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**AGENCY FOR
INTERNATIONAL
DEVELOPMENT**



SAHEL REGIONAL

COUNTRY DEVELOPMENT STRATEGY STATEMENT

FY 83

BEST AVAILABLE

February 1981

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
WASHINGTON, D.C. 20523

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REGIONAL DEVELOPMENT STRATEGY STATEMENT

SAHEL DEVELOPMENT PROGRAM

Agency for International Development

Washington, D.C.

March, 1981

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INTRODUCTION

The purpose of this document is to present AID's development strategy for the Sahel in the context of the CILSS-Club regional strategy. Planning for a comprehensive development program in the Sahel began in 1974-75 when major donors and Sahelian governments agreed that the region's ability to withstand future droughts depended on its attaining a much higher level of agricultural productivity and broad-based development generally. This involved not only programs to increase production in the short-run but larger more long-term programs to create institutions and build infrastructure that would enable Sahelian countries to continue the development process on their own. Because the countries of the region faced many common problems and because the resource requirements for the overall program were so great it was decided that a concerted donor-Sahelian effort aimed at commonly perceived regional goals would be required.

The mechanisms through which these development commitments were made are the Permanent Interstate Committee for Drought Control in the Sahel (known as CILSS) and the Club du Sahel. The CILSS is an organization of Sahelian states that was originally created to mobilize emergency assistance and help coordinate drought relief efforts. By 1977, CILSS had become the Sahelian organization primarily responsible for coordinating longer term development assistance and planning development programs at the regional level. The Club du Sahel is an organization of donors and CILSS members whose main responsibilities are to: (1) analyze the major development problems facing the Sahel, (2) formulate strategies and programs to address those problems, and (3) help mobilize external financing for the programs.

The CILSS and Club Secretariats in Ouagadougou and Paris are companion organizations which work in concert.

On the basis of an assessment of the development needs of the Sahel, the CILSS-Club determined that it would take at least 20 years and \$20-30 billion in development outlays to raise the Sahelian economies to a level where they could provide for the minimal needs of their populations on a self-sustained basis. The CILSS-Club then established working groups to analyze the development problems of the Sahel on a sectoral basis, analyzed the major constraints to agricultural growth and proposed strategies for the development of rainfed agriculture, irrigated agriculture and livestock. Other sectors that were critical to achieving increased agricultural production were also studied: natural resource conservation, human resource development and transportation. The strategies that were developed were then reviewed and accepted by the Sahelian governments and the donors.

This planning and coordination process has led to the Sahel development program. Development projects are negotiated between individual donors and Sahelian governments or regional organizations. Most activities are funded by one donor and are country-specific, although many of these are paralleled by similar one-donor projects in another country. In some instances, however, large or long-term projects may be multi-donor financed. Problems that are regional in scope are addressed through regional projects; such projects can be implemented through regional organizations or through a series of bilateral sub-projects.

Within the context of the CILSS-Club planning process, AID has formulated its own regional strategy. This strategy is based on (1) the

goals and priorities of the CILSS-Club and (2) AID's analysis of development problems in the Sahel and the Agency's mandate to focus on the basic needs of the poor majority. AID's strategy like that of the CILSS-Club is framed in regional terms since a regional perspective is necessary to ensure comprehensive analysis of Sahel-wide problems and issues. AID's programs in each country are consistent with this strategy and, when taken together, make up a coordinated regional effort by the U.S. to achieve long-term broad-based development in the Sahel.

This interim AID strategy covers the initial 10-year period of AID's participation in the Sahel Development Program. It will be revised as necessary to conform it to the further analysis and policy of the CILSS-Club and of AID.

PART I

ANALYSIS OF DEVELOPMENT IN THE SAHEL

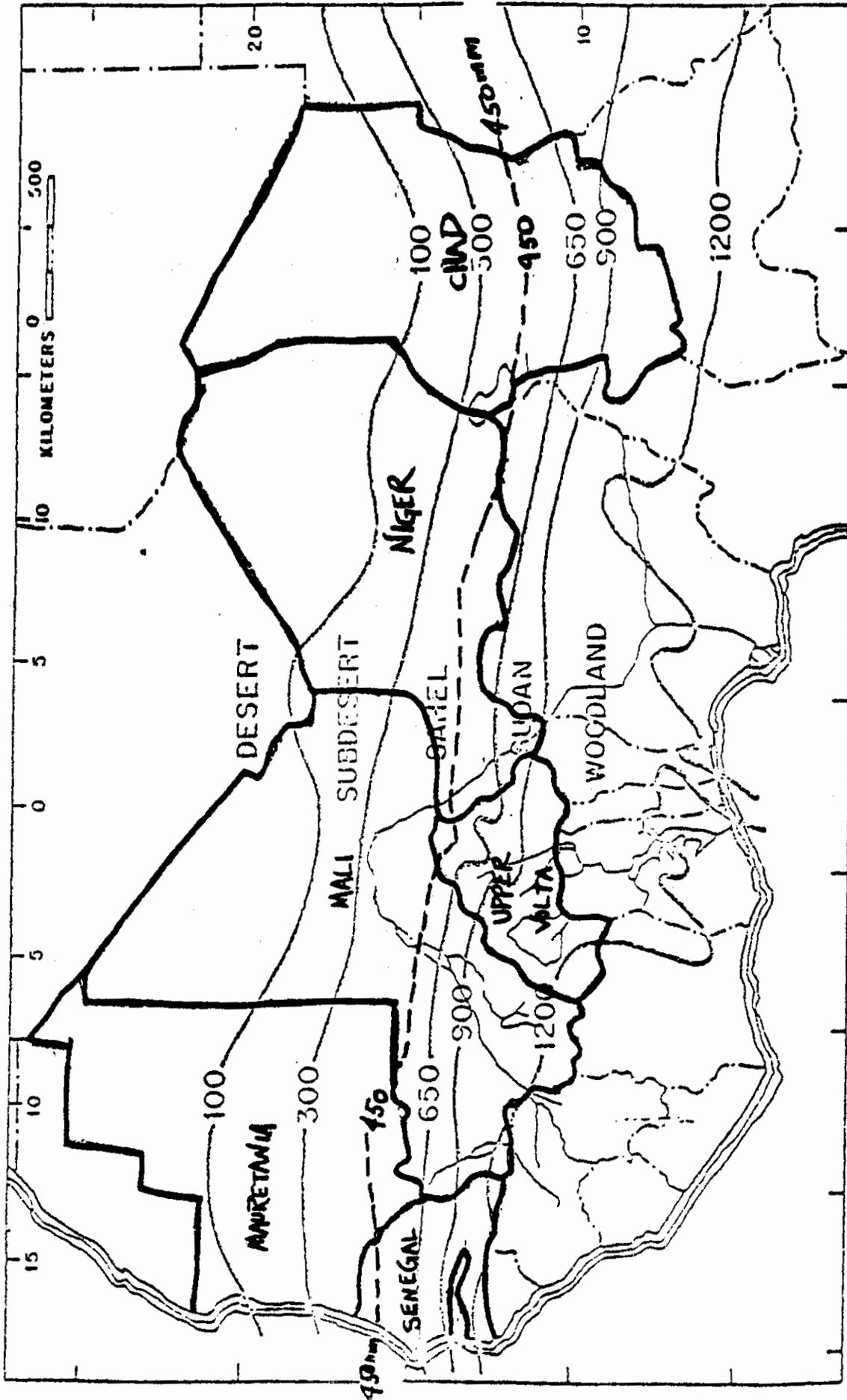
A. POVERTY IN THE SAHEL REGION

The overwhelming majority of the population of the eight Sahelian countries lives in rural areas, a regional average of 85-90 percent in 1977. The rural poor include two principal occupational groupings in the Sahel: small farmers and herders. These occupational groupings are not mutually exclusive and indeed, the massive population dislocations following the severe drought and ensuing famine during 1968-74 have tended to temporarily blur distinctions between them. However, major characteristics remain.

1. Small Farmers

Across the region approximately 65 percent of the population works in sedentary agriculture. The majority are small farmers who typically farm plots of three to five hectares on land held in usufruct by ancestors over the centuries. They raise both food crops and cash crops, depending on geographical location and the extent of government efforts to promote production.

Most of these small farmers inhabit the Savanna belt of the Sahelian countries with most agriculture being carried out under rainfed conditions in the southernmost Sudan zone lying between the isohyets of 650 and 900 mm of rainfall. The Savanna belt, which also includes the Sahel zone (300-650 mm of rainfall), comprises only 27 percent of the area of the Sahelian countries but contains 67 percent of their population. The three major water systems of the Sahel are located here: the Senegal and upper Niger river systems and the Lake Chad Basin, plus the smaller Gambia and Upper Volta river systems.



Climatic Zones of the Sahel-Sudan Region

The rainy season in the Savanna is irregular both in quantity and distribution. Unreliability of rainfall has enormous implications for the economic status of the small farmers and for the improvement of agriculture. Uneven rainfall distribution prohibits double-cropping and farmers plant with a rain-deficit year in mind. The desire to avoid risk can discourage investments in improved but perhaps untried crop technologies which could be wiped out by unpredicted drought.

Crop yields are low and unreliable for a number of other reasons: limited availability of agricultural inputs such as improved seeds or chemical fertilizers and little access to institutional credit to purchase inputs. Lack of access to extension services also contributes to low yields. An almost exclusive reliance on manual labor indicates a level of technology "primitive" by most world standards; many regions have yet to arrive at the stage of animal traction. Even when various factors interact to produce an abundant harvest, the small farmer still confronts a number of obstacles: inadequate storage facilities, an inadequate transportation network and a market mechanism which, in the interest of satisfying the urban consumer, keeps producer prices low.

Export crops are the chief source of cash earnings for small farmers. Most production of export crops occurs in high rainfall areas (above 800 mm), while food grain production takes place in both the semi-arid and wetter zones. Most export crops are sold to government marketing agencies but almost all food crops are kept for subsistence consumption.

The incomes of small farmers range from 10-20,000 FCFA (US \$50-90)

in most of the region, often less than two-thirds the national GNP per capita. Money incomes are marginally higher for small farmers who live and work in higher rainfall areas served by regional development organizations that provide greater access to current production inputs. Small farmers who own livestock are also marginally wealthier than those who do not. Such income differences as exist between small farmers will only lead to improvements in their basic condition as measured by nutritional and health standards or literacy if these services are provided and can be afforded. Often, income differences are reflected in increased purchases of small consumer durables such as bicycles or transistor radios or of consumption items such as cloth, sugar or tea, and thus may compete with other basic human needs.

2. Herders and Nomads

Herders are the second major group of rural poor, accounting for one-fourth the regional population. These pastoral people share the Savanna belt with small farmers. They occupy, for the most part, the northernmost sahel zone of the Savanna belt during the rainy season, moving southward with their animals in pursuit of water and grass as the rains recede. Herders tend livestock, their chief asset, whose numbers in the Sahel before the drought were among the highest in Africa. Within the group of herders is a smaller number of nomads who inhabit the northern subdesert. These nomads tend mainly camels and goats, do not farm and are virtually unreachable by government services.

Most herders are engaged in transhumance involving cyclical migrations with their animals. They generally have rights to land and are thus linked to the history and tradition of a specific region. Like

small farmers, herders often raise crops on their recognized land in between periods of migration. However, their main economic activity consists of subsistence dairying and meat production in an ecological zone that has few alternative uses. Their linkages with crop producers and other sectors of the Sahelian economies occur during the dry season when they migrate into higher rainfall areas. Small farmers who own cattle entrust them during the agricultural season to traditional herders who take the animals on a long migration in search of forage. Farmers usually reciprocate by allowing herders to pasture their own animals in harvested fields. Cattle eat crop stalks and other residue and the farmers receive manure as fertilizer in return.

It is during the dry season that herders enter the money economy through sales of hides, butter, cheese, milk and meat and purchases of millet, sorghum and other cereals for cash or exchange for labor. Also, great livestock migrations normally occur during this period to satisfy coastal meat demand, though inadequacy of supply during the last drought caused coastal states to turn temporarily to other sources. Adroit risk averters, herders operate in complex relationships within a fragile environment, seeking higher incomes that will maximize their well-being. They adapt to positive changes within the existing economic and social structure over which they have some control.

During the two decades preceding the last drought livestock production increased rapidly due to above average rainfall, the development of permanent groundwater sources and better veterinary services. Herders rapidly increased the size of their herds during this period and, pushed by farmers into previously marginal crop land, took their

animals northward into yet more fragile ecological regions. As the rains failed, the land failed because herds had already exceeded rangeland carrying capacity. Once the long-term nature of rain failure became apparent, the sudden reverse migration of herders and their animals southward collided with previously settled farmers as both groups rushed to food distribution centers.

The number of cattle which perished is variously estimated at 20-50 percent of pre-drought figures in Mauritania and Niger; 20-40 percent in Mali and Chad; and 10-20 percent in Upper Volta. Accelerated slaughtering further reduced the herd population. These losses and changes in the age and sex composition of livestock herds will affect production of meat and milk for many years. Only Senegal, Chad and Niger may now have reached the 1970 level of head of goats and sheep. By 1977 only The Gambia had replenished cattle herds to pre-drought levels, while Niger had very possibly reached range carrying capacity in cattle.

3. Urban Poor

Rapid urban growth is a relatively recent phenomenon in the Sahel's major cities. Smaller cities and towns have witnessed a similar expansion. The influx to urban areas of persons displaced by the drought and famine in more recent years has exacerbated the already heavy demand on essential urban services, particularly housing and sanitation, and strained the ability of local governments to respond. Many newcomers, unable to find employment, simply exchanged the tenuous life of the countryside for the insecurity of the town.

In the last 10 years, urban areas have almost doubled in population, with rural migrants accounting for the greatest part of this increase. A very sizeable portion of the urban population consists of recent arrivals from rural areas, equipped with essentially untransferrable rural skills and possessing a world view of life more appropriate in a rural setting. More often than not, the urban poor are recently arrived rural poor.

The rapid growth of urban centers due to migration is largely attributable to low farm incomes and few opportunities in the countryside, and a quest for some sense of freedom from a largely subsistence way of life. Wage labor in the cities has not been able to absorb all the influx of migrants, but the cities maintain their attraction because incomes, even of the urban poor, come closer to average GNP per capita (e.g., in the \$100-150 range) than do the incomes of small farmers, herders or nomads.

Among the urban poor are temporary migrants from rural areas who come during the dry season when demand for farm labor is nil. A significant portion of rural incomes in the Sahel derives from remittances sent home by these migrants who return to their villages for spring planting. However, as migrant urban workers find higher paying or steadier jobs, they extend their stay and ultimately become permanent residents of the cities. This increases the effective demand for social services and heightens the competition between rural and urban areas for scarce development resources.

4. Indicators of Basic Human Needs Status

Aggregate indicators of the current basic human needs status of

people in the Sahelian countries place the groups of rural and urban poor in a context of widely pervasive poverty.

a. Physical Quality of Life Index. The Physical Quality of Life Index (PQLI) developed by the Overseas Development Council is one indicator measuring the degree to which basic human needs are being met. While the United States and France reach the mid-nineties, only Cape Verde of the Sahelian countries surpasses 25 and the Sahelian regional PQLI averaged 18 in 1978 (Table 1).

b. Health Status. Life expectancy has gone up slightly since 1960 but the regional average still falls below 40 years (Table 1). Infant mortality rates have changed only marginally if at all during the last 15 years, from 168 per thousand to 159 per thousand*. By comparison, infant mortality for all the "low income" countries of the world dropped from 142 per thousand in 1960 to 122 in 1975. Of the Sahelian countries, only Cape Verde in the Sahel was well below both sets of averages.

Health conditions since 1960 have changed little for the majority of the Sahelian population. Only 25 percent of the population has access to potable water (Table 2). The number of doctors relative to total population has increased substantially (Table 2), but few of those doctors are in rural areas. Health clinics are being constructed in rural areas and increasing numbers of paramedical persons are being trained but, compared to need, the numbers are minimal. Most of the population does not have access to modern basic health services of any kind.

*Health statistics, as other data, are often unreliable.

Table 1

Physical Quality of Life Index (PQLI^{a/})

	<u>Life Expectancy at Age One (years)</u>	<u>Infant Mortality Per 1,000 Live Births</u>	<u>Adult (15 years+) Literacy Rate (Percent)</u>	<u>PQLI</u>
Cape Verde	50	105	37	45
Chad	38	160	6	18
Gambia	40	165	10	21
Mali	38	188	5	14
Mauritania	39	187	11	18
Niger	39	200	5	14
Senegal	40	159	5-10 ^{b/}	21
Upper Volta	38	182	5-10 ^{b/}	16
Sahel Regional	38	177	7	18
All Low-Income Countries				40
All Countries in World				65
United States				95

Source: Overseas Development Council, Agenda 1979, p. 132:

The PQLI combines three indicators - infant mortality, life expectancy at age one, and literacy - into a single composite index. Each of the components is indexed on a scale of 0 (the most unfavorable performance in 1950) to 100 (the best performance expected by the end of the century). The composite index, the PQLI, is calculated by averaging the three indices (life expectancy, infant mortality, and literacy), giving equal weight to each of them.

a/ The United States and World Development: Agenda 1979 (Overseas Development Council, pp. 156-159, 1979).

b/ Weighted average by population, using literacy rates of 10 percent for Senegal and 7.5 percent for Upper Volta.

Table 2

Nutrition and Health Status in the Sahel

	Percent of Minimum Daily Caloric Requirement ^{a/} 1961-65	1973-77	Daily Protein Intake in Grams ^{b/} 1976	Physician		Population Per		Nursing Person ^{c/}		Percent With Access to Potable Water ^{d/} 1974
				1960	1974	1960	1974	1960	1974	
Cape Verde	-	-	-	-	-	-	-	-	-	-
Chad	98.8	76.7	60	70,000	44,370	-	-	6,990	26	
Gambia	92.7	96.8	58	-	-	-	-	-	-	
Mali	86.3	75.1	64	39,000	33,000	1,490	2,480	-	-	
Mauritania	86.5	79.2	62	30,000	17,770	7,130	3,790	-	-	
Niger	91.1	80.6	62	71,000	41,060	8,800	4,840	-	27	
Senegal	90.4	95.0	67	35,000	15,360	4,410	1,920	-	-	
Upper Volta	82.0	76.4	59	100,000	59,570	4,370	4,520	25	25	
Regional	88.9	80.9	62.3	62,092 ^{d/}	38,048 ^{d/}	4,602 ^{e/}	3,989 ^{d/}	25.9 ^{f/}	25.9 ^{f/}	
Low Income Countries	-	-	-	37,000	21,185	4,515	6,710	25	25	
Middle Income Countries	-	-	-	3,050	2,430	2,235	1,570	52	52	

Sources: a/ Figures derived from FAO-established minimum daily requirements in 1978 Global Assessment Report to Congress (U.S. Department of Agriculture, 1978).

b/ Table III, World Military and Social Expenditures 1978.

c/ World Development Report, 1978 (IBRD, 1978).

d/ Weighted average (for year) for six countries.

e/ Weighted average (for year) for five countries.

f/ Weighted average (for year) for three countries.

The major debilitating diseases in the Sahel are malaria, measles and intestinal diseases with concentrations of schistosomiasis, trypanosomiasis, and onchocerciasis in some areas. Programs to control these diseases are expensive, complex and beyond the means of these countries at this time. Over the long run, immunization programs can significantly reduce the incidence of mortality from measles, polio, pertussis/diphtheria, tetanus and tuberculosis.

The single most important cause of poor health in Sahelian populations, especially children, is malnutrition. However, neither caloric nor protein intake has shown any significant increase since 1960 (Table 2) and all the Sahelian countries continue to show caloric intake lower than FAO-WHO minimum daily recommendations. The situation has worsened in all countries except The Gambia and Senegal. In most years there are some parts of the Sahel that suffer from inadequate rainfall and the distribution system is not sufficiently developed to enable the timely movement of food grains from surplus to deficit areas.

Rural health services providing basic preventive and curative care reach only about 20 percent of rural Sahelians.

c. Education. Education in the Sahel falls far short of serving the needs of the rural majority. Few of the Sahelian countries have yet achieved more than an estimated 10 percent adult literacy rate; the estimated rate for all Africa is 17 percent. While Senegal has managed to enroll 23 percent of school-age students, other Sahelian countries average out at an enrollment rate closer to 10 percent against 27 percent for all Africa.

The disparity of education levels is most pronounced between

the urban poor and the rural poor. Dropout levels from rural primary school are extremely high before completion of fourth grade, the estimated educational point necessary for students to achieve the required level of literacy. The relatively few in rural areas with a primary education must generally move away to larger cities if they wish to continue with secondary education.

Progress in non-formal types of basic education is more difficult to measure. There are, for example, government programs to teach home economics, young farmer training centers, and vocational training schools, and Islamic schools offer some basic education in most Sahelian countries. Thus far these programs have been small, and not very well staffed, and have not received much support from the rural population. Area development organizations have mounted the most effective training efforts in rural areas with programs to improve farming practices, usually in relation to a particular export crop. While the intent of these programs is to increase production for export to earn needed foreign exchange, they result in increased incomes and improvement in the quality of life of the rural populations.

B. CONSTRAINTS TO IMPROVING RURAL WELFARE

Rural poverty can be attributed mainly to six significant constraints, each of which is interrelated with the others. These constraints include:

- (1) land, water and forest resources that are meager and/or difficult to manage;
- (2) a low level of technological development in agriculture and livestock production, the primary economic activities of the rural poor;
- (3) the relative absence of transport and agricultural production and

marketing infrastructure; (4) limited training manpower and administrative and institutional structures that inhibit the governments' abilities to carry out rural development and impede involving the groups of rural poor in managing their own development; (5) lack of social services, especially related to health; and (6) government policies that tend to favor urban residents.

1. Water, Land and Forest Resources

The low quantity, variability and seasonal nature of rainfall limits the kind of crops that can be grown and restricts farmers to a relatively short crop season. Annual rainfall patterns coupled with recurring droughts place heavy demands on labor during the relatively short cropping season, especially at harvest time. With soils that are deficient generally in phosphates and nitrogen, soil fertility has been declining as population pressures cause more land to be cultivated and as farmers shorten the fallow periods required to regenerate soil fertility. Because of water and soil problems, crop yields are low and the level of annual production of food and other agricultural products held down. This results in low real incomes and frequently food shortages for both the rural and urban poor.

Relatively abundant rainfall and the development of groundwater resources during the 1950's and 1960's led to an extension of cultivation northward into marginal areas with consequent destruction of vegetation and soil erosion. Livestock herds expanded during the same period. The breakdown of traditional systems of herd and range management led to overgrazing and the depletion of pastures and increased the vulnerability of Sahelian grazing resources to drought and desertification.

Growing populations and urbanization are increasing the demand for wood for fuel and resulting in the removal of much of the brush and tree cover especially near settled areas. The problem of overcutting of the natural forests for fuelwood has been compounded by the use of trees and shrubs as forage for livestock. If the rate of overcutting persists to the year 2000, Sahelian woodlands will supply only 20 percent of the needed fuelwood; this may be beyond the point at which natural regeneration is possible. Overcutting of the natural forests has removed also the major source of protection for the soil from wind and water erosion and from insolation. This has been accompanied by overgrazing of increased numbers of cattle on available rangeland, causing a rapid degradation of that resource as well.

Extensive river basins--the Senegal, the Niger, the Voltas, the Gambia and Lake Chad--represent considerable agricultural potential but have thus far proved difficult to exploit with capital-intensive development projects, such as the Richard-Toll project in Senegal and the Office du Niger scheme in Mali. Higher rainfall areas in the southern portions of the Sahelian countries also represent a natural resource with considerable agricultural production potential, but problems of endemic human and animal diseases have precluded settlement and rapid development of these areas.

Population densities are low in relation to total land area, but increasing human and animal numbers are putting pressure on Sahelian croplands, rangelands and woodlands. If animal and human populations continue to increase without complementary increases in productivity, overpopulation and further ecological deterioration will occur.

2. Level of Technology

The vast majority of small farmers follow "traditional" low-yielding agricultural practices designed to meet subsistence needs and minimize risks against drought. These practices consist of: gradual land clearance and stump removal; "half shifting cultivation" (villages are permanent, the fields change, with fallow periods breaking the cropping cycle); little mixed farming, though livestock may be present; multiple cropping (presence of different plants on the same field to moderate nutrient demand--e.g., millet and cowpeas); relatively little use of improved varieties, fertilizers or other off-farm inputs. The typical holding devotes two-thirds of cultivated acreage to millet and sorghum; the rest is distributed between such crops as rice, maize, cowpeas, cotton and groundnuts.

In most Sahelian countries, women, traditionally, have the major responsibility for food crop production. Men perform the heavier tasks of land clearing and preparation while women sow, cultivate and harvest grain and other food crops. Men predominate in export crop production although it is not unusual for women to tend their own export crops fields and keep the income earned therefrom.

Although still dominant, these traditional cropping patterns have undergone change. Shorter fallow periods and the increased ratio of cultivated to fallow land is reducing soil fertility. Chemical fertilizer and fungicide have been introduced but their use is still low in most of the region. Other signs of change are also evident, for example, the adoption of new implements such as seeders, plows, multi-purpose implements and carts, and of certain techniques such as deep plowing and sowing in

rows. Widespread use of animal traction for the more energy-demanding farm operations is limited by the lack of access to credit by the poor to allow purchase of draft oxen and the prevalence of debilitating animal diseases. More widespread adoption of animal traction is constrained also by the lack of a profitable technology using draft animals that is adapted to the semi-arid agriculture of the sahelian zone.

Some irrigated agriculture is practiced along river banks and small lakes throughout the region. These irrigation systems are of two types: traditional flood-recession irrigation in which crops are planted on riverbanks as flood waters recede, and small farmer-developed perimeters. Larger irrigated schemes have not been so successful due in part to poor construction and design and in part due to inadequate training of operating personnel and participating farmers.

Research and development of export crop technologies has resulted in significant returns to governments in the form of increased foreign exchange earnings. However, research and development of technologies for food crops has been relatively neglected with the result that the potentially large returns in the form of increases in real incomes for the small farmers have not been realized.

Despite limited investment in research on staple food crops, there are technologies involving integrated export and food crop production both for rainfed farming and small-scale irrigation that can result in modest productivity and income gains for small producers. These existing crop technologies are more promising in areas of higher (800 mm) and less-variable rainfall. Much remains to be done, however,

to develop substantially higher-yielding varieties of millet and sorghum, the principal sources of calories for the rural poor, and to develop highly profitable farming systems for small farmers.

Similarly, research and development of technologies in livestock production have been neglected with the exception of research on animal diseases and on rangeland species. Livestock production is potentially an important source of increased income for both herders and small farmers because of the growing domestic and export demand for livestock products. However, the many economic and social demands placed on animal production in the Sahel--milk production, cash income, security, prestige--combined with poor production practices results in low levels of productivity. One aspect of this problem is the herder-owner relationship in which the herder's compensation is derived principally from milk for subsistence and sale. As a consequence, overmilking results in high calf mortality and low rates of reproduction. Also, the limited access of the livestock owning population to consumer commodities together with the absence of savings/investment alternatives result in maintenance of large unproductive herds--a low offtake rate of about 10 percent is the general rule.

Closely associated with the neglect of research has been the slowness to develop institutions for delivery of information, services and inputs to food and livestock producers. Area development organizations established to provide support to export crop production and marketing have been slow to broaden their role to encompass food and livestock production. Various problems such as overly-centralized organization, lack of trained administrative and technical staff, and preoccupation with export crop marketing have made the area development organization a weak

conduit between the research station and the small farmer or herder.

The development of irrigated agriculture holds great promise for increasing food and agricultural production and raising the incomes of the poor. It is estimated that 600,000 hectares of land are currently being used for irrigation, including traditional flood recession cultivation. The potentially irrigable area by the year 2000, assuming the construction of regulatory dams, totals 1,830,000 hectares. Modern irrigation technologies exist that could probably be adapted for use in the development of Sahelian river and lake basins. However, making use of these technologies will require substantial investment in physical and social overhead capital, in the form of dams, irrigation systems, roads, social services facilities, adaptive research and training in ways to ensure the employment of small farmers in these schemes.

3. Infrastructure

The extensive area inhabited by the Sahelian population results in long distances to markets and high transport costs. Investment in transport infrastructure has largely been limited to building trunk roads and to linking Sahelian urban centers by road or rail to coastal countries. Few resources have been devoted to investment in all-weather secondary roads linking rural areas to main roads or to market towns or to building the capacity to maintain roads. One consequence of the lack of infrastructure is that grain in surplus producing regions cannot be moved economically to deficit regions and the cost of transporting food to and from the coast is high. The lack of secondary and feeder roads is a major constraint to increasing the access of the rural poor to such sector supporting services as agricultural extension or to such basic social

services as health. River transport is limited by the seasonal pattern of rainfall and poor management. Other inefficiencies hinder rail transport between Sahelian and coastal countries.

Other forms of rural infrastructure are in short supply. Realizing the potential of irrigation downstream from proposed major dams such as Manantali or Selingue will require substantial additional investment in irrigation systems. As with transport, many of the existing irrigation systems have fallen into disrepair or are being operated at less than capacity. Physically rehabilitating these systems, and strengthening the capability of managers and farmers to maintain them, would have a significant short-run payoff in terms of increased food and agricultural output.

4. Trained Manpower and Institutional Structure

Trained administrative and technical manpower is a limiting factor in every sector and at every level. Trained scientists, technicians and administrators are in short supply, and the continuance of the educational system designed in colonial times has contributed to the excessive growth of public employment rather than to the preparation of skilled manpower for agricultural and rural development. Educational institutions are ill-equipped—in terms of facilities, teaching staff, curricula, practical orientation—to produce the appropriate mix of skills needed for rural development. Sahelian governments must hasten the reorientation of their educational systems toward producing the requisite rural development skills.

Institutions such as official marketing boards have become instruments for centralized crop collection and storage, debt collection

for credit extended and agricultural taxation--all in the interest of obtaining a marketable surplus of export crops such as groundnuts and cotton from rural areas. In some countries, notably Niger, a large portion of profits also go into rural sector institutions which provide credit for rural investment as well as reinvestment into agro-industry plant and equipment related to the export product. In general, however, more of the revenues or exchange earnings from the export of primary commodities could be invested in rural areas. Aside from traditional social organizations, only a few local participatory institutions have emerged that would help ensure access by small farmers and herders to productive assets and promote a more equitable distribution of the benefits and costs of economic change. Local administrative and planning capabilities required to make farmer cooperatives and producer associations effective are also weak.

5. Social Services

The provision of social services to rural people is impeded by a number of factors. The demand for unmet medical or educational services in urban areas is high and there are powerful incentives that encourage health workers or teachers to choose urban as opposed to rural jobs. Access to health facilities can be expanded with more extensive use of paramedical staff trained in preventive medicine, but the provision of such services requires a high level of technical and administrative training and supervision and a functional referral system which is often not available.

Above all, wider provision of social services in rural areas requires substantially greater investment than is currently being allocated

to the provision of such services, and the capacity to finance their recurrent costs. In countries as poor as those in the Sahelian region, widespread local participation in the form of building and maintaining schools, dispensaries and roads will be essential to reduce the enormous investment and recurrent costs that would be required. The obstacles to such independent local action have been alluded to above. In addition to local participation, more external aid could be allocated to social service sectors, but such an allocation of existing or planned financial flows competes with aid to other sectors such as food production and agriculture whose development is also critical for accelerating growth and reducing poverty.

6. Government Policies

Sahelian governments have pursued agricultural and food policies that favored the urban consumer at the expense of small farmers and herders. Until recently, official prices for domestically-produced staple grains had been kept low both in relation to world market prices and to prices of manufactured goods. In addition, the prices urban consumers paid for imported rice and wheat had been subsidized in time of world shortages and high prices, tending to reduce the demand for cheaper, less preferred domestically-produced staples such as millet and sorghum. Low producer prices for food, food imports and subsidized urban consumption all combined to keep producers real incomes low, discourage investment in agriculture, slow the expansion of domestic production, and increase clandestine exports. Fortunately, this trend now shows signs of changing.

Although industrial jobs are few in number, they exert a pull on rural people to seek employment in urban areas. The consequences of

unrestrained migration presently are increased urban unemployment and poverty, and increased pressure on governments to step up the provision of social services to city residents paid for in part by taxing the rural population.

C. ASSESSMENT OF SAHELIAN ECONOMIC PROGRESS, COMMITMENT AND PLANS

1. Economic Progress

Economic growth in the Sahelian countries during 1960-76 has been slow. For most of the Sahelian countries, GDP has barely kept pace with population (Table 3). In Mauritania and particularly in Niger, recent rapid growth in iron ore and uranium production has led to high growth rates in the industrial/mining sector and to the increased availability of resources for investment. In Niger, close to 100 percent of uranium revenues go into the National Investment Fund. But here, as in other Sahelian countries, balanced and self-sustaining growth will of necessity require a long timeframe.

Senegal, as a result of its past position as the administrative and commercial center for French colonial West Africa, is considerably more developed than its neighbors. Although the Senegalese economy has grown very slowly during the past decade, it still has a sizeable manufacturing sector and a relatively large cadre of trained manpower to work in both the private and public sectors. Outside of Senegal and the mining sectors of Mauritania and Niger, economic activity remains largely agricultural at a very low level of productivity. Per capita incomes for Chad, Mali and Upper Volta were all under \$150 in 1976 and the latter two countries have shown virtually no growth in real terms during the previous 16 years (Table 3).

Table 3 Basic Indicators for the Sahelian Countries

	Population		GNP Per Capita		Per Capita Indices	
	Total 1975 Average % Rate of growth ^{a/}		U.S. Average % Rate of growth ^{c/}		Food & Agricultural Production Average: 1975-77 (1969-1971 = 100)	
	1970-75 (Z)	(Z)	1976	1960-76	Food ^{d/}	Agriculture ^{d/}
Cape Verde	290	-	260 ^{a/}	-	-	-
Chad	4,035	2.1	120	-1.1	83	88
Gambia	519	-	180 ^{a/}	-	98	98
Mali	5,697	2.5	100	0.9	83	86
Mauritania	1,322	2.7	340	3.7	70	70
Niger	4,592	2.7	160	-1.1	80	80
Senegal	5,000	2.7	390	-0.7	104	106
Upper Volta	6,032	2.3	110	0.8	96	93
Sahel Regional	27,487	2.5 ^{e/}	183 ^{g/}	0.1 ^{e/}	89	90
Low Income Countries	-	2.4	150	0.9	-	-
Middle Income Countries	-	2.7	750	2.8	-	-

Sources: a/ Annex A, World Atlas of the Child (IBRD, 1978).
 b/ Table 13, World Development Report (IBRD, 1978).
 c/ Table 1, World Development Report (IBRD, 1978).
 d/ Derived from Tables 5 and 6, FAO Production Yearbook (FAO, 1977).
 e/ Weighted average for six countries.
 f/ Weighted average for seven countries.
 g/ Weighted average for eight countries.

It is clear that, with the exception of Senegal and perhaps Niger, significant diversification of economic activity has not yet begun in the countries of the Sahelian region. Economic growth has traditionally been dependent on exports of a few primary commodities. Peanuts, cotton and/or livestock account for 80-90 percent of the exports of Mali, Upper Volta, Chad and The Gambia. Minerals now account for a growing and significant share of export earnings in Mauritania and Niger; in the latter, revenues from uranium mining activities also contribute a sizeable portion to the national budget. However, there has been very little industrialization in any of these countries and all are almost completely dependent on imports for the products and commodities required for their development. The economic performance of the landlocked Sahelian countries is typical of other countries under similar circumstances and simply reflects the extremely difficult problems that must be addressed and overcome if development efforts in the Sahel are to succeed.

a. Agriculture

Poor economic performance is directly related to lack of progress in the Sahelian agriculture sector. Food grain production, which accounts for well over half of the value added in that sector in the Sahel region, has not kept pace with population growth. The regional index of per capita food production declined 10 percent during 1970-77 (Table 3).

The performance of export crop production was better than for food grains and provides the basis for the economic improvements that have occurred among rural people in the region. Export peanuts and cotton are the principal sources of money income for Sahelian farmers.

Progress, however, has not been dramatic and has been limited mainly to higher rainfall areas (above 800 mm). Export crop production has been successfully introduced and diffused in The Gambia and the central part of Senegal for peanuts, southeast Mali for cotton and peanuts, and in the southwestern parts of Upper Volta and Chad for cotton. In these areas, a relatively high percentage of farmers use animal traction (almost 50 percent in The Gambia) and most use some fertilizers and other inputs produced off the farms.

Since the drought all the Sahelian countries have increased producer prices for food and export crops; in some, the increases have been substantial. In The Gambia where peanut production has been well established for several decades, growth in production in recent years has been low but producer prices have risen by over 200 percent since 1970, with the result that in 1976 the rural population had an average per capita cash income of \$35. In the groundnut growing region of Mali, production doubled between 1968 and 1977 and producer prices rose 150 percent. During that same period cotton production in Upper Volta quadrupled. Most of the benefits from these developments occurred in the higher rainfall areas of the Sahel. For the region as a whole, however, the productive capacity and well-being of most of the rural poor have not improved significantly.

b. Livestock

The performance of the livestock production sector is somewhat analogous to that of food grains. During the 1960's and early 1970's there was a relatively rapid growth in livestock production in the Sahel, largely due to favorable weather, improved animal health

services and programs to increase water supply. Following the drought, it became clear that increased production was due less to technological improvements than to increasingly intensive and excessive use of limited and ecologically fragile rangelands. Since the drought, priority attention has been focused on ways of increasing livestock production while at the same time reversing the deteriorating condition of the rangeland.

c. Demographic Trends

Limited progress in food and agriculture is further compounded by the rapid growth of population. For the region as a whole, population is growing at the rate of 2.5 percent a year and would be growing faster were it not for the prevalence of endemic disease, high rates of mortality and malnutrition. As health conditions and nutrition improve, population growth will probably increase because of reduced mortality and higher fertility. Although traditional attitudes and low child survival rates of the rural poor limit the effectiveness of family planning efforts, many Sahelian governments have come to accept family spacing if not family planning as a means of limiting population growth. In The Gambia, Niger, Mali and Senegal, maternal-child health programs are being broadened to include family planning services. Despite this progress, population growth will probably not abate until families perceive that there are social and economic benefits to be derived from fewer children.

d. Trained Manpower

Although economic progress has been slow, development activities are underway that are increasing the capacity of Sahelian governments to improve their development performance significantly. The basic problem is

Table 4 Demographic Trends in the Sahel

	Life Expectancy at Birth ^{a/}		Mortality Rate Per Thousand ^{a/}		Crude Birth Rate Per Thousand Population ^{b/}		Crude Death Rate Per Thousand Population ^{b/}		Percentage Change:		Total Fertility Rate ^{b/} 1975
	1960	1975	Infants Aged 0-1 1960	Infants Aged 1-4 1975	1955-60	1970-75	1960	1975	1955-60/1970-75	1960-75	
Cape Verde	43	50	95	79	47	33	-	-	-42.4	-	-
Chad	34	39	160	-	46	44	26	24	-4.5	-8.3	5.3
Gambia	36	40	67	-	42	43	-	-	+2.4	-	-
Mali	35	38	123	-	50	50	30	25	0.0	-20.0	6.7
Mauritania	36	39	187	169	45	45	26	24	0.0	-8.3	5.9
Niger	36	39	200	162	52	52	27	25	0.0	-8.0	7.1
Senegal	36	40	193	158	48	48	25	22	-0.0	-13.6	6.3
Upper Volta	32	38	182	-	50	49	31	25	-2.0	-24.0	6.5
Regional	35	39	168	159 ^{c/}	48	48.3	28 ^{d/}	24 ^{d/}	-1.9 ^{d/}	-11.0 ^{d/}	6.4 ^{d/}
Low Income Countries ^{e/}	36	44	142	122	48	47	26	20	-2.1	-21.1	6.2
Mid. Income Countries ^{e/}	49	58	72	46	45	40	17	12	-9.2	-27.3	6.1

Sources: a/ World Atlas of the Child, 1978 (IBRD, 1978).
 b/ Table 15, World Development Report, 1978 (IBRD, 1978).
 c/ Weighted average (for years) for four countries.
 d/ Weighted average (for year) for six countries.
 e/ Table 1, World Development Report, 1978 (IBRD, 1978).
 Figures are for the years 1960 and 1975, respectively.

that most of the prerequisites for broad-based rural development are missing. There is little economic infrastructure, support services are lacking and there is such a shortage of trained manpower that most institutions responsible for development activity are unable to function effectively. Solving these problems will not immediately yield improved BHN indicators but it will provide the means to achieve progress over the long run. The major constraint is trained manpower, and the small rise in secondary school enrollment during 1960-75 underscores the difficulties of rapidly increasing the number of skilled people (Table 5).

Differences in enrollment in secondary schools between the lowest and highest-income countries in the Sahelian region is quite large. The latter are better able to afford secondary education, but it is also known that increasingly complex economic and social activities go hand in hand with development and this implies quantum increases in trained manpower. Although data is not available on the numbers of trained personnel in various skill categories in the Sahel, it is known that their numbers are increasing rapidly. During the 10 years ending in 1974 the number of Sahelian university students approximately quadrupled and the rate of increase has probably quickened since then.

The number of national institutions of higher learning has increased dramatically in the Sahel during the last decade. Most countries have a university. In addition, there are training institutions for teachers, agricultural technicians, health personnel, public administration and management and other vocational skills. These institutions need to be modernized to become more appropriate for their countries' needs and expanded. However, they are gaining experience

Table 5

Primary and Secondary Education
in the Sahel

	Numbers Enrolled in Primary School as Percentage of Age Group (6-11 years) ^{a/}		Numbers Enrolled in Secondary School as Percentage of Age Group (11-20 years) ^{a/}	
	<u>1960</u>	<u>1975</u>	<u>1960</u>	<u>1975</u>
Cape Verde	56	-	6	-
Chad	16	37	neg.	2
Gambia	12	32	3	9
Mali	7	22	2	3
Mauritania	8	17	neg.	3
Niger	5	17	neg.	2
Senegal	27	53	3	11
Upper Volta	8	14	1	2
Senegal Region	12 ^{b/}	27 ^{c/}	2 ^{d/}	4 ^{c/}
Low Income Countries ^{a/}	30	52	2	8
Middle Income Countries ^{a/}	79	97	12	35

Sources: a/ World Atlas of the Child (IBRD, 1978).
b/ Weighted average for eight countries.
c/ Weighted average for seven countries.
d/ Weighted average for five countries.

and many are now much closer to being able to provide quality education than they were 10 years ago.

e. Decentralization

Partly as a result of increased higher level education, key development institutions are also improving. In recent years there has been a tendency to decentralize rural development activity in the Sahel. This has resulted in the creation of area development organizations in Mali, Upper Volta and Senegal. Originally these organizations concentrated almost exclusively on the production of export crops. However, their mandates are now being broadened to encompass regional development generally. In carrying out their functions, these organizations work closely with the small farmers of their respective regions and valuable lessons are being learned about ways in which broad-based, socially acceptable development can be achieved in various parts of the Sahel. The provision of social services are increasingly being devolved to these organizations or to local government units.

f. Conclusion

Much remains to be done to achieve real improvements in the lives of the rural poor. High-yielding agricultural technologies need to be adapted to the Sahel. Appropriate irrigation must be stepped up. Rural infrastructure and supporting services need to be greatly improved. This is especially true of roads and marketing systems. A road network exists but has deteriorated over the years because of inadequate maintenance. This problem is now receiving the priority attention of CILSS-member governments and donors in the Club du Sahel. It is also clear that access to the sea is extremely important. Although north-

south roads to Ivory Coast and Nigeria have been improved, not much progress has occurred elsewhere to benefit the land-locked countries.

2. Commitment to Growth with Equity

For the Sahelian countries a commitment to growth with equity means a commitment to rural development. This commitment requires developing high-yielding technical packages for rainfed agriculture, expanding irrigation and, in some ways most importantly, improving natural resource management and conservation.

The natural resource base in the Sahel is deteriorating. Achieving broad-based rural development in the Sahel will involve reversing this trend and increasing the productivity of food grains, export crops and livestock. This view has been accepted by all of the member-countries of the CILSS and donor members of the Club du Sahel and their development strategies have been designed accordingly.

Although an agriculture-based rural development strategy is more apt to be equity-oriented than one based on industrialization, equitable growth does not always or necessarily result. For the Sahel, however, the economics of crop and animal production at the present time dictate against plantations, large mechanized farms or ranches. Consequently most agricultural development programs are small farmer and herder oriented.

There is substantial evidence that Sahelian governments are taking equity into account in development programs. One basic indicator is the priority assigned to food grain production. Prior to the drought it was assumed that development depended on rapid growth in export crop production and that food grains would continue to grow with population.

The drought in the early 1970's demonstrated conclusively that food supplies in the Sahel have always been precarious and were becoming more so because of growing population, erratic weather and the allocation of land to export crop production.

All the Sahelian countries are according a higher priority to food crop production. In Mali, major programs are underway to increase millet and rice production. In Senegal, irrigation projects are aimed at eliminating the country's rice deficit and efforts are being made to increase millet and sorghum yields in the groundnut producing area of Sine-Saloum. Niger, Upper Volta and Chad have initiated expanded cereals research and extension programs at the national level. Politically, the most visible and sensitive need in these countries is to keep the urban areas adequately supplied and this is certainly a priority concern of the governments. They are also determined, however, to assure that the food needs of the rural population are met even during years of low rainfall.

The commitment is less clear concerning the relative importance attached to increased production, especially for export crops, as against increased rural incomes. Most agricultural development programs and policies in the Sahel are production-oriented and the achievement of production targets is not always consistent with equitable increases in rural incomes. In some cases, the investment and risk to be undertaken by the individual farmer to achieve increased output exceed what would be warranted by the increased income he is likely to get. In general, the farmers who are in a position to utilize agricultural inputs most productively will benefit the most but, on the other hand, there is no indication that the benefits are intentionally going to privileged

classes or groups.

The balance between urban and rural priorities, another indicator of commitment, is beginning to shift toward rural areas. Most social services are concentrated in the cities, but to a large extent this is because providing these services to rural areas is extremely difficult, expensive and generally beyond the technical and administrative capability of most Sahelian governments. Clearly more could be done and there is evidence that increased attention is being given to such matters as sanitary conditions in villages, low-cost health delivery systems and educational reform. There needs to be a thorough assessment of how meaningful the progress has been thus far.

Aside from the provision of social services there is the question of resource transfers from rural to urban areas by means of tax and price policies. Prior to the drought the policy of all of the Sahelian governments was clearly one of utilizing agricultural surpluses to finance urban development, industrialization and expanded government bureaucracies. There were no other sources of funds. In recent years there seems to have been a shift in this policy. Profits of marketing organizations are increasingly being used to pay for input subsidies and extension programs. More importantly, producer prices have been increasing since the early 1970's at a much faster rate than they did during the previous years. As a result, it is likely that more of the value added in agriculture is being returned to the farmer rather than allocated to other sectors.

Sahelian governments have made a tentative commitment to growth with equity but do not have very many programs designed to address equity concerns per se. With the limited resources available to them, when

they have to choose between growth and equity they usually choose the former. This is partly for political reasons but also because most policy makers in the Sahel as in other LDCs feel strongly that real development can only come through economic growth and modernization. In their view, choosing labor-intensive over capital-intensive methods of production, or low technology over high technology, is like accepting second rate economic status for their countries.

3. Host Country Development Plans

a. Policies and Goals

The common characteristic of all of the Sahelian development plans is that they seek rapid broad-based growth through agriculture-based strategies. Although Sahelian economies have barely kept pace with populations during the past decades, all of the current plans call for annual GDP growth rates of six to eight percent. Targets for food and agriculture aim at increasing production by four to five percent per year, about double the past rates. The other major objective is food self-sufficiency. For the inland countries this means ambitious growth targets for millet and sorghum production. Mali has placed a major emphasis on rice primarily because it has more potential than coarse grains for significant increases in production. Senegal and The Gambia are also placing heavy emphasis on rice since food self-sufficiency for them means the elimination of large rice imports. Finally, another top priority objective of all of the countries is to increase farmer incomes and reduce urban-rural income disparities.

These broad objectives translate into more specific objectives that differ somewhat between countries. One common objective is the

development and improved control of water resources. This involves primarily small irrigation projects along the major rivers but Senegal, Mali, The Gambia and Niger have also plans for large-scale river basin development projects. These projects are seen as virtually the only means of protection against drought and also as an important way to increase agricultural productivity.

Since the drought, another major goal, especially for Mali, Senegal and Chad, is reconstitution of their herds. These countries suffered major losses during the drought. They see a return of herd sizes to pre-drought levels as critical, not only to the herder and his well-being but also to assure adequate supplies of meat for cities and to earn badly needed foreign exchange through exports. Other goals stated as top priority in one or more of the plans were: (1) the diversification of agricultural production (Gambia and Senegal); (2) resource conservation (Niger and Senegal); and (3) improved access to outside markets (Niger). Although these objectives were not top priority concerns in all plans, they are in fact critical to the long-term development of most of the Sahelian countries.

All of the Sahelian countries put equity goals near the top of their priorities and many have in fact adopted important policy changes in pursuit of that goal. One of the most important of these is decentralization. Mali, Upper Volta, Niger and Senegal have decided to implement their rural development programs at the sub-national level. This not only results in more effective location-specific interventions but also helps assure that progress in rural areas is more broad-based than it would otherwise be. Many area development organizations, however,

continue to promote specific cash crops, and in most cases governments tend to give priority to regions with the highest agricultural potential; the majority of cash crop producers in these regions are, of course, also poor farmers.

The goals and policies of the Sahelian governments concerning health, education, industry and other sectors are fairly typical of other small least-developed countries and need not be discussed in detail here. It should be noted, however, that although rural health is given a high priority, the governments have not yet begun addressing the problem with substantial funding. Curative medicine and effective, widespread, low-cost rural health delivery systems have not yet been developed and are not receiving substantial budget allocations. Similarly, rural education and education reform are being discussed by a few countries but little concrete action has been undertaken.

g. Development Programs

All of the development programs in the Sahel place heavy emphasis on agriculture and infrastructure. As noted above, the approach to rural development in most of these countries is decentralized so that programs tend to be in the nature of integrated agricultural production projects.

Senegal is currently mid-way through its fifth five-year plan (1978-1981) which totals \$1.8 billion. Of this amount, 27 percent is for the primary sector (crops, livestock, fisheries and forests), 24 percent is for the secondary sector (industry and mining), and 13 percent is for infrastructure. The remainder is for social services and miscellaneous. Large amounts under the plan are for irrigation and transport projects.

The major agricultural programs are administered by parastatal organizations whose responsibilities are defined in terms of specific crops and regions. Looking to the future, Senegal is placing high priority on rice and is planning large programs in the Senegal Valley and in the Casamance. The objective is to eliminate rice imports by the mid-1980's.

The 1974-78 Mali Development Plan was only about half completed by the end of 1978, and the GRM continued its implementation in 1979. The current cost is estimated at \$1.2 billion. The plan gives first priority to developing the agricultural and livestock sector in order to meet basic food requirements of the population. Projects in the transportation sector are also directly related to the objective of increasing agricultural production. They aim at improving access to producer regions and lowering transportation costs. Other priorities are to increase the exploitation of local resources and to achieve a more extensive industrial processing of Mali's primary products. To this end, the plan emphasizes the development of hydroelectric resources. The plan also aims to improve social services, especially in education and health. Preliminary work on a new development plan is underway.

The draft Upper Volta Development Plan (1977-81) places first priority on rural development and the development of water resources. More than a fifth of the \$1 billion in planned investment over the five year 1977-82 period will go into agricultural projects including the Volta Valleys, now being cleared of onchocerciasis. The Health Ministry's recently proposed rural health delivery system reinforces the GOUV

commitment to improving the quality of life and productive potential in the rural areas. The next highest priority is reform and extension of the education system to meet the needs of an agrarian economy. Industrial development is centered on encouragement of more highly labor-intensive small and medium-sized enterprises to reduce under-employment. Infrastructure development includes upgrading the major trunk roads and improving the feeder road system. The overall approach to development involves strong local participation and decentralization of decision-making to the regional (sub-national) levels.

Niger had not planned its rural development activity in an integrated way until recently. This was primarily because the opportunities for more development activity were limited and Niger had very little financial resources or implementation capacity. This situation is rapidly changing as a result of the country's uranium revenues. The recently ended Three-Year Plan (1976-78) totalled \$365 million of which \$77 million was funded by the GON. The next plan will be much larger and an even larger share will be GON-funded. The government will undertake a number of integrated agricultural projects at the Department level. In addition, small irrigated perimeters are also being developed. For the longer term, plans are actively underway for the Kandaji dam to be located north of Niamey near the Mali border. A substantial amount of resources are also going into major roads, the most important of which is the currently unpaved portions of the east-west road linking Niamey to Diffa. Another major priority is the construction of administrative infrastructure as a prelude to expanded and hopefully more effective public sector institutions.

The smaller development programs in the Sahel--Chad, The Gambia, Mauritania and Cape Verde--concentrate on agriculture and infrastructure in much the same way as the countries described above. Most of the rural development activity in Chad is in the southern part of the country and consists either of programs to increase cotton production, or integrated efforts to develop areas that appear to have potential. The other major area of activity is around Lake Chad where efforts are underway to introduce irrigation in the polders. Outside of agriculture, the major activity is a World Bank/USAID-financed road maintenance project. In Mauritania, the major activities are an all-weather east-west road from Nouakchott to Nema, and irrigation projects along the Senegal River. In The Gambia, the major programs are an integrated rural development project that covers the western half of the country and a program to construct all-weather roads running the length of the country on both sides of the river.

PART II

SAHEL DEVELOPMENT STRATEGY

A. THE CILSS-CLUB FRAMEWORK

AID proposes to address the development problems analyzed in Part I through the CILSS-Club strategy and planning process. The multi-donor CILSS-Club program has two basic goals: (1) the achievement of food self-sufficiency and (2) eventual self-sustaining growth and development. Food self-sufficiency is clearly the highest priority goal of the Sahelian states. The second objective focused on self-sustaining development represents the CILSS-Club long-term goal. Donors and Sahelians have come to recognize that, with continued increases in population which are inevitable, long-term food self-sufficiency requires a strong and dynamic economy that can generate resources for agricultural inputs and provide the technological base for long-term increases in agricultural productivity. Self-sustaining development may be defined as the indigenous capacity to achieve long-term economic growth and provide continuous improvements in quality of life for the majority of the people. Basically what is needed is: (1) a high enough level of economic activity to generate resources for production-increasing investments, (2) a diversified and reasonably stable economy, (3) an infrastructure base that will support an expanding economy above the subsistence level, (4) an indigenous capacity to train the manpower needed to bring about and sustain growth and progress, and (5) a level of social services, including basic health and primary education, that permits the majority of the population to participate in the development process and lead productive and continuously improving lives. For the Sahelian countries,

achieving this level of development will require tremendous indigenous efforts and large amounts of foreign assistance over a long period of time. Also, given their small size, isolation and narrow resource base, long-term growth and development depends on the Sahel countries becoming better integrated into the rest of the West African regional economy.

The regional strategy for achieving the CILSS-Club goals has six major elements. These are:

- rainfed agriculture,
- irrigated agriculture,
- livestock,
- resource conservation,
- transport and infrastructure, and
- human resources.

These elements are interrelated and address not only food self-sufficiency but also the broader problems of rural development and increased incomes for the poor majority. Rainfed and irrigated agriculture are the most important and have the highest priority within the Club.

Rainfed agriculture currently accounts for most of the food production in the Sahel and generates most of the rural employment and income. The goal of the CILSS-Club is to double food production in rainfed areas by the year 2000. This is to be achieved first by disseminating proven technologies to small farmers and, over the longer term, by developing new technologies to achieve higher yields and increase drought resistance. The development of new technologies will involve creating an adaptive research capacity in the Sahel and improving linkages between Sahelian

research institutions and international research centers on the one hand and Sahelian extension services on the other. Another aspect of the rainfed agriculture strategy is the opening up of new lands. Some of these underutilized lands, particularly those currently being cleared of onchocerciasis, are in high rainfall areas and are potentially very productive. Since developing these lands will involve considerable costs and in some cases high social risks, the approach is to proceed from technical and socio-economic studies to the preparation of land use plans, the development of economic and social infrastructure and finally organized resettlement of farmers who are now in overpopulated and/or less productive areas. These new lands also will be given development attention.

It is a basic tenet of the CILSS-Club that the Sahel cannot achieve food self-sufficiency without major investments in irrigated agriculture. This is not only because rainfed agriculture will always be vulnerable to droughts but, more important, rainfall levels in the Sahel are too low and too erratic for truly high-yielding technologies ever to be adapted. The situation is one where crop yields in rainfed areas could reach 1,500 to 2,000 kg. per hectare (double present levels) in years of high rainfall. With assured water (irrigation) it is possible to achieve yields of 4,000 to 6,000 kg. per hectare. It has been estimated that there are four million hectares of irrigable land in the major river basins of the Sahel. Comprehensive feasibility studies are required in each case. The Club strategy is to carry out these studies on an urgent basis and to begin the construction of large multi-purpose

projects in the mid to late 1980's. The present planning is to have an additional 600,000 hectares under irrigation by the year 2000. All of the rice, wheat and sugar consumed in the Sahel will be produced on these irrigated lands as well as substantial amounts of corn, millet and sorghum. At the same time that the feasibility studies for river basin development are being conducted, irrigation projects that do not require major investments will continue to be developed. These projects include the rehabilitation of existing irrigated perimeters that have fallen into disrepair as well as the development of new perimeters that are low cost and economically viable.

After crop production the most important economic activity in the Sahel is livestock production. This is the sector that was most adversely affected by the drought and the major short-term objective of the CILSS-Club is herd reconstitution. The long-run objective is to achieve continued increases in animal production without further deterioration of the rangeland. The goal that has been adopted by the Club du Sahel is six percent annual growth for the next 20 years. This is to be achieved through improvements in range management, animal husbandry practices, integration of livestock and crop production including animal fattening activities by small farmers, more efficient marketing systems and, perhaps most importantly, increased rates of harvesting (i.e., offtake).

Aside from the obvious need to increase agricultural productivity, the most urgent task facing Sahelian governments and donors is natural resource conservation and preservation of the Sahel's threatened resource base. The Club strategy emphasizes two aspects of this problem:

deforestation and deterioration of the rangelands. Projections show that demand for firewood is growing at a rapid rate at the same time that the size of the forests is declining. Environmental protection thus is a high priority of the CILSS-Club. Studies are needed to determine feasible alternative sources of energy, but in the meantime the Club strategy calls for the immediate planting of tree plantations around villages and towns. A key requirement for the success of this program is the education of the rural population on the need for reforestation and on ways of initiating and managing reforestation projects. Similarly the key to range preservation is the education of herders on the need for improved range management. Studies and experiments are needed to determine the best ways to organize herders for this purpose; such training activities and studies are being incorporated into all CILSS livestock production programs.

The final two elements of the CILSS-Club strategy, transport and human resource development, address constraints that are common to all of the production sectors. In transport, the top priority concern is all-weather rural roads. This is considered to be one of the key constraints to increasing agricultural production above the subsistence level. The strategy calls for (1) the rehabilitation and improved maintenance of the existing all-weather road network and (2) the construction of additional rural roads usually in conjunction with integrated agricultural development programs. Over the longer term it is also an objective of the Club du Sahel to restructure the overall transport network in Sahelian countries so that intra-zonal transport needs can be met as well as the dominant movement of imports and exports outside the region.

The priority objective in the human resource area is to break manpower constraints in the productive sector programs. This calls for improving and in some cases expanding the institutions that train mid- and high-level technicians. Other priority human resource concerns are: (1) functional literacy programs in rural areas, which entails the restructuring of the education system away from an exclusive academic orientation, and (2) improved health delivery systems for rural areas. These two measures are considered to be essential elements of any program to increase productivity and well-being in rural areas.

The CILSS-Club development strategy as presently articulated has as its top priority the achievement of food self-sufficiency and reduced vulnerability to future droughts. The approach for achieving this goal is basically small farmer-oriented so that food production increases will be accompanied by higher farmer incomes and broad-based development in rural areas. During the early years the strategy calls for direct impact programs aimed at increasing food production (primarily through rainfed agriculture) and improving rural infrastructure and social services. At the same time necessary first steps aimed at long-term sustained agricultural growth in the Sahel will be undertaken. These include the creation of various institutions needed to implement development programs; the training of manpower in technical and managerial skills needed for modernization; and growth and the filling of information gaps that are constraints to progress in most sectors, especially river basin development. These efforts will lead to programs in the 1980's that will greatly enhance agricultural productivity and enable the Sahel to withstand the effects of future droughts. If the CILSS-Club goals are

reached the following conditions will prevail in the Sahel by the year 2000:

- productivity in the agriculture and livestock sectors will have increased substantially and the region will have much of the expertise needed to continue the process without outside initiatives;
- multi-purpose development of the major river basins will be well underway;
- natural resource degradation will have been halted and possibly reversed; and
- institutions, trained manpower and infrastructure will be in place to meet the economic and social needs of the region, particularly those related to agriculture and rural development.

Although the goals of the CILSS-Club are stated primarily in terms of food production, the overall development process in the Sahel is considerably broader than that. All individual Sahelian countries have comprehensive development programs that cover export crops, major infrastructure, industry, minerals and urban development; these programs receive considerable support from the donor members of the Club. Thus, issues that are critical to the achievement of self-sustaining development in the Sahel, such as the relative priorities of export and food crops, planning for Sahel-wide transport needs and comparative advantages related to industrialization, are being addressed jointly by donors and Sahelian governments through the CILSS-Club and at the individual country level. As the focus shifts from the immediate problem of food

self-sufficiency to the longer term one of self-sustaining development, it can be expected that all sectors of the Sahelian economies will be integrated into the CILSS-Club regional development strategy.

B. AID'S DEVELOPMENT STRATEGY AND TARGET GROUP

As a member of the Club du Sahel, AID accepts the goals and priorities reflected in the CILSS-Club regional development strategy described above. AID's participation in the multi-donor Sahel development program is further influenced by (1) its own analysis of the nature and causes of poverty in the Sahel as presented in Part I of this paper and (2) the Agency's mandate to concentrate U.S. assistance on meeting the basic needs of the poor majority. This means that AID will help achieve the two main goals of food self-sufficiency and self-sustaining development by emphasizing broad-based increases in income, employment and social services for the rural poor. In strategy terms this implies that agriculture programs are seen as part of a broad-based rural development effort and top priority is given to increased small farmers' incomes, equitable distribution of benefits, popular participation and the various relationships between increased production and other basic needs of the rural poor.

In the interest of achieving the most efficient use of scarce resources, AID chooses to interpret the food self-sufficiency goal as aiming at long-term food self-sufficiency for the region as a whole. This means that over the long term the Sahelian countries as a group will produce enough food to feed the total population of the region. During good years the region will produce more than necessary and will build

buffer stocks. Stocks will be drawn down during years of low rainfall. Implicit in the goal of regional as opposed to national self-sufficiency is the assurance that any one country experiencing a long-term deficit will have the means to obtain its food requirements from outside through trade and the capacity to distribute it internally where it is needed. This has also been defined as food security or food self-reliance.

At the present stage of development in the Sahel the appropriate strategy for achieving the development goals for the Sahel is to concentrate on increasing productivity at the small farmer level. Since small farmers in the Sahel make up over 80 percent of the population and produce largely food grains, increasing their productivity would achieve increased food production as well as widespread increases in rural incomes. This in turn would provide the basis for improved social services in rural areas. Further, the institution-building and infrastructure-development required to increase small farmer production above the subsistence level would do much to begin the modernization process leading to self-sustaining development. Also, support to small-scale enterprise and agro-industries related to agricultural and rural development can help the small farmer by providing locally made inputs and markets for local production.

Accordingly, AID will concentrate its development assistance in efforts to enhance the welfare of the rural poor. These efforts will be directed primarily toward small farmers and herders who live in the Savanna belt (the Sahel and Sudan zones) above 300 mm mean annual rainfall. Rainfed production programs will be concentrated in areas with a mean

annual rainfall of 450 mm or greater. Livestock programs will be carried out in both the sahel and sudan zones. The choice of target areas excludes direct action in the subdesert areas of less than 300 mm of rainfall, with the exception of small irrigation development. This does not imply the exclusion of nomadic peoples who migrate south to the sahel zone from participating in relevant programs, e.g. livestock and health projects, when their migrations bring them into contact with such project activities. AID will seek opportunities to promote small-scale private enterprise and small agro-industry in rural areas where such activities relate to agricultural development or create employment opportunities in market centers, small towns and villages. Special attention in agriculture and agro-industry will be given to the sparsely settled areas now being freed from endemic disease. AID does not envision major assistance to the urban poor except on a selective basis when the conditions warrant it.

As related to these target groups, AID will pursue six specific objectives in the Sahel over the next decade. These are:

1. Increase agricultural production using proven technologies.
2. Strengthen the institutions and train the manpower needed to achieve sustained increases in agricultural production over the long term.
3. Develop the infrastructure base, particularly as it relates to agriculture.
4. Halt the deterioration of the natural resource base and

develop energy sources.

5. Improve preventive and curative health services in rural areas and initiate population planning wherever possible.
6. Develop the human resource base primarily through mid-level technical training and functional education in rural areas.

AID's priorities and strategies with respect to each of these objectives are discussed below.

1. Agriculture Programs Using Proven Technologies

These programs, which can achieve moderate increases in production in the short-run but have limited potential for continued increases over the long-term, are based on the dissemination of existing technologies to small farmers and herders. This is done primarily through integrated rural development (IRD) projects which not only provide extension services but also credit for animal traction and other inputs, rural roads, storage facilities and on-farm trials of new technologies. These projects can involve the integration of food crop, export crop and livestock production and, in some cases, small-scale irrigation systems. In addition to IRD projects AID will support the development of irrigated perimeters and small herder-oriented livestock production programs. These latter projects will be fewer in number but, in those instances where they are feasible, the development impact can be substantial.

Past experience has shown that small farmer-oriented programs, whether IRD projects, irrigated perimeters or livestock production, are very complex and concrete results are accomplished largely through a process of providing the farmers with the knowledge, means and incentives for them to make their own decisions regarding increases in production.

AID has a number of such projects in the Sahel and it is our goal to initiate new ones as opportunities arise. These projects are all expected to be long-term with results becoming increasingly significant as technical, economic and social lessons are learned by farmers and Sahelian and donor technicians.

2. Institution-Building Related to Agriculture

a. Research

During the next decade AID will give much greater emphasis than in the past to developing and delivering new technologies in both crop and livestock production that are appropriate for small farmers and herders. The research base for creating a far more productive agriculture sector and improving the welfare of the rural poor is deficient in the Sahelian countries. Agricultural research, especially on food crops, has not benefitted from investment commensurate with the importance of agriculture within the region, or with the large returns that investment in research can bring.

The major emphasis in research should be on local, adaptive research and on the nature and characteristics of local farming and herding systems, including research in social and economic constraints faced by farmers. Research is required on the improvement of water management practices in both rainfed and irrigated agriculture, on the improvement of soil fertility, plant protection and pest management, and on the development of appropriate farm mechanization technologies. The development of intermediate mechanization technologies is critically needed to overcome the constraints imposed by periods of peak labor demands. The primary goal of this research will be to capitalize on the unused potential of

rainfed agriculture and small-scale irrigated agriculture; a secondary goal is to set the stage for future investments in medium and larger scale irrigation systems that are more costly and more technically demanding.

AID's efforts will take the form of financial and technical assistance to build national and regional research capacity through IPM, SAFGRAD and others, and to increase the relevance of that research to the needs of small farmers and herders. Emphasis will be placed on building the capacity to carry out adaptive research so that national research institutions can identify and test under Sahelian conditions food production technologies developed by the international research centers such as ICRISAT and ILCA or by research organizations in other developing or developed countries. Because even adaptive research requires high levels of scientific and technical ability, AID will supply scientists and technicians to work directly within research organizations and will begin identifying and training Sahelian scientists and technicians to reduce progressively this dependence on expatriate research personnel.

Part of the effort to develop new technologies involves the introduction of modern agriculture inputs. Increased supplies of seeds, fertilizers, pesticides, and farm machinery should be provided to enable area development organizations to reach large numbers of small farmers. One of the most critical constraints to increasing food and agricultural production in the Sahelian countries is the shortage of phosphates for fertilizer. Since low-grade phosphate ores are abundant throughout the region, during the 1980's AID will provide assistance to the Sahelian

countries to carry out explorations, testing and feasibility studies on the creation of simple crushing facilities to manufacture ground rock phosphate for direct application as fertilizer. As feasibility is determined, AID will be prepared to assist in financing the manufacture of ground rock phosphate either bilaterally or with other donors.

b. Extension

Extension, in the form of delivering production inputs and technical information and services to farmers and herders and training them in the use of new techniques, is now carried out largely by area development organizations, many of which are primarily responsible for export crops. Whether provided regionally or nationally, extension services in the Sahelian countries are plagued by unknowns for farmers, poorly trained and inadequately equipped agents, and few linkages between extension and research. A notable characteristic of extension in the Sahelian countries is its failure to reach women who in many instances are the principal producers of food crops.

AID's approach to extension will be to improve the quality and relevance of training received by extension agents and to include the appropriate retraining of existing agents as part of agricultural production projects. AID will also concentrate on improving linkages between research institutions and extension services. Because experience with traditional extension services has been so unsatisfactory both in the Sahel and elsewhere, AID will experiment with alternate models and approaches to providing extension, including the use of mass communication media, the use of women agents, and the involvement of both farm men and women as cooperating personnel at the village level. AID's experience

with different models for providing extension services across the Sahelian countries will be monitored and evaluated carefully and successful experiments will be replicated as projects are designed or redesigned.

c. Supporting Services

The supporting services that require the most urgent attention in the Sahel are agricultural credit, and food grain storage and marketing systems.

The limited availability of long-term credit for the purchase of draft animals and equipment is likely to retard the extension of improved technologies to larger numbers of small farmers. Institutional credit to small farmers is presently provided only by the area development organizations. Although this does provide for some coordination between credit and the provision of other agricultural services, it limits the number of credit recipients.

During the 1980's, AID will seek to expand the capacity of area development organizations and state-supervised cooperatives to provide adequate seasonal and longer term credit. This assistance will include training to strengthen the administrative capacity of managers of credit programs. At the same time, AID will try to involve local farmer and herder associations/cooperatives in the management of credit schemes in order to reduce administrative costs and rates of default.

AID's support to marketing and storage in the Sahelian countries will include financing the construction of grain storage facilities, and providing technical assistance both in managing the acquisition and release of stocks of grain and in assessing the economic

impacts of stocks management on producers and consumers. Assessing the effects of grain marketing operations on the structure of agricultural prices and agricultural incomes is critical in a strategy that seeks to raise rural welfare by increasing food production. AID will promote such assessments at the levels of both the Sahel region and the individual Sahelian state.

Sahelian governments have evinced a decided preference for public sector grain marketing institutions as an alternative to private traders and several Sahelian governments have given official marketing boards a monopoly on grain trading. In practice, this official monopoly is difficult if not impossible to enforce, and the limited empirical evidence available indicates that large numbers of low-volume Sahelian grain traders are highly efficient in amassing output from large numbers of small producers and in distributing supplies. Thus, AID will provide assistance on two fronts: first, to marketing boards, to even out fluctuations in grain supplies and to influence structural changes in price policy; and, second, in conjunction with food production projects, to groups of small farmers to enable them to store grain locally and take advantage of higher seasonal prices. The use of PL 480 commodities in support of both these approaches is discussed below as an important aspect of food for development.

d. Planning, Policy, Monitoring and Evaluating

Although Sahelian countries have received considerable technical assistance from U.N. agencies, France and other donors for general planning for economic development, they have received little assistance in planning the development of the agricultural sector or in planning

rural development. The Club and CILSS, recognizing this shortcoming, have called for a major effort to strengthen the analytical capability of Sahelian governments in agricultural planning and policy formation as part of the Club's effort to develop a strategy for investment in rainfed and irrigated agriculture.

It will be part of the AID strategy to assist CILSS and the Sahelian countries to strengthen their capacity to plan and formulate policies for agricultural and rural development. AID will also help to establish a Sahel-wide system that will measure the current basic needs status of the poor, and the changes in employment, income, nutrition status and access to basic social services that accompany development projects and programs.

3. Natural Resource Conservation and Energy

Reversing environmental degradation is a critical prerequisite to long-term economic growth in the Sahel. If steps are not taken soon to conserve forest and range resources, the Sahel's major source of energy will be depleted and growth in livestock production will be severely limited. Also, as crop production in the Sahel becomes more intensified, problems of soil depletion and erosion will need to be addressed.

At present, the main energy source in the Sahel is firewood used primarily for cooking but also to some extent for heating. The immediate problem is that forests around cities and major towns are being denuded and, for the region as a whole, sources of firewood are being utilized faster than they are being replenished. If present trends continue, forests could disappear from large tracts in the Sahel by the end of the

century. This has major economic implications. The Sahelians may have to switch to another source of energy, oil for the more affluent and perhaps cowdung for most of the rural population. The use of cowdung for heating combined with the loss of tree cover will have serious effects on soil fertility. Although this is the most serious energy problem in the Sahel, over the very long-term the high cost and world scarcity of petroleum products could become an important constraint to growth of the Sahelian economies.

The Club recently compiled a study of energy problems in the Sahel. The main findings of the study were:

- The most serious energy problem is the excessive use of firewood. Since there are no economic alternatives to firewood for cooking, the only solutions to the problem are the use of more efficient stoves and reforestation.
- Present reforestation problems are insignificant compared to need and a massive increase in such programs is urgently required. Such programs have been shown to be economic and successful in other countries, e.g., Algeria.
- Although hydroelectric power accounts for only a small portion of energy consumption in the Sahel, it is very important to the modern sector. All of the region needs for additional electricity for the next 20 years can and should be met through hydroelectric rather than fuel-powered plants.
- Alternate energy sources appear feasible under certain circumstances and should receive further study. These

include windmills, solar pumps for irrigated perimeters and solar water heaters.

- Each Sahelian country should have a long-term energy program to systematically develop its energy sources and identify ways of using energy most efficiently.

A combination of firm government policies and increased public awareness is now needed. During the early 1980's the AID strategy will be to increase Sahelian expertise in natural resource management and to initiate economically and socially feasible programs to reverse existing trends. If solutions require new investments in plantations, firebreaks, fencing and labor-intensive resource management programs, AID will provide the financial and technical support needed. The key goal to be pursued by donors and Sahelians alike is to find solutions to the problem of natural resource degradation during this decade and to begin to reverse the process during the 1990's.

4. Infrastructure

Infrastructure requirements in the Sahel as in other least developed countries range from major infrastructure like railroads and telecommunications down to rural roads and minor irrigation systems. In evolving its concept of basic human needs AID has come to recognize that, even in the presence of appropriate development policies in recipient countries, the absence of certain infrastructure can indeed be a critical constraint to helping the poor majority. This is clearly the case in the Sahel. The Sahelian governments have adopted a long-term development strategy that is agriculture-based and oriented toward small, largely subsistence farmers. A key element of that strategy involves infrastructure

investments essential to long-term agricultural growth. The most important of these investments are in two sectors: transport and irrigation.

a. Transport

The most critical need in transport is a network of all-weather secondary roads linking the important population and production-marketing centers in the Sahelian countries. These roads are needed not only to transport marketable surpluses of food grains and export crops to markets but also to move food grains from surplus to deficit areas. This is a continuing need in the Sahel where rainfall is so sporadic that, even in years of high rainfall at the national or regional levels, some areas receive little rain and experience food deficits. In the past the lack of an adequate road network has made it impossible to provide food to these areas when needed. AID's transport assistance will include the improvement of existing roads as well as the construction of new roads. In general, road improvement and construction will be associated with projects to increase production and to broaden the access of the rural poor living in remote areas to government services and markets.

Road improvement and construction will be accompanied by programs to increase the capacity of Sahelian countries to maintain roads once they have been improved or built. This aspect of assistance to infrastructure will involve training and technical assistance in management, maintenance, procurement and the management of recurrent costs. Similarly, AID will assign higher priority to upgrading the existing secondary road network rather than expanding it. The selection and

design of roads to be improved or constructed will be determined largely by the production impact of the roads and the likelihood that resources at the local or national level will be generated to cover maintenance costs.

b. Irrigation

Most of AID's assistance in irrigation development will be devoted to small to medium-scale irrigation systems that include a large element of farmer participation in construction and management. Such irrigation will be carried out in higher rainfall areas as an adjunct to rainfed agricultural production as well as in areas near major rivers and lakes, and will be complementary to AID's efforts to increase productivity in rainfed agriculture.

In conjunction with other donors AID will assist in the rehabilitation of irrigation systems that have fallen into disrepair or are not working at capacity. AID will also participate in financing new irrigation projects on a selective and experimental basis designed to develop efficient systems that will be suitable for implementation in conjunction with multi-purpose river basin development projects. AID is in agreement with the CILSS-Club assessment that large-scale irrigation is critical to achieving long-term food self-sufficiency; AID will give higher priority in the near-term to financing downstream irrigated agriculture. AID will participate, along with other donors, in river basin feasibility studies during the early 1980's leading to joint financing of mainstream construction (dams, power generators). It will be AID's objective to orient the planning of these projects primarily toward small farmer production rather than large-scale commercial farms.

c. Project Financing Criteria

Certain criteria will be met by these projects before they become eligible for AID financing:

- the projects, on completion, must provide benefits (e.g., controlled irrigation water, improved access) to areas in which AID or other donors, under Club du Sahel auspices, are making an investment in basic human needs assistance;
- the projects will induce measurable improvement in the lives of the peoples in these areas substantially greater than would occur with existing AID and other donor assistance;
- there are no smaller scale alternatives which could provide comparable benefits to the rural poor;
- the influences on the social, health and physical environment have been carefully examined and all possible precautions taken to prevent or minimize human and ecological damage;
- the project has been coordinated with other donors in both its planning and financing aspects.

5. Rural Health and Population Strategy

In accordance with the CILSS-Club health strategy, AID actively promotes the linkage of Sahel health initiatives with development activities in other sectors in the belief that increased productivity is directly related to improved health status. Sustained accelerated growth is best supported by integrating health actions and concerns with

agricultural and water development programs while attempting to minimize the negative health impacts of these development activities. AID's activities of integrating health actions and of expanding Sahelians' accessibility to primary health services will be targeted to rural populations without overburdening the existing infrastructure. The goal of AID's health initiatives in the Sahel is to develop and expand a permanent and self-sustaining health care delivery system which is compatible with the ability of CILSS countries to absorb additional services, manpower and low recurrent costs. AID development support for health services and the supporting infrastructure will concentrate in the areas of primary care through technical assistance for demographic data analysis, village-based delivery systems, endemic disease control and family planning.

a. Integrated Village-Based Health Care Delivery Systems

The major component of the AID direct health care strategy is assistance in the development of low cost delivery systems to improve access to care for the 80 percent of the Sahelian population living in rural areas. Expanding access to primary care and preventive services centers around the village-based health worker who is the provider of initial service at the entry level of the delivery system. Village health workers are trained to provide simple clinical procedures; health education, including nutrition and family planning; health promotion including prenatal, maternal and infant care; and disease prevention services. The AID health strategy stresses the development of systems required to train, support and supervise village health workers in order to integrate village-based units with existing government health systems.

b. Control of Endemic Diseases

In addition to the provision of direct curative and preventive care, AID will stress endemic disease control components in the integrated village health delivery systems and integrated rural development programs. AID will continue to expand its assistance in the design and implementation of expanded programs in immunization to decrease the incidence of such diseases as measles, polio, tuberculosis, pertussis, tetanus and diphtheria in targeted populations. AID will also assist in the planning and design of endemic disease control components into integrated rural development programs to address potential increases in the incidence rates of onchocerciasis, schistosomiasis and trypanosomiasis in those project areas where these diseases pose constraints to increased productivity. Projects designed to provide safe drinking water through the development of community water supplies will receive support by AID.

c. Population

Rapid population growth can negate, and in some respects undercut, much of the progress made in the productive and social service sectors. At the same time, the lack of reliable demographic data limits the abilities of Sahelian decision-makers to adequately set health policies and population strategies according to existing and projected needs. AID's current objective is to assist Sahelian governments in the improvement of data collection and analysis of reliable information crucial to the design of appropriate health strategies and interventions. The long-term objective is to assist the Sahelian governments to achieve a population growth rate that is consistent with their resource base, absorptive capacity and development goals. Toward this end, AID is

expanding its support for the delivery of family planning/child spacing and nutrition services to targeted populations within the culturally acceptable mode of maternal and child health care. In this integrated health care context, clinics, health posts and village health workers will provide expanded services to counteract constraints to the lowering of infant mortality and the encouraging of natural family spacing.

6. Human Resources Development in the Sahel

The lack of an appropriately skilled human resource base inhibits economic and social development in the Sahel. The problem is severe enough to justify training and education assistance in nearly every sector and at all levels.

Consistent with AID's emphasis upon the development of the rural agricultural sector, priority will be given to selected activities that impact upon a broad range of beneficiaries in a balanced manner, all supportive of the rural poor, while recognizing that the general thrust in each country will influence the ordering of, and emphasis placed on, these priorities:

- Skills training in appropriate farm and off-farm related technologies; health, nutrition, literacy, cooperative organization and general learning for the rural farm family through support to Sahelian institutions for the training or retraining of low and mid-level cadre who will in turn provide outreach services in their respective disciplines. The possibilities of introducing innovations, such as the use of media, to provide outreach to geographically isolated populations will be examined.

- Training and retraining for mid and higher level cadre in the public, para-public and private sectors in planning, execution and evaluation, including finance, accounting and general management. This training will be conducted, as national requirements dictate, through a blend of short-term in-country training, support to appropriate Sahelian training institutions and participant training.
- Formal education from primary school through university.

AID is committed to the development of indigenous educational and training capability in the Sahel, but recognizes that this must be achieved in a phased manner. AID will judiciously allocate resources in support of formal education, but the attribution of these resources will differ significantly in each country in proportion to the degree of advancement of each educational program as it relates to national development objectives, and in consideration of other donor input and the overall AID program and its human resource requirements. AID will adhere to the principles of resolving rural/urban and male/female inequities in access to educational opportunity, particularly at the primary level, and of improving internal efficiency at all levels through teacher training, improved curricula and better administration. AID will carefully examine proposals for expansion of primary education in consideration of recurrent cost implications. AID will provide whatever assistance seems appropriate in the interest of achieving institutional self-sufficiency.

Special care will be taken to assure that all AID projects impact directly and positively upon women. In addition to considering their concerns in the design and implementation of all AID projects, AID will

specifically consider how training will involve women, how technology will impact upon women, how women may gain better access to credit, how women may become more productive and how women may better share in the proceeds of higher productivity.

C. SPECIAL AID CONCERNS

1. The Regional Approach

AID will approach its assistance to the eight states of the Sahel on a regional basis in the form of our participation in the work of CILSS and the Club du Sahel which together coordinate the Sahel development program by bringing Sahelians and donors together for the purpose of developing region-wide strategies and sector plans and to review development problems common to the region. As coordinating organizations, the CILSS and Club generally do not administer programs on their own or negotiate specific country projects. Rather, the specific projects that flow from this regionally coordinated planning process will normally be developed by each donor individually pursuant to bilateral agreements between donors and national authorities of the individual Sahelian states. Accordingly, most of AID's assistance to the Sahel will follow the normal programming practice of designing and implementing specific bilateral country projects.

However, the commonality of knowledge and understanding that is built into the overall CILSS-Club process can produce two results that reinforce a regional approach to development in the Sahel. First, the donors who participate as a group in the workings of the CILSS-Club tend to adopt similar or at least complementary assistance strategies and

services as health. River transport is limited by the seasonal pattern of rainfall and poor management. Other inefficiencies hinder rail transport between Sahelian and coastal countries.

Other forms of rural infrastructure are in short supply. Realizing the potential of irrigation downstream from proposed major dams such as Manantali or Selingue will require substantial additional investment in irrigation systems. As with transport, many of the existing irrigation systems have fallen into disrepair or are being operated at less than capacity. Physically rehabilitating these systems, and strengthening the capability of managers and farmers to maintain them, would have a significant short-run payoff in terms of increased food and agricultural output.

4. Trained Manpower and Institutional Structure

Trained administrative and technical manpower is a limiting factor in every sector and at every level. Trained scientists, technicians and administrators are in short supply, and the continuance of the educational system designed in colonial times has contributed to the excessive growth of public employment rather than to the preparation of skilled manpower for agricultural and rural development. Educational institutions are ill-equipped--in terms of facilities, teaching staff, curricula, practical orientation--to produce the appropriate mix of skills needed for rural development. Sahelian governments must hasten the reorientation of their educational systems toward producing the requisite rural development skills.

Institutions such as official marketing boards have become instruments for centralized crop collection and storage, debt collection

for credit extended and agricultural taxation--all in the interest of obtaining a marketable surplus of export crops such as groundnuts and cotton from rural areas. In some countries, notably Niger, a large portion of profits also go into rural sector institutions which provide credit for rural investment as well as reinvestment into agro-industry plant and equipment related to the export product. In general, however, more of the revenues or exchange earnings from the export of primary commodities could be invested in rural areas. Aside from traditional social organizations, only a few local participatory institutions have emerged that would help ensure access by small farmers and herders to productive assets and promote a more equitable distribution of the benefits and costs of economic change. Local administrative and planning capabilities required to make farmer cooperatives and producer associations effective are also weak.

5. Social Services

The provision of social services to rural people is impeded by a number of factors. The demand for unmet medical or educational services in urban areas is high and there are powerful incentives that encourage health workers or teachers to choose urban as opposed to rural jobs. Access to health facilities can be expanded with more extensive use of paramedical staff trained in preventive medicine, but the provision of such services requires a high level of technical and administrative training and supervision and a functional referral system which is often not available.

Above all, wider provision of social services in rural areas requires substantially greater investment than is currently being allocated

sector priorities for the Sahel. This facilitates donor coordination in the planning of individual projects at the national level and enhances the opportunities for parallel financing in the same country among two or more donors. This pattern tends to get extended across the Sahel from one country to the next. Second, and perhaps more important, the Sahelian states and donors alike will increasingly examine the development problems and needs in the Sahel on a transnational basis. Many of the problems in one state are common to most of the region, and the efforts required to deal with them, though often undertaken physically in individual countries, require a "regional" investment for their economic efficiency. This regional investment may be undertaken by donors through a regional project framework or a bilateral project approach.

AID's regional project portfolio in the Sahel grew rapidly in the early years because it provided the means for AID's participation in the CILSS-Club planning process. The regional portfolio became the programming tool for AID's work on region-wide problems involving multi-donor planning. Several of the projects originally conceived as regional projects have been spun off as regular bilateral country activities. This is as it should be. Activities which remain in a regional category are those which involve assistance to regional organizations such as the Club, CILSS, AGRHYMET, the Sahel Institute and the river basin commissions, categorized as follows:

- River Basin Development - The development of the Sahel's international river systems are represented by organizations representing the user nations such as the Lake Chad

Basin Commission, the Commission for the Development of the Senegal River (OMVS), the Gambia River Basin Commission and the Niger River Commission. AID will assist these international commissions in concert with other donors, in formulating optimum strategies leading to development of the Sahel's river basins.

- Agriculture - Similar constraints and opportunities inherent in Sahelian agriculture suggest regional approaches in pursuit of regional food security. Hence AID will undertake activities in regional food crop protection to reduce pre- and post-harvest losses, in regional inland fisheries to further exploit this protein-rich sector, in the production of fertilizer, in weather monitoring and research to enhance local Sahelian agricultural productivity. Regional approaches are also possible in transport, communication and other areas related broadly to agricultural development.
- Institutional Support - AID will support multi-national institutions which serve to identify regional problems and solutions, including the Club du Sahel, CILSS and the Sahel Institute.
- Population - Demographic data collection and analysis efforts will be undertaken to provide the necessary information Sahel-wide in facilitating consideration of population planning measures.

AID's management of regional projects will be influenced by the character of the project and the specific arrangements developed by the Sahelians. In the case of the river basins, for example, the commissions are generally responsible for mainstream infrastructure development, with the member states responsible for downstream development or the broader economic planning and actions relative to actual development of the basin. The responsibility for managing AID assistance to the river basin commissions is assigned to a particular AID country mission where that responsibility is most appropriately handled.

The other major type of AID regional projects—the more conventional variety—involves those development concerns common to several of the Sahelian states for which consolidation of donor inputs and management is particularly desirable in order to avoid duplication of effort. The AGRHYMET regional project is one example. AID has developed a pattern for all projects of this type which defines a management system, relating it to the responsibilities of each bilateral field post where the project operates and to Washington. This pattern will be converted into a set of formal guidelines covering the responsibilities and roles of all of the project managers and AID mission directors concerned.

2. Absorptive Capacity

It has become clear during the CILSS-Club planning process that the Sahel's requirements for development assistance are much greater than its present ability to absorb such assistance productively. This problem is most evident with respect to programs that have a direct impact on basic human needs. Programs to increase small farmer production, for instance, are hampered by poorly trained extension agents,

the absence of farm-tested improved technologies, inadequate farm to market roads, poorly manufactured farm implements and inappropriate credit policies. Health, primary education and functional education programs are constrained by similar problems. This means that, before key basic human needs indicators can begin to show change, it will be necessary to undertake a large number of expensive often long-term programs that do not immediately improve the lives of the poor majority. Furthermore, in places like the Sahel, the absorptive capacity problem extends beyond strictly BHN programs. Programs to build and upgrade roads are limited by a shortage of trained personnel and funds needed to operate and maintain the equipment and to maintain the roads.

The major implication of the absorptive capacity problem is that AID and other donors must limit the amount of resources going to direct-impact programs until all of the prerequisites to the achievement of program objectives are in place. In strategy terms this means that for some time to come large proportions of U.S. assistance to the Sahel will have to go to institution-building, technical manpower training and economic infrastructure. This is not to say that the U.S. and other donors should not now be supporting direct-impact programs. The problem is to achieve a proper balance recognizing that there is both a short-run need to alleviate poverty and a longer-term need to remove basic constraints to major broad-based improvements.

The CILSS-Club framework provides the mechanism for coordinating donor assistance on the basis of shared knowledge of the Sahel's capacities and progress. This institutional apparatus is oriented to problem solving and provides a means for analyzing absorptive capacity on a global

basis. For example, CILSS is working with donors to assure adequate attention is given to the accelerated training of Sahelians in each sector area. Special commissions or working groups have been established to examine the problems, needs and optimum strategies in food grain production, marketing and pricing, controlled irrigation, recurrent costs and energy/reforestation. CILSS has established a Project Management and Analysis Unit to monitor CILSS-Club progress for the purpose of identifying common bottlenecks, and is developing a proposal to strengthen the various sector planning units of the Sahel governments. It will be AID policy to support and stimulate these and other efforts by the CILSS-Club in order that we may jointly come to grips with absorptive capacity constraints as they arise.

3. Recurrent Costs

The size and nature of the Sahel development program will result in large increases in recurrent costs that will exceed what can be financed by the Sahelian governments themselves in the near future. Major components of the program, including those that broaden access to social services which are not revenue generating, as well as those that build essential institutions and infrastructure, will not generate the revenues to pay their recurrent costs. Yet, most of these kinds of activities are critical first steps to achieving broad rural development objectives.

For donors there are two recurrent cost issues: first, in the short run the issue is whether and to what extent donors should finance recurrent costs upon formal project termination. The approach adopted by most donors is to include such operating costs in the external

assistance provided during the life of its projects on the assumption that host governments can assume those costs once the projects end. This assumption is now open to question. Second, in the long run, the issue is whether to fund the recurrent cost gap associated with the Sahel program as a whole. To help resolve this issue, the Club has undertaken a study to assess donors' options for meeting the recurrent costs of the global Sahel program. These options broadly include: changing the composition of the Sahel program to increase the proportion of revenue generating projects by de-emphasizing non-revenue generating BHN programs at least in the early years; undertaking only those BHN projects that have a capital-generating capacity built into them which adequately covers their recurrent costs; extending the life of the Sahel program beyond twenty years so as to lower annual recurrent cost requirements; and last, meeting the recurrent cost gap with external financing.

It will be AID policy to work jointly with Sahelians in dealing with the conclusions of the Club's study in a positive and creative manner. Accordingly, AID in each country will:

- Assess the current and planned AID program with respect to the nature and extent of the local operating costs financed by AID and by the host government annually through 1985.
- Select a minimum of two AID projects for the purpose of developing alternative methods or formulae for covering their recurrent requirements upon project termination.
- Share the results and generate review of the subject with the donor community as well as the host government.

- Examine each new project initially at the PID stage and in depth in the PP from the standpoint of its recurrent cost implications including the least cost approach to financing or otherwise meeting the recurrent requirements of the project.

4. West Africa Integration

In formulating the Sahel development program, it was recognized that the problems in developing the Sahel were of such enormity, and the task so long-term, that a special effort was required which would focus initially on the eight Sahelian states. The first phase of the Sahel development program therefore placed emphasis on the institutional and manpower preconditions to development of the Sahel's economic base. The long-range strategy introduces in its second phase the question of the Sahel's economic relationships with the West African coastal states and others. Thus there has been an awareness of the importance of this relationship but little emphasis placed upon it up to now.

At the same time there is a growing understanding between the Sahelian states and their neighbors which will, in time, lead to greater integration in the West Africa region. This is occurring through the cooperation of the various West Africa regional organizations which have various linkages to CILSS and the individual Sahelian states. Among these organizations are CEAO, ECOWAS, BOAD and the Entente Fund.

It is AID's view that regional integration is critical to the achievement of self-sustaining growth in the Sahel. Part of our regional development strategy, therefore, will be to assist regional organizations in their efforts to provide a better understanding of regional economic

linkages in West Africa and, when possible, strengthen those linkages to the benefit of both Sahelian and coastal countries. These linkages could include: the interrelationships of cash crop and traditional dryland agriculture; river basin development; trade in livestock and trade policies generally; transport and marketing channels; the issues of self-sufficiency and comparative advantage; finance, capital investment and capital flows; manpower training, formal education and labor migration.

5. Role of Women

It has been amply documented that women play crucial economic and social roles in Sahelian countries, especially in rural areas. However, they do not benefit proportionately from government services and development programs. Sahelian women have much less access to primary education than men, have a poorer health status, and do not receive as much training in the skills they need to perform their tasks more effectively. AID will address this problem primarily by including in all rural development and rural health projects special measures to address the special needs of women and to involve them more directly in the development process. This will involve: assuring that extension services orient more of their advice to women, including women in cooperatives and other village level organizations; making special efforts to develop and introduce labor-saving innovations in rural households; and expanding functional education related to family health care. One major constraint to providing more of these services to women is the almost total lack of technically-trained women in most rural areas. Institutions to train women as trainers in home economics, agricultural

practices, family health and other subjects of use to women need to be greatly improved. This will be emphasized by AID.

At a more general level AID will support efforts to document and analyze the role of women in the Sahel and the extent to which their needs are not being properly addressed. In this way AID could help to increase the attention given by Sahelian governments to the special problems and needs of women.

6. Food Aid

Food aid has played an important role in AID's development assistance for the Sahel. All Sahelian countries have received U.S. commodities under Title II emergency programs. As AID is able to shift away from food-for-relief to food-for-development in the Sahel, increasing attention will be given to linking food aid to Sahel development program agricultural and developmental objectives. In the short term, AID will experiment with both Title II and Title III programs to assess their adaptability to the special needs of the Sahel. Accordingly, Title III food-for-development programs are under consideration for Senegal, Mauritania and Cape Verde; and Title II Section 206 programs are planned for Upper Volta and Niger. Title I has proved inoperative in the Sahel because of the inherent financial burden.

AID will continue to supply Title II for use in direct nutrition programs targeted mainly to vulnerable groups, i.e., mothers and pre-school children, and in food-for-work projects. Title II MCH programs administered largely by U.S. private voluntary organizations are an important vehicle not only for improving the nutrition of mothers and young children, but also valuable for transmitting health and nutritional education.

Over a broader front, it has long been thought that PL 480 Title II could be used to promote and finance improved food management in the form of grain reserves in the Sahelian countries. Experience in the early 1970's in Niger and Upper Volta was inconclusive, largely because the extended drought effectively precluded using PL 480 commodities to stabilize fluctuations in food supplies much less prices. In FY 1979 the United States approved under Title II 10,000 tons of sorghum to Chad to support an FAO-managed reserve scheme. Proceeds from the sale of the sorghum will finance the formation of farmer associations that will store grain for later sale to the national grain marketing board. In FY 1980, AID will undertake a Section 206 multi-year program for Upper Volta which provides 39,000 metric tons of grain. Proceeds from the sale of these commodities will be used to improve the ability and operating efficiency of the Office National des Céréales to buy, store and sell grain in the rural areas, and to make systematic diagnosis of the grain market system to determine how the private sector's stock and talents can best be used in a mixed system. AID will carefully monitor these programs to determine if they are replicable in other Sahelian countries. Grain stabilization efforts require not only commodities and technical assistance in physically managing stocks, but also economic analysis and careful programming to assure that production incentives and farm income are not adversely affected. Thus U.S. food aid, as well as assistance in grain marketing and storage, will be accompanied by technical assistance in both stocks management and analysis of the effects of the assistance on low-income producers and consumers.

7. Peace Corps and Intermediaries

It will be AID policy to work toward full collaboration with the Peace Corps in the interest of maximizing the number of projects involving joint participation. Toward that end, AID mission directors and Peace Corps country directors will meet in the field at least quarterly; AID design teams will consult with Peace Corps overseas staff during the process of developing Project Papers for projects where Peace Corps might be able to play a role; and AID missions will solicit selected clearance by the Peace Corps on PIDs, CDSSs and ABSs.

In addition, it will be AID policy to draw upon private voluntary organizations (PVOs), Title XII universities, BIFAD and other intermediaries to the maximum possible extent to assist AID in the planning and implementation of AID activities. AID recognizes the special capability and experience of these organizations to undertake projects in specific areas and they will be given first consideration in carrying out projects that require a large degree of local participation.

8. Donor Assistance

It is estimated that the Sahel program would receive in excess of \$1 billion annually from all sources for the first 10 years, with the United States providing approximately 10 percent of that amount. On this basis, the overall program would thus require approximately \$10 to \$15 billion with the U.S. share being \$1 to \$1.5 billion over this 10-year period, or \$100-150 million per year.

Overall, the United States has financed well under 10 percent of the total Sahel program. In recent years, at least four donors have provided more aid than the U.S., and these have accounted for about

60 percent of total contributions. See Tables 6 and 7 on commitments to Sahelian countries by recipient and by donor.

France is the largest donor in the Sahel and much of its assistance is in the form of non-project technical assistance to ministries and other public sector organizations. France also provides substantial budget support to governments experiencing severe financial difficulties. The remainder of French aid is similar to that provided by the European Community (EC), i.e., cash crop production, agro-industries, and some infrastructure, mostly roads. The World Bank's program also includes cash crop and transport projects but its programs tend to be more oriented toward other aspects of rural development as well. World Bank transport projects, for example, include not only trunk roads but also road maintenance and rural roads, two types of activities that are critical to increasing agricultural production above subsistence level and opening up isolated areas. Also, the World Bank is undertaking major cereals and livestock projects. These projects are small-farmer oriented and are often fully integrated, i.e., they include not only extension but also research, training, marketing, feeder roads, credit and input supply. Since the drought, Saudi Arabia has become the third largest donor to the Sahel. The Saudi program is concentrated in heavy infrastructure and budget support rather than technical assistance. Other Arab donors such as Kuwait, the Arab Fund for Social and Economic Development and the OPEC Development Fund are also large donors and also tend to concentrate on infrastructure projects.

There is a good deal of complementarity in the programs of the various donors. Given the very low level of development in the Sahel

it is necessary that many different constraints be addressed at the same time. There is a need for infrastructure projects, institution building, rural development, export crop production and social services. Under such circumstances it is appropriate that different donors with different capabilities concentrate on those areas in which they have a comparative advantage. Where their capabilities overlap with AID's interests and capabilities, it will be AID policy to encourage joint or multi-donor participation and financing. This will apply particularly to projects in cereals and livestock production, forestry, agricultural research, integrated rural development and rural health.

Table 7

Commitments to the Sahelian Countries by Recipient*
(in millions of U.S. dollars)

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
CAPE VERDE	20.8	25.6	40.3	51.0
CHAD	70.6	116.2	96.5	170.7
GAMBIA	12.9	32.5	39.6	35.5
MALI	159.8	215.9	191.6	178.3
MAURITANIA	83.0	231.5	129.3	128.9
NIGER	106.9	189.7	128.1	176.8
SENEGAL	144.0	131.9	165.9	224.5
UPPER VOLTA	110.9	121.8	178.1	197.4
REGIONAL	<u>54.4</u>	<u>41.7</u>	<u>80.5</u>	<u>93.9</u>
TOTAL	<u>763.3</u>	<u>1,106.8</u>	<u>1,049.9</u>	<u>1,257.0</u>

*Includes Official Development Assistance (ODA) from DAC countries, multilateral sources, OPEC sources, and U.N. Agencies.

PART - III

APPENDICES

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IN THE SAHEL

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MACROECONOMIC ISSUES

IN THE SAHEL

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I. Growth Potential in the World Context

A. Constraints

The Sahel presents one of the world's most difficult challenges for economic development. Land fertility and mineral endowment are poor, while population growth rates are high and possibly increasing. An inhospitable and unreliable climate make agriculture, on which the vast majority of the population rely, a risky and unremunerative undertaking. Underdeveloped human capital (literacy and technical/managerial skills) plus inflexible institutions and inadaptated policies hamper the progress of non-traditional sectors. Five of the eight countries are land-locked or island and transport infrastructure is rudimentary - factors which inflate domestic costs, reduce benefits from trade, and hamper the execution of development projects. Not surprisingly, per capita GNP and quality-of-life indicators rank these countries among the lowest in the world.

The Sahel is one of the most poorly-endowed regions of the world for energy, and this scarcity together with low per capita income explains why Sahelian per capita energy consumption is only one-third the average of even the Low-Income-Country group. Since energy consumption generally bears a close correlation with economic growth, the Sahel's poor endowment is an important contributing factor to the region's weak growth performance.

The scarcity of fossil fuel also brings reliance on fuelwood and thus contributes to ecological degradation (Annex table 1.2).

While agriculture (crops and livestock) is the main contributor to GDP and employment, agricultural output has been essentially stagnant in the past decade, while annual variations due to unpredictable rainfall have occasionally been dramatic. Since manufacturing and trade in the Sahel are based on the processing and exchange of primary products, poor agricultural performance explains most of the weakness in GDP growth in the 1970's. The region's continued inability to achieve food self sufficiency has exposed it to the rising cost and uncertainty of supply of food on the world market. This has led to a renewed concern for establishing national and regional food security programs, such as cereals stockpiles and financial facilities. The high cost of risk reduction, however, must be weighed against the competing need for productive investment in agriculture.^{1/}

Domestic policies have played their part in restraining growth, diversification, and external equilibrium. Official food pricing policies and marketing monopolies have weakened incentives to agricultural output. Over-extended public sector enterprises and suspicion of the private sector have hampered growth of manufacturing and commerce (although the limitations of market size and technical/managerial resources are contributing factors). Artificially low interest rates have discouraged savings and misallocated investment. Preemption of resources by central government from productive sectors for inefficient public enterprises and consumption subsidies, by increasing production costs and inflating demand, have weakened export competitiveness and increased import propensities. These various defects have converged to create the macro problem of recurrent costs management to which the CILSS/Club have devoted considerable attention in the past year.^{2/}

^{1/} See "Food Security" below

^{2/} See "Recurrent Cost" below

International trade and payments have not evolved favorably for the Sahel in the past decade. Exports, which are concentrated on a few cash crops (peanuts and cotton) and some minerals (iron, phosphates, uranium) have generally faced declining world prices. On the other hand, the Sahel like other developing regions has had to cope with accelerating price increases for manufactured and petroleum product imports.^{1/}

In an effort to maintain consumption and pursue investment targets, many of these countries have run up large external debts^{2/}, a period of difficult economic adjustment. Since currency agreements preclude devaluation,^{3/} the only remaining options are domestic austerity and reform and (temporarily) slower growth, or increased international payments support. How to cope with external shocks has become a key issue for these countries, and for assistance programs to them.^{4/}

^{1/}Overall, terms of trade for the Sahel deteriorated an average of 1.6 percent per annum in 1970-78, compared to 0.3 percent annum for all low-income countries (Annex table 8).

^{2/}The region's external debt rose from 20% to 36% of GNP between 1970 and 1979, and debt service went from 3.4 to over 10 percent of exports in the same period. (Annex table 9).

^{3/} But effective exchange rates have been adjusted in some cases, using import duties and export subsidies.

^{4/} See "Adjustment to External Shocks" below.

In common with all developing countries the petroleum price increases and world economic stagnation have brought about increased reliance on foreign loan capital. Added to the region's higher structural dependency on foreign savings, this has produced debt-to-GNP ratios now averaging some 75 percent higher than the Low-Income-Country group as a whole. The Sahel's debt service ratios, which were only a fraction of the LIC average in 1970, had increased to parity by 1978 and are likely to be well in the forefront at the present time (Annex table 9).

Poverty, isolation and scarce exportable resources have left the Sahel comparatively unattractive for foreign private investment. Cumulatively through 1977, PODI (private overseas direct investment) accounted for less than 8 percent of total external resource flows (less than 4 percent excluding Senegal), compared to 19 percent for the developing world as a whole. (Annex table 6).

B. Potential

Nonetheless, most of these countries could, in the view of the World Bank, achieve long-term growth rates in the order of 5 percent per annum if they acquired the capital infrastructure and adopted the appropriate policies to exploit their comparative advantage in agriculture. Potential is particularly high along the major river systems, although massive investment would be necessary to harness it.

While sound domestic policies which strengthen rural productivity and purchasing power should stimulate growth based on domestic demand, and should provide economically rational opportunities for import substitution

investments, the Sahel should also benefit in the future from its increasing participation in international trade.

For most of these countries, the principal export potential lies in cereals and livestock trade with the major West African coastal states. The region also can expect growth in industrial crops (cotton, peanut oil) and off-season produce for European markets. Senegal should continue to capitalize on its excellent ocean fishing resources, and to increase the domestic share in value-added in this sector. Subsoil exploration and development in the Sahel thus far has been minimal, primarily due to logistical constraints. However, in addition to the existing commercial exploitation of uranium in Niger, iron in Mauritania, phosphates in Senegal and (soon) gold in Mali, it may be expected that other finds will be discovered and developed in the future (hopefully including petroleum) as world shortages make exploration of remote areas and poorer-quality yields more economically justifiable.

With the exception of Senegal, these countries presently lack the human skills, physical infrastructure and transport links to support large-scale industrial developments. Even in Senegal, domestic cost structures tend to price the country out of the market for footloose foreign investors.

However this disadvantage may be remedied by appropriate macroeconomic policies. On the other hand, throughout the Sahel there is great potential for small and medium-scale industry and annex services, initially aimed at domestic markets but which, with experience, could evolve into potential sources of export earnings.

II. The Sahel in the West African regional context

The Sahelian countries share many physical and institutional characteristics which justify treating them as a region: climate, geography, language, colonial heritage, monetary institutions etc. Considerable benefits may be realized by promoting development in the Sahelian framework, harmonizing price and trade policies, and supporting regional undertakings such as integrated river basin development.

But for the particular event of the 1969-73 drought, the Sahel has little historic or economic claim to treatment as a distinct trading unit, however. Its past fortunes have been closely linked to those of North and West Africa, for which it served as a trading link as well as a supplier of gold, salt and food. As the drought period recedes, these traditional links are being reaffirmed. The framework for broader regional cooperation within West Africa is already being developed, via ECOWAS and CEAQ.

A. Scope for Regional versus Individual National Development Strategies

Although economic conditions are similar among Sahelian countries in many respects, the question remains whether they stand to gain more from concerted economic action in a regional framework, or from essentially individualized development.

In general, there are wide areas in which common policies and joint action clearly are preferable. Foremost is relations with the donor community, which continues to recognize a joint approach to the common problems of the region as a basis for increased aid (however, the shared characteristic of poverty is hardly a solid foundation for economic integration). Second is coordination of national policies concerning trade, investment, payments and the movement of factors of production (labor, capital, technology). Other key areas of mutual interest and dependence are transportation and communications development, integrated river basin development, and joint efforts to address transnational problems such as crop pests, human disease, and transhumance pastoralism. There are many cases where investment which is not cost-effective at the national level becomes realistic at the regional level - for instance, specialized manpower training.

With regard to fixed capital investments in production, these advantages of regionalism are less pronounced. If the Sahelian commitment to regional free trade were vigorously pursued, there would be the theoretical benefits of wider markets supporting greater investment. However since trade patterns are fundamentally oriented to the outside world, the actual consequences would likely be disappointing, at least in the medium term. Efforts to overcome this via planned investment (on the Central American Common Market pattern) would probably result in considerable inefficiency and excess capacity since such collective decision-making invariably gives more weight to political ambitions and leverage than to economic logic. Given these risks and uncertainties,

it would seem prudent to focus on creating the preconditions for region-oriented industry (common policy environment, and adequate transport links) and leave actual investment decisions to the private sector. If investments are nonetheless orchestrated by the public sector, their regional coordination should be ensured to the extent possible.

Agricultural pricing policy is one area where concerted actions by Sahelian countries, supported by the donors, is clearly required. Doubtless the best solution would be free market determination of prices, allowing international trade to arbitrate away differentials. The present system of imposed prices with large differentials merely yields artificial deficits in low-price countries as food is exported to neighboring states, and serves to artificially depress producer prices in the latter countries. Individual Sahelian states are unlikely to succeed in their efforts to liberalize food-grain markets and increase producer prices unless compatible policies are adopted by their neighbors.

Such a common (or least harmonized) pricing policy would lay the foundation for more efficient foodgrain management systems including regionalized food security systems.

If such a harmonized policy framework were achieved, probably most aspects of rainfed agricultural development could continue to be pursued as at present, by individual Sahelian states. To some extent, separate paths and independent programs are healthy and desirable as well as inevitable - since only in this way can the region test and evaluate various technological options and development modes in a sector where no proven methods or easily replicable formulas yet exist.

Such clearly is not the case for large scale irrigation based on integrated river basin development, on which long-term progress towards food self

reliance and security depends. By the nature of the problem, concertation among riparian states is essential - and is being achieved via the relevant river basin authorities. Sahelian involvement in such schemes is producing a web of broader interdependency among nations in this region. Downstream navigation, fisheries development, energy policy, and the potential for energy-intensive extractive and production industries, all are topics for mutual planning. The problems of cost allocation and protection against individual default with respect to infrastructure finance will require greater confidence among neighbors concerning national fiscal and monetary policies. With the maturation of plans for integrated river basin development, the concept of regional interests and regional concertation finally is becoming a tangible reality, and is developing its own momentum.

Still unanswered is what overall regional grouping makes best sense for the Sahelian countries. While the Sahel itself is the logical unit for some purposes (programs based on similar socio-economic, climatic and ecological conditions), other groupings are more rational for broader economic relations. Trade among Sahelian states certainly should be expanded, but the largest gains from comparative advantage can only be realized in groupings encompassing nations with contrasting economic structures. It is in the Sahel's long term interest, therefore, to strengthen traditional ties with the West African coastal states (via the CEAO, CDEAO, Entente, etc) and North Africa. Inevitably, economics and geography will dictate somewhat different links for each individual Sahelian country. The appropriate grouping will likewise vary according to the functional issues to be dealt with.

B. Participation in Regional Organizations

The Sahelian countries maintain economic links with the rest of Africa through participation in a wide range of monetary, trade technical and development organizations. All participate in the ADB, the UN-ECA, the CCAO (chambre de Compensation de l'Afrique de l'Ouest) and the ABCA (Association des Banques Centrales Africaines). Many Sahelian states also participate in sub-regional institutions such as the River Basin organizations (OMVS, OMVG, NRBC, Liptako-Gourma), and regional solidarity and integration groupings (the CEAO, CDEAO, Entente, and OCAM). Some also maintain political-economic links with North Africa via the Conférence of Saharan Heads of State (Chad, Mali, Mauritania, Niger).

1979 Membership in Selected Regional Organizations

	<u>Cap Vert</u>	<u>Chad</u>	<u>Gambia</u>	<u>Mali</u>	<u>Mauritania</u>	<u>Niger</u>	<u>Senegal</u>	<u>Upper Volta</u>
CEAO				X	X	X	X	X
CDEAO	X		X	X	X	X	X	X
Entente						X		X
L - G				X		X		X
OMVG			X				X	
OMVS				X	X		X	
NBA			X			X		X
OCAM						X	X	X
UMOA						X	X	X

Source: BCEAO, 1979 Annual Report.

Two of the most important West African regional organizations are the CEAO and the CDEAO, both of which are dedicated to economic integration via customs agreements and reduction of barriers to factors of production.

The CEAO^{1/} conducts a program of seminars to promote regionalism (in 1978 it organized a seminar on regional cereals policy). However, its principal focus is on tariff policy and regionalized investment schemes. It manages two subsidiary Funds for this purpose:

- The FCD (Fonds Communautaire de Development), is maintained by member state contributions based on exports (the TCR, or Taxe Communautaire Regionale). Two-thirds of receipts are transferred to importing member states to offset losses due to multilateral tariff reductions, while the remainder is used for development projects in poorer member states.

- The FOSIDEC (Fonds de Solidarité et d'Intervention pour le Développement de la Communauté) serves to mobilize foreign and domestic capital to finance regional development projects.

The CEAO's financial base has been eroded by the economic downturns in the leading member states (Ivory Coast and Senegal) who have fallen into arrears on their contributions during the past three years.

The CDEAO^{2/} has recently concluded agreements to consolidate tariff policies of member states and to eliminate visa requirements for member nationals. Other CDEAO programs are the establishment of a regional telecommunications network, and progress towards the simplifications of intra-regional payments.

^{1/} Communauté Economique de l'Afrique de l'Ouest (ECOWA)

^{2/} Communauté Economique des Etats de l'Afrique de l'Ouest (ECOWAS)

C. Regional Trade

Sahelian trade comprises the visible movement as recorded by governments and international agencies, and the invisible flow of unofficial exchanges and border trade.

The recorded trade pattern (1978) suggests almost negligible exchanges among Sahelian countries (3 percent of their total exports), but substantial trade with the rest of West Africa (21 percent of total exports).

Seventy percent of trade flowed between the Sahelian countries and the industrialized nations (principally France). In Africa, the main trading partners were Nigeria and the Ivory Coast.

Reliance on developed-country trading partners was highest for the coastal states plus Niger (Uranium) and less pronounced inland. It was lower for exports than for imports (due to aid financing).

Senegal led the region in intra-Sahel trade (7% of total exports from Senegal, versus 3% for the region as a whole) - but probably even this is inflated by re-exports.

Non-recorded trade is certainly large and the bulk is transacted among neighboring countries: grain, livestock, salt etc. If the complete record were known, it would show a far greater degree of mutual reliance among Sahelian states, and between the Sahel and the rest of West Africa, than we can deduce from the presently-available data.

D. Regional Transport

The Sahel's wide distances and sparse population pose special problems for transport. Improved road density (asphalt and gravel) is about 4.5 kilometers per thousand square kilometers of area on average, ranging from 4.7 km/1000 km² for Gambia to only 2.7 for Mali. Road density is strongly correlated with population density; however, Mauritania, Senegal and Chad have substantially better road-per-capita ratios than the remaining countries in the region. (Annex table 10).

Access routes to the four inland countries are of vital importance in assuring food supplies in times of emergency, containing import costs, and maintaining export competitiveness. For all four countries, these routes exceed 1000 kilometers. Closest ports differ for each, implying a need for broad links with many periphery countries.

The CILSS/Club Strategy notes that the Sahel's transport network was designed during the colonial period to facilitate export of cash crops from Africa abroad. Transversal connections between Sahelian countries therefore were neglected, as was intra-state transport. Consequently, the Sahelian states remain relatively isolated from each other, and relatively unprepared for integrated national development. Finally, the low population densities in the region make road construction and maintenance costly. In general, road networks have deteriorated since independence, particularly secondary roads serving the rural population.

The first priorities therefore are to establish sound maintenance systems, and to expand rural networks and intra-Sahelian links. Among the more ambitious options is extending the Dakar-Bamako railway on to Niamey.

III. Selected Policy Issues

A. Adjustment to External Shocks

The Adjustment Problem

Although the underdeveloped Sahel is comparatively less vulnerable than higher-income countries to changes in world economic conditions, nonetheless the effects of the 1973-74 international monetary crisis, the repeated petroleum price increases, the gradual tightening of world food balances, and the stagflation settling on the industrialized countries, have had their repercussions on this region as well.

While the bulk of the Sahel's population is engaged in subsistence agriculture and thus insulated from world economic events, foreign developments have greatly complicated the task of maintaining balanced national budgets, external accounts, food security, and the momentum of monetized sector growth on which development depends.

Government revenues remain heavily dependent on import duties, taxes on importing firms, and receipts from exports. Countries such as Senegal which mounted ambitious development plans on the basis of expected growth in mineral and groundnut exports have had to undergo painful readjustment as world commodity markets deteriorated in the latter part of the decade.

(Some commodity prices have improved again more recently - see Annex table 8). The rising cost of petroleum and manufactured imports have inflated government expenditures both for investment and for current operations. It has increased the probabilities of project cost overruns, and thus complicated project planning, particularly for multi-donor undertakings such as OMVS.

The repeated shortfalls in Sahelian food production, according to the Club Secretariat, have left the region permanently dependent on food imports.¹⁾

1) SAHEL D(80) 101, The Sahel Drought Control and Development Programme, 1975-79: A Review and Analysis, pages 5 and 74.

At the same time, the gradual tightening of world food supplies makes permanent food dependence increasingly costly and problematic. Perhaps schemes such as the proposed IMF Food Facility will help dampen the regional impact of cyclical shifts in prices which have made imports hardest to sustain at the precise time they are most needed. However, from the stark long-run perspective depicted in the Global 2000 Report, world food trends leave the Sahel no option but far more determined efforts at regional food self-reliance.

Tourism earnings have been particularly sensitive to the European economic downturn. Earnings from workers remittances, an important factor for several countries with special access in the past to European labor markets, have been affected by EEC efforts to reduce unemployment by halting and reversing immigration. Increased international protectionism likewise has eroded the export earnings prospects of the region and the incentives to private direct investment.

Countries which attempted to maintain development momentum despite the increasingly hostile external environment were obliged to enter the commercial capital market at a time when international interest rates were sharply rising. High service charges plus poor export prospects led to serious external debt problems in several Sahelian countries.

To the extent that trade and payments between Franc and other currency zones is not symmetrical, the Sahel has also had to absorb the effects of changing fortunes of the French Franc. Within the UMOA, the large deficits of certain Sahelian countries were long offset by Ivory Coast surpluses: the recent deterioration in Ivory Coast external accounts has made that system more tenuous and has increased the burden on France as ultimate guarantor of UMOA solvency.^{1/} [The recent deterioration in the Ivory Coast's balance of payments was due primarily to the government's decision

^{1/} footnote text in brackets

to restrain temporarily cocoa exports, and to a sharp increase in imports of goods and services. It is expected that the Ivory Coast's external payments will improve in future years as cocoa exports resume and petroleum exports come on stream.

Net Foreign Assets (OFA Billions)

	<u>12/77</u>	<u>12/78</u>	<u>12/79</u>	<u>6/80</u>
Ivory Coast	17.4	24.3	- 69.0	-146.6
UMOA Total	53.3	34.9	-101.4	-211.7

2. The Sahelian Adjustment Response

Adjustment measures by Sahelian states to the deteriorating world economic climate include a mix of domestic demand-restraining monetary/fiscal measures, drawdown of foreign exchange reserves (as percent of imports if not in actual money terms), and increased recourse to external borrowing. Cuts in domestic budgets have of course reduced development and have had a negative multiplier effect via the tightening of supply of counterpart funds to support foreign-aided projects. Several countries have been forced to seek international financial assistance in the context of IMF/Bank stabilization programs. Such programs open the prospect of general restructuring of participating country economies, increased liberalization of prices, more incentives to rural sectors, and leaner and more efficient public sector. Although currency parity agreements with France seem to preclude exchange rate adjustment, effective exchange rates are being devalued in practice in some instances via higher import taxes plus export subsidies. It would be a mistake, however, to assume that the poor and fragile economies of this region have the strength and flexibility to carry out domestic readjustment with the ease

and efficiency expected (often mistakenly) of more advanced states.

3. Implications for Donors

Scope for donor support of Sahelian adjustment measures varies according to the range of aid instruments available to each donor. Direct financial support for economic reforms can be provided by some, and the United States can pursue similar objectives (particularly regarding agricultural policy) via PL 480/III and program aid. Donor project assistance can be targeted to reduce the Sahel's vulnerability to external factors by promoting export diversification, energy conservation and supply development, commodity export stabilization and insurance schemes^{1/} and food production itself. Implementation modes can be selected which will facilitate future adjustment, such as promotion of private intermediaries and reliance on credit/price incentives rather than working through bureaucratic delivery and control institutions. Some of the pressure on host government budgets can be relieved via greater donor responsiveness to the recurrent cost financing implications of projects. In the broader context, all donors can assist by supporting the stabilization and structural adjustment programs of the Fund and Bank, and by support in international fora for instruments (such as enlarged and liberalized IMF facilities) which help address the payments problems of countries similar to the Sahel.

^{1/} such as STABEX

B. FOOD SECURITY

Food self sufficiency is increasingly remote for the Sahel. The causes of dependency are both physical and institutional. Overcoming the problem involves long-term development efforts but also measures to improve policies, provide food security, and promote regional cooperation. The role of foreign assistance, through unambiguous, will be a key factor.

¹Deficit. Some five years after adopting the Sahel Development Strategy, the region has become if anything more dependent on external assistance to meet its food requirements.

Food Situation in 1979

	Per Capita Food Production (1969-71 = 100)	Net Food Imports (000 MT)	Food Aid (\$M)
Cap Vert		43	14.2
Chad	90	20	14.0
Gambia	83	36	2.5
Mali	85	36	8.0
Mauritania	74	152	17.3
Niger	90	28	5.8
Senegal	94	388	23.2
Upper Volta	99	56	27.8

On a preliminary basis the CILSS has projected that the region's food deficit for 1980/81 will be even higher, and that about 800 thousand metric tons of food aid will be required in addition to normal imports.

The regions food imbalance can be traced to structural limitations, short-term gaps, and political/institutional weaknesses. Important structural factors on the demand side are rapid population growth and urbanization;

and on the supply side, poor soil, meager rainfall, and rudimentary transportation systems.

In addition to structural imbalances, which vary according to country (Mauritania and Cap Vert have little prospect of achieving balance soon; whereas Mali and Niger have much better potential), the region continues to face sharp year-to-year shifts in weather which require short-term stabilization in the form of aid, commercial imports, or drawdowns from stockpiles.

Finally, the region's poor food performance both in long-term growth and in coping with short-term fluctuations, also is due to illiberal economic regimes and cumbersome state marketing institutions which restrain production and hamper efficient distribution.

2. Solutions. In the longer run, food self-reliance requires agricultural development via improved rainfed technology packages, heavy investment in irrigation, and expansion into new lands. It also requires progress in restraining population growth and urbanization. Alternatively, these countries must develop other growth sectors permitting them to pay for the food they need to import.

In the short run, substantial progress depends on liberalizing state controls over the domestic food market, reducing barriers to trade, and increasing the delivery of agricultural inputs (fertilize, insecticides, seed, credit).

Some form of food security system is also essential to give insurance against periodic crop shortfalls. The alternatives include a variable levy on foodgrain imports (especially effective for coastal states), financial facilities, and physical cereals stockpiles. Their usefulness and viability depends heavily on how well they are managed, and whether their objectives are realistic. One proposal, on an international scale, is for a

Food Facility under the IMF, which would compensate developing countries for higher import costs in times of international food shortfalls. Another option is a system of national or regional stockpiles (the central feature of current CILSS proposals). These, however, can be economically very costly, diverting resources from productive investment in agriculture. Politically, however, they are very appealing - particularly for landlocked states for whom international supplies may arrive too late.

3. Regional. The Sahelian states stand to gain a great deal by adopting a harmonized approach to cereals policy. Compatible domestic pricing and trade policies will contribute to the success of efforts to liberalize cereals markets. The CEAO, to which most Sahelian states belong, provides a framework for progress in this direction. Realizing the benefits of intra-regional trade in cereals will require improving transport links, market information exchange, and reduction of quantitative restrictions and other non-tariff barriers.

Regional stockpiles and financial facilities offer substantial economies, in principle, over individualized national undertakings - by risk-spreading and reduction in aggregate facility requirements. However, their success depends on firm commitments as to objectives, operating procedures, and supporting national policies (trade, prices, macro demand management), which will be a challenge to Sahelian statesmanship.

4. Aid. The goals to be pursued by international assistance in the food sector include, in highest priority, assuring that essential needs are met (reaching vulnerable groups and averting famine), and ensuring a long-term reduction in food dependency by avoiding aid disincentives to production.

On one level, it seems clear that provision of aid must be increasingly linked to meaningful policy reforms reducing impediments to domestic production and distribution of food. On a second level, difficult policy choices must be made, given the financial limits on overall assistance, between emphasis on investment in increased productive capacity on the one hand, and high-cost risk reduction programs such as stockpiles, on the other. One important intermediate requirement is to improve the reliability and timeliness of information on the food situation in order to identify critical situations when they are imminent, and another is to find ways to respond more rapidly when shortfalls do occur. However, these concerns must not divert from the fundamental primacy of increasing production and making it more reliable.

C. Recurrent Costs

The CILSS/Club study on recurrent costs projects that the ex ante fiscal gap for the Sahel as a whole will increase (in constant dollars) from \$166 million in 1978 to about \$180 million in 1982.^{1/} [Among the several factors tending to widen this gap is the high level of foreign project assistance, since host governments must budget for local salaries and maintenance after the initial investment if cost recovery within the project is inadequate.] In the absence of compensating increases in public resources (foreign or domestic origin), this gap will have to be closed by reductions in maintenance and investment expenditures, and thus slower growth: there is no ex-post fiscal deficit.

There is little scope for increased taxation, according to the study, although tax collection performance should be improved. Opportunities for expanding public debt (domestic or foreign borrowing) have already been exhausted, and West African central banking regulations limit recourse to the printing press (inflationary finance). The only real possibility is to expand the tax base by achieving higher growth.

With respect to public expenditure, Sahelian governments can and should help close the fiscal gap by (a) containing the growth of public sector employment, and (b) relieving the burden of the parastatal sector on public finance and on the economy in general. Both objectives can be achieved only by overcoming the official suspicion of the private sector, by redistributing economic activity from the public to the private sector (this includes raising prices to cereals producers), by improving private sector access to credit, and by reducing the monopoly power of state enterprises. Such measures are consistent with the objectives of increasing general economic growth, expanding the tax base, and closing the fiscal gap.

^{1/} [Text in brackets]

However, it is unrealistic to expect Sahelian governments to make sufficient progress to eliminate the fiscal gap prior to 1990. In the intervening period, according to the recurrent costs study, they will need additional external assistance designed to reduce the fiscal burden, in order to avoid the necessity of lowering investment and slowing growth.

IV. Recent Economic Trends: A factual Survey

The conclusions and recommendations given in the preceding sections follow from our analysis of actual trends, to the extent we can document them, in the Sahel's economic performance over the past decade.

These trends are described factually in the following review, which concentrates on the key macroeconomic developments regarding national accounts, public finance, monetary expansion, and the balance of payments.

A. National Accounts

Most countries experienced lower growth rates for GDP in the 1970s, with the exceptions of Chad and Mali. In the longer period 1960-78, three countries (Mali, Mauritania and Upper Volta) were able to increase per capita GDP, while per capita income fell in the remaining three countries analyzed by the World Bank. However, Niger's performance will show improvement in 1979-80 due to growth ^{of} uranium production.

<u>Average Annual:</u>	<u>Chad</u>	<u>Mali</u>	<u>Mauritania</u>	<u>Niger</u>	<u>Senegal</u>	<u>Upper Volta</u>
GDP Growth: 60-70	0.5	3.3	8.1	2.9	2.5	3.0
70-78	1.7	4.6	2.3	2.4	2.2	-0.2
Per Capita 60-78	-1.0	1.0	3.6	-1.4	-0.4	1.3

The contribution of agriculture to GDP fell sharply in 1960-78 in all countries except Senegal. The index of per capita food production (1976-78 versus 1969-71) likewise fell in all countries except Senegal.

Since the share of agriculture in total labor force declined only marginally, these drops in output signified very large declines in per capita rural income.

<u>Percentage Change, 60-78</u>	<u>Chad</u>	<u>Mali</u>	<u>Mauritania</u>	<u>Niger</u>	<u>Senegal</u>	<u>Upper Volta</u>
Agriculture/GDP	-3	-18	-33	-26	+2	-24
Agric/Total Labor	-3	-2	-1	-2	-1	-1
Food Prod. per cap. (70-8)	-9	-2	-3	-1	+1	-3

All countries increased their shares of investment in GDP in 1960-1978, often by substantial amounts (15 percentage points for Mauritania and Upper Volta, and three to seven percent for the remainder). Mauritania achieved the highest investment ratio (52 percent) of any developing country in the world, due almost entirely to massive foreign capital inflows.

Percentage Changes in GDP Shares, 1960-1978

	<u>Chad</u>	<u>Mali</u>	<u>Mauritania</u>	<u>Niger</u>	<u>Senegal</u>	<u>Upper Volta</u>
Consumption	+10	+ 4	+ 8	0	+ 4	- 1
Investment	+ 6	+ 3	+15	+ 6	+ 7	+15
Savings	-12	- 4	+10	0	- 4	+ 1
Exports	+ 4	+ 9	+23	+14	- 8	+ 6
Imports	+22	+16	+28	+20	+ 3	+20
Resource Balance	-18	- 7	- 5	- 6	-11	-14

savings

Although domestic ratios improved in Mauritania and held steady in Niger and Upper Volta, they declined in the remaining countries. Thus higher consumption together with sharply higher investment brought about a strong increase in imports, well in excess of export earnings, and overall resource balances generally declined. In other words, the achievement of higher investment in this period was possible only through large increases in foreign savings, often supplanting domestic savings and therefore was largely irrelevant as a measure of domestic performance.

B. Public Finance (Annex table 3)

Information on fiscal performance for Sahel countries is often scant and outdated. The recent Club Secretariat analysis of recurrent cost financing¹⁾ provides one of the first detailed analytical approaches to the subject. However, most information on trends still comes from Bank/Fund sources, which cover five countries (Gambia, Mali, Niger, Senegal and Upper Volta), sufficiently well to permit useful comparisons.

Current revenues generally increased at high rates for these countries in the period 1974-78, and appeared to grow as a percent of GDP as well,

1) CILSS/Club, Working Group on Recurrent Costs, Recurrent Costs of Development Programs in the Countries of the Sahel (August, 1980)

with the sole exception of Niger¹⁾. In Gambia in particular, the revenue-to-GDP ratio moved up very sharply from 18.5 to 32.8 percent during this period.

Although current (non-development) expenditures also increased rapidly in most countries, the majority of governments succeeded in improving their budgetary savings ratios (current receipts less current expenditures as a percent of current receipts). Percentage point improvements were achieved of 7 for Gambia over 30 for Niger, and 19 percent for Mali (although this was simply a reduction in Mali's dis-savings ratio). More uncertain performances were made by Senegal (whose ratio oscillated downwards some $3\frac{1}{2}$ percent) and Upper Volta (a decline of 11 percent through 1977).

The share of investment and development in total expenditures increased markedly in all countries except Senegal (where, excluding participations and loans, it dropped 3 percentage points). Development expenditure ratios more than doubled in Niger, tripled in Mali (the latter from a low initial level, however), and nearly doubled in Gambia (rising to 53 percent of total expenditures).

By increasing total expenditures at rates well above growth in revenues, budgetary deficits were allowed to widen as well in 1974-78, with the exceptions of Niger (which recorded surpluses at least through 1976) and Senegal (which reduced its deficit by 75 percent between 1974 and 1978). Fiscal deficits were particularly explosive in Gambia, where they rose to levels equal to 15 percent of GDP by 1978.²⁾

- 1) However, Niger's rapid recent growth in GDP based uranium exports, from which the GON captures a large share of the proceeds, will substantially revise performance on this criteria for the later part of the decade.
- 2) In Mauritania, domestic revenue rose from \$62million in 1973 to \$87million in 1975, \$109million in 1976 and \$129million in 1979. Similar to other Sahelian countries, however, current budget deficits also grew rapidly: from \$8million in 1975 to \$11million in 1979.

C. Monetary Expansion and Inflation (Annex table 4)

Monetary trends in the Sahel 1975-79 exhibit a pattern of large domestic expansionary pressure, partially offset by foreign-account absorption, but nonetheless leaving a large net increase in money supply.

On the domestic side, demand pressures arising from public sector credit (government being the main component) were less important than pressure from private credit in all countries except Mali and (to a lesser degree) Gambia. Growth of savings deposits offset only a small fraction of credit expansion in all countries, and were negligible in many (Mauritania, Chad, Mali).

The principal balancing supply-side factor was the drawdown of net foreign assets (presumably by increases in liabilities), with the sole exception of Niger (where foreign transactions were expansionary). The data imply that most of the adjustment was in short-term capital, rather than long-term borrowings.

Net growth in money supply was highest in Niger (equal to an annual average of 30 percent). Monetary growth in most other countries was equal to some 12 to 16 percent per annum.

How much of this expansion reflected real economic growth versus mere inflation can be measured by comparing nominal money growth to recorded price movements (Final three lines of annex table 4). It would appear that monetary expansion translated primarily into inflation in about half the countries (Gambia, Mali, and marginally Upper Volta). For the other countries with adequate data (Niger, Senegal, and marginally Mauritania), there was substantial growth in real (net) money supply, indicative of higher levels of economic activity plus widening of the monetized sector.

It is difficult to quantify the relative importance of domestic monetary/fiscal policy, versus imported inflation, in explaining actual price movements. A substantial part of monetary growth during this period was required to accommodate the increased import costs of petroleum and manufactures in order to maintain import volumes. There is no doubt, however, that the effort to maintain or increase consumption and also pursue ambitious development objectives, despite low productivity contributed significantly to the inflationary pressures in this period.

D. Balance of Payments (Annex table 5)

In the period 1974-1978, all Sahelian countries encountered deteriorating current account balances. Trade balances fell in Chad, Gambia, Mauritania, Senegal and Upper Volta; and increased deficits on services were sufficient to reduce the current account balances for the remaining two countries (Mali and Niger).

Long-term capital movements improved sufficiently to increase positions on the basic balance between 1974 and 1978 for Mali, Mauritania and Senegal. For the remaining countries, increased recourse to short-term borrowing and international payments facilities was necessary.

The final impact on foreign exchange reserves was neutral for the region as a whole (reserves rose fractionally from 235 to 239 million SDR), but this was due to net increases by only 3 countries: Niger (+ 62 million SDR), Senegal (+ 10) and Mali (+ 2). Reserves for the remaining countries fell, notably Upper Volta (- 21) and Mauritania (- 24).

Due to rising import bills during this period, however, the import capacity of reserves fell even when reserves improved in dollar terms. At end-1979, reserves equaled less than three month's imports for five of the eight Sahelian countries.

Recent IMF studies anticipate a continued widening of the current account deficits for the region. The Fund projects that the deficit will grow from some \$600 million in 1976 and \$1120 million in 1979 to about \$1500 million in 1981.

In 1977 the last year for which we have complete data for most countries, the Sahel (excluding Cape Verde) imported \$418 million more than exports. The principal deficit countries on trade balance were Mauritania, Upper Volta and Senegal.

All countries had large debits on services account. Service debits were particularly important for the land-locked countries plus Mauritania.

Unrequited Transfers (including, in this presentation, both public and private) were larger than the deficit on trade account, but insufficient to offset total trade and services, leaving a net current account deficit of about \$320 million. The main deficit countries on current account were Upper Volta and Mauritania, which together accounted for over half the total for the region.

The near-totality of current account deficits was offset by capital account credits. With the exception of Senegal and (surprisingly) Chad, private investment made only a minor contribution. Other long-term capital (primarily public loans) was the principal balancing factor.

Four out of seven countries were in net surplus on the basic balance in 1977. However shifts in short-term capital (particularly large in Mali and Upper Volta) and other factors (including IMF facilities) widened the final overall deficit to about \$32 million to be met through drawdowns in reserves. The principal drawdowns were made by Mauritania and Upper Volta; while Niger and Senegal succeeded in making net increases in their holdings.

STATISTICAL ANNEX

Table 1 The Sahel in the Developing World Context¹⁾

	Sahel ²⁾	All LICs	4. Trade & Payments	Sahel	All LICs
1. Basic Indicators			Exports, 1978 (\$M)	934	28749
- Population, 1978 (M)	28.1	1293.9	-Growth, 1970-78 (%p.a.)	5.0	- 0.8
- Growth rate, 1970-78 (% pa)	2.4	2.2	Imports, 1978 (\$M)	1936	32073
Area (000km ²)	5292	26313	-Growth, 1970-78 (%p.a.)	5.2	3.2
Per Capita GNP, 1978 (\$): Growth 60-78 (%)	200 (0.2)	200 (1.4)	C/A Deficit, 1978 (\$M)	599	3461
Inflation, 1970-78 (%pa)	8.9	10.6	Disbursed debt, 1979 (\$M)	1571	41253
Adult literacy, 1975 (%)	9.8	38.0	-Ratio to GNP, 1979 (%)	35.6	21.7
Life expectancy, 1978 (years)	42	50	Debt Service Ratio, 1978 (%)	10.1	11.7
2. GDP Growth rates 1970-78 (% p.a.)	2.0	3.4	5. Agriculture		
- Agriculture	0.6	2.0	Agricultural/Total Labor		
- Industry	5.5	4.5	Force, 1978 (%)	85	72
- Services	3.1	4.3	Per Capita food production		
- Public consumption	4.0	3.7	growth 70-79 (% pa)	- 1.3	- 0.4
- Private consumption	2.5	3.1	6. Cereals Indicators, 1979 ³⁾		
- Investment	3.1	3.6	Production, 1979 (M/T)	Sahel	All LICs
3. Energy Indicators			Yield, 1979 (kg/ha.)	5.25	66.4
- Consumption growth, 1974-78 (%p.a.)	6.4	6.8	Imports (M/T)	529	918
- Per Capita Consumption, 1978 (kg)	67	161	Exports (M/T)	0.79	17.2
- Share in total imports, 1977 (%)	17	16		0.03	0.5
			7. Development Assistance ⁴⁾		
			ODA Disbursements, 1976 (\$M)	1105	8378
			Per Capita (\$)	36.8	18.9
					21588
					6.9

1) Source: 1980 World Development Report. LC (Low income group) are countries with 1978 per capita income below \$360.

2) Estimates which exclude Cape Vert and Gambia.

3) Source: FAO 1979 Trade & Production Year books

4) Club Sec.

2. Key Development Indicators^{1/}

	Cape Verde	Chad	Gambia	Mali	Mauritania	Niger	Senegal	Upper Volta
1. Basic Indicators								
Population, 78 (m)	0.3	4.3	0.6	6.3	1.5	5.0	5.4	5.6
-Growth, 70-78 (%pa)		2.2		2.5	2.7	2.8	2.6	1.6
Area (000 KM ²)	4	1284	11	1240	1031	1267	196	274
Per Capita GNP	160	140	230	120	270	220	340	160
-Growth, 60-78		-1.0		1.0	3.6	-1.4	-0.4	1.3
Inflation, 70-78 (%pa)		7.4		7.8	10.4	10.7	8.0	9.6
Adult literacy, 75 (%)		15		10	17	8	10	5
Life Expectancy, 78 (yrs)		43		42	42	42	42	42
2. GDP Growth, 70-78 (%pa)								
Agriculture		1.7		4.5	2.3	2.4	2.2	-0.2
Industry		-0.1		2.0	-2.3	-0.2	3.3	-3.6
Services		8.5		9.2	2.1	8.6	3.9	1.4
Public Consumption		2.5		5.2	7.6	4.2	1.0	2.7
Private Consumption		0.1		3.6	17.7	4.2	2.3	3.8
Investment		1.8		6.0	4.4	1.6	2.1	0.8
		3.1		1.8	5.1	5.2	2.5	1.8
Shares in GDP, 78 (%)								
Investment		17		17	52	19	23	25
Public Consumption		18		19	38	11	17	13
Savings		-7		5	7	12	11	-3
Resource Balance		-24		-12	-45	-7	-12	-28
3. Energy Indicators								
Consumption, 74-78 (%pa)		5.0		5.9	4.3	7.5	4.7	10.9
Consumption, 78 (kg/cap)		22		30	203	38	181	25
Share in Imports, 77 (%)		27		25	6	...	15	19
4. Trade & Payments								
Exports, 78 (\$M)		102		107	119	158	391	57
-Growth, 70-78 (%pa)		-15.9		7.7	-0.8	13.2	4.4	8.5
Imports, 78 (\$M)		192		219	181	346	788	210
-Growth, 70-78 (%pa)		-13.4		5.0	6.3	5.5	4.7	9.4
C/A Deficit, 78 (\$M)		188		72	65	81	114	79
Disb. Debt, 79 (\$M)		172		545	590	234	729	256
D.S. Ratio, 78 (%)		13.0		7.1	17.0	2.9	14.9	3.8
5. Agriculture								
Agr./Total Labor, 78 (%)		86		88	85	91	77	83
Food production per capita, growth 70-79 (%pa)		-9.4		-1.8	-3.5	-0.7	1.4	-3.3
6. Cereals Indicators, 1979^{2/}								
Production (000 MT)	1	644	77	1033	44	1628	680	1145
Yield (KG/Ha.)	100	531	922	603	365	446	660	544
Imports (000 MT)	4.3	19.8	36.0	35.7	152.0	47.9	402.3	55.7
Exports (000 MT)	0	0	0	0	0	20.0	13.9	0
7. Development Assistance^{3/}								
ODA Disbursements, 78 (\$M)	33.2	119.0	35.2	161.5	216.9	154.1	225.9	159.4
-Per Capita, 78 (\$)	110.7	27.7	58.3	25.6	144.6	30.8	41.8	28.5

1/ Source: 1980 World Development Report. 2/ Source: FAO Trade & Production Yearbooks 1979

3/ Source: CILSS/Club ODA To CILSS Member Countries 1975-1979

BUDGETARY PERFORMANCE: 1974 AND 1978

	<u>Gambia</u>	<u>Mali</u>	<u>Niger</u>	<u>Senegal</u>	<u>U. Volta^a</u>
1. Revenue Performance Ratios					
1974	16.9	12.1	16.2	16.2	11.0
1978	32.8	12.4	12.3	22.7	15.6
2. Budgetary Savings Ratios					
1974	23.2	-29.5	-8.2	10.2	26.3
1978	29.1	-10.7	29.3	6.9	14.8
3. Development Expenditure Ratios					
1974	28.1	1.6	12.1	10.8	14.7
1978	52.9	5.7	29.8	8.0	21.1
4. Surplus/deficit Ratios					
1974	-1.8	-3.8	-0.1	-5.9	2.8
1978	-15.0	-2.1	-0.0	-1.0	-0.5
5. Foreign Financing Ratios					
1974	179.4	86.8	n.a.	96.0	-
1978	78.7	92.1	n.a.	(-100.0)	738.0

Definitions

1. Revenue Performance ratio = Total revenues as percent of GDP
2. Budgetary Savings Ratio = Current revenues less current expenditures, as a percent of current revenues
3. Development Expenditure ratio = Development (or investment) expenditures as a percent of total expenditures
4. Surplus/Deficit Ratio = Surplus or deficit as a percent of GDP
5. Foreign Financing Ratio = Foreign Financing (generally external borrowing) of deficit as a percent of total deficit.

Notes: a) Data for 1974 and 1977.

Sources: World Bank and IMF documents, and Horenstein (10/79)

Origin of Monetary Expansion 1975 to 1979
(Percent contributions to (narrow) money growth)

	<u>Chad</u> ¹⁾	<u>Gambia</u>	<u>Mali</u>	<u>Maur.</u>	<u>Niger</u>	<u>Senegal</u>	<u>U. Volta</u>
Domestic Transactions	126.3	256.9	126.2	176.6	173.7	156.9	131.4
Credit expansion	132.3	293.6	135.0	180.6	198.9	197.6	176.1
Public	(18.7)	132.6	87.8	68.5	-34.1	33.5	21.6
Private	(113.6)	161.0	47.2	112.1	233.0	164.1	154.5
Savings (Increase = -)	-6.0	-36.7	-8.8	-4.0	-25.2	-40.7	-44.7
Foreign Transactions	-27.5	-237.0	-24.7	-81.5	26.6	-79.8	-68.3
Foreign assets (net increase)	-30.2	-237.0	-24.7	-81.5	33.8	-71.7	-63.7
LT Borrowing (increase--)	2.7	-	-	-	-7.2	- 8.1	-4.6
Other (net)	-7.4	-31.7	-21.7	-21.4	-15.9	-7.7	-0.1
Total increasing in money	91.4	51.6	79.8	73.7	184.4	69.4	63.0
Memo: Increase in Prices	n.a.	51.9	72.9	49.2	79.8	28.0	48.2
Increase in real money supply	-	-0.3	7.7	24.5	105.0	41.4	14.8

1) 1974 to 1978

Source: IFS, 9/80

BALANCE OF PAYMENTS SUMMARY
1977 - \$ Millions

	<u>Chad</u>	<u>Gambia</u> ^{a)}	<u>Mali</u>	<u>Mauritania</u>	<u>Niger</u> ^{b)}	<u>Senegal</u>	<u>Upper Volta</u>	<u>Total</u>
Miss Exp.	106.6	52.9	124.6	156.9	199.0	667.4	94.8	1402.2
Imp.	-142.2	-62.0	-114.4	-290.8	-217.6	-772.5	-220.8	-1820.3
Trade Bal.	-35.6	-9.1	10.2	-133.9	-18.6	-105.1	-126.0	-418.1
Services	-81.5	-3.4	-88.0	-86.2	176.7	-69.1	-98.0	-502.9
Transfers	88.6	4.8	90.0	125.3	43.9	119.0	126.7	598.3
C/A Bal.	-28.5	-7.7	12.8	-94.8	751.4	-55.2	-97.3	-322.7
Pvts. Inv.	21.1	0.0	-5.0	4.1	5.0	33.2	3.3	61.7
LT Cap.	11.9	4.3	41.7	57.0	66.4	32.9	44.9	259.1
Basic Bal.	4.5	-3.4	48.9	-33.7	17.3	10.9	-49.1	-4.6
ST Cap.	-1.6	-1.6	-31.8	-7.7	1.3	10.5	37.8	6.9
Other	-7.0	5.5	-17.4	3.2	-	-14.4	-3.9	-34.0
Reserves ^{c)}	-4.1	0.5	-0.3	-38.2	18.6	7.0	-15.2	-31.7

Source: IFS 9/80

a) FY 77

b) Estimates, based primarily on Horenstein (1979)

c) IFS entry with reversed sign

Table 6

Indicators of Total External Financial
Resource Supply to the Sahel through 1977
(\$ Millions)

	<u>PODI Stock end-1977</u>	<u>Cumulative Grants</u>	<u>Debt Capital</u>	<u>Total Resources</u>
Chad	25	564	45	634
Gambia	14	71	28	113
Mali	10	677	459	1,146
Mauritania	25	543	457	1,025
Niger	80	767	209	1,056
Senegal	350	1,060	479	1,889
Upper Volta	20	617	133	770
Sahel Total	524	4,359	1,880	6,763
Excluding Senegal	174	3,299	1,401	4,874
All LDCs	84,996	100,657	264,442	450,095

Source OECD,
Development Cooperation, 1979

Table 7 Destination of Merchandise Exports

	<u>Total</u>	<u>Industrialized</u>	<u>Other</u>
<u>Sahel</u>	\$ (%)	\$ (%)	\$ (%)
Exports, 1960 (\$M)	405 (100)	340 (84)	66 (16)
Exports, 1978 (\$M)	934 (100)	620 (66)	314 (34)
Growth, 60-78 (%pa)	4.8	3.4	9.1
<u>All LICs</u>			
Exports, 1960 (\$B)	18.8 (100)	12.0 (65)	6.7 (35)
Exports, 1978 (\$B)	28.7 (100)	19.0 (66)	9.7 (34)
Growth, 60-78 (%pa)	2.4	2.5	2.2
<u>Memorandum</u>			
GDP growth, 60-68 (%pa)	-	4.2	5.4

Source: 1980 World Development Report

Note: All figures are derivations except 1978 total exports.

Table 8

Terms of Trade Indicators
for Sahelian Countries

(a) Principal Sahel Export Commodities (1975 = 100)

	<u>1976</u>	<u>1978</u>	<u>1980</u>
Cotton	150.8	127.7	197.8
Groundnuts	97.7	145.7	110.9
Phosphates	53.3	43.2	70.0
Minerals	96.9	85.8	117.7

(b) Selected Sahel Import Commodities (1975 = 100)

	<u>1976</u>	<u>1978</u>	<u>1980</u>
Sorghum	93.6	86.0	145.2
Petroleum	107.4	118.5	279.9
Manufactures	101.7	127.2	159.0

(c) Terms of Trade (1970 = 100)

	<u>1972</u>	<u>1974</u>	<u>1976</u>	<u>1978</u>	<u>Average Annual Percent Change</u>
Gambia	115	91	94	62 ^{a)}	-6.6
Mali	106	86	110	93	-0.6
Mauritania	89	70	75	68	-4.7
Niger	118	103	98	78	-3.1
Senegal	107	118	110	100	0.0
Upper Volta	107	92	104	89	-1.4
All Low Income Coun- tries	-	-	-	98	-0.3

a/ 1977

Sources: World Bank, 1980 World Tables
IMF, International Financial Statistics
Club du Sahel, Sahel Drought Control and Development
Programme, 1975-79 Review

Table 9 External Debt Indicators: 1970 and 1978-79

	<u>Disbursed Debt</u> (\$M)		<u>Debt/GNP Ratio</u> (percent)		<u>Debt Service Ratio</u> (% of exports)	
	<u>1970</u>	<u>1979</u>	<u>1970</u>	<u>1979</u>	<u>1970</u>	<u>1978</u>
Chad	32	172	11.8	30.8	3.7	14.0
Gambia ^{a)}	9	45	14.0	27.9	1.1	0.4
Mali	238	545	88.1	53.8	1.2	5.6
Mauritania	27	590	16.8	117.6	3.2	16.3
Niger	32	234	8.7	15.5	3.8	2.7
Senegal	103	729	12.2	30.0	2.8	14.1
Upper Volta	21	256	6.4	24.5	4.0	3.7
Sahel	462	2 571	20.0	35.6	3.4	10.1
All LIC ^{b)}	...	41253	18.1	21.7 ^{c)}	12.3	11.7

a) Gambia data for 1973 and 1979

b) World Bank list of Low-Income Countries (per capita income below \$360 in 1978)

c) 1978

Source: World Bank: 1980 World Development Report
and 1980 World Debt Tables

10.

Sahelian Road System ^{1/}

	<u>Paved & Gravel Roads (Km)</u>	<u>Population Density (per km²)</u>	<u>Road per 000 km² area (km)</u>	<u>Road per million persons (km)</u>
Chad	4578	3.34	3.57	1065
Gambia	521	54.54	47.36	868
Mali	3309	5.08	2.67	525
Mauritania	2366	1.45	2.29	1577
Niger	3863	3.95	3.05	773
Senegal	5836	27.55	29.78	1081
Upper Volta	3676	20.43	13.43	656
Sahel	24149	5.41	4.55	841

*/ Laterite roads and tracks are excluded from this table due to data gaps. Such roads exceeded the length of surfaced roads by a factor of 12 for those countries reporting.

Source: Louis Berger International, Inc., "Inventory of Data on the Transport Infrastructure of the Sahel", 1/77 (preliminary); World Bank, 1980 World Development Report.

ANNEX B

SAHELIAN LIVESTOCK INDUSTRY STATUS
AND
DEVELOPMENT STRATEGY

Sahel Development Program
USAID
September, 1980

SAHELIAN LIVESTOCK INDUSTRY STATUS AND DEVELOPMENT STRATEGY
Sahel Development Program
USAID
September, 1980

Livestock Industry Status

Livestock production is the major occupation and support of approximately 21% of the population of the eight CILSS Member Sahelian Countries. Nearly half of these could be classified as sedentary, while the rest are transhumant or nomadic. The Sahelian rangelands provides forage for about two thirds of the livestock while the higher rainfall areas of the south provide a combination of range, fallow land regrowth and crop residue for the other third.

This livestock industry accounts for approximately 16% of the GNP for the Sahel. Prior to the drought exports of livestock made up to 55% of total exports for some countries, however, these declined to 10 to 40% following the drought and have only partially regained previous levels. The main factors which have limited the increase of exports are the rebuilding of reduced livestock herds and the increased domestic demand resulting from increased population and urbanization. Percentage of total meat production exported in previous years has ranged for various Sahelian countries from zero to more than 50%, however, in 1977 the Sahel average was 23% with a high of 43% for Chad and negative or near zero for three other countries (Table I).

While the Sahel is a net exporter of meat as shown in Table I, it is also a net importer of milk and milk products. Importations of milk exceeded the domestic production in 1977 and were valued at 38% of the meat export value. There has been a six fold increase in milk imports since 1968.

TABLE I

- 2 -

PRODUCTION AND DISPOSITION OF MEAT AND MILK IN THE SAHEL 1977
(000 KG)

Country Statistic	Cape Verde	Chad	The Gambia	Mali	Mauri- Tania	Niger	Senegal	Upper Volta	Sahel
Total Meat	1,022	77,891	8,001	101,720	62,702	94,098	73,742	55,502	474,677
Production	1,238	144,537	8,109	82,676	140,092	66,706	73,304	48,546	365,208
Domestic Meat Consumption	-4.1	10.9	15.3	13.8	26.8	13.7	14.0	8.3	12.9
Per Capita Meat Consump- tion (3)									
Net Meat Exportation	-216	33,354	-108	19,044	22,610	27,392	438	6,956	109,469
Percent of Meat exported	-21.1	42.8	-13.5	18.7	36.1	29.1	0.6	12.5	23.1
Total Milk	7,000	260,700	5,000	124,800	167,300	357,000	119,800	87,000	1,158,600
Domestic Milk Consumption	37.2	170,249	9,052	155,892	237,130	377,742	281,606	151,660	1,520,541
Per Capita Milk consump- tion (3)	124	66	17	26	159	78	54	26	54
Net Milk Imports	30,210	9,593	4,052	31,070	69,850	20,759	161,850	64,090	391,465

1. Beef 55%, Small Ruminant 29%, Camel 5%, Poultry and others 5%.
Includes carcass plus offal.

2. Production figures include camels which were excluded from FAC Data.

3. Given in Kilograms or liters.

In addition to the decreased meat exports and increased milk imports there has been a reduction of domestic per capita consumption from 17.2kg of meat⁽¹⁾ and 54.8 liters of milk in the 1960's to a low of 12.9kg of meat and 53.6 liters of milk in 1977.

Examination of the dynamics of both the human population and livestock population over the past 20 years (Table II) will help explain the factors contributing to this decline. Livestock numbers, expressed in United Bovin Tropical (UBT)⁽²⁾, have been cyclic over the period, increasing from 21 million in 1961 to 24 million in 1968 then down to 20 million in the early 1970's before increasing again to an estimated 23 million in 1980. It should be noted that the 1980 stock of livestock has eaten most all reserves and many reports indicate a higher than normal death loss. This may suggest that the livestock population is again at the top of the cycle. The human population, on the other hand, has progressed steadily from 19 million in 1960 to 28 million in 1977. Therefore, the higher ratio of people to livestock has resulted in a reduction of per capita production from approximately 23kg of meat and 54 liters of milk in the 1960's to 17kg of meat and 40 liters of milk in the late 1970's.

Given the lack of a constant trend toward increased livestock numbers, it might be assumed that the experience of the past 20 years has established that the average stocking capacity with present technology and infrastructure for the Sahel is near 22 million with a variation of about 2 million more for rainy years and 2 million less for drought times. Species composition has remained fairly constant with a slight increase in the small

(1) Meat is defined as carcass plus consumable offal.

(2) One UBT = 250kg of live animal weight.

TABLE II

SAHELIAN HUMAN POPULATION AND LIVESTOCK NUMBERS BY COUNTRY
(000 Units) (1)

Species Year	Human					Livestock in UBT (3)				
	1960	1968	1977	1961-65	1968	1973-76	1977	1980 (3)	20 years Average	
Cape Verde	220	257	301	21	23	22	18	20	21	
Chad	2,920	3,531	4,086	4,496	4,570	4,022	4,132	4,230	4,290	
Gambia	370	447	530	255	198	264	248	240	240	
Mali	4,000	4,840	5,991	4,825	6,014	4,817	4,894	5,300	5,170	
Mauritania	1,030	1,249	1,496	3,318	2,921	2,981	3,026	3,540	3,154	
Niger	3,160	3,820	4,869	4,448	5,036	3,645	4,149	4,810	4,415	
Senegal	3,590	4,235	5,236	1,790	2,789	2,641	2,550	2,680	2,490	
Upper Volta	3,960	4,790	5,849	1,638	2,731	2,090	2,157	2,400	2,200	
Total Sahel	19,160	23,169	28,358	20,792	24,282	20,482	21,174	23,200	21,980	

(1) FAO - 1976 and 1977

(2) UBT = Unites Bovin Tropical
 One Bovin = 0.75 UBT
 One Camel = 1.00 UBT
 One Horse = 1.00 UBT
 One Donkey = 0.50 UBT
 One Small Ruminant = 0.15 UBT

(3) Projected Estimate based on CILSS/Club
 Livestock Strategy Report 1980.

ruminant percentage. Given this livestock population ceiling, the same production efficiency as 1977, the current human population growth of 2.1% and the present per capita consumption rates the Sahel will become a net importer of meat in addition to milk between 1985 and 1990.

Including milk, the Sahel would be a net importer of livestock products by 1984. Or, to be able to maintain meat exports at the 1977 level, the domestic per capita meat consumption will have to drop to near 10.8kg by 1990.

These are not predictions, but they are real possibilities if little or nothing more is done to improve range and livestock production than has been realized in the past 20 years. Actually there are factors which indicate that domestic per capita demand will increase and that there is potential for significant increases in livestock production. The expected increased per capita demand is tied to the increasing urban population which consumes two to three times the rural population per capita consumption. The potential increased livestock production depends on removal of several constraints to make presently underutilized areas of range forage available and to allow the livestock herd production efficiency to increase.

It is the stated goal of the CILSS/Club du Sahel to meet this challenge of increased production to satisfy the increased domestic demand and maintain present export levels. There are optimists who believe that production can be doubled. This optimism is viewed with skepticism in the 1980 CILSS/Club Livestock Strategy Paper. The CILSS/Club proposes a strategy to obtain a 75% production increase by the year 2000 and they speculate possible additional increases with significant investments. A more realistic goal is considered no more than a 50% to 65% increase. Necessary interventions to achieve the latter will be discussed below.

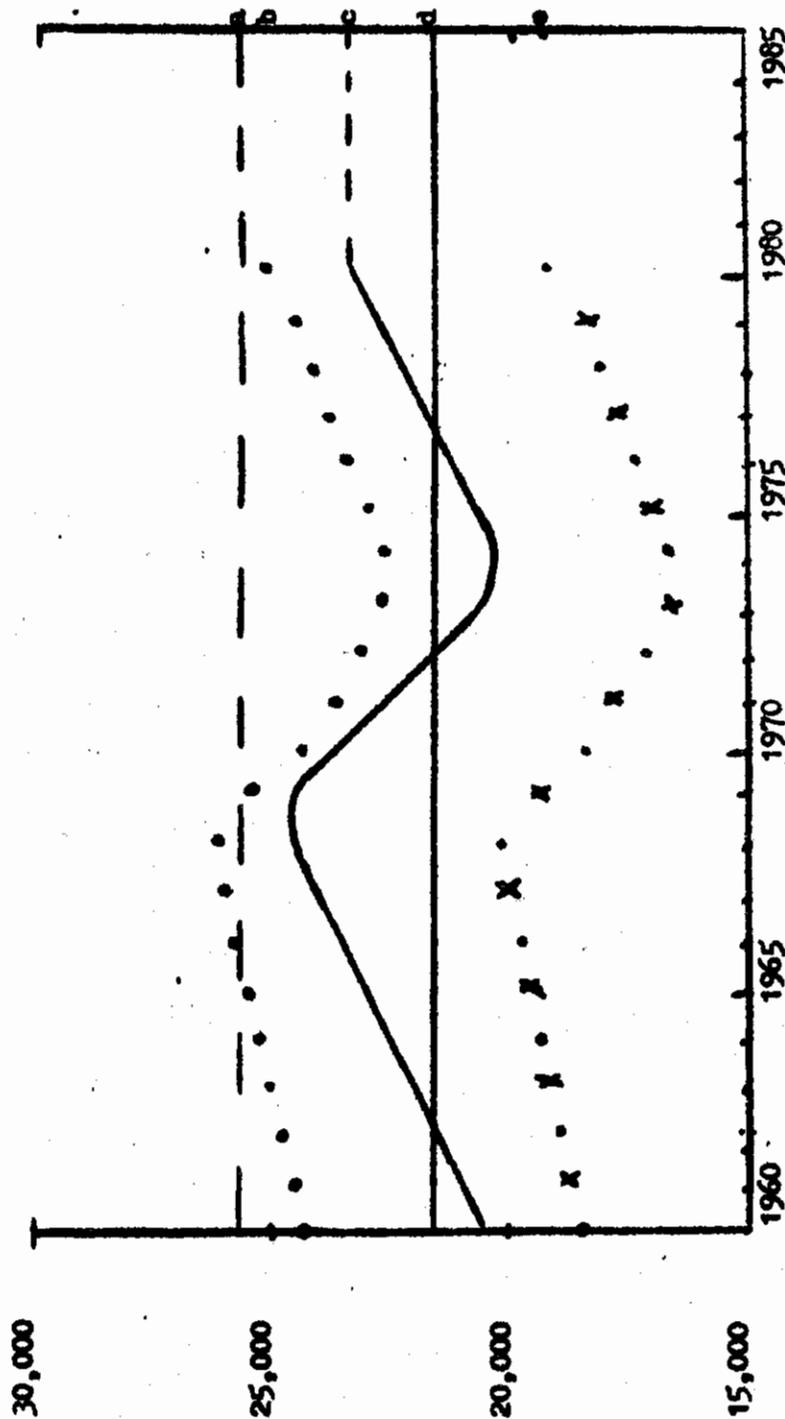
Range Status

The seasonal and annual range capacity is roughly depicted in Figure I, as it apparently increased from the early 1960's until the drought in the late 1960's when it fell below average until the late 1970's. The average is projected from 1980 to 1985 since any interventions aimed at increasing the forage supply are likely to take at least five years to have a significant effect and rainfall is unpredictable.

The actual number of livestock is also included in the figure as it was influenced by the forage supply and other factors. During the 10 to 15 years prior to 1968 good climatic conditions; increasing livestock prices and demand; increased animal health care; and an increased numbers of water wells encouraged and facilitated increased livestock numbers and production. Those who judge this increase as irrational livestock and range management due to an unresponsive system fail to recognize that similar livestock buildups tend to occur throughout the developed, as well as the developing world. Likewise livestock losses and temporary range deterioration are not uncommon when livestockmen get caught by droughts with the range stocked to capacity for the rainy years. One should remember the losses suffered in the Southwestern U.S. in the 1950's drought and in Australia in the 70's, not to mention the current U.S. livestock problems. This does not lessen the burden on all livestockmen to find solutions to avoid the excessive buildups, which are ultimately damaging to the natural resources and production.

FIGURE I
(000 UBT)

ESTIMATED SEASONAL AND ANNUAL RANGE CARRYING CAPACITY AND
LIVESTOCK POPULATION IN THE SAHEL
FROM 1960 - 1980 AND PROJECTION TO 1985



- a. Projected Range Carrying Capacity following interventions to the year 2000.
- b. Approximate maximum available forage supply in growing season.
- c. Cyclic level of livestock on range over past 20 years.
- d. Present Safe Range Carrying Capacity before interventions.
- x . x e. Approximate minimum available forage supply in dry season.

The cause and effect relationship should be studied a bit before assigning the blame for environmental or range degradation on the technical interventions such as animal health service and water wells. These interventions may have facilitated the rate of increase of the herds which were being enlarged anyway, but they were not the cause. The cause was the long period of abundant forage and favorable demand. Improved health only increases the efficiency of production to realize faster growth and/or sales. The increased watering points opened new range to more efficient use due to reduced walking stress between water points. The bad commonly blamed on these interventions should be attributed to the natural survival instinct and hope common to any livestockmen who is caught by a drought and tries to hold his herd together in hopes of rain and recovered prices.

The importance of livestock production efficiency for controlling livestock numbers to protect the range is shown in Table III. The same factors which have been blamed for increasing animal numbers and degrading the environment are essential to the potential of a herder family to provide their increasing nutritional and monetary needs with the same or fewer animals. Production level one in Table III gives the present meat and milk production of a "Family Herd" at today's average production efficiency. Following varying degrees of interventions in animal health care, water point developments to improve nutrition and reduce stress, and improved range management, corresponding degrees of increased fertility, reduced death losses and faster growth would be expected. These improved levels of production efficiency, given as production levels 2, 3, 4 and 5, show that that same size family consumption of meat and milk could be obtained from a herd only 67 to 84% as presently required.

Contrary to previous belief that the traditional Sahelian herder will

TABLE III

POTENTIAL MEAT AND MILK PRODUCTION FROM A FAMILY HERD OF 50 HEAD OF CATTLE OR EQUIVALENT HERD OF SMALL RUMINANTS OR CAMELS (36 UBT)

Production Level	Production Rate of Production	Annual Meat Produced		Annual Milk Produced		Per Capita (1) Production		% of Herd Needed For Constant Production Level	
		Kg	% Change	Liters	% Change	Meat	Milk	Meat	Milk
1	Present (2) 60% Fertility 35% Calf Mortality Standard Growth	800	0.0%	2000	0.0%	53kg	133 Liters	100%	100%
2	Partial Interventions (3) 65% Fertility 25% Mortality Standard Growth	950	18%	2400	20%	63kg	160 Liters	84%	83%
3	Partial Interventions (4) 65% Fertility 25% Mortality 10% Increase Growth	1050	30%	2400	20%	70kg	160 Liters	76%	83%
4	Full Interventions (3) 70% Fertility 20% Mortality Standard Growth	1000	26%	2850	43%	67kg	190 Liters	80%	70%
5	Full Interventions (4) 70% Fertility 20% Mortality 20% Increase Growth	1200	50%	2850	43%	80kg	190 Liters	67%	70%

- (1) For Family of 15 persons.
- (2) Value of present production at 1977 prices is \$1600 for the family or \$107 per capita.
- (3) Primarily animal health interventions.
- (4) Animal health plus nutritional interventions.

continue irrational herd increases above his needs, it is now more commonly accepted that herd numbers are governed very rationally. Herd numbers are controlled by family needs, labor constraints, forage and water supply, market demand, and rational reserve for bad years. If we accept that the herder is rational, then we are obliged to demonstrate to him that the services we offer will in fact allow him to increase his family security and his annual income at the same time. In this situation the traditional incentive to increase the size of the family herd and the aggregate pressure on the range will be reduced.

Another lesson learned following the drought, was the need to limit water production at each point to accommodate a number of livestock compatible with the forage capacity of the area or route. Equally important is the need to study the social structure to help regulate the new water and grazing area opened. A cadre of personnel should be established in the areas to make a continuing study of the human needs, as well as monitoring the range and livestock conditions while extending information on animal and range management. These actions will help avoid future losses, while further increasing efficiency.

Following the drought of 1968-73 livestock numbers returned to the more reasonable stocking rate which existed in the early 60's. A graphic presentation of the stocking rate or grazing pressure on the forage supply as it varies within years and between years is also shown in Figure I. Livestock numbers cannot be adjusted rapidly enough to fit this variable forage supply due to slow herd regrowth as well as market absorption limitations in times of drought. Therefore a margin of safety must always be maintained. That is, livestock numbers should never significantly exceed that which could be maintained, even if poorly, during the worst years and seasons with the present

technology and infrastructure. A general rule is to stock at 80% of average capacity in order to have at least a 20% forage reserve for drought years.

Forage growth well exceeded animal numbers during most months for the rainy years prior to 1968. This excess forage and higher prices encouraged increased herd numbers until the herd was dependent on that maximum forage production. Then with the onset of the drought there was only enough forage during the peak months of the year, making it necessary to market, move further south or chance high weight and death losses during the rest of the year. The improved health controls did allow some of these cattle to move into previously unusable southern range. By 1973 livestock numbers in the Sahel had leveled off at about 20,000,000 UBT which appears to be within about 10% of the maximum numbers that can be properly managed on the present accessible range and seasonal cropland. Table IV gives the number of UBT by country for 1977, the average for the past 20 years and estimated carrying capacity for the present and future potential as calculated by IEMVT⁽¹⁾.

The IEMVT estimated potential stocking rate of 27 million UBT by the year 2000 is an increase of 25% over the present capacity. This increase is dependent on extensive projects to develop water points, reduce range fires, introduce and enforce range management and improve animal health. These interventions are essential to obtaining optimum utilization of underutilized areas in the north as well as to opening new lands to grazing in the southern regions of higher disease risk. The capacity might be farther increased to a maximum of 30 million by extensive reseeding of fallow lands.

(1) IEMVT = Institut d'Élevage et Médecine Vétérinaire des Pays Tropicaux.

TABLE IV

PRESENT STOCKING RATES AND ESTIMATED CAPACITY BEFORE AND AFTER PROPOSED INTERVENTIONS BY SAHELIAN COUNTRIES (000 UBT)

Country Statistic	Cape Verde	Chad	The Gambia	Mali	Maurita- nia	Niger	Senegal	Upper Volta	Total Sahel
1977 Livestock Numbers in UBT (1)	19	4,133	248	4,750	3,026	4,354	2,551	2,157	21,237
20 years Average (2)	21	4,290	240	5,170	3,154	4,415	2,490	2,200	21,980
Estimated of UBT Capacity Before Interventions	18	4,623	185	5,240	2,990	4,844	2,232	1,492	21,626
Estimate of Future UBT Capacity After Interventions (Year 2000) (3)	20	8,158	185	6,244	3,209	5,489	2,232	1,494	27,032

(1) United Bovin Tropical calculated by IEMVT from FAO Statistics 1977

(2) Average of FAO Statistics 1960-1977 plus projection to 1980

(3) Main Interventions aimed at expansion; water point development, fire control and animal disease control. (Intent is to conserve 20% of forage for emergency reserve).

Note: In cases where estimated capacity is lower than actual population the analyst feels the overpopulation will cause longterm range deterioration and should not be maintained.

For purposes of this paper a slightly more conservative increase of 20% to a stocking rate of 25.6 million by the year 2000 will be used. This is considered more nearly within the physical and financial possibilities.

Social and Ecological Considerations

While many articles have been written about the negative effects of a variety of technical interventions, others point out the lack of evidence to establish a cause and effect relationship. Swift⁽¹⁾ suggest that a lack of assistance to the pastoralist may be more detrimental to both the social structure and the ecology than the threat of technical interventions. This could result from the increased exit of pastoralists to become sedentary farmers on marginal land, both changing the social balance and putting a greater farming stress on the environment. A shortage of pastoralists might lead to establishment of large ranches needing less labor. The intent of interventions would be to improve the efficiency of herding to avoid forced departure into farming or urbanization.

Efforts to improve grazing distribution through proper water point development and associated range management will also contribute to the protection of the ecology. While assuring a more efficient use of the range resources the excess grass covers will be reduced, thereby decreasing the threat of range fires. (The uniformly shorter grass reduces frequency and intensity of range fires which tend to destroy trees, other plants and animals).

It is essential to the success of every intervention that a continuing dialogue be established with the target population to learn their needs, desires and capacity, while gaining their confidence and explaining

(1) Jeremy Swift, 1977.

or demonstrating the potential interventions. The sociological as well as the ecological implications of each intervention should be studied in advance as well as simultaneously with the implementation.

Livestock Production Potential and Disposition

While the interventions of water point development, range management and animal health improvements are essential to expanding range utilization and carrying capacity, they will also improve efficiency of animal offtake. That is, the increased supply of water and nearby forage will improve the nutritional state and reduce stress, and the improved animal health will reduce direct death loss, as well as production losses due to non-fatal diseases and parasites.

It is estimated that these interventions could increase efficiency of offtake 25% by the year 2000. This combined with a 20% increased herd size and increased offtake as herd growth becomes stable results in a total increase of 68% over the 1977 production level of meat. Production of milk will only increase 50% as herd stabilization will not increase milk offtake as it will meat offtake.

The 25% increased production efficiency is based on estimates that the cited interventions will increase fertility from 60% to 70%; reduce calf death losses from 35% to 20%; and increase growth rate by 20% in half the herds by the year 2000.

Table V presents the projected animal numbers, production and consumption from 1968 to 2000. Based on these estimates, which depend on very large donor inputs, excellent host country cooperation and a bit of good luck, the domestic meat consumption can be satisfied through the year 2000, while

TABLE V.
PROJECTED LIVESTOCK NUMBERS, HUMAN POPULATION, AND
PRODUCTION AND CONSUMPTION OF MEAT AND MILK 1968-2000

Parameter Year	Livestock Numbers (000 UBT)	Meat + Offal Production (000 kg)	Milk Production (000 liters)	Human Population (000)	Total Domestic Consumption		Per Capita Domestic (1)	
					Meat + Offal (000 kg)	Milk (000 liters)	Meat (kg)	Milk (liters)
1968 (1)	24,300	516,700	1,206,300	23,200	399,500	1,270,000	17.2	54.8
1977 (1)	21,200	474,700	1,129,000	28,400	365,200	1,520,500	12.9	53.6
1978 (2)	21,800	489,000	1,162,900	29,100	378,300	1,557,000	13.0	53.6
1979 (2)	22,500	503,600	1,197,800	29,800	390,400	1,594,400	13.1	53.6
1980 (2)	23,200	577,000	1,270,700	30,500	402,600	1,632,600	13.2	53.6
1981	23,200	577,000	1,270,700	31,200	415,000	1,671,800	13.3	53.3
1982	23,200	577,000	1,270,700	32,000	428,800	1,712,000	13.4	53.6
1983	23,200	577,000	1,270,700	32,700	441,500	1,753,000	13.5	53.6
1984	23,200	577,000	1,270,700	33,500	455,600	1,795,100	13.6	53.6
1985	23,200	613,000	1,350,000	34,300	469,900	1,838,200	13.7	53.6
1990	23,600	660,400	1,454,400	38,700	561,200	2,069,600	14.5	53.6
1995	24,600	726,500	1,600,000	43,500	669,900	2,330,200	15.4	53.6
2000	25,600	796,000	1,752,800	49,000	803,600	2,623,500	16.4	53.6

(1) Source FAO and CIILSS/Club du Sahel Strategy Paper 1980.

(2) Calculated projections based on following assumption (1978-2000):

(a) Assuming 20% herd increase by 2000 plus 25% increased efficiency.

(b) Offtake = UBT Marketed or consumed divided by total UBT in herd.

(c) Assuming 14.8% offtake in 1980, 15.7% in 1985, 16.6% in 1990, 17.5% in 1995 and 18.5% in 2000.

(d) Assuming 2 to 3% herd growth rate or 12% increased production by the year 2000.

(e) Recommended stocking rate 21,600,000 in 1980, 22,600,000 in 1985, 23,600,000 in 1990, 24,600,000 in 1995 and 25,600,000 in the year 2000. Human Population Growth Rate 2.4%

surplus meat for exports will tend to decline to near zero by the end of the century. The increased milk production will only partially fill the the increased demand of the growing population, while the deficit will tend to increase each year.

The production balance of meat and milk is given in Table VI along with the net foreign exchange value of the two products. Export of meat and foreign exchange value is expected to reach its highest in 1980 or shortly thereafter as excessive stocking of the range forces a slowing of herd growth. Following the high in the early 1980's both meat export and foreign exchange value will tend to decline until they are below zero by the year 2000 due to the faster growing domestic demand.

Club du Sahel First Generation Livestock Projects

Fifty five percent of the proposed projects have commitments, are being studied or have expressions of interest from donors. The livestock sector is receiving 10 to 15% of total donor aid, which is slightly below its relative importance as it provides 16% of GNP.

USAID Livestock Projects

Much useful information has been gained from the various AID livestock projects which range from near completion to those not yet fully implemented. These projects have addressed animal health vaccine production; commercial feedlots; forage production; marketing; range fire control; training in range and livestock management and extension; farm level animal feeding; animal disease and parasite research; development of animal diagnostic lab; animal traction studies; mixed livestock - farming studies; small ruminants and cattle breed disease resistance research; socio-economic studies of herders

PROJECTED MEAT EXPORT, MILK IMPORT AND
NET FOREIGN EXCHANGE VALUE

Product Year	Production Balance for Export or Import or Reduced Consumption		Net (1) Foreign Exchange Value (US \$000)
	Meat and Offal (000 kg)	Milk and Milk Products (000 liters)	
1968	117,200	- 63,700	\$ 175,800
1977	109,500	-391,500	108,200
1978	110,700	-394,100	110,100
1979	113,200	-396,600	113,700
1980	174,400	-361,900	217,500
1981	162,000	-401,100	191,000
1982	148,200	-441,300	162,100
1983	135,500	-482,300	134,800
1984	121,400	-524,400	105,100
1985	143,100	-488,200	146,000
1990	99,200	-615,200	54,100
1995	56,600	-730,200	- 33,600
2000	- 7,600	-870,700	-160,200

(1) 1977 Value Meat and Offal US \$1.5/kg (CILSS/IEWVT 1980)

1977 Value Milk US \$0.17/liter (CILSS/IEWVT 1980)

in project areas; and ecological evaluations of previous interventions and/or pressure from human and livestock populations. The livestock sector is receiving 11% of total USAID funds or 20% of funds directly related to production (\$10,000,000 proposed for 1981).

Delayed project implementation and progress has been a common problem due to a variety of reasons including: host country desire to control projects and make them more action orientated than study orientated; delays in AID/Washington approval and contract assignment; difficulty in locating experienced French speaking technical advisors willing to accept project site and conditions; shortage of technical and administrative counterparts; shortage of project and/or host country funds for transportation and maintenance; and often a lack of good communication among project manager, contractor, technical advisors, host government organization, and the project target population.

These experiences plus various evaluation studies suggest that all projects should contain a strong socio-economic and resource monitoring evaluation component which can utilize counterparts who would also double as extension agents to introduce potential interventions. The interventions should be conservatively chosen but of enough magnitude to interest the host government sufficiently to gain support. Training of the counterparts in-country, on the job, as well as short term and long term U.S. or third country training is considered essential to project success and continued development. Recurrent costs should be closely considered and provided for in the project funding.

Recommended Interventions

I. Sahelian Rangeland Areas

A. Redistribution of range land utilization through water management.

1. Finance surface water catchment basins or traditional wells in underutilized grazing areas for specific control by most proximate herder or family identified by a sociological study team in the project zone. Wells or basins should be planned to supply only enough water to support a given number of animal units for the space and rational time sequence recommended by the range management team.
2. As alternative "limited water supply points" are developed, the existing "unlimited water supply points" (such as boreholes and pumping stations) should be fitted with supply limiting devices (hand drawn system; hand pumps, or limited orifice size) in accord with agreements reached by sociological and range management team with well users and government regulations.

B. Reinforce Existing Animal Health Service.

1. Refrigerator and fuel budget for health stations and coolers for distribution.
2. Supplies of vaccine, medicine and basic materials for health care of animals, including small ruminants.
3. Based on specific local transport needs, motor bikes, animal drawn carts or other forms of transportation might be provided with appropriate fuel and maintenance budget.

4. Short term training in animal health care and equipment maintenance.
 5. Provide simple village level animal care kit and rustic livestock corrals.
 6. Support regional research to improve small ruminant health care.
- C. Search for economical source of supplemental minerals and salt.
(Present prices are prohibitive, i.e. not cost effective).
- D. Support Regional Satellite Range Monitoring Project
- E. Range Fire Management - Support research to study controlled burning on range nutrition, forage production, wood fuel supply and soil condition. There are both advantages and disadvantages of burning, but very little firm information or agreement on its use. However, there appears to be a preponderance of information to indicate the ineffectiveness and lack of cost efficiency of firebreaks. Reduction of range fires through extension education should be promoted, while studying periodic managed burning.

II. Mixed Farming Area

- A. Reinforce existing animal health service to apply prophylactic care package to animals introduced into the area.
1. Furnish same support to health service as listed under Range-land Area.
 2. Develop appropriate prophylactic care package for these areas.
 3. Support research and improvement of trypanotolerant breeds of cattle and small ruminants.

- B. Support pilot and research projects to increase soil building forage crops on fallow land and increase efficient utilization of all crop residue and native forage by ruminants for production of milk, meat and work. This can be done on integrated rural development projects and in association with food crop production research.
- C. Livestock Feeding - Because the Sahel is a grain deficit region and cost of energy and protein supplements as well as cultivated forage are relatively high, livestock feeding can not be expected to contribute significantly to increasing meat production. (The cost of increased weight in feedlots of the Sahel have averaged two to three times the value of the weight gained). While interventions in industrial feeding are frequently not justified, there are some conditions under which feeding on the farm or near a source of cheap feed can be profitable. There may be special cases where animal health services, credit or transportation support may be justified to facilitate use of these resources, but mixed farming area livestock feeding should generally be left to its normal growth in line with feed supply and livestock demand. This increase in livestock husbandry in the higher rainfall farming areas will contribute to stratification, but only a small percentage of the northern area young animals will be needed to utilize the resources. It is expected that most of the resources will be used by the permanent-disease resistant herds of the south; hence explicit stratification projects should not be attempted.

1. Seasonal Farm Fattening or Holding - Excess crop residue, fallow land forage and possibly industrial by-product feeds, not needed to feed work oxen and the permanent village herd, can be profitably fed to market age livestock for a few months of the dry season to defer marketing until the seasonal price increases.
2. Industrial Feedlots - Only suggested in cases where a feedlot can be located adjacent to a dependable, steady supply of a cheap energy and/or protein by-product feed source such as a sugar mill or oil mill in a farming area which also has a good source of forage. Depending on the cost and supply of feedstuff, there may be only seasonal feeding advantage.

D. Milk Production - Feeding of by-product feeds to supplement the nutritional needs of the traditional dual-purpose herds near urban markets is recommended, but establishment of commercial dairying is not considered feasible in most areas. Sahelian milk production is not competitive with world markets, nor is it likely to be so; hence milk production projects should generally not be considered.

III. Livestock Marketing - Marketing studies in West Africa have suggested that the traditional marketing system is efficient and responsive to the needs of the livestock industry. Domestic marketing is expected to increase and may need to be facilitated in some cases.

- A. Develop water points on traditional marketing trails.
- B. Establish native range forage reserves at strategic points on the trails to be used in the dry seasons.
- C. Distribution and storage of food grain and other commodities in livestock production areas.

IV. Participant Training - Both technical and administrative training should be an integral part of every project to prepare host country personnel to continue the projects and extend the improved technology throughout their countries.

V. Monitoring and Evaluation

A. Good data collection for monitoring and analysis before, during and following any intervention is essential to planning, management and evaluation of that intervention as it effects the target group's economy, social life and ecology.

B. An interdisciplinary team including production specialist, socio-economist and ecologist should be involved from the planning stage and implementation to the final evaluation.

C. Information Needed for Design, Management and Evaluation.

1. Vegetation map of area including standing forage estimates by location, season and year (minimum of two years data).
2. Animal distribution map by species, ages, sex, season and year (2 years data).
3. Animal production parameters including weights, reproductive rate and death losses should be estimated.
4. Stock water distribution map with capacity by location and season.
5. Human population distribution, ethnic and social relationships, principle activity and water-range control by location.
6. Animal disease status.
7. Animal health, government extension service and other support service available to the project area.
8. Present government policy on water control and/or range control.

9. Status of use of forage by-products in mixed farming areas.
10. Availability and price of concentrate by-products in mixed farming areas.
11. Present use of fallow land and potential for legume forage production in rotation system.
12. Constraints which may limit development such as supplies of materials, social acceptance, water development on treks between grazing areas and market, and the market demand for livestock.
13. Availability of host country technicians and candidates for training as technicians necessary to implement project.
14. Livestock development activities of other donors as well as host country.

General Summary of Livestock Development Strategy

The 1980 number of livestock in the Sahel is estimated to be slightly in excess of the safe carrying capacity for protection of the range resources and for maintaining a forage reserve of approximately twenty percent for livestock survival in drought years. That forage reserve was obviously completely consumed in many areas in 1980 before the new rains commenced. Hence livestock were reported to be in poorer condition and to have suffered higher death losses than normal.

Reduction of herd size, or at least, maintenance at zero growth should be encouraged by introducing government policy to charge for all animal health services, while requiring a strict health care program which will tend to increase production of the smaller herds remaining. All price and export controls should be removed to allow fair market price and maximum marketing.

Estimates of potential increase of Sahelian range carrying capacity range from 15 to 30%, while 20% is considered an obtainable goal by the year 2000. This increase will require substantial donor support of projects for the development of stock water, range management, range fire management and animal disease control. If these range improvements are started now, the range capacity might be sufficient for today's livestock charge by 1985.

The traditional livestock production system is relatively effective for the Sahelian conditions, therefore it should be supported by improving the use of available resources rather than replacing the system. In addition to expanding the grazing capacity through the range developments and opening of disease infested areas, these same interventions are expected to improve offtake efficiency as much as 25% by the year 2000. The increased offtake will be from a combination of higher reproduction, lower calf mortality and faster growth rate resulting from increased forage and water supply, reduced stress and improved health.

Other interventions which are recommended include research of large animal and small ruminant disease and parasite problems which limit production efficiency and prohibit use of some southern ranges, research to optimize production of trypanomiasis tolerant breeds of cattle and small ruminants; and research on soil building legumes for rotation, forage production, forage storage and forage utilization on the mixed farming-livestock operations.

While these interventions in the higher rainfall areas will tend to increase livestock husbandry in the south, the concept of stratification is not expected to increase significantly over present trends. Most of the livestock grown and fed in these mixed farming areas will continue to be

work oxen and permanent herds of disease tolerant breeds. A small percentage of young stock from the north will be needed for the increased feeding capacity in these areas, but most animals will continue to be grown out on the traditional northern ranges.

These substantial production increases will not be enough to maintain the present level of domestic per capita meat and milk consumption and net exports if population growth continues at the present rate. By the year 2000 domestic meat consumption will equal the optimistic projected production, while milk production will, at best, only satisfy the rural consumption. The host governments should be prepared for this probabilities. Substantial levels of meat exports are expected to continue due to higher coastal prices hence domestic Sahelian per capita consumption will continue to decline.

The traditional marketing system has been found to be efficient and is expected to continue to meet the needs of increased marketing to the national urban centers and to the export markets. Recommended interventions to facilitate marketing are: 1.) development of supplemental watering points on traditional market trails, 2.) establishment of native range reserve areas on these trails to be used only in the dry season to encourage and facilitate marketing at that time and 3.) distribution and storage of food grain and other commodities in livestock production areas.

Due to the extensive nature of Sahelian milk production, the high cost of a milk collection system and the lack of a sufficient economical source of high energy feedstuff for a commercial dairy industry, these countries should plan to increase milk imports to satisfy the growing urban demand. The projected increased milk production is expected to continue to supply the rural demand.

Some portion of the agricultural by-product feeds will be used for the growing-fattening operations where transportation cost is not prohibitive and for milk, poultry and possibly swine production near the urban centers. However, trade and price controls should be discouraged since local livestock efficiency will not always compete economically with world market prices which may tend to return a greater benefit to the same mixed farming population.

Technical training in all the livestock and range management disciplines as well as administrative training is essential to development project implementation and to the long term administration of continued development.

Continual monitoring, evaluation and redesign of these recommended interventions will be necessary to most effectively and efficiently utilize and protect the natural resources and the limited financial resources.

ANNEX C

BEGINNING FAMILY PLANNING PROGRAMS

IN

SAHELIAN COUNTRIES

BEGINNING FAMILY PLANNING PROGRAMS IN SAHELIAN COUNTRIES

Summary

Desirability of family planning programs in each of the Sahel states is essentially assumed. With some adaptation to individual country conditions, this paper identifies the principal constraints to implementing family planning (FP) projects in the Sahel and outlines a limited, feasible, politically low-profile and realistic initial project scheme. Having obtained host country agreement and commitment, the central hypothesis is that the most efficient means of affecting fertility in the shortest time will be by attaching voluntary FP counseling services combined with distribution of commodities to a limited number of quality functioning mother/child health care (MCH) centers in larger urban areas. AID should preferably work through other official or private agencies where the option exists. Obviously for a program to have significant impact upon population growth rates not only must FP services be widely distributed including eventually into rural areas but also a variety of complementary means can be brought into play depending upon the character of the country situation. The latter will require intensive social and demographic research, a substantial commitment of donor resources, sensitization, training and full-scale host country commitment. Finally it appears that a successful program can not be realized in the absence of rising standards of living which development is assumed.

The 8 Sahelian CILSS member states are one of the least developed areas of the world and although small in absolute numbers, the population density is great in higher rainfall areas and along the rivers and is growing at a rate, which largely outpaces per capita GNP and agricultural growth rates (Annex 1). Urban population growth is one of the world's fastest (Annex 2) and affects mainly the capital cities; through rural-urban migration and natural increase Sahelian capitals will on the average double every 10 years, if the current rates continue. Emigration resulting from pressure on resources poses potential international difficulties. Although these issues are increasingly recognized by high Sahelian government officials and foreign experts, there is considerable disagreement about the magnitude and priority of the problem and possible solutions to issues as complex and sensitive as those of rapid population growth. This paper, in a way a compromise, outlines key elements for successful population programs, related to conditions in the Sahel and USAID's possible assistance role.

Key Components of successful Family Planning (FP) Programs in the Sahel
Political, Professional and Popular Support. As in all development activities but even more so in family planning, motivation is the most important factor for success. Government officials, health professionals and the people themselves must be convinced that small families are preferable to large ones and must actively support programs which will achieve this result. A national FP organization is indispensable for success.

Reasonably High Child survival rate. Access to modern health care, improved sanitary and living conditions and better nutrition will significantly lower child mortality rates and thus achieve the goal of fewer but healthier children. If, as at present, only one out of 2 newborns will reach adolescence, parents will hardly accept the limits of, say, 2 children per family.

Sufficiently High Level of (Female) Education and (Female) Employment.

Numerous studies in comparable LDC's have shown a direct relationship between education, employment and FP acceptance, especially with regards to women. Sensitization and health education can be launched successfully among a population, which listens to radios, understands posters and reads articles and pamphlets about FP.

A Certain Level of Affluence. Access to higher living standards in many cases represented by consumer goods such as transport vehicles, better housing, household appliances and numerous other items, appears to be an important condition of family size limitations in developed as well as in developing countries.

Accommodating Social Values and Legislation. In a society where deeply ingrained religious and cultural resistance against FP prevails and where women have a low status, population programs will have limited success at best.

Host Country Absorptive capacity. Any new or additional program obviously needs start up and maintenance resources, trained personnel, construction, furniture, commodities and a maintenance budget. This is especially true when a FP unit is being physically integrated into MCH centers. Very often

the latter services have to be upgraded too in order to cope adequately with an additional service.

Management. One of the most frequent reasons for high "drop out rates" are interruptions in commodity distribution and inadequate or impractical recording/registration systems.

Availability of acceptable, affordable, safe, easy to use and correctly administered FP commodities Many items such as IUD's and condoms are often unacceptable in strong Muslim societies, others such as the pill (especially the 21 day disk form) are often hard to understand even within more

All the above mentioned issues are closely interlinked. Whereas the required levels may differ, all must be addressed in order to achieve successful programs.

The Present Situation in the Sahel (see Annex 3)

Mali and the Gambia are the only Sahelian countries with national FP activities. Senegal will start shortly in Dakar with USAID's assistance. Chad, Mauritania and Niger were until recently strong opponents of FP: their attitudes seem to be changing. In Upper Volta the new Health Planning Unit Project envisages the implementation of a MCH/FP center. Cape Verde has several German and Dutch sponsored MCH centers which distribute FP commodities.

In general, the attitude towards FP among many high ranking Sahelian government officials is more favorable than just a few years ago, but few

would give it a high priority. The level of popular support is limited, especially among the rural population. With regards to the other key components very little already exists, as can be expected of the poorest LDC's. On average one out of four children dies before the age of 15 (this is probably higher in rural areas); adult literacy rate is around 10%, but lower for women; the consumer society is essentially non-existent outside the large urban areas; the French 1920 law is still in force in some countries and Muslim religion influences the daily life, especially in the parts north of the 17th parallel. In the cities however social values are changing and while the financial absorptive capacity of ministries of health and social affairs are practically nil, personnel can be made available but will need initial training and supervision. Apart from a handful of clinics and (semi) private pharmacies in some large towns, FP commodities are not available.

When comparing the above outlined preconditions with the current situation, then it becomes clear that the most favorable conditions for starting FP commodity distribution are offered in the capital cities and some large urban areas. These have by far the largest growth rates (Annex 2), mainly due to the rural-urban migration which may be accelerating. However, rural areas cannot be excluded from population activities at some point.

The Role of USAID in FP Programs.

Sensitization and Training of National Government Officials. This means mainly a continuation of what is already being done : seminars and workshops, modified RAPIDS presentations: the regional demographic project,

centrally funded training seminars for doctors, nurses, midwives, administrators, revision of training curricula, and an overall revision of these programs, to improve quality and extend the activity to all Sahelian countries.

Strengthening of Existing National FP Organizations and Centers.

At present this concerns mainly Mali, Senegal and Gambia. Explicit organizational responsibilities from the ministerial down to the district level are a necessary precondition. AID should work through national or international (official as well as private) FP institutions (UNFPA, IPPF) to the extent that this approach is expedient. Existing FP centers should be evaluated and their needs filled through necessary technical and financial assistance.

Implementation of New FP Centers in the Capital and Provincial Urban Areas.

Ideally, a FP unit should be physically and professionally integrated into MCH activities at the primary (outpatient) and secondary (hospital) level. This will not only ensure a higher child survival rate, but greatly increase the "pick up rate" of new FP acceptors through prenatal and postnatal services. The best time to convince a mother for prolonged child spacing is following child birth in a well-run postnatal unit. Paradoxically, fertility services are also an important part of a FP unit since these women form in general about one third of the total clientele. The major problem with this integration is, that existing MCH services are generally of a very low standard and, apart from food distribution days, frequently underattended. In the capital cities, MCH services are available through hospitals, doctors and nurses consultation and pharmacies populaires; where these services exist FP units could be set up in the vicinity but need not

necessarily be physically attached. In smaller urban centers the physical integration will require substantial upgrading of the existing MCH centers in terms of equipment, furniture, possibly construction and supply of basic drugs. The initial number of FP centers should be limited in number for managerial and political reasons.

Distribution of FP Commodities through Commercial Channels in Large Urban

Areas. After national and international organizations and well functioning FP centers are established AID's assistance should provide (subsidized) commodities, to be sold at affordable prices through pharmacie populaire and private pharmacy networks. Whether this is done through doctors or midwives prescriptions or "over the counter", should be decided case by case. Distribution personnel will have to be trained and supervised.

Evaluation. All AID funded projects must have inbuilt evaluation capacity and should include registration and recording systems to allow assessment of drop out rates and follow up. Intermittent surveys through simple and restricted questionnaires must be carried out in order to continuously improve programming.

FP Education. Once a well administered FP distribution network is in place, radio emissions, posters, films, television advertising, etc. can be implemented through established information channels.

Financing. Any investment and maintenance costs entailed in the addition FP services must be borne by donors for an extended period of time. However salaries and per dia should remain within the countries regulation limits and not be subsidized.

All the above recommendations have focused on FP, that is advice on child spacing and distribution of commodities which ultimately will limit

the size of the individual family by reducing fertility. But, as mentioned earlier, the immediate and far greater problem is urban growth through rural migration. Only about 25-30% of total capital city population growth is due to natural increase. The way to slow down migration and emigration is to improve living conditions and income opportunities in rural areas. Thus rural development is itself, in effect, a population program, as it improves key elements such as income health services, education and employment, especially for women.

The Regional Aspect and Foreign donor Coordination. The CILSS/Club mechanism should be used to promote donor support, to inspire and coordinate future efforts. This is especially important since at present AID is substantially the only donor willing to fund actual implementation of FP programs. The CILSS regional effort should include government sensitization and project identification or development. The Sahel Institute (SI) has made a MCH program proposal with some FP components which may be useful for sensitization and statistical services. The demographic unit of the SI will be occupied over the next 5 years with the regional demographic data collection and analysis program whose results will further influence national policies towards more active population programs. At present both CILSS and the Sahel Institute are waiting for key personnel who will be encouraged to implement these activities.

UNFPA, IPPF and National Population Institutions. Countries, which already have institutions in place (Mali, Senegal and Upper Volta to some extent) could be approached through the appropriate official channels. Once needs are identified and agreed upon by the missions, AID could fund and the national or international organizations implement programs. Alternatively

AID may have to assume implementation.

Given the sensitive and complex nature of the issue, certain interventions should be avoided :

Implementation of FP services as an independant service or as a sine qua non component of immunization and other child mortality reducing programs.

The "inundation" approach : massive advertising and free FP commodities distribution.

Distribution of FP commodities by Village Health Workers, particularly in the startup period of FP programs.

"Integration" of FP units into MCH centers if such integration overtaxes the capacities of the latter.

Drawing highly qualified health personnel away from their present activities with attractive salaries and other benefits.

Conclusion. AID's assistance role in FP should be offered as a service like any other service which ultimately will improve the quality of life. AID should preferably be indirectly involved in program financing through national and international FP organizations if this is an effective option. Initially cautious and restricted to capital cities and some provincial towns, FP could gradually expand to rural areas. Incremental costs associated with FP should be carried by AID, possibly in collaboration with other donors.

ANNEX 1:

DEMOGRAPHY AND ECONOMIC TRENDS:

	1980 Population in-000-	% Average ann. population growth	Year 2000 Projected Popl in-000-	GNP per capita		Average Index of food productions per capita 1976-78 (1969-71: 100)	1970-78 % average ann growth
				Dollars, '78	Average ann, growth, %		
Cape Verde	300	1.8	400	160	-	-	-
Chad	5000	2.2	7000	140	-1.0	89	-0.1
Gambia	600	2.4	900	230	-	82	-
Mali	7000	2.5	11000	120	1.0	90	2.0
Mauritania	2000	2.7	3000	270	3.6	71	-2.3
Niger	5000	2.8	9000	220	-1.4	87	-0.2
Senegal	6000	2.6	9000	340	-0.4	96	3.3
Upper Volta	6000	2.6	9000	160	1.3	95	-3.6
Low income Countries ave- rage		2.2		200	1.6	97	+2.0

Source: World Development Report 1980, The World Bank.

ANNEX 2:

DEMOGRAPHY, HEALTH AND SOCIAL TRENDS

	Infant mortality rate/1000 1960 1978(1)	Life expectancy at birth 1960 78	Daily calory supply per capita: % of requirement: 77	Urban Population			Adult literacy rate: % 1960-75	Dependency ratio (1)
				% of total pop. 1980	Average annual growth rates: 1970-80	% of urban Pop. in capital city 1980		
Cape Verde	- 105	- 60	-	8	-	-	-	.79
Chad	- 165	35 43	74	18	6.7	39	- 15	.85
Gambia	- 165	37 41	-	16	-	-	-	.79
Mali	210 190	37 42	90	20	5.5	34	3 10	.86
Mauritania	- 187	37 42	86	23	8.6	39	5 17	-
Niger	212 200	37 42	91	13	6.8	31	1 8	.96
Senegal	193 159	37 42	95	25	4.5	65	6 10	.89
Upper Volta	263 182	37 42	79	9	4.1	41	2 5	.89
Low income countries average	- 14.7	42 50	91 (Western standard: 131)	21	4.0	16	29 38	.82

Source: (1) Population Reference Bureau - World Data Sheet and Demographic Data Unit 1979
 all others: World Development Report 1980, The World Bank.

DEVELOPMENT OF FAMILY PLANNING EFFORTS IN THE SAHEL

	Family Planning Association Established	Government Perception of Population Growth Rate	Government Vote for UN Sponsored World Population Plan of Action *	Legal Barriers Repealed	Government Support for Family Planning	Major External Assistance
Cape Verde	-	FP integrated with MCH services	-	-	-	German, Dutch bilateral MCH programs
Chad	-	Acceptable/population is smaller than desirable	For	-	-	UNFPA (population census)
The Gambia	1969	FP integrated with MCH services	-	date unknown	1974	UNFPA (population census) IPPF (local FPA assistance) AID/UCSC (training of FP workers) (terminated)
Mali	1972	FP integrated with MCH services	-	1972	1974	IDRC (pilot project 1971) AID/UCSC (training) (rural health IPPF (local FPA assistance) UNFPA (population census, services)
Mauritania	-	Acceptable/opposes attempts to control population growth	For	-	-	UNFPA (population census)
Niger	-	Acceptable level (beginning to look into family health)	For	-	-	UNFPA (population census) AID/CRF (MCH - rural health program)
Senegal	1970	Too high (1976)	-	date unknown	1974	AID/UCSC (Training) (service) Pathfinders (service) UNFPA (population census)
Upper Volta	-	Perception unknown Actively supports improvement of women status	For	-	-	UNFPA (population census, sex education)

*World Population Plan of Action recommends that all countries "ensure the right of persons to determine in a free, informed and responsible manner, the number and spacing of their children and make available advice and the means of achieving it".

HUMAN RESOURCES DEVELOPMENT

Annex - Human Resources Development

AID's strategy seeks to maximize Sahelian capacity to deliver essential agricultural and social services, while developing a broad skills base, at the village level, to effectively utilize innovative technical inputs and generate increased agricultural production and income. AID also recognizes that over the long term, economic expansion in all sectors will require improved access to formal education, but in view of the constraints to rapid expansion of educational systems, AID's strategy is to support the reform of existing primary systems in countries where opportunity for such reform exists.

AID's Human Resources strategy in the Sahel focuses upon three principal axes:

1. Participant training and the strengthening of Sahelian agricultural training institutions.
2. Basic skills training for the rural population.
3. Improved and more efficient primary education.

1. Participant training and the strengthening of Sahelian agricultural training institutions.

Although Sahelian manpower needs assessments offer conflicting findings and recommendations, all agree that significantly larger numbers of better trained agricultural personnel are needed at all levels. These include managers and administrators, agronomic and range management researchers, agricultural, livestock, forestry and fisheries extension personnel, and of course, farmers. The aggregate output of Sahelian training institutions is less than the demand, and Sahelian governments depend heavily upon expatriate technical assistance for specialized higher level personnel. AID has recognized this need, and will continue efforts already underway to provide U.S. and third country participant training, and to strengthen Sahelian agricultural training institutions, where appropriate. In Niger, the Rural Sector Human Resources Development Project supports the Rural Polytechnic Institute which offers mid-level training in agriculture, forestry and rural engineering. In Upper Volta, AID supports a training center for forestry agents and two agricultural training institutions; one for the training of extension agents, and another, at the university level, for training in agronomy, forestry and livestock. In Mali, AID finances Agriculture Apprenticeship Centers which offer mid-level training in extension, agronomy, plant pathology and sociology. AID also plans to support agriculture related training institutions in Senegal and Mauritania.

In addition to short term regional training, AID finances U.S. and third country participant training through the Sahel Manpower Development Project, and within the context of ongoing projects. AID will place increasing emphasis upon regional short term training, particularly with regard to project management and implementation.

2. Basic skills training for the rural population.

The intensification of agricultural production requires not only technical expertise on the part of change agents and managers, but cognitive skills and attitudinal learning on the part of farmers/herders, to

enable them to make more and better use of improved inputs. Although universal access to effective primary education is a stated goal of Sahelian officials, economic, political and social realities suggest that interim solutions for more education be quickly identified. The acquisition of practical skills to facilitate remunerative activities is paramount, and in the Sahel, literacy, numeracy and understanding of science and environment should be seen as means to that end.

The specific learning needs of persons engaged in farming or herding vary according to ecological and agricultural patterns (rainfed vs irrigated); the state of technology (hand, animal, mechanized traction); and farming systems (commercial vs subsistence), therefore, the nature of AID's project intervention will define the parameters of required producer skills. AID's training strategy will address two broad categories of beneficiaries :

1. Producers, including landless farmers, pastoralists, subsistence farm families, and commercial farmers.
2. Persons engaged in off-farm activities contributing to value-addition to agricultural products, including suppliers of services (repair, maintenance, credit and transport), processors and storers, artisans and small manufacturers.

With respect to the first of these categories, producers, the following training is needed :

- a) application of new input, varieties and improved farm practices.
- b) storage, processing, preservation.
- c) farm planning and management, including record keeping, cost and revenue computation, weighing, use of credit.
- d) supplementary skills and knowledge relating to family improvement, understanding of government, and availability of services.

With respect to the off-farm population, training is needed in business planning, record keeping, cost accounting, procurement and inventory control, market analysis, servicing, mechanics, maintenance, processing, sales methods and knowledge of taxes and credit availability.

Both of the above beneficiary categories require the acquisition of, or easy access to, computational skills and literacy.

Since rural education is more effective when functional opportunities exist for the practical application of skills learned, AID will focus more closely upon skills training, including literacy and numeracy, within the context of rural development projects and will assess the extent of beneficiary participation in all project evaluations. When possible, AID will work with and re-inforce existing national and local organizations for the delivery of numeracy, literacy and skills training, and will avoid the establishment of parallel or competing structures.

Primary Education

Formal school enrollment in the Sahel lags far behind the rest of the world, but economic, social and pedagogical conditions are not yet amenable to serious expansion of the systems. Curricula are rigid, traditional, exclusive, and tend to encourage rural-urban migration. National budgets can not yet support significant expansion, and farm families are not able to dispense with the need for children's labor, particularly girls'. The internal efficiency of formal schools is poor, such that even without expansion, the existing system could turn out 20 % more graduates.

AID is faced with a number of options with regard to assistance in the formal education sector, and some explanation is necessary as to the underlining constraints to expansion thereof. In the Sahel, secondary schools represent a serious but understandable bottleneck. As presently constituted, primary education, is but a path to continued upward movement in the system; not a useful end in itself. Since only a small number of job opportunities exist in the modern sector, Sahel governments choose to limit numbers of secondary school entrants, using restrictive primary school output measures as a means of limitation. This policy results in large numbers of drop outs and repeaters, at various stages of primary education. Even if the quality of instruction in traditional primary schools were to improve, the lack of space in secondary schools would necessitate an arbitrary raising of the standard for primary school completion or automatic admission of primary graduates would have to be foregone. Previous attempts to limit numbers of primary school graduates admitted to secondary school have failed, resulting in privileged admission policies and widespread unrest. Secondary school enrollments should only expand in proportion to external demand, and it is therefore, not possible, given limited modern sector, opportunities to think in terms of increased secondary enrollment. Yet, as long as the *raison d'être* of primary education is to prepare for continued formal education, current output regulations will dictate poor primary school efficiency.

Although AID will continue to explore ways of providing non-formal basic education through the use of radio and indigenous village structures, using rural development projects as a vehicle for delivering such training, strengthening formal primary education is viewed as an important long term development priority. Educational growth parallels economic growth, and whereas demand for increased skills accelerates educational output, the lack of an educated citizenry inhibits economic growth.

Until such time that conditions are amenable to school expansion, AID will focus upon improving the internal efficiency of existing systems. Educational efficiency is the rate at which students pass through the system, including drop-outs and repeaters, with a minimum of wastage. Efficiency must also be measured in terms of its qualitative dimensions including input (class size, teacher qualifications, instructional materials etc.); output (learning achieved - knowledge, skills, attitudes); and outcome which refers to external objectives such as the productiveness of graduates.

Niger, Mali, Senegal and Upper Volta have experimented with rural-based curricula. Generally, these efforts have not succeeded because they mainly focus upon revision of syllabi and practical training, usually in the form of school gardens. Curriculum Development should comprise a careful examination of objectives with respect to output and outcome, and a careful analysis of inputs necessary to achieve them. These inputs will then include not only the organization of course content, but the preparation of texts and other instructional materials, provision for retraining of teachers, and a re-appraisal of administrative policies concerning standards, class size and the use of space.

There are few successful models for educational reform in francophone Africa. In Cameroon, a comprehensive reform of the national system was undertaken by several donors, including FAC, UNESCO, AID and the World Bank. The approach was comprehensive, involving planning, curriculum development, materials development and reproduction, teacher training and school construction.

We have learned from the Upper Volta's experience with the "Plan Christol" that rural based terminal primary education does not easily gain acceptance. Dual rural education schemes which run parallel to the traditional system tend to be discriminatory, expensive and ineffective. It is preferable, to reform existing systems in such a way, that they will provide useful basic skills to primary school leavers while allowing high achievers to undertake secondary education. This type of reform permits educational planners to maintain existing standards with respect to secondary school admission, and gives primary school officials increased flexibility with regard to articulation and course content for students who might otherwise be obliged to repeat grades or terminate their education with no useful skills.

Conditions in Mali, Upper Volta and possibly Niger appear to be favorable to primary education reform. Mali, in collaboration with the World Bank has already undertaken some reform efforts, and the GRM is sensitive to the need for better rural education. Following the dissolution of the rural education centers, the GOUV has elaborated a plan for the renovation of rural education and the reform of the primary system. Niger is now in a better financial position to finance serious education reform and the GON seeks to broaden its revenue base through increased agricultural production.

The nature of AID's assistance or total assistance, in the case of multidonor funded efforts should include the following :

- technical assistance for a policy planning, administration and supervision, curriculum development, research, evaluation and teacher training.
- facilities for the production, reproduction and distribution of educational materials.
- participant training as required.

AID will not support the expansion of secondary schools until such time that external demand warrants such expansion, and AID will not support the expansion of the primary system until existing systems become significantly more efficient. However, in view of the long term

importance of primary education, AID will support reform efforts, in selected countries, that seek to gain better efficiency by broadening the educational base as earlier described.

In addition to a serious commitment toward basic policy changes on the part of the concerned government (standards, curriculum, site emplacement, budget), primary education reform requires considerable external financing and expertise. Although AID can support small prototype operations, it is preferable that AID join other donors and exploit mutual comparative advantage. We have learned from the now defunct but promising Chad comprehensive education project that given host country institutional commitment (Institut National pour les Sciences de l'Education, in the case of Chad) and solid technical assistance, that the U.S. can effect positive change in rural education.

SAHELIAN LIVESTOCK INDUSTRY STATUS
AND
DEVELOPMENT STRATEGY

Sahel Development Program
USAID
September, 1980

EVALUATION IN THE SAHEL DEVELOPMENT PROGRAM

In its nature the Sahel Development Program (SDP), "the commitment of a generation", presents unique problems to and, indeed, promises singular benefits from efforts and resources committed to evaluation. The problems flow from the variety of novel issues emerging from this multilateral, multinational and regional development effort; the potential benefits will flow from these as well as from our long-term presence itself. That is, in the SDP we have the opportunity, having once accepted the challenge, to proceed deliberately, to avoid conventional "crash programs", to undertake adequate preliminary studies, to implement pilot projects and experiments before launching broad efforts and to take the time to identify and appropriately exploit the knowledge gained from the inevitable mistakes and false starts. A comprehensive system for evaluation of projects and programs may be of greater value to a program such as the SDP than to most others in the AID experience. But the evaluation program itself is not a "shelf item" - it too must be created.

The activists in the SDP are multiple and disparate. AID, relatively, plays a minor role. We cooperate within a comprehensive regional strategy whose 20-year goals are explicit and quantifiable yet each donor's subsidiary "share" of the agreed targets cannot be identified. There are obvious inherent difficulties which result in the need for each donor and host country to set its own program, project and national goals. Logically, in order to fully exploit the potential an evaluation system should address the activities of each of the actors at every level of the action. An optimal system will require full interest and cooperation of

donors and host governments. We shall not achieve that; we will be able to develop a functional and useful system.

Elements of a system

The Club/CILSS has already completed a comprehensive evaluation of the Sahel program, the Review and Analysis of 1980. This was done ad hoc by consultants on the basis of data from heterogeneous sources of uneven quality; nonetheless the evaluation was favorably reviewed universally, although the assessment itself was none too reassuring. One would hope that the challenge presented to the analysts by that evaluation will not have to be overcome in the future, that increasingly we will have more and better quality data, more analysts in place, more recorded experiences and project evaluations completed and a system to generate the necessary periodic or continuing evaluation as required. An evaluation of the overall multi-donor, multi-country, regional program would again be appropriate in late 1982 or early 1983 at which point five years of the AID development program will have been completed.

Club Secretariat

The Secretariat in Paris has asked all of the donors to forward evaluation materials of any nature which could be helpful in creating a record of the progress of the program. These materials include project and donor program evaluations, assessments by host governments of donor programs, sector analyses and policy statements. The Club will maintain files of these materials for all users. Experience in the use of the diversity of data generated by the Secretariat request has revealed, predictably, a heterogeneity of quality and focus of evaluation materials.

Certain donors concentrate on process of project implementation, others upon effect, still others narrowly upon financial issues and finally there are those who attempt to quantify overall progress. All working in this field are obliged to contend with an absence of base-line data. Few have taken the time to generate dependable information. Some very few have managed exemplary project evaluations which can be models for the community. Regrettably most donors and Sahelian governments do not share an intense interest in retrospection; some systems of assistance delivery are simply not designed to lend themselves to an evaluation process. Those interested in the subject, including the Club Secretariat and the U.S. are in a jungle pressing to construct a workable system. The system will provide means to evaluate the spectrum of concerns entailed in projects, overall processes of development and aggregate effects of programs.

Program

We know only too well that the Sahelians are materially poor in almost every respect; no one can reliably quantify this poverty. Such data were not available when the program began and will not be accessible in any near future. We also know that when we started our work in this region conditions were critical; further we can quantify the assistance which has been expended, in its variety of forms, on behalf of regional improvement since the process was initiated. Finally and incontestably we are assured that progress has been realized, if only negatively to the extent that no similar disaster has been experienced. Considering the considerable aggregate foreign assistance flows of recent years, flows which reached (by any realistic estimation) a significant fraction of the regional annual income,

average per capita incomes have had to have been appreciably affected.

Unfortunately we cannot accurately measure these effects.

In gross economic terms there are available estimates of overall incomes of each of the countries. Relevant data of this nature are generated by national statistical agencies, ministries of economy, central banks, regional banks, various international institutions and AID personnel. Quality varies; overall it is improving. We do not feel that, without major effort we can significantly improve these data; therefore we shall rely upon the major sources with established systems and some historical credibility and acceptability for macro-economic data. These sources are principally the IMF and the IBRD supplemented by the regional central bank (UMOA) and the national statistics sources.

Gross economic data are necessary but not sufficient, for AID particularly. The mandate is to improve the living conditions of the poor. Recent work on indicators of quality of life (eg. PQLI) attempts to quantify the standards of the poor. The Club Secretariat with AID collaboration has undertaken to adapt the PQLI methodology of the Overseas Development Council (ODC) to the Sahel in an effort to first determine if the PQLI is itself appropriate to use in the Sahel and, if so, to strengthen the data from which that indicator is derived or, if not, to derive a similar index and data system for the Sahel. The ODC has completed initial investigations and is developing its analysis and recommendations. AID and the Club expect to implement a system of quality of life measurement when this analysis is completed.

Data which can be used to assess aggregate economic and quality of life progress in the region will flow from the sources identified above. Comprehensive evaluations of the regional program will be undertaken perio-

dically on the initiative of the Club Secretariat, based obviously upon these aggregative data as well as all available contemporaneous materials, following the excellent example of the Review and Analysis of 1980.

Process and Project

The Secretariat of the CILSS contains a Division of Program, Management and Evaluation (PME) which has responsibility for evaluation at all levels of the Sahel Development Program. This division will focus initially upon project and process evaluation. AID has arranged to finance an appropriate expert in CILSS/PME to animate this activity. Search for this specialist is now underway. The goal of this aspect of the work of CILSS will be to sensitize and activate the responsible actors in the regional development program to the requirement and utility of evaluation at all levels. Ideally we would wish to create an evaluation process within each activity which process would continually feed back to project implementers as well as those responsible for sectoral, national and regional programs. Various means, formal and informal, will be appropriate to the stages of these activities and it will be the responsibility of PME to identify and implement these. Obviously the task is immense since it should effect every individual and organization involved in the development program; moreover, with few exceptions, structured evaluation does not yet exist in the region. A major function of PME will be to articulate the problems and constraints confronting host governments and donors resulting from the incompatible and not infrequently incomprehensible procedures and regulations to which agencies must adhere in order to implement projects. (AID is not the least obstructive in this respect). An important goal for PME will be to esta-

lish a formal evaluation requirement and a universally acceptable procedure for evaluation as part of each project.

AID's system of evaluation is receiving increased emphasis. Recent experience with project evaluation and with the process of evaluation itself has revealed major difficulties. Not only have we been remiss in adhering to our own regulations, we have found that in too many cases the narrowest interpretation of those requirements has been applied. The result too frequently are evaluations which are of restricted utility, of unbalanced focus upon process to the exclusion of an assessment of results, impact and achievement of goals. AID/W must undertake the job of improving the effectiveness of the established system.

SMDC and SDPT

The Sahel Mission Directors' Council and the SDPT conduct what is, in effect, a continuous evaluation of all levels of the program in the region. This is achieved in the process of refining the AID program strategy by sector and sub-sector. The various advisors of the SDPT systematically study the factors of Sahelian environment, the activities and experiences of host and donor personnel at all levels of the development effort. Detailed sector strategy proposals are then formulated and submitted to the SMDC for consideration and refinement. These exercises concentrate the considerable collective experience of the AID Directors along with that of the expert advisor upon completed, current, and contemplated projects, present circumstances, latest analyses and recent evaluations respective of the sector or subsector under consideration and yield perhaps the best possible understanding of the situation and potential in the field. The effect is continuous feed-back of continuous evaluation, such that the

goals of evaluation are being realized directly at the several levels where such information can be best used and where adjustments can be made.

The SMDC serves also ^{to} reexamine, revise and advise with respect to AID regulations and procedures which have a major and frequently deliterious effect upon projects and programs. The directors in council share experiences, identify common problems, coordinate and standardize approaches, and identify and implement ^{means to effect} reform.

The excellent example of the recent joint evaluation of the program in Senegal is proposed for emulation by other missions.

Summary

The evaluation system of the Sahel Development Program is in rapid evolution with some portions more fully developed than others. An outline of the disaggregate system and its prospects follows :

1. Evaluation of multidonor regional program
 - a. 1980 evaluation completed; next overall evaluation contemplated late 1982 or early 1983.
 - b. Macro-data - generated regularly by IBRD, IMF, central banks, national statistics services and donor missions.
 - c. PQLI type indicator to be developed by AID/Club/ODC
 - d. Program and project evaluations generated by donors; assembled for reference by Club Secretariat.
2. Project and Process Evaluation
 - a. Projects evaluated pursuant to regulations by USAIDs
 - b. Projects evaluated by other donors
 - c. Enhanced system of project and process evaluation to be developed by Club Secretariat Program, Management and Evaluation Division.

d. Possibly standard evaluation format for all donors to be developed by CILSS/FME.

e. Ad hoc AID audits.

f. Continuous SDPT coordination and informal evaluation.

3. Program, Process and Project

a. Sahel Mission Directors' Council

b. Joint AID mission/host government evaluations.

ANNEX F

A NOTE ON RIVER BASIN

A NOTE ON RIVER BASINS

To achieve food security assuring minimal consumption based upon current agricultural production in the Sahel in the year 2000, the regional production capability will have to increase by the equivalent obtainable from one million hectares of irrigated land. There is little likelihood that this quantity of additional irrigation will be developed; the current area under full or partial water control is approximately 250,000 hectares. The Sahel has both the land and the water availability in the large rivers to develop this amount of irrigation, but it will require significant water control systems.

It is difficult to foresee how the Sahel will feed its expected year 2000 population in years of good rainfall without developing the basins. Already in some countries there is pressure upon the dry lands and this contributes to land destruction. Properly installed and managed full water control irrigation is the only certain way to provide food security during drought periods and to retain increased populations in the rural areas. Effectively developed river basins will contribute substantially to environmental protection, preservation of woodland and through power generation provide an alternative to energy imports as well.

Large river regulation projects are expensive; dams the size of Manantali on the Senegal and the Kandadji on the Niger will cost over \$500 million each and may reach \$800 million or more if related works are included. Irrigation development costs range from \$5-30 thousand per hectare at 1980 prices. Not only are these numbers incommensurate with AID's current budget but the dams and downstream systems are frequently challenged as being uneconomic in terms of world-wide investment alternatives. In thinking about dams and irrigation systems in the Sahel AID will have to address two categories of questions:

(a) Can the Agency undertake substantial participation in extensive irrigation and, if so, then (b) is the Agency committed to assist the small farmer enough to accept low internal rates of return in irrigation projects for his benefit which will be necessary to feed the growing population and provide security from drought in the Sahelian countries?

The Sahelians have already reached their conclusion: river basin development is vital; there are no adequate alternatives. Accepting this, it is difficult to see how AID could avoid contributing to infrastructural development to the extent funds can be made available. River basin investments are necessarily multidonor enterprises; other donors are already committed but are uncertain of the viability of their investments. Substantial participation by the U.S. would provide good technical direction and would tap the years of unique American experience. Substantial short cuts to the lengthy process of evolutionary development can be taken for the Sahel using known technology.

The pace of the development of the human resources component of river basin development poses perhaps the greatest challenge. The necessity of institutionalizing both highly technical planning and management staff in regional and national development organizations and training farmers, herders and fishermen in new methods of pursuing their occupations must be understood and carefully factored into the planning process. Social and environmental effects must be studied, and the negative effects mitigated or outweighed by the benefits.

What happens when the AID budget is inadequate for the desirable level of irrigation system development? The AID Sahel program will proceed with essentially its present format which is necessary in any case. That is, regional food self-reliance and food security will require substantial improvement in rain-fed agriculture, livestock production and small irrigation development, the present emphasis of AID's program. We will be able to contribute to certain aspects of

river basin development which the present budgets can sustain and in which we have superior capability such as planning, environmental issues and public health, of which current or proposed contributions to OMVS, OMVG and NBA are examples.

But if the Sahel Development Program succeeds with rainfed production improvement (and small perimeter development) to the maximum realistic extent possible, i.e. four percent per year for twenty years (an ambitious target), it will have accomplished the necessary but not the sufficient. The Sahel in the year 2000 will not have food self-reliance based upon agricultural production, it will not be able to generate surpluses to create security stocks and it will not have the indigenous resource capacity to withstand drought. Nor will it have created the prospects to achieve these things.