants are not isolated nor homogeneous in composition. Nor is there a clear distinction between rural and urban population. The increased urbanization of the rural society is now underway; we can not stop it nor should we stop it. We should, instead, try to encourage and direct it.

We have already shown the importance of commercializing of agriculture. The principal mechanism of accomplishing this will be the growing urbanization in rural areas. Commercialization of agriculture will mean the monetarization of the rural economy. This monetarization will, in turn, lead to greater specialization in creation and delivery of goods and services. Both presently needed and new goods and services will become available, produced by more efficient specialists. These will be purchased by farmers with funds generated by the sale of farm goods. The growing rural urbanized areas will be the centers for this specialization. This specialization, collected around rural centers, should lead to the growth of the parallel sources of agricultural inputs, credit, information, and marketing services we noted earlier. These rural growth centers can also be the point where greater non-farm employment opportunities can be created to serve as sources of non-farm income for the rural population.

Thus, these increasingly numerous small rural urbanized areas can serve as a focal point in the dynamic interplay between the metropolitan urban center of Dakar and the farmer. They can play a role in collecting and processing of farm produce, supplying of farm inputs and information, providing of banking and credit facilities and acting as social and political centers for the rural population.

While the expansion of these rural urbanized areas should be encouraged, it should be planned for so as to avoid or at least mitigate the adverse effects such areas can have on the resource base of the region where they are located and their possible negative social, cultural and economic consequences. As an example, the Gannett Flemming study indicates that as many as 200,000 people will live in urbanized areas along the Fleuve (not counting Saint-Louis) by the turn of the century, 20 years from now. Without proper preparation for this population there is the risk that sewage and effluents from processing and manufacturing plants and other pollutants will sharply reduce the quality of the water of the Fleuve. Urbanized sprawl, squatter villages and other negative social, cultural and economic occurences could further degrade the resource base of the Basin.

Human Resource Development and Rural Development

As described in this paper, our basic goal is to increase the productivity, efficiency and reliability of the agricultural sector. One of the primary means of achieving this goal is human resource development. The evidence linking this means to this end is growing and convincing. Theodore Schultz in his Nobel prize lecture stressed that the "decisive factors of production in improving the welfare of poor people are not space, energy, and cropland; the decisive factor is the improvement in population quality". In the World Development Report, 1980, the World Bank makes a detailed and quantitatively supported argument to support the importance of human resource development in economic growth. In our Joint Assessment it was noted in all our projects that greater involvement and understanding of project objectives and their

management by beneficiaries would improve project productivity. This involvement can only be done through greater levels of human skill being implanted with the beneficiaries themselves.

In many areas of human resource development AID responds well. We can generally meet the training needs for middle and upper level managers, technicians and trainers. But in one major area we still have not found a way to respond effectively. This missing link is providing skills to the beneficiaries (farmers, herders, fishermen, etc.) to manage and efficiently use the resources made available to them by our projects. This type of training has to be at the bottom level with those who actually get their hands dirty growing or raising food. It also must provide the appropriate technical skills in management and production. Ideally, this should be accompanied by functional literacy and computational training. The level of training should be such that the beneficiary should be able to read simple instructions and keep basic account books.

The present system we use to train farmers, herders, etc., is to set up an extension or "animation" organization and train the trainer or animators. This system is not working. The people in these extension organizations and those that we train as trainers are too often removed from the environment of the farmer. While they may have only limited education and limited ability for upward mobility, the magic wand of a job with the government in an AID project turns their heads toward Dakar and the bright lights and away from the farm. Too often such extension agents tend to be administrators rather than educators. They are interested in how much fertilizer the farmer uses, not in instructing him in how to use the fertilizer. They collect debts, see that the crop in planted according to their instructions and make sure the peasant is following the government line. They have no obligation to instruct the farmer or to answer his questions or needs. They are responsible to the Government and not to the farmer. Animators, on the other hand, come to animate but to do little else. They are selling ideology, not how to grow better crops.

An additional problem with the present system is that it creates enormous recurrent cost problems. Too often the extension agencies and animating services demand to have all the accessories of the job before they can do the work. This means not only desks, typewriters, offices, etc., but their own vehicles and a period of training overseas. In sum, these skill delivery systems don't work, or, at best, deliver too little service for too much money.

What is the solution to this problem? We don't know yet, but two elements would seem to be needed in whatever final answer evolves. The first element is the need for a locally derived and locally based representative or contact person between the needs and desires for informations and skills of the farmers and sources of this information and skills. Equally important, this contact person, who ever it may be, must have part of his/her compensation in funds or kind provided by the farmers. Only in this way will there be an obligation on that contact person to seek that information that is needed in response to farmers' needs.

The second element is the need to begin to develop, in a very low-profile way, extension and reading materials in indigenous languages. At the moment there appears to be lots of talk and little action as far as literacy programs are concerned in indigenous languages. This may change in the future. A functional literacy program needs to do more than just teach people to read; it must have material for them to read once they have learned. By starting now to develop these materials, AID will be in a good position to capitalize when renewed interest in literacy programs occurs, as Gellar has suggested it will.

D. Other Donor Activity in Agriculture and Rural Development

To be most effective, our programs need to be coordinated with those of other donors to avoid redundancy and to support each other. The following is a brief overview of donor activity in the agricultural and rural development area taken from data prepared for the Ministry of Plan.

Peanut Basin

Most donor work in this area is directed through SODEVA. The World Bank and the Caisse Centrale are financing programs in Sine Saloum. FIDA and BIRD are developing programs in the Mbour and Louga areas. AID will fund activities in the Thies and Diourbel Regions. An extensive program in storage and development of a security stock is underway with USAID, German and French financing. The FED is continuing to finance a program for confectionary peanuts, while the French have just come through with funds for decentralization of the Seed Service. In Bas Saloum the Germans are finishing a general development project. In forestry, USAID is funding a project in village woodlots and firewood production.

Eastern Senegal

The FED is finishing up its cotton and cereal project. At the same time the World Bank is looking at an integrated development project in Eastern Senegal and in the Upper Casamance. The World Bank, IDA and Kuwait are also carrying out a livestock project in Eastern Senegal. The Government is looking for financing for another livestock project in the department of Kedougou.

Casamance

The Sedhiou Project is continuing with both Bank and Caisse funding. The government is looking for about $7.5 million for this project after 1983. USAID will be continuing to operate in the Lower Casamance project. Senegal has Canadian, BAD and Citibank funding for the Guidel dam and the Chinese have promised funding for the Bignona Dam. The SODAGRI project in the Anambe Basin has received Saudi funding but is still looking for $17 million to complete it. A number of forestry projects are being funded in the Casamance by the Canadians and the U.N.

Fleuve

There are a number of projects going on in the Fleuve. The French and the

World Bank are financing most of the projects in the Delta, and the Dutch the perimeter on Ile de Morphil near Podor. The French are also financing work at Matam, and, of course, USAID has a project in Bakel. Kuwait is providing some of the funding for Debi with the World Bank, and the Germans have a project in Nianga.

Sylvo-Pastoral

Livestock is the principal resource of this region. Both USAID and FAC are actively involved in the SODESP project with some funding from the FED. In the Bakel region USAID has another livestock project. The Swiss have a fattening operation near Lake Guiers.

North Coast

This is a major vegetable and fruit area. Fixation of the sand dunes and protection of the area is being undertaken by USAID and the U.N. The Belgians have a major horticultural project, with the FAO, in the Camberene area north of Dakar.

E. AID Resource and Management Capabilities

An additional component in our analysis for an agricultural and rural development strategy is an analysis of projected AID funding and management capabilities. USAID/Senegal presently gets about 15.5 million dollars for bilateral programs from the Sahel Development Program (SDP), a single pot of money for all of the Sahelian countries. While it is difficult to predict with accuracy, it nevertheless seems unlikely that this pot will be increased to any great extent in the near future. We could estimate that by FY 85 Senegal would receive about 25 million dollars for bilateral assistance. This would represent, in real terms, a continuation of the present funding level.

As we have shown, Senegal both needs a great deal of assistance and also has the possibility, with present reforms, to use these additional funds

to begin moving towards a point of self-sustaining growth. If our bilateral source of funds from the SDP is limited, how can we mobilize these additional funds? The answer here appears to be to look at more creative non-project programs which have more specific orientations. Of these the Title III project and the proposed Agricultural Commodity Import Grant seem to be most appropriate. Another U.S. source of financing to be investigated would be HIG support of loans to aid urbanized development in the rural sector with a particular emphasis on the Senegal River Valley.

As noted in our October 6th memo, Title III (and the Ag. Commodity Import Grant) program respond ideally to Senegal's present economic problems by providing both immediate relief to the balance of payments and liquidity problems while funding the longer term restructuring of the rural economy to provide long term growth possibilities. There are also programs which should require proportionately less AID staff involvement.

At the moment the Title III program is at about 7 million dollars a year. If this initial program goes well, it seems likely that this amount can be increased to 10 million dollars by FY 85. The proposed Agricultural Commodity Import Grant is to be initiated at 5 million dollars in FY 82. Here again, if the initial results are positive, this program could be at about 7.5 million by FY 85.

The HIG program, if it is started, would start modestly and could be about 2.5 million by FY 85.

The other ongoing program for the Mission is the Title II program. It is unlikely that this program will grow in a significant way in real terms in the near future. Nevertheless, taking a 10% inflation rate, this program would be about 11 million dollars in FY 85.

Add these all up and we can look forward to a 56 million dollar a year bilateral program by FY 85. If we add to this potential OMVS regional funds related to Senegal of 5-10 million dollars, we see a total Senegal program of 61 to 66 million dollars a year. This would be more than doubling the

present program in four years.

The staff required to handle, program and account for these increased funds will not be increasing as fast as these dollar totals. Our present limit of 28 direct hire personnel will probably not be increased and may be reduced. It is anticipated that foreign national direct hire, on the other hand, will increase as will contracts for both US and foreign nationals. We can assume, however, that there will be pressure to limit these increases.

The type of funding entering the country and the design of the program will have some mitigating effect on the amount of AID staff needed to handle the increased money flows. The Title III and proposed Ag. Commodity Grant program are to be handled to a large extent by GOS offices especially set up to do so or by existing GOS services. Since this type of funding will be the source of much of the new AID flow into Senegal this arrangement should have a major effect on reducing some AID staff workload. Even with these arrangements, it will still take a major effort for the Mission to handle adequately the cash flow expected.

A look at the Mission's present pipeline indicates that it is having major problems in handling the present load, let alone the future projected load. This pipeline is now 64% of obligations. One of the major causes of this pipeline has been the difficulty of signing contracts to get projects underway. This has been related to the problem of getting people who have language and other qualifications to live in the countryside where our projects are located. An additional problem is getting the GOS to move contracts through their own laborious system. Procurement has been also a problem, as has logistics.

Modification of the design of our projects to reduce the need for high level technical people and the use of more AID contracts in lieu of GOS contracts may solve some of these problems. The new Project Support Office should help procurement and greater regionalized focus of our projects should reduce logistical and managerial problems. These modification may not be enough,

however, to get the pipeline broken and to have funds flow in a more judicious manner. More radical ideas may have to be tried.

In any case, unless conscientious thought goes into how to develop AID's operation within the country consistent with the constraints on its staff, a major managerial crisis may occur. Continual pressure to move more money with fewer hands produces two responses. One is to cut back the funds handled to a level that can be competently handled by the present number of staff. The other is to seek changes in the methods by which funds are handled so as to be able to move more funding more efficiently. This latter option is obviously the most useful for Senegal and AID.

II. STRATEGY FOR AGRICULTURAL AND RURAL DEVELOPMENT IN SENEGAL.

Before we begin to lay out a strategy for agriculture and rural development for Senegal, it would be best to define just what a strategy is. In an ideal world, man would have all the resources to do all the things he wanted at once. Of course, the real world is not like this. We have limited resources to do only certain things at any given time. A strategy then, is a plan to take these limited resources and achieve what we want to or should accomplish. The hard edge of a strategy, that part of it that gives it form, is what we don't choose to do. This is a point too often forgotten. If the criteria that evolve from our strategy are so general that they fit all programs, then we have no real strategy. What we are not going to try to do often requires much explanation because, as we noted, in the ideal world we can choose to do everything.

In an ideal world, strategies would be both inclusive and exclusive. They would be inclusive in the sense that they have taken account of all relevant information and exclusive in the sense that the action undertaken because of the strategy is the single best one to achieve the desired objectives. Of course, in reality our strategies are often far from this ideal situation.

To develop our strategy we need to have four elements, three of which we have already covered. These four elements are: 1) an analysis of what is being

done and what needs to be done to increase ag. and rural development, 2) an analysis of what is actually being done by the GOS and donors in this area, 3) an analysis of AID resources and abilities to work in this area, and 4) an analysis of what AID wants to do, of its objectives. This latter has yet to be examined.

AID's objectives are detailed in our October 6th memo on Joint Planning. Specifically, these objectives include the following:

1) an emphasis on growth of the economy through increased productivity, 2) a concern for both short term monetary and productive growth to solve the present liquidity problem and the long term restructuring needed to establish a basis for continual growth, 3) human resource development at the grass roots level as a basis for providing means of increasing productivity in the agricultural sector, 4) greater involvement of the beneficiaries in project management and implementation, 5) more explicit linkages of our projects to the macro-economic needs of the country particularly through the Plan de Redressement, and 6) relating our projects to the new GOS growth strategy of expanding non-traditional exports and increasing agricultural production for both export and import substitution.

From these four elements, general criteria for investment selection can be developed. In order of priority, we see three major selection criteria from this analysis:

1.a. Select investments which have the greatest marginal productivity.
b. Select activities that build on existing capabilities and skills.
2. Select investments which conserve or replenish existing productive capacity.
3. Select investments which will restructure the economy or its productive institutions in such a way as to insure future growth potential.

Let's look at these criteria for a moment. They follow a logical order for productive investment. Seek areas of highest return first, then protect those areas that are now productive and finally invest in those areas that

have the highest long range productive potential. It is all quite orthodox and straight-forward. It is also consistent with the GOS Plan de Redressement and our own perception of going for immediate production to resolve the liquidity problem and at the same time beginning the necessary restructuring upon which continual growth will be dependent.

The use of these basic criteria can determine the composition of AID's project and program investment portfolio. We will now look at some of the specifics of this potential portfolio, the where, what, how, who and how much of our future program design.

From a managerial point of view there is a strong argument for USAID to focus its program in localized areas. Our present program covers all of the country except Eastern Senegal. We have continually been criticized for the scattering of our projects. Managerially this scattering means greater logistic problems and costs and lower efficiency.

Management support is reduced by the need for travel over large distances. For example, such mundane but vitally important matters as paychecks and mail prove to be major problems with such a diverse program, drawing time and attention from more basic project management questions.

From an operational point of view our programs lose a lot of potential effectiveness because they are isolated from other programs. In addition, we are unable to gain knowledge and experience in any one area over any length of time as we start and stop programs all over the countryside. Under such circumstances, it is harder to do good evaluations and to have some form of measurable data either before or after our projects.

From a planning point of view we are always starting from ground zero with new areas and new people to deal with. We need a long term commitment to a given area or areas and to try over this long term to build our interventions one on another in a block style towards some eventual solid structure. If our program is too diffuse, we have neither the resources nor the time to do this.

We need to localize ourselves in limited geographic areas. To do so means that we are excluding ourselves from other areas but this limiting is what a good strategy is about. Localization does not mean that we should have an exclusive right over some domain.

We should, as much as possible, carry out our projects in collaboration with other donors and governmental services. This type of overlapping would give us a stronger, more resilient program.

In what areas should we work? Senegal has six major agricultural zones -- Peanut Basin, Casamance, Fleuve, Eastern Senegal, Ferlo, and North Coast. Let's briefly look at the characteristics of each in terms of our criteria.

Eastern Senegal

This region is underdeveloped, underpopulated and has major infestation of onchocerciasis and trypanosomiasis. Its agricultural potential is largely known. It has no ground water, and the soils, while good in some places, are also interspaced with a ferruginous crust. There is virtually no political or physical infrastructure.

The region is possibly of some value for the future but has limited immediate potential.

North Coast

This is a vegetable growing area with some possible alternate energy resources (wind and peat). It is an area of good export and import substitution possibility for food crops. This is also a good potential for employment in the region. But even though there is some useful potential, this area is still marginal as far as the economy as a whole is concerned. It is also a fairly well-off area with less urgent needs for development investment compared with other regions.

Peanut Basin

This, at present, is the main agricultural region of the country. It is the principal source of most of the country's export earning and food production

(millet). It has a well developed infrastructural base and the best institutional resources in the country. There is some concern that this region is experiencing declining soil fertility and productivity. While the present production in the region is high, it has relatively low marginal productive potential.

Ferlo

This pasture and livestock region suffers from a lack of water. There remains some potential in the region in livestock and in certain exotic plants (gum arabic). At present,however, it lacks infrastructure. The region is isolated from the rest of the country and is marginal to the overall economy.

Fleuve

This river basin has the highest potential of any region in the country. To achieve this potential, it will need enormous influxes of capital for infrastructure and institutions, it will be a long time before significant production occurs from this region. Results to date from investment in this area have been disappointing. There are formidable institutional problems to be resolved on land tenure and on other questions before this region can begin to take off.

Casamance

Casamance is really three separate areas. The Lower Casamance is the major rice growing area of the country at present. Fundamental soil problems, however, preclude any major increase of rice production from the area in the near term. The Middle Casamance, on the other hand, is a region of great agricultural potential. It has a relatively low population; the land is good and it has some of the highest rainfall in the country. There are few major obstacles to increasing production in the area. Long neglect and lack of infrastructure are the most important difficulties. New roads are beginning to open up the area, however. The major program in this area is the Sedhiou program funded by the World Bank. The Upper Casamance, the third area, is

also a region of high potential. Here again, the lack of infrastructure has slowed development. There is an important rice growing scheme being done by SODAGRI with Saudi funding. The grey soil of both the Upper and Middle Casamance has the highest potential of any areas in the country.

From applying our criteria, we can see that three areas are important for AID consideration -- Peanut Basin, Casamance and the Fleuve. The Casamance appears to be the region with highest marginal productivity (particularly the Middle and Upper Casamance). As far as rice culture is concerned, it is also an area where we can build upon existing knowledge and skills of local farmers, as rice has traditionally been grown in the area. The Fleuve is obviously the region with the greatest long range potential. This potential will take a long time and huge investments in time and money to realize. For this reason we need to start now with these investments so that by the time population pressures and food demands begin to bear heavily on the economy this region will be developed enough to begin to satisfy this need. Within the Fleuve, AID should try to build on the experience it has gained in the Bakel area. Finally, the Peanut Basin, while not having a large marginal productivity, is still the most important agricultural region in the country and the need to conserve and replenish its natural resource base is fundamental.

While it is true that our project selection criteria could fit other selected projects in regions outside of the three noted above, the need to focus our activities is compelling enough that such other projects should be looked at only if they represent an extraordinary possibility.

Once we have selected the regions, the next question is what should we be doing in them. The answer to this question must reflect the comparative advantage of each region, the abilities of AID to work with those comparative advantages and present GOS and donor activities in the region.

The Casamance can be looked at as two distinct areas of the Lower Casamance on one side and the Middle and Upper Casamance on the other. In the Lower

Casamance we have a major project which we have had high hopes will cause major production of rice. On closer examination of the difficulty of working with the "cat" soils of this region, these high hopes may be premature. A long term research program will be required before the rice production potential in the Lower Casamance can be realized. Given this situation, it seems necessary to reorient our program in this area to put more emphasis on development of the upland dryland resources that have more immediate return, with an emphasis on import substitution and export crops. These could include tropical fruits, peanuts and corn. To increase local income we should capitalize on the indigenous entrepreneurship of the region by encouraging small scale enterprises in crop transformation, marketing and input supply. This would also be a good area in which to start a farmer credit bank. Finally, basic infrastructure is an important need of the area.

In the Middle and Upper Casamance we have a region that, on paper at least, appears to have the highest immediate potential of becoming the "bread basket" of the country. In the present dryland areas unintensified cultures of peanuts, corn and sorghum already give the highest yields in the country. It is also a region well suited to the full scale integration of livestock in a mixed farming system. The principal problem of the region is a lack of infrastructure and inputs.

The grey soil of the Sedhiou and Anambe areas represents about 30,000 ha of the best rice production land in the country. Salinity is not a problem; water appears to be available; people in the area have grown rice before. Other donors are presently working in these regions, but there seems to be additional need for funding to move these programs along.

Finally, inland fishing and processing is a need that has seemingly high marginal return from this area.

The Fleuve is a region that will need a massive program of infrastructure development and a great deal of planning, design and research. Practical

research, in particular, needs substantial emphasis. Development activities cover the length of the river basin. For implementation work AID should continue its emphasis on the Bakel area. Irrigated rice and other crops mixed with livestock production should be the basis of this production implementation. Our efforts, however, need to be more broadly based than that. As we have stated earlier, we are interested not only in production but in commercialized production, production that will have an effect on the needs of the country as a whole and not just on an isolated area. Therefore, our implementation should also look at transformation, marketing and the myriad of support services related to agriculture. Employment concerns and the development of Bakel as a commercial center are new elements we need to consider . Fishing as it relates to the overall regional development is also an important consideration for this area.

In our planning for the Fleuve it is important to realize that it is highly unlikely that there will be any significant increase in production from this area for the next ten to fifteen years and that it will be after the turn of the century before this region will become an important production region for the country. Thus we need to be prepared for a long haul and not be too quick in leaping from one project to another.

Our major concern in the Peanut Basin is to conserve the natural productive resource base of the region. The rather spotty recommendation of the NAS report highlights the difficulty of developing a focussed, cohesive approach to this type of program. Soil conservation is a complex question which in the end depends on the modification of the husbandry practices of the local population. One element of soil conservation about which we know a great deal and which fits our objectives is the planting of trees for charcoal production. This type of project satisfies the need to reduce soil degradation in two ways: 1) by providing tree coverage over selected soil areas and 2) more importantly, by reducing the pressure to cut down trees for charcoal production in more fragile peripheral regions. Not only does this type of project help in

reduction of soil degradation, it also has a direct economic effect by reducing demand for imported fuels. Fuelwood projects need not take agricultural land out of production as most of the trees can be planted, as we are doing in the Bandia project, on already degraded classified forest areas.

Once we know what we want to do, we need to consider how and by whom we want our projects developed. From the Joint Planning and the analysis we see an idealized structure around which our programs should be built. First there is a vertical linkage from the macro-economic needs of the country down to the producer/beneficiary. At the producer/beneficiary level should be a second horizontal linkage to those elements which support and reinforce the ability of the producer to utilize and benefit to the maximum extent from the activities of our projects. This idealized inverted "T" form of linkages cannot be met in all our activities but should serve, nevertheless, as our basic project model. The focus of this model is the producer/beneficiary. The context in which the projects operate is the macroeconomic needs of the country.

As has been noted, our goals of productivity, efficiency and reliability can best be achieved by developing the skills of the producer/beneficiary in decision making, management and technical areas related to the resources our project brings.

As also noted, this training may be very difficult to do. It implies that we need to simplify the techniques and skills required to be transferred to the producer. This simplification has another advantage. It allows us to make more extensive use of less technically oriented people to run our projects as a replacement for the high skilled people we can't get. Thus we can make more effective use of Peace Corps and both local and U.S. based PVOs.

This dual linkage in our project model also reflects the need for greater commercialization of small farmers and the expansion of the necessary supportive rural services to accomplish this. Vertically, the marketing of farmers' produce can help to alleviate macro-economic needs by reducing

imports and increasing exports. Horizontally, the linkages of the producer to the myriad of supportive services provided from the local area will support local enterprise and creation of non-farm employment.

While the bulk of our projects should be producer focussed, we should not cut ourselves off from the possibility of using more capital-intensive production methods if those are appropriate and necessary to achieve badly needed production immediately in areas which may be labor scarce. We are thinking, in this case, of such regions as the Anambe Basin in the Upper Casamance. The acid test for such a choice is the long run cost of such production. Substitution of one resource for another to minimize cost is a sound economic and social judgment.

If, as we argued above, we attempt to simplify the techniques and skills we hope to transfer to the producer, then we will need to design our projects in smaller incremental steps that move forward in a bit by bit fashion increasing and improving skills, processes and infrastructures as we move along. This would be done in constant consultation with the producers/beneficiaries to see that the projects continue to respond to their changing needs and those of the economy. To avoid a disjointed and randomly directed program we will need to cap this incremental stepping approach with a long term overall commitment to a project area. Long term in this context means 10 to 30 years.

As we have pointed out, we need to concentrate and focus our efforts to maximise managerial logistic and productive efficiency. This, in turn, requires a more integrated approach of our activities in any given area. Regional development agencies, that are so prominent in the Plan de Redressement, will also be a benefit to us in this approach. They provide us with a central point out of which to work and also an access to the rural communities which will also play a major role in rural development. While we may work with the RDA's we should also try to modify them and to move them toward a more responsive position vis à vis the farmer.

A final point on how we should carry out our programs is to note the need to find ways to be effective in using local currency in our project development.

As we have projected, local currency programming may be, by FY 1985, as much as half of our bilateral funding.

Given our emphasis on working at the grass roots with producer/beneficiaries, we should have few problems of finding appropriate ways to spend this local currency effectively.

We will have to work to see that these local funds are additional and complementary to our dollar funding activities. Larger scale use of locally funded activities will necessitate much closer collaboration with GOS offices and officials.