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Sahel Regional Aid Planning and Coordination Semiannual Management Report:

1 September 1980 - 28 February 1981

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Project No. 625-11-995-091

Advisory Committee on the Sahel

Board on Science and Technology for International Development

Commission on International Relations

National Academy of Sciences - National Research Council

Washington, D.C. 1981

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Jeffrey Gritzner, Professional Associate
Colette Simonds, Administrative Secretary/Research Assistant

INTRODUCTORY NOTE

During this report period, particular attention has been directed toward problems in the areas of environmental rehabilitation, renewable energy, and agro-forestry.

SUMMARY OF ACTIVITIES

BOSTID Participation in the Office of Science and Technology Policy (OSTP) Mission to Africa (20 September - 1 October 1980).

Michael Dow, Deputy Director of BOSTID, accompanied Frank Press, Director of the Office of Science and Technology Policy, and Philip Handler, President of the National Academy of Sciences, on a mission to Nigeria, Zimbabwe, Kenya, and Senegal. While in Senegal, Dr. Dow discussed a broad range of BOSTID concerns with USAID/Dakar officials. Particular attention was directed toward proposed development activities in the Senegal river basin.

Discussion Seminar on the Senegalese Groundnut Basin (8 October 1980).

In April 1980, at the request of the Water and Forest Service of the Government of Senegal and USAID/Dakar, a small group of Academy-selected specialists visited Senegal to make a preliminary assessment of the factors relating to declining agricultural productivity in the "groundnut basin" of West-Central Senegal.

This assessment concluded that the groundnut basin is experiencing severe environmental degradation, declining soil productivity, and limited economic options because of the inflexibility of the existing agricultural system. It is not clear to what extent drought and other natural causes, as opposed to excessive exploitation, are contributing to the degradation--although it is assumed that both natural and cultural factors are in play.

The April assessment resulted in a number of recommendations as the basis for formulating location-specific strategies to increase and sustain agricultural productivity and to provide economic alternatives for the population

of the basin. The October discussion seminar was held in order to further examine the recommendations made and to better relate them to the priorities of USAID/Dakar.

The seminar participants were:

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Lucie Colvin
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Washington, D. C.

Bill Wright
International Agricultural
Development Service
New York City, New York

A summary document was prepared following the meeting and was forwarded to the USAID mission in Dakar.

BOSTID Participation in CADA Agricultural-Sector Discussions (September - October 1980).

In order to strengthen their economic assistance effort in sub-Saharan Africa, representatives of Belgium, Canada, the Federal Republic of Germany, France, the United Kingdom, and the United States had met in Paris in 1979 at the initiative of the French government. They discussed the coordination of resources for joint projects within the framework of a Conceived Action for Development in Africa (CADA). On the basis of these discussions, the United States selected two areas, forestry and agricultural research, within which to explore new program directions. At the request of U.S. Agricultural Consultant Francis LeBeau, the staff participated in discussions concerning agricultural research.

Meeting of the Advisory Committee on the Sahel (3 November 1980).

The summary minutes of the November ACOS meeting are attached to this report as Appendix I.

Staff Travel to Arizona.

A series of meetings were held in Arizona in November in connection with BOSTID interest in species-selection trials to support agro-forestry and environmental rehabilitation projects in the Sahel. Discussions were held

with staff members of the Meals for Millions/Freedom from Hunger Foundation and a visit was made to the Southwest Traditional Crop Conservancy Garden in Tucson. Further discussions were held with plant scientists at the University of Arizona and with staff members of the University's Office of Arid Lands Studies.

Subsequent to the Tucson meetings, visits were made to the Boyce Thompson Southwestern Arboretum near Superior, Arizona; to the University of Arizona's Agricultural Experiment Farm at Mesa; and to the Desert Botanical Garden in Papago Park near Phoenix.

Seed from the following species was acquired for shipment to the Sahel:

<u>Cassia artemisioides</u>	Feathery Cassia
<u>Dasyllirion wheeleri</u>	Wheeler Sotol
<u>Dodonaea viscosa</u>	Hopbush
<u>Encelia farinosa</u>	Brittlebush
<u>Leucaena leucocephala</u>	Hawaiian Giant (K8) Leucaena
<u>L. retusa</u>	Golden-Ball Leadtree
<u>Lysiloma microphylla</u>	Littleleaf Lysiloma
<u>Melia azedarach</u>	Indian Lilac
<u>Orthocarpus purpurasiens</u>	Owl Clover
<u>Phaseolus acutifolius</u>	Tepary Bean
<u>Proboscidea sp.</u>	Devil's Claw
<u>Piosopsis juliflora</u>	Western Honey Mesquite
<u>Psophocarpus tetragonolobus</u>	Winged Bean
<u>Salvia greggii</u>	Autumn Sage
<u>Simmondsia chinensis</u>	Jojoba
<u>Yucca elata</u>	Soaptree Yucca
<u>Zea mays</u>	Pima-Papago Sixty-Day Maize

Although the seed was distributed on the basis of its relevance to specific projects in the Sahel, the principal recipients of the seed were forester John Falconi of USAID/Nouakchott and El-Hadji Sène, Director of the Senegalese Water and Forest Service.

Solar Energy Research Institute Workshop on Tree Crops for Energy Co-Production on Farms (11-14 November 1980).

A small task force at the Solar Energy Research Institute (SERI) has been considering the potential of tree crops as a possible component in diversified agricultural systems at the farm level. The members of the task force believe that trees could produce annual crops, such as pods, seeds, or fruit, that could be used for energy production on a local basis while accumulating wood and providing other benefits. Although several tree species were discussed, including Diospyros virginiana (Persimmon), Quercus spp. (Oaks), Castanea spp. (Chestnuts), Carya spp. (Hickories), Juglans regia (Persian Walnuts), Prosopis spp. (Mesquites), Sapium sebiferum (Chinese Tallow Tree), and others, particular emphasis was placed upon the potential contribution of Gleditsia triacanthos (Honeylocust).

The staff was invited to the meeting primarily to relate the interests of the SERI task force to the realities of dryland agricultural systems in Africa.

United Nations Mauritania Desertification Project (5-17 December 1980).

At the request of the United Nations Sudano-Sahelian Office (UNSO), the staff participated in the development of a dune-stabilization strategy for Mauritania. The assembled team was composed of the following individuals:

Sam Andrawis
Remote Sensing Institute
South Dakota State University
Brookings, South Dakota

David Mouat
University of Arizona
Tucson, Arizona

*Kevin Dalsted
Agency for International Development
Nouakchott
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International Resources Development
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Boise, Idaho

Albert Klingebiel
Consultant
Silver Spring, Maryland

Fred Westin
South Dakota University
Brookings, South Dakota

*Renewable Resources Management Project

The ACOS staff contributed a process-oriented statement of environmental change to the published project document.

Staff Visit to Senegal (13-16 December 1980).

Following a BOSTID workshop on Science and Policy Planning for Development in Morocco, BOSTID Deputy Director Michael Dow briefly visited Dakar in order to discuss the proposed establishment of a regional microbial culture collection in Senegal.

Office of Technology Assessment Discussions (21 January 1981).

At the invitation of Barbara Lausche of the Congressional Office of Technology Assessment (OTA), the staff gave a presentation dealing with the application of energy-flow theory to project identification in environmental rehabilitation programs, and with the involvement of local populations in such programs.

Program Discussions with USAID's Office of Forestry, Environment, and Natural Resources.

Late in January, the BOSTID staff participated in a series of discussions to define program directions for the remote sensing, forestry, and natural resources sections of USAID's newly-formed Office of Forestry, Environment, and Natural Resources.

Working Discussions on the Establishment of a Regional Microbial Culture Collection in the Sahel.

Plans have been completed to hold these discussions in conjunction with an international workshop on biological nitrogen fixation technology for tropical agriculture to be held at Cali, Colombia during the second week of March, 1981.

Environmental Degradation in Mauritania.

The BOSTID staff has completed a final draft of a detailed report on environmental degradation in Mauritania. The report includes an overview of land use and environmental change, approaches to project identification in environmental rehabilitation, and specific recommendations for the restoration of critical ecological processes within the ecological provinces of the country.

Scientific Networking.

Scientific networking in relation to the Sahel has been continued during this report period. Particularly noteworthy meetings were held during this report period with officials of the Desertification Unit of the United Nations Environment Programme, the International Development Research Centre in Ottawa, the International Atomic Energy Agency, and the International Office of the French Délégation Générale à la Recherche Scientifique et Technique.

Miscellaneous Activities.

During this period, the staff was also involved in a number of other activities of relevance to problems in the Sahel. These include a BOSTID/ Advisory Committee on Technology Innovation meeting on tropical deforestation in Latin America; discussions with Dick Young Productions, Ltd concerning the role of documentary films in Sahel development; and discussions with officials of the National Geographic Society regarding the Sahel.

FUTURE ACTIVITIES

Scheduled Activities.

Working Discussions on the Establishment of a Regional Microbial Culture Collection to Support Effort in Biological Nitrogen Fixation in the Sahel (Cali, Colombia). 11-13 March 1981

Staff participation in the BOSTID Advisory Committee on Technology Innovation meeting at Lubbock, Texas. 23-24 April 1981

Travel to Arizona in connection with BOSTID efforts in agro-forestry and environmental rehabilitation in the Sahel. 24-28 April 1981

Tentatively Scheduled Activities.

Staff travel to Ottawa for discussions with the International Development Research Centre concerning support for the Sahel Institute and shared interests in agro-forestry. 23-24 July 1981

Advisory mission to Senegal in connection with proposed efforts to establish a regional microbial culture collection. 31 August - 7 September 1981

Staff travel in the Sahel concerning program
development and support for the Sahel Institute.

8-30 September 1981

SUMMARY MINUTES

Advisory Committee on the Sahel

Board on Science and Technology
for International Development

Commission on International Relations

National Academy of Sciences

November 3, 1980
Washington, D.C.

MEETING OF THE ADVISORY COMMITTEE ON THE SAHEL

The meeting was called to order by Samuel Adams, Acting Chairman of the Advisory Committee on the Sahel (ACOS), at 9:30 A.M., November 3, 1980.

Following Dr. Adam's welcome and introductory remarks, ACOS staff director Michael Dow briefly described the origin and development of the ACOS program, and summarized the activities undertaken during the life of the Academy's Sahel Regional Aid Planning and Coordination contract (AID/afr-C-1354) with the Agency for International Development (USAID).

Dr. Dow noted that late in November 1979, the original ACOS contract was amended slightly to focus upon the following areas:

1. Cooperation with USAID directed toward increasing project impact in the areas of ecology, forestry, and adaptive technology.
2. Assistance to the Sahel Institute
 - a. in organizing a unit for the coordination of environmental research and training;
 - b. in establishing, in collaboration with the International Development Research Centre (IDRC), regional baseline data on research activities to be carried out in the Sahel; and
 - c. In the area of scientific networking within the Sahel region.

It was noted further that the ACOS contractual obligations accord well with the concern expressed in the August 2, 1979, Presidential Memorandum to the Administrator of USAID and the Director of ACTION requiring that United States development assistance programs be evaluated in the

light of the following objectives, and that high priority be given to programs which would advance these objectives:

1. necessary preservation of natural forest ecosystems and their rich complex of plant and animal life;
2. multiple uses of highly diverse tropical forests, including management of natural stands, development of ecologically sound forest plantations, and combined agriculture and forestry;
3. increasing yields in family-scale tropical agriculture to relieve pressures on forest lands that are not suitable for cultivation; and
4. developing integrated projects for reforestation, more efficient fuelwood use, and alternative energy sources.

Within a somewhat broader context, both the ACOS statement of work and the Presidential directive are wholly compatible with the recently issued World Conservation Strategy, a document prepared by the International Union for Conservation of Nature and Natural Resources (IUCN) in collaboration with the United Nations Environment Programme, the Food and Agriculture Organization of the United Nations, the United Nations Educational, Scientific, and Cultural Organization, and the World Wildlife Fund.

Dr. Dow indicated that, in addition to the ACOS and to individual specialists who are invited to participate in specific activities, the Sahel Program draws from the extensive resources of BOSTID and its Advisory Committee on Technology Innovation (ACTI), a committee which undertakes studies of technologies of potential importance to development. Recent BOSTID/ACTI studies of direct relevance to the Sahel would include those summarized in the following publications:

More Water for Arid Lands: Promising Technologies and Research Opportunities (1974)

Underexploited Tropical Plants with Promising Economic Value (1975)

Postharvest Food Losses in Developing Countries (1978)

Microbial Processes: Promising Technologies for Developing Countries (1979)

Tropical Legumes: Resources for the Future (1979)

Firewood Crops: Shrub and Tree Species for Energy Production (1981)

Other BOSTID studies pertinent to ACOS activities would include those discussed in reports such as Methane Generation from Human, Animal, and Agricultural Wastes (1977), Ferrocement (1973), African Agricultural Research Capabilities (1974), Energy for Rural Development (1977), Resource Sensing from Space (1977), and Appropriate Technologies for Developing Countries (1977). BOSTID is also engaged in a study of the diffusion of renewable energy technologies in cooperation with the Rockefeller Foundation. This study explicitly deals with the diffusion of such technologies in the Sahel.

During the past three years, ACOS staff members have undertaken a series of activities related to ecological and environmental aspects of development in the Sahel region. These have included:

1. A survey of the literature, both historical and contemporary, regarding ecological changes;
2. Consultations with as many individuals and organizations as possible concerning these changes;

3. A series of workshops and related cooperative activities focussing upon a number of specific problems, including

- two workshops with officials of the Mauritanian Government regarding environmental degradation in Mauritania;
- a workshop with the Sahel Institute on Institute's ecology and environment program for 1980-1985; and
- an advisory assessment of environmental degradation and agricultural productivity in the Senegalese groundnut basin.

From these activities, a number of conclusions have been reached concerning the nature of environmental and ecological rehabilitation. These conclusions, and their implications for technical assistance activities within the framework of the objectives of the Permanent Interstate Committee for Drought Control in the Sahel (CILSS) and the Club du Sahel, were outlined in a presentation given by Dr. Dow and Jeffrey Gritzner. It was reiterated that these conclusions relate well to the priorities contained in the Presidential Memorandum of 2 August 1979 concerning the importance of environmental considerations in development activities, and to the IUCN's World Conservation Strategy. A paper on this subject is being prepared as the report of the ACOS on the completion of the current USAID contract.

The remainder of Dr. Dow and Mr. Gritzner's presentation was accompanied by color transparencies illustrating the various points made.

It was observed that, ecologically, the Sahel can be termed a degraded subclimax. There is a wealth of evidence to suggest that it previously supported a much greater diversity of plant and animal species,

and probably a greater total biomass, on average, than it does currently. Pollen samples taken in the Mauritanian Adrar reveal the existence of an extensive range of species between 9000 B.C. and today. Maps of the region from recent historical times show forests in areas where there is now little more than desert. Traveller's accounts tell of a diversity of peoples, animals, and vegetation in areas which are now almost wholly devoid of life. Although this degradation is periodically reversed, where rainfall and reduced use pressure combine to permit revegetation, the general trend has been towards degradation.

This degradation emerges from a combination of climatic events and human activity, particularly animal husbandry. Much attention has been devoted to the question of whether the climate of the region has changed, whether the series of droughts in recent years represents the drier part of a cyclical pattern or whether there is a secular trend towards diminishing rainfall and more serious droughts. As yet there is no hard evidence to indicate which of these alternatives is the more likely.

A second issue (perhaps more important for the shorter-range purposes of development) is whether the degradation which has occurred and is occurring, the desertification of the Sahel, is a progressive and irreversible process. To resolve this issue, one must examine the dynamic processes which are at work, and determine in which direction, towards degradation or regeneration, these processes are operating. One might then better judge what the net effect is likely to be in any given area.

The main processes are those which involve climatic factors such as rainfall, physical resources such as soil and water, and the biological resources--especially the interaction of human and animal populations with vegetation. Degradative forces include droughts, human activities such as land clearing for housing, road construction, agriculture and pastoralism, and, especially recently, firewood and charcoal consumption. Regenerative forces include good rainfall in certain years, natural regenerative forces (such as the natural reseedling of vegetation), control of grazing and land-use through better management practices, and active environmental stabilizing efforts, such as reforestation, sand-dune stabilization, shelterbelts and the like. This is relatively obvious and understood. There are, however, operating also a myriad of subtler ecological relationships which are not as understood, yet which play a profound role in contributing to deterioration or regeneration, and which may work independently of the more obvious forces.

For example, following a drought, a period of overgrazing, or other major degradative event, the ecology of an area will establish a new equilibrium among the surviving species. In the equilibration, other species of plants, and, as we now are beginning to understand, microorganisms, insects, and small animals, may be eliminated by the new conditions. The net effect of this is the reduction of the gene pool, and in many instances it appears that, in arid zones, it is more difficult for new or former species to intrude and become established. The dynamic processes of regeneration are constrained.

What has evidently resulted from these factors operating over the past several hundred years has been a gradual reduction in genetic diversity in plants and animals in the most affected areas, a circumstance which has in turn led to reduced stability or resilience to subsequent stress. Wildlife has largely been eliminated, and is no longer able to provide food through direct off-take, stimulate vegetative growth through browsing, or transmit seed to regenerate vegetation over wide areas as an important part of the natural regeneration mechanism. Agriculture has regionally replaced a complex of mixed annual and perennial crops with monoculture or simple rotations more subject to the vagaries of climate and human management. Forestry has similarly tended to concentrate on replanting very limited areas with single varieties, or in protecting already severely limited areas of forêts classées, usually in the wetter southern areas, allowing the drier, northern areas, on which the natural regeneration formerly depended, to become barren.

Thus the question of the extent to which this degradative process is reversible through human intervention must be dependent upon the extent to which the intervention supports or enhances the natural dynamics of the regenerative elements of the ecological systems.

Dr. Dow indicated that there may be little which can be done about certain elements, although a better understanding of them may moderate further decline. As noted by Francis de Chassey, for example, the French pacification of the region in the late 19th century and early 20th century led directly to a profound increase in the cattle population of the area,

as pacified warrior classes turned to cattle raising and the marabouts invested their newly acquired wealth in cattle. Following independence for Francophone West Africa, the imposition of national boundaries and the progressive restriction on livestock movement further affected livestock/plant relations and reduced the flexibility of pastoral systems. Forêts classées and pasture management were seriously neglected, a circumstance which disproportionately affected perennial browse legumes and shrubs which we now know to be a major source of livestock nutrition, particularly for dry season grazing supplementation of annual grasses.

In concluding his review of the historical evolution of environmental degradation in the Sahel, Dr. Dow indicated that one must also include the human population as the most important element of the ecological systems. Here too, the evolutionary processes have favored a progressive limitation of options, at least as regards environmental stability and coping strategies in times of stress. To mention but a few factors: health measures have increased survival and thereby population pressure, while the factors affecting vegetation and livestock have tended to reduce carrying capacity, so that urban drift, and drift to the south of large numbers of people has occurred; education has tended to separate young people from traditional wisdom regarding their environment and heritage; the imposition of alien systems of resource management without consultation or explanation has led to disillusionment, a breakdown in respect for traditional values, frustration, and, commonly, failure. The Sahel is littered with the débris of rural development schemes which fell short of their social and economic objectives.

A further important current factor is the energy crisis, which has caught the Sahel at a most critical time. Through the research activities of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Zaria, Bambe, and other agricultural centers, it appears possible to foresee in the relatively near future prospects for modern, mechanized, energy-intensive agriculture to support industrialization and urbanization. However, as a result of the need to reduce energy consumption in agriculture, the population is caught poised, at perhaps its most vulnerable, between on the one hand having almost completely abandoned traditional means of self-reliance and on the other hand without yet achieving modern societal interdependent organization to cope with stress. The population of the Sahel is now among the most seriously affected by the energy crisis, to the point of destroying its future environmental stability to cook today's food. With each passing day, it faces greater difficulty in achieving the stability and self-sufficiency objectives of CILSS and the Club du Sahel.

It is clear that what can be done to arrest and reverse environmental degradation depends on viewing the systems as a whole, and the dynamics which are operating - ecological processes, environmental processes, social, economic, and political processes. To the extent possible, these processes must be used and supported to assist regeneration and reduce pressure on degraded areas.

Fundamental to regeneration is the expansion of the diversity of genetic resources, the infusion of new varieties, and the strengthening of

natural regenerative mechanisms. This does not mean abandoning conventional agricultural systems, but in supporting them with a greater variety of complementary components, including perennial, deep-rooted species to fix nitrogen and retain moisture, to bring other nutrients from lower soil horizons, and to stabilize the fragile environment by limiting erosion. Fortunately, this also coincides with many traditional concepts of resource management throughout the Sahel.

Dr. Dow noted that the introduction of new genetic resources is not a new idea; it is happening all the time. In Africa, particularly, the majority of food crops, as well as many of the domestic animals, are exotics, for example: maize, cassava, groundnuts, peppers, mangos, onions, tomatoes, poultry, domestic swine, and cattle.

Revegetation by both local and exotic species, is also a convenient focus because it is central not only to environmental rehabilitation and stability, but also to meeting energy needs, food requirements, and supporting other economic activities. The problem is to organize external support for revegetation efforts in a manner which meets economic and social criteria by fitting resources to the local situation, particularly to local perceptions of need or opportunity. Sahelian peoples have evolved highly sophisticated, successful management strategies, and can, when permitted, manage and adapt their resources very skillfully. Technical assistance agencies should capitalize on this knowledge in defining projects. The management of human resources, land-tenure systems, and the protection of vegetation from overgrazing should wherever possible be left to the traditional systems.

Consideration of these factors has led to the concept of "agro-forestry centers", where the functions of nurseries to try out local and imported species of food, fodder and fuel crops would be expanded to include a two-way process of learning about local resources, adapting technology, and developing more extensive local management in revegetation efforts, and in increasing biological productivity in the surrounding community. The "agro-forestry center" should be a neutral ground location on which the technical assistance/rural development agency can work with local people before unnecessary risks are imposed on the farmer/villager/pastoralist. The "agro-forestry centers" should consider:

- nursery techniques for local and exotic species
- species selection for
 - food crops
 - fuelwood
 - cash crops
- windbreaks, shelterbelts, living fences, and field trees
- browse and fodder
- construction materials (drawing on local traditional knowledge as well as external concepts)
- dune stabilization
- soil factors, such as rhizobia and mycorrhizal fungi
- water-resource use
- energy technologies, such as stoves, biogas, etc., as well as
- health and sanitation.

In addition, the centers should be used as foci where natural regeneration processes can be strengthened by such means as multipurpose

INPUTS

Personnel
Local
External
Peace Corps
etc.

Financial

Species:

Local

Exotic

Traditional

- Food
- Fuelwood
- Traditional multipurpose
- Cash crops
- Medicinals
- Living Fences

PLANNING
MANAGEMENT: jointly
with rural
dwellers

Crafts
small
industry

[Size to
depend on
specific location,
functions,
objectives]

AGROFORESTRY
CENTER

"neutral
ground"

Social Center
training
documentation
marketing &
accounting, cooperatives,
etc. etc.

Nursery

Adaptive
technology
water
energy
health
storage

Seed
Nursery
Technology

OUTPUTS
(Selected by rural
dwellers)

Species: Seedlings
Seed
Cuttings

- Food
- Trees
- Shrubs, toddler
- Multipurpose, cash crops
- Dune Stabilization

Adapted Technology:

- water - pumps
- irrigation
systems
- windmills
- energy - biogas
firewood
charcoal
stoves
- health - sanitation
technology

Crafts & small industry

seeding round well heads, aerial seeding, improved habitat protection for wildlife--including possibilities for the commercial exploitation of species such as addax, crocodiles, and various species of fish.

A central principle should be adopted in which these activities are developed and planned jointly with local populations. This would better assure that the activities are directly related to the needs and perceptions of their ultimate beneficiaries, a circumstance which would greatly enhance possibilities for successful implementation.

ACOS and ACTI have studied and identified many species of potential importance to such systems in the Sahel. Many samples of seed have already been sent to Sahelian organizations--approximately seventy species in Mauritania alone. What remains to be institutionalized is a more flexible approach to rural development through support of the agro-forestry concept on a broader scale. Several such centers, although not with the full range of functions envisioned, are already operating in Senegal and others are planned in Mauritania. More are needed in other Sahelian countries.

In light of the nature and complexity of environmental and agricultural problems in the Sahel, the establishment of flexible, responsive, multipurpose agro-forestry centers emerges as the most urgent recommendation of the ACOS staff. Dr. Dow reiterated the anticipated benefits of the proposed centers:

- the retrieval and integration of indigenous knowledge and adaptations,

- the ability to better use existing social systems as management systems, permitting a more precise and more immediate response to local problems,
- the strengthening of national extension networks,
- increased economic opportunities both through village access to viable, "new" economic plant species such as jojoba, and through improved possibilities for the development of village industries and improved marketing capabilities for crafts, honey and other forest products, etc.
- the satisfaction of local needs, including:
 - food
 - fuel (firewood, charcoal)
 - medicinal substances
 - fodder
 - building materials
- various forest products such as cordage and tannin
- the strengthening of environmental regenerative processes
- habitat improvement for the many wild animals which are of importance to local economies
- adapted technologies for energy, sanitation and health, water-resource conservation and use.

Following the ACOS staff presentation, Irving Coker, Director of USAID's Office of Sahel and Francophone West Africa Affairs, discussed the Agency's activities and objectives in the Sahel region. USAID is currently attaching particular importance to self-sufficiency in food-stuffs, economic self-sufficiency, and the energy problem. Mr. Coker specifically feels that USAID, and the donor community in general, has done too little in the areas of forestry and environmental rehabilitation. He believes that levels of investment in these areas have been excessively modest in relation to the magnitude of the problem. He believes

further that more explicit linkages must be made between efforts in forestry and economic development. Mr. Coker expects to attend the upcoming Club du Sahel meeting in Kuwait, where he will gauge Club interests in the areas of forestry and environmental rehabilitation, and thus be better able to redefine USAID directions in these critical areas. The Academy's interest in the potential stabilization and increased productivity will be considered upon Mr. Coker's return.

During the lunch period, a film was introduced and shown by Stan Staniski of USAID's Training and Development Division. The film, produced by Mr. Staniski in conjunction with Academy-supported Mauritania Environmental Workshop, dealt with the causes and consequences of environmental degradation in Mauritania. The film was well received and stimulated considerable comment and discussion.

During the afternoon session, discussion focussed variously upon approaches to evaluating degradation, the possibility of gaining a better understanding of climatic change in the Sahel through the application of dendrochronology, and the importance of securing sound demographic data for development planning. Concern was again expressed regarding the general neglect of the social sciences in the formulation and implementation of development projects. While in most instances social scientists are consulted, they continue to be involved in a rather peripheral manner.

Additional discussion was devoted to ACOS-USAID cooperation, and the desirability of increasing USAID's awareness of ACOS concern and recommendations. One suggested vehicle for improved communication was ACOS participation in the February 1981 Sahel mission director's meeting to be held in Banjul.

The meeting was adjourned at 5:00 P.M.

ATTENDANCE

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Advisory Committee on the Sahel Staff

Rose A. Bannigan
Michael G. C. McDonald Dow, Director
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John G. Hurley
Colette Simonds, Administrative Secretary

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