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CONCERTED ACTION IN DEVELOPING
THE ECOLOGY/FORESTRY SECTOR
IN THE SAHEL COUNTRIES

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AID Experience in the Forestry Sector
in the Sahel - Opportunities for
the Future

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INTRODUCTION:

The renewed interest and activities of the Agency for International Development (AID) in the forestry sector in Africa date from the mid-seventies. They had their origins, as did the sector activities of many other donors and multi-laterals, in the post Sahelian drought recognition of the direct relationship between the problems of energy and the environment. Those early years saw a first tallying of the predominance of fuelwood and charcoal in domestic energy supply (often in excess of 95% of the total) in the nations of Africa. This was accompanied by a realization of the implications for environmental deterioration (loss of vital vegetative cover, greater susceptibility to the extremes of climatic conditions, soil erosion and degradation leading to desertification) resulting from fuelwood harvesting. Beginning in fiscal year 1977, a series of AID project designs and obligations came on stream to address these development problems and opportunities.

Over the past six years, AID has committed approximately U.S. dollars 55 million for forestry and fuelwood projects and another U.S. dollars 80 million in closely related natural resources and renewable energy projects in Africa.¹ It should be noted, furthermore, that these figures do not include PL-480 supported forestry activities. In a recent interim report on this subject, the author estimated that more than U.S. dollars 125 million, including both USAID PL-480 and U.S. supported World Food Program activities, could be taken as U.S. contributions towards forestry and related activities for the Africa Region.²

As a result of project cycles, a fair number of these AID projects have recently been subject to scrutiny through mid-term evaluations. Information obtained in these evaluations, particularly that concerning the technical and administrative dimensions of project performance was summarized in a paper and used as the basis for the AID Africa Bureau Forestry Program Evaluation Workshop, held in Lome, Togo, 4-11 May 1984 with AID/Washington and USAID Mission Forestry staff. Other donors and African Governments as well have been intensely and seriously reviewing the accomplishments of the sector.⁴

¹ All footnotes can be found at the end of the text.

These evaluations and the experience obtaining constitute substantial new data and information. In effect they offer the results and lessons of a first generation of sustained forestry/fuelwood sector development efforts in the Sahel. They are now serving both donors and Africa Governments as a basis for corrective actions, improved project and program implementation and guidance to directions and opportunities for greater effectiveness of interventions in this critical fuelwood and natural resources conservation sector. It is thus particularly timely and pertinent that the Club du Sahel and the CILSS have convened this present meeting to prepare proposals and recommendations concerning a strategic plan of action for the ecology/forestry sector in the countries of the Sahel.

FORESTRY TECHNOLOGY: STATE-OF-THE-ART:

The following is a brief overview of AID's experience with different technological options for resolving the fuelwood/forestry problems as these have been identified over the last decade. The focus of these activities has, in the main, been directed at increasing production - usually through various tree planting schemes. Some attempts at conservation have been undertaken, to be sure, with improved cooking stove technology and more efficient charcoal conversion technology although the latter two are not treated in this paper because they have not to-date been the subject of much USAID project activity, at least to the point of having been systematically evaluated.⁵ Because of AID's close involvement with African Governments and other donors working in the sector, particularly through the CDA Forestry/Fuelwood Technical Committee⁶, the opinions offered below are both the result of and have been the substance of previous discussions about the sector. AID believes they are neither particularly innovative, at this juncture, nor controversial, and that they will be shared as least in part by many of the individuals and organizations concerned.

In reviewing past activities it is fundamental to fully understand the typology of the different schemes. Enough experience has now accumulated to allow for careful analysis of what has and has not been effective. For the purposes of this paper, four principal options will be discussed, namely block plantations, village (communal) forestry, farm forestry, and natural forest management. Each will be briefly defined, their advantages and disadvantages reviewed and their potential impact for meeting the objectives of the sector in the future explored.

Block Plantations

This option is defined here as the large-scale efforts to plant contiguous blocks of trees usually with the exclusive objective of generating forest products, mostly fuelwood but occasionally poles as well. They are usually planted on public lands or on lands appropriated by the state for these purposes. Numerous efforts of this nature have been undertaken throughout Africa but the record remains rather lackluster.

The advantages of a block plantation fuelwood production strategy are many. In the first instance, block plantations are a traditional professional skill that occupies a significant place in the technology employed in the sector worldwide. Decision-makers and development planners rarely quibble with this affirmative action option which produces high visual impact and a sense of achievement. Because they tend to concentrate the resource in relation to the market place, they are readily susceptible to economic analysis with a minimum of variables and are seen as discreet investment opportunities which attract capital. As massive efforts they achieve economies of scale and offer the opportunity for simplified silviculture and management. Indirect benefits include rather substantial employment generation, a contribution to the macro-effects on environmental stability, a training ground for forestry staff and demonstration that something can be done to ameliorate the fuelwood deficit dilemma.

On the other hand, the strategy of block plantations for fuelwood production in Africa has been fraught with problems and disadvantages that have, and continue to, severely undermine its effectiveness. The most crucial of these disadvantages are those related to the cost/benefit ratio. Despite the fact that fuelwood is now part of the cash economy, market prices are still relatively low. Plantation grown fuelwood will have to compete with fuelwood being harvested, essentially free, from natural forest stands. Therefore anything which affects the cost/benefit ratio will have a significant impact on effectiveness. Among the factors presently obtaining are: limited land availability; conflict with local populations over land use generating greater protection costs; overall growth as a result of climate/soil conditions and species match to site; lack of quality control on the full spectrum of the technical package from seed collection to planting⁸, and, the administrative and managerial arrangements required to organize, mobilize and coordinate a large labour force in a series of plantation activities.

Perhaps the single greatest problem with a strategy of large-scale, state-controlled and capital intensive block plantations are the implications overall for policy and action on the part of the African Governments and their donor partners. Such a strategy exacerbates the problems of the dichotomy between agriculture and forestry by reinforcing the ill-conceived notion that somehow the foresters alone are going to resolve the fuelwood problem. With establishment costs ranging higher than \$U.S. 1000 per hectare, the demands on national and donor development budgets to make any impact on the fuelwood supply problem will be extraordinary.⁹ Added to that is the emerging realization that large-scale block plantation in areas under 800 mm of rainfall (the areas where the greatest deficits occur) may not be inherently feasible because of the growth/fuelwood price relationship. The development community, both African and donors alike, must also recognize that it is no longer sustainable to go ahead replanting behind an ever-increasing wave of clearing of land on marginal areas and unmanaged overexploitation of natural forest areas.

Large-scale block plantations should not be discounted entirely. Select situations, adjacent to urban centers where fuelwood demand and prices will continue to be high, offer opportunities in the future. Careful design and planning based on sound information about soils, climate and site selection, species yield and growth, supply and demand projections, opportunity costs for the land to be planted and the natural forests and woodlands to be cleared, and on the institutional framework required, will all be necessary so as to maximize growth and vastly improve the present cost/benefit ratios obtaining.

Village (Communal) Forestry

Early on, as part of efforts to insure greater involvement of rural people in reforestation efforts, village or communal ("bois de village") projects were designed and put in place. These are here defined as those projects carrying out smaller-scale plantations (1-10 hectare/year) established on so-called village common lands and involving, theoretically, shared work for shared benefits.

The principal advantage is the fact that such an approach responds to the needs to get the rural people themselves involved in the solutions to the fuelwood problem. The village forestry approach has important potential for demonstration and training of rural people and government personnel about the problem and potential solutions to the fuelwood supply

deficit. It means that governments can employ the limited resources (human and financial) available to the sector to promote and service a tree planting effort and thereby attract and guide investments of land and labour of the peasantry in addressing the problem. It may be possible to use village forestry to maximize production on inadequately used sites or even to rehabilitate degraded areas. If woodlots can be spread through the landscape, the environmental amelioration effects may also prove worthwhile.¹⁰

Village forestry, however, shares many of the disadvantages, particularly on the technical issues of species choice and growth, mentioned above regarding block plantations. There is some opportunity to reduce costs but the overall importance of a positive cost/benefit ratio is still fundamental because it is more likely to directly affect rural people who can scarcely afford to make erroneous investment decisions given their often tenuous hold on economic stability. Furthermore if the outcome is negative, this is likely to have lasting impact on the receptivity of rural people toward future reforestation efforts.

The community dimensions of village forestry appear, however, to be even more crucial to efficiency and effectiveness with this strategy option. The attractive notion of shared work for shared benefits in pursuit of a solution to a common problem, the raison d'etre of village forestry, remains an elusive, utopian goal. A full discussion of the community dimensions of village forestry are beyond the scope of this paper but some of the more critical issues are discussed below.¹¹

Consensus in decisions related to village forestry are fundamental about three aspects of this type of plantations - allocation of land and labour and distribution of benefits. Truly communal land available for planting may be hard to find. Often there is little land actually unused and that which may appear unused could be held in fallow which particular villagers expect to be allocated to them sometime in the future. Here as with block plantations, there is opportunity for conflict which will require protection, and thus higher costs, to assure plantation success. Likewise in many villages, communal work efforts are customary for projects likely to benefit the entire community. Few woodlots projects in Africa have reached the point of harvesting and the question of the distribution of benefits thus remains a critical one for many of these endeavors. The question of whether those who shared in the work and/or the production tradeoffs (foregone grazing, fuelwood gathering, farming opportunities) will

ultimately receive the benefits remain unanswered. The simple fact is that a projectized approach to village forestry may make it impossible to function when the idealized design meets the difficulty of fathoming the village reality.

The interactions between the rural people and the foresters comes into play at many levels in a village forestry undertaking. Too often these have proved overwhelmingly complex, leading to bureaucracy, indecisiveness, and imposition instead of extension. The extension function should come into play right from the start of the project. A clear perception of villager needs will lead to a better understanding of project action opportunities which can then be translated into a simplified technical package, an appropriate extension approach and a manageable administrative system keyed to servicing the villagers rather than simply living up to the ambiguous projections of output. Flexibility and feedback through a functional monitoring system are essential. The extension approach must be a legitimate outreach activity and not merely promotion of a predetermined technocratic solution. In short, a much improved ratio of achievement to inputs will be necessary in the future if these village woodlot programs are to make significant and efficient impact on the fuelwood problem in Africa.

Farm Forestry

As mentioned earlier, interest in forestry activities in Africa grew out of the concern for the fuelwood supply problem. The analysis of demand, however, usually focussed on the politically sensitive and more tangible issues of fuelwood and charcoal supplies for the urban areas. At the time, and even today, fuelwood supply for the rural areas seems less emphatic. The early emphasis was useful essentially because it prompted action but in part this rather narrow view of the problem contributed to the approach featuring state-run block plantations to supply these markets. The needs, however, now appear quite different.

Increasingly those concerned with rural development in Africa are becoming aware that the major issue is the declining capability to produce the food necessary to feed the burgeoning population. An important dimension of this situation is the continued soil degradation resulting from intensified cultivation, the clearing of more marginal lands for agriculture and an overall diminution of environmental stability. Forestry sector development specialists and others are coming to understand that rarely can projects and activities whose sole purpose is fuelwood production be

sustained. Rather these activities must be dual in nature, both production and protection oriented-exploiting on a large-scale the ameliorating effects of vegetative cover in sustaining and promoting environmental stability. The forest services of Africa are as yet ill-equipped to meet the challenge head-on and must, in the future, be better integrated into the agriculture and rural development policies and programs. Simply translated that means working with farmers to promote tree planting at least cost and with greatest scale and spread, namely on the farms and farming lands of Africa.

Farm forestry refers to sustainable forestry production activities, either through plantations or better management of existing resources by individual farmers and peasants on their land. Whether this be through an agroforestry technology approach combining crops and trees either in time or space, or through small woodlots or individual tree plantings, it calls for careful incorporation of tree components in the farming systems being employed. It aims at the opportunities inherent in a farmer's discretion about the utilization of his basic resources, land, labour and capital, in fulfillment of his own basic needs and economic opportunities.

It will be the farmers using less capital intensive methods, planting trees along the field margins, in small uncultivateable patches across their lands or in agroforestry configurations who will produce fuelwood in the future. They will be able to do so because they will realize tangible and multiple benefits: forestry support to agricultural productivity through the shelter effect, by addition of leaf litter to raise the organic matter levels in the fields and by tree roots that mine the deeper soil layers of the soil. They stand to gain as well from multipurpose trees that produce fruit, forage, medicines and nutritional ingredients in the family diet. Through these benefits, and by being able to sell firewood (or simply avoid cash expenditures or laborious collection) they may finally be able to afford the soil and water conservation and land-use protection practices they have long been exhorted to take up.

Much of what has been stated above is indicative of the advantages of farm forestry as a strategy to meet the fuelwood production needs in Africa. Farm forestry offers great opportunity for impact though its potential for cost effectiveness both at the macro-investment level which concerns governments and donors and on the level of the individual family which will take it up as part of their production activities. The multiplier and spread effect also offers an opportunity for widening the impact of fuelwood production

projects, and importantly, of the ameliorating effects of tree cover for environmental stability. Perhaps the greatest advantage will be the resultant integration of agriculture and forestry implicit in attempting a farm forestry approach.

These will be some disadvantages as well to a farm forestry approach. The single most important constraint will be the need to shift emphasis in present programs and projects that such a choice entails. The development of a farm forestry approach springs from the lessons learned to-date. The challenge will be to view it as a long-term proposition requiring gradual change in the many facets of sector development from policy through the institutional, legislative and regulatory framework to the technical packages and practices in the field. It will take time and intensive action, something that may not be inherently compatible with a projectized approach to development. There will be a need for a sense of perspective aimed at moving from the stages of pre-feasibility through research and testing, to demonstrate and pilot activities and on to full-scale diffusion and investment.

Farm forestry will also mean change that must start with the foresters themselves, their attitudes and the way they do things. The traditional emphasis on safeguarding the reserve forests has led to policies and actions geared to conservation and control. In order to appropriately and effectively service a nation's largest client group - its peasants, these policies and actions must evolve to a development and service orientation. It will be, in some cases, difficult to overcome the antagonism between peasants and foresters; the former are unlikely to believe that the latter have suddenly and miraculously become their benefactors.

The key to the success of a farm forestry fuelwood development strategy will be the nature of the extension program that is set up. In the past there have been a series of misconceptions about extension which have been undermined their effect. Extension needs to be understood for what it is - the outreach function of a program or project which permits dialogue between the client and the service. The outreach approach which is necessary is based on the notion that the most important element of a people-oriented development strategy are the people themselves, their needs, aspirations and opportunities. Two-way communication of a legitimate farm forestry extension program is simply the most effective way to learn about the client peoples and thereby adapt project or program activities to meet their needs and opportunities. Farm forestry in Africa combined with the economic opportunity of a

cash marketplace for fuelwood holds bright promise for the future.

Natural Forest Management

Of even more recent vintage is the emergence of the potential of natural forest management for fuelwood production. Almost all of the fuelwood currently being utilized in Africa comes from natural forests and woodlands but little has been done to assess this productivity or develop it. For too long, the classical notions of forestry science--multiple use and sustained yield--have been frequently evoked as dogma, first to the African foresters, and now among them; little, however, has been accomplished on the ground.

The advantages of natural forest management would appear to be many. As pointed out above, the sheer predominance of natural forests for fuelwood supply immediately suggests the development opportunity these formations represents. Even modest gains in productivity could have significant impact on the fuelwood supply. Large areas of natural forest formations still exist in Africa. It has been estimated that there are 40000 km² of reserved forests (foret classee) in the 8 CILSS countries and also vast areas of natural forests and woodland formations in the public domain.

The "foret classee" were originally reserved with a long-term view to multiple and sustained use; this has not materialized to-date. This is especially surprising because it has now become obvious that forests have long been used for just such multiple and sustained purposes by the rural people themselves for food, firewood, fodder, rustic building materials, medicines and numerous other household needs. Measured in terms of these different products, or indeed simply in terms of biomass productivity, it is small wonder that these forests and woodlands are finally taking on new importance. As equally important as their productive nature is their role in maintaining macro-environmental stability which as pointed out above has enormous impact on agricultural productivity. The natural forests constitute as well the greatest single reservoir of biological diversity.

Perhaps the greatest advantage they offer, however, is the potential for a greater return on investments in fuelwood production programs as compared to the costly plantation endeavors discussed above. Preliminary data emerging from albeit very limited trials suggest that the costs may be as little as \$200/hectare to restore and rehabilitate the productive potential of even fairly degraded forests areas.

This must be compared with the much larger establishment costs of plantations in the first year. Furthermore it is becoming obvious that simple management schemes can be effective. Studies on standing fuelwood volume, cutting yields and rotations are underway in a few countries. Even this modest start will soon provide the forestry authorities with important quantitative information with which to guide permit systems for fuelwood cutters - an important step towards rationalizing use and projecting returns to cover the recurrent costs of managing these forests.

The disadvantages and constraints, not the least of which is the newness of this endeavor, should not be overlooked. Plans and priorities in terms of both needs and opportunities will be crucial as this strategy is taken up. At the outset, it is likely to be even more difficult to succeed because the priority areas are probably those forests under greatest pressure. It would also appear necessary to achieve some impact at the highest policy levels so that governments have a clear understanding of the opportunity costs of clearing land for agriculture on marginal soils to obtain short-term food production gains as against the ultimately high costs of future rehabilitation. This will be a difficult issue because of the lag time associated with achieving significant demonstrable effect and its rather less dramatic visual impact.

At the same time it will be necessary to come to grips with the need for certain production tradeoffs in order to assure that management efforts may succeed. A delicate and critical issue for many priority natural forest areas will be the need to fix livestock carrying capacity and control ingress into and harvest of the products of the forest in certain areas at critical stages in the management scheme. The solution will be local participatory management schemes which involve the people in adjacent villages in the activities being undertaken and including them as part of the ultimate destination of the benefits expected.¹² Lastly and importantly will be the considerable staff and financial resources required for forest management as compared to the meagre resources employed to-date for so-called protection efforts.

A gradual expansion of natural forest management as a fuelwood production strategy will be hard work requiring vision and determination to succeed. On the medium term it would appear to offer the most attractive and innovative option within the exclusive domain of the forestry sector to advance the cause of rural development in the fuelwood deficit areas of the Sahel region. This is stated here more as a hope and aspiration than a prediction.

ISSUES FOR FORESTRY DEVELOPMENT IN THE SAHEL:

The preceding section, in the course of the essentially technical overview, raises a series of larger issues which need further discussion and consideration in preparing a forestry sector strategy for the Sahelian countries. AID believes that the next five years or so must clearly be viewed as a period of consolidation of the gains already made in the forestry sector in the Sahel, marked by a willingness to deal affirmatively with these difficult but meaningful issues. There is reason for optimism because of the inherent regional cohesiveness of the Sahelian African states whose similar ecological situations and common natural resources problems mean that working together they can multiply the effect of the lessons learned. No attempt has been made to rank these issues nor does the order imply priority.

Integration of Agriculture and Forestry

In recent years development community involvement in the forestry sector has shifted away from the more traditional pursuits of industrialization and commercialization of timber products to a more basic needs, people-oriented, social or community forestry approach. In this regard much attention has been focussed on fuelwood production and conservation, at least in part because of world concern for energy resources. The Sahelian experience with these fuelwood development projects has been marked by both progress and problems. Progress has included identifying the enormity of the fuelwood problem in the arid and semi-arid areas, the important relationship between fuelwood harvesting and environmental decline, and, in part, the technical packages for raising fuelwood productivity.

At the same time, those concerned with rural development in Sahelian Africa, both Africans and donors alike, have come to realize that the primary issue for the region is continued soil degradation leading to losses in agricultural productivity and the ability to feed the people in these countries. In the harsh climatic extremes of the Sahel, agricultural development efforts, in addition to trying to increase per hectare yields of basic food crops with modern technology, must also devote attention to building on peasant subsistence farming systems in order to increase their resilience during poor rainfall years. This resilience must be based on a clear precept of soil and water conservation and stewardship for the land. Good opportunities for expansion of the agricultural frontier are

fast disappearing in the Sahel and increasingly conversion is taking place on soils of marginal quality require innovative, sustainable farming systems which take account of the characteristics and needs of the soil. The role of trees and forests, at the macro-level for overall environmental stability and at the field level for their effect on field moisture, soil nutrient status, and crop yield, is probably the most tried and accessible technology available today.

Planting trees in farmers fields in agroforestry configurations or as small woodlots, fence-rows, around the homestead or wherever they may fit, as well as maintaining and managing forests and woodlands for sustained multiple-use can be the key to environmental stability in the Sahel. This, however, means more than having foresters espouse and promote agroforestry. It means in effect, policy and programs that recognize the importance of tree and forest cover for agricultural productivity and which translate into meaningful administrative, legislative and institutional framework capable of promoting and delivering this approach to the farmers. It will necessarily be a long-term proposition; neither the foresters nor the agronomists are as yet ready for this marriage and many vested interests and institutional problems will have to be overcome along the way. The time to start, however, is now; the outcome should be a multidisciplinary extension approach which seeks to service the opportunities and needs of the peasants rather than three separate extension services (agriculture, livestock and forestry) which compete for the attention and resources of the farmers.

More work on basic studies to assemble and amplify the effect of what is already known about the benefits of tree planting on crop production from a farming systems viewpoint will be necessary.¹³ More importantly, however, will be continuing the policy review already underway in some African governments about the integration of agriculture and forestry, and extending it and accelerating it where possible. A dynamic, practical process of policy dialogue among government ministries concerned, and between African governments and their donor partners, is necessary to address the issues of policy reform and institutional changes required to proceed with a practical integration exercise.

Institution Building in the Forestry Sector

In order to participate fully and effectively in the development process, and particularly via an integrated operational mode with agriculture staff, the emerging institutional capability in the sector in Sahelian Africa must

still be strengthened. Ultimately forestry staff must be prepared to act as the brokers of the technology, servicing the agricultural extension programs, producing planting stock for reforestation efforts, and continuing their primary role in the management of forested areas.

Many of the present problems obtaining in the project portfolios today stem from a fixation on increasing productivity through tree planting, too often with very little attention to nurturing the policy, administrative, managerial and institutional framework which would facilitate production. Both donors and governments themselves have overestimated the managerial capability of the forestry authorities to deliver these projects. The question of absorptive capacity for additional forestry project activity in certain Sahelian countries today is a very real issue. This has often been accompanied with similar debilities on the part of donor field staff. The result has been, in many cases, a paralyzing urgency to fulfill ambiguous and often overambitious project output projections - rather than legitimate development. Projects should be much more development oriented, focussing on identifying and understanding problems and finding and putting in place solutions to these problems. More attention to flexibility, feedback and reactive capacity, as well as financial and managerial skills should be part of the technology transfer process.

Attention to the institutional aspects of sector development means reviewing the policy setting, the organizational and administrative arrangements for accomplishing sector goals, the legislative and regulatory framework, the budget allocations for the sector, and the human resources availability and needs. This latter aspect deserves special attention because while there is now an emerging cadre of capable, well trained individuals manning the forest services of Sahelian Africa, they are still too few in number to adequately meet the needs and opportunities. Considerable efforts on training new staff and retraining those whose background and attitudes have been oriented to the traditional pursuits of control and conservation, at all levels from professionals to skilled workers, will continue as a fundamental agenda item for the sector.

Greater Attention to Planning and Priority Setting

Too many of the ongoing project efforts in the sector across the Sahel have been put in place without benefit of comprehensive planning. One can readily question the effectiveness of many of these projects and their use of the

limited financial and human resources available to the sector simply because needs and opportunities have been neither assessed nor prioritized. To overcome these difficulties, an important objective of Sahelian forestry sector development must be the institutionalization of a functional planning capability within the national forestry services. Simply stated, that implies, first of all, doing the planning by using and improving the data and information at hand. It also entails initiating the communication and feedback activities horizontally within the service and vertically within the ministry that ensures that the information is being used in a real, dynamic planning process.

At the core of planning is sector analysis, grosso modo the supply/demand equation and its parameters whether the data is sparse or the model imperfect. Fortunately in all but one of the Sahelian countries, basic sector assessment is underway through the CILSS "Bilan Programme" exercise. These models not only help guide the decision making process but they are also of paramount importance in identifying critical data and information gaps that the planning unit must seek to fill. Likewise it is important to avoid having information gathering become an end unto itself. It should be carried out with the ever present objective of strenghtening the planning and decision-making and passing on the information and action needs and opportunities to decision-makers and field staff. Donors too have an important role to play in strengthening the planning process. In addition to the support they may earmark for such activities, they must increasingly validate the planning process by seeking to use it in project identification and respecting the priorities for action that have been established. Where planning capability is still weak, project identificaion teams must have suitable resources and time to properly assess the needs and opportunities in close collaboration with host governments.

Recurrent Costs in the Forestry Sector

Recurrent costs have become an issue for the forestry sector in the Sahel for a number of reasons. Government allocations to the sector before the majority of present donors became involved was relatively modest. The large number of new project starts since the last great drought imply additional government funding to carry them on once donors financing terminates. This has been a particular problem within the forestry sector because it is rare to find projects of a duration sufficient to see the long-term efforts of forestry and tree-planting come to fruition. Longer projects, say of a minimum of ten years duration, are required in order to get

trees established and utilized and therefore corroborate the investment rationale of the project model.

Recurrent costs are also a problem because of the choice of basic strategies, e.g., block plantations versus farm forestry. The basic ratio of investment to effect is different between these two; in the former a considerable portion of the investment must be continuously repeated while the latter concentrates on building up within the forest service capability (extension capability) to promote and service the farmers.

The former offers the opportunity for direct returns to the forest service through cash revenues from fuelwood. In practice however, the enormous capital to begin and the uncertainty of positive cost/benefit ratios given present experience make it a dubious proposition. In the latter case, continued investments will also be required but these will in part be contributed in kind by the farmers who employ their own land and labour to plant the trees. The remaining operational costs for an effective farm forestry extension program are very real to be sure. These, however, could, in principle, be financed at least in part out of revenues generated from a more carefully controlled and rationalized fuelwood harvesting system on natural forests and woodlands.

Considerable further study is necessary on forestry investment rationale in the Sahel. Data accumulated through the experience of the past generation of forestry development projects will add measurably to improving the level of analysis. Serious macro-economic analysis by Sahelian governments themselves on the sector may help to find answers to questions such as overall government funding for the sector, the costs of affirmative action now versus rehabilitation later and the matter of fuelwood pricing. All concerned with the sector need to recognize that the intangible benefits of environmental stability and associated support to agricultural productivity (some of which can and should be quantified) may be more valuable than direct production benefits and difficult to accomplish with any other technology.

People's Participation in Forestry

As discussed above, future effectiveness of forestry sector development activities in the Sahel will require two major strategy options, namely natural forest management and farm forestry. Both of these call for the active and progressive local participation of rural people if they are to be successful and achieve the momentum and production commensurate

with the burgeoning demand for the products and services of the forest and the ever increasing need for environmental amelioration to sustain agriculture and combat desertification.

Fuelwood production for domestic energy today flows almost exclusively from the natural forests and brushlands of the Region. The potential for substitution either through large-scale plantation grown wood or from other energy sources, on the medium term, does not appear promising. In order, therefore, to bring these lands under sustained productive management and insure their role in maintaining overall environmental stability, management systems will have to be devised and put in place. These management systems will require active local participation because, as is evident from the present conditions of the reserve forests, these lands are typically already providing goods (fuelwood, animal forage, building materials, food, medicines and sundry other domestic needs) for the rural people. Classification and attempts at exclusive protection are politically, economically and practically impossible without the consensus and involvement of the rural people. With present demographic expansion this situation cannot be expected to improve.

It is furthermore certain that over large areas of the Region it will be necessary to reintroduce trees for both production and soil and water conservation reasons. The answer lies in farm forestry where by encouraging the farmer to reintegrate

trees back into his/her farming systems, meaningful gains can be made in forest production, soil and water conservation, and also increased agricultural productivity. Putting such farm forestry systems in place will require, eventually, a massive and effective agricultural/forestry extension services program, able to demonstrate to the farmer that the production tradeoffs associated with tree planting, protection and maintenance will yield tangible positive benefits to the family.

Both of these strategies will necessitate new approaches and new attitudes on the part of the rural people and the extensionists and foresters. The forestry extension message, as part of the overall agricultural/rural development extension strategy must shift from control and policing to a service and development orientation. Such changes must be initiated by the government services themselves but must be guided by patiently acquired information about the people, their attitudes towards trees and forests, their present uses (demand) and future needs, and their farm production practices as well as social management arrangements. Such information will guide the necessary reorientation of policy, codes, rules, forestry programs, projects, and management practices. It will also assist the extension staff in helping the people themselves devise local participatory management schemes necessary to control the management, production and protection of agreed natural resources development schemes.

Rationalization of the Fuelwood Market place and Private Sector Opportunities

In the past the role of the private sector was seen almost exclusively as entrepreneurs who could undertake capital intensive tree planting for commercial production or who could organize, capitalize and manage medium and large-scale exploitation of natural forests. In the fuelwood deficit zones of Africa, little of this so-called private sector entrepreneurship has emerged to-date for obvious reasons, many mentioned above. Who then will produce the wood to serve the cooking needs of the many millions of African families? A certain level of entrepreneurship has already started in response to the demand for fuelwood. It is now common to find fuelwood markets in all the urban centers of the continent; fuelwood has distinctly joined the cash economy. The question remains, however, who is producing this wood and who will continue to do so?

Throughout Africa wood is being cut and stacked along the roadside for sale to vehicles bound for the urban centers. It is produced by peasant families cutting the native vegetation,

uncontrolled and often destructively, unencumbered by permits, fees or other control systems. Nothing is being reinvested, as clearly today these families have little or no incentive to invest. The small amount they receive (and this is merely speculation because the subject has not been well studied) from the drivers and middlemen is probably insufficient even to spur them to full-scale employment as fuelwood cutters. They use their spare moments to generate a little cash income. Are they protecting stands of trees or foregoing cutting to maintain sustained yield or guarantee environmental stability? The easy answer would be that they have no sense of such concepts. The truth is that they probably do understand cause and effect in relation to forest resources cut because if they do not, someone else will. There are no management plans, little forest service control or assistance and few if any customary or societal guarantees for those who might be willing and able to accept the tradeoffs. Are they indeed aware of the cash market value of what they produce or if they are, can they do anything about achieving greater returns from their labours? The fact is that in many areas, not just in Africa, both the forests and the peasants are being exploited to provide cheap energy to the urban areas. It is an opportunity cash market begging to be rationalized, in which the private sector (especially farmers) can play a significant role.

Forestry/Fuelwood Research in Sahelian Africa

The first part of this paper is devoted to a review of the state-of-the-technology. It highlights the wide swings in forestry development strategies that have characterized projects since renewed donor attention to the sector in the Sahel. In part this evolution of strategies has been purposeful but it appears that it is also due to uncertainty about the appropriate forestry science and technology and how to apply it. A full scale review of this issue is beyond the scope of this paper; furthermore it has been the subject of considerable dialogue within the development community over the last year or so.¹⁴ The paper also speaks of the needs for consolidation; more attention and support to research would seem essential to consolidating the gains made and overcoming the shortcomings.

Three fundamental objectives should be part of any future research efforts. The first is a greater development orientation to research efforts. In addition to the basic research being carried out on traditional topics such as species adaptation and growth trials, research should also address the systems aspects of forestry as a production

strategy. This means more attention to such topics as agroforestry, forestry in farming systems and the community, social, and economic dimensions of forestry systems, both separately and integrated with agriculture. On a second level, it will be necessary to address the need for greater communication and exchange of research information among the Sahelian countries. The Sahel Region is favored by a certain cohesiveness in terms of a commonality of resource situations, problems and efforts. For that reason research results and project experience can be meaningful from one country to another. Any research endeavors should clearly strive to assemble what is known in the Region and diffuse it widely for maximum impact. At the core of any attention to development of forestry/fuelwood research in the Sahel, and the third objective should be improved national research capability, at a very pragmatic level in each of the countries. The research institutions in any given field in any country should be the repositories of the state-of-the-art; they should also be the brokers of sectoral problem-solving on-the-ground which is an important aspect of any development process.

Options for bringing resources to bear in strengthening the research capabilities in the sector in the Sahel include: increased direct bilateral assistance in the form of research projects; greater emphasis and attention to research and fact finding in ongoing projects; and enhanced cooperation among the Sahelian countries themselves and their donor partners in the exchange of information on forestry and fuelwood research results and experiences. It goes without saying that all of these action options imply particular attention to the need and opportunities for greater integration between agriculture and forestry.¹⁵

Forestry Education in the Sahel

Another issue which has long been discussed in development circles concerned with forestry development in Africa has been the lack of high-level ("3 o cycle") education facilities for the francophone countries. Decisions and action on this front in the past have been constrained by lack of funding although it is known that UNDP has in past years earmarked funds under its Africa regional account for this purpose. A further complication, and the key one, has been the divergent viewpoints among the African countries themselves about the approach, course content and location of such a regional facility. These concerns stem from the logical interests of the countries involved, some who would favor an arid-zone forestry focus, others who prefer a curriculum of relevance to the tropical highlands, and still others who suggest the

content be oriented to the low land humid topics. This, of course, has been the crucial issues in many regional endeavors. It would appear that given the regional cohesiveness existent in the Sahel in regards to forestry, it might just be possible to come to terms on the difficult points of a regional effort of this nature. A clear mandate from the African governments of the Sahel might then be able to attract donor interest and support.

DONOR COORDINATION FOR FORESTRY DEVELOPMENT IN THE SAHEL:

The analysis of the situation of the technology of forestry presently being employed in the Sahel as well as some of the issues mentioned above, particularly those concerned with agriculture/forestry integration, sector institution building, the need for planning, and recurrent costs, all point to the need for greater attention to sector programming. The Club, de Sahel in its draft agenda for the present meeting points out the need for better coordination between Sahel countries and their donor partners in the sector. AID, because of its view of these needs, its understanding of the meaning of coordination, its experience with the Cooperation for Development in Africa (CDA) Forestry/Fuelwood Initiative, its concern for consolidation of the gains made in the sector and the opportunities inherent to a coordinated effort, heartily endorses the concept of coordination.

The first generation of forestry projects in the Sahel since the drought have been put in place in a somewhat uncritical fashion. In part this was attributable to the relatively low level of development of the sector at the time and the resulting lack of in-depth analysis available for project identification. It has also been due to the uncontroversial nature and political appeal of projects which deal with topics such as tree planting, environmental stability, anti-desertification efforts and meeting peoples' basic needs. These projects have fortunately provided a wide range of lessons that have served to better define the needs and opportunities for action. Those concerned with sector development in Africa, both Africans and donors alike, should lose little time in effectively applying these lessons. The projectized approach to development programming wherein individual nations meet their donors partners one on one is not a particularly efficient mechanism for learning; donor coordination can help overcome the contradictions of the present system.

But what exactly do we mean by donor coordination? AID's view is that it means first-of-all closer ties between and among

African governments and the donors interested in the sector. It is not intended nor should it imply donor complicity in imposing a sector development strategy on a host government. Rather AID sees it as a three-tiered "process", probably best carried out at the country level although as the sector matures, regional coordination within the Sahel may also be accomplished. The first step to coordination is communication by which all interested parties, ideally led by the host government, exchange information on their programs, the lessons being learned, their preceptions of future needs and their intentions about their own actions. This first step is an enormous one, which requires both time and commitment to accomplish (and let there be no mistakes about the effort required). The payoffs can be equally significant and well worth the effort. They provide the basic wherewithal for government and its partners to rationalize sector programming through a better understanding of what is being done, what works, and importantly, what does not appear to be working.

On the second tier is greater efforts at cooperation between the host government and the donors. In AID's view this process means concerted efforts at sector planning and progressively better decisions about development priorities and action in the sector. AID believes that to achieve such cooperation the donors should encourage and support African efforts to develop basic institutionalized planning capability in the sector. Encouragement and support are a two edged sword assistance with developing the planning capability and responsiveness in the form of further assistance and support to deal with the identified priorities at a pace which the host government can sustain. For the host government, this planning capability establishes the rhythm and agenda of sector development and allows it to pursue a coherent and rationalized sector strategy with its donor partners. It also quickens the pace of diffusion of workable technical packages, facilitates project identification, provides for the monitoring and evaluation function so necessary to a dynamic development process, and enhances the host/donor partnership through mutual respect of each other's capabilities and interests. Finally it provides a forum for generating the level of understanding and concern that may on occasion be necessary to deal with issues which transcend the sector, e.g., the need for greater integration of agriculture and forestry, and may require policy change and reform on the part of government and donors alike.

On the third tier is the perhaps more elusive goal of the perfect world of development programming involving long-term planning, long-term commitments by both host and donors, jointly funded projects and pooled resources, available to

government to pursue its highly specific plans ratified by the donor community and probably inferring complex integrated rural development packages.

AID believes thus that should the concerned parties at this meeting espouse the need for greater coordination this should start at the country level in each of the eight countries of the CILSS. It should start, not with meetings in Paris, Rome or Washington, but by strengthening the planning process begun under the CILSS Bilan Programme in each of the capitals. It should be African led, encouraged by the donors and involve regular exchanges and meetings at both the development programmers level and among the technicians concerned. Such a process appears presently to be underway in three countries of the Sahel already: Senegal, Mali and Upper Volta. Strengthening it there and expanding it to other countries is necessary. Such a process can provide the filter to discerning Sahel wide coordination needs and thereby fortify the present CILSS/Club du Sahel system. Beyond the country-level coordination process, it would appear that there are a number of opportunities for pan-Sahelian attention involving workable coordination among all the African countries and their donors partners which may in the near term accelerate the achievements in the sector. These include: region-wide dialogue and practical steps to the integration of agriculture and forestry; coordination of Sahelian forestry/fuelwood research endeavors; and a regional approach to strengthened forestry education and training.

AID'S INTENTIONS IN THE FORESTRY SECTOR IN THE SAHEL:

The Agency for International Development has been a strong supporter of Sahelian forestry development activities since the great drought of the late 1960's/early 1970's.¹⁶ The Agency expects to maintain a continuing commitment and level of support to the sector conducive to further achievements and development. It believes, however, that the next five years must be marked by affirmative action to consolidate the present gains and rationalize the host government/donor approach to the sector. In that light AID expects that other traditional donors who support forestry in the Sahel will reaffirm and perhaps even increase their commitments. Likewise new donor attention and support should be welcomed and encouraged; these new donors should be attentive to and carefully guided by the lessons obtaining from present endeavors. Planning and setting development priorities for the sector should be an important agenda item for Sahelians and donors alike in order to deal in a practical manner with the issues of absorptive capacity and recurrent costs. AID believes that attention will also be

necessary to the presently numerous and over-projectized activities that characterize the sector at present. Greater concentration on viable sector development opportunities based on clearly defined priorities will be necessary to strengthen impact and highlight achievements at this critical juncture.

AID also considers the present meeting and other indications of both African and donor scrutiny on the progress and problems of the sector as extremely positive steps towards increasing the impact and effectiveness of sector development activities. Further improved donor coordination efforts will be useful in strengthening and institutionalizing that process. AID believes that the seven donors involved in the CDA Forestry/Fuelwood Technical Committee would be willing to share their experience on coordination in the forestry sector in support of similar efforts in the Sahel. AID looks to the future to greater donor coordination in the Sahel, beginning at the country-level but also envisages modest potential regional level activities ideally in support of the present Club du Sahel/CILSS mechanism.

For its part AID will continue to be involved in the sector with considerable emphasis focussed on practical steps towards the integration of agriculture and forestry it considers essential to increased future development impact. As an indicative planning figure, AID estimates that its financial support to the eight Sahelian countries for sector activities will be on the order of U.S. \$60 million over the next ten years. AID also expects to provide continued support and assistance to the CILSS and encourages the efforts of the new Executive Director to improve the operations of his organization. Furthermore AID, under its present regional action portfolio for the Sahel would be receptive to a proposal for a region-wide forestry and fuelwood research action plan and would encourage and welcome other donors to join in such an undertaking. Finally AID looks to this meeting for a clear expression of the combined African/donor view of the forestry sector, its achievements, problems and opportunities to help guide it in its future commitment to the forestry sector in the Sahel.

FOOTNOTES:

1. Bureau for Africa, AID, Energy, Forestry and Natural Resources Activities in the Africa Region, Jan. 1984, Washington, D.C., pp. 199. As a rough estimate, perhaps 60% of these funds have been allocated to the Sahel.
2. Clement, P., Food Aid and Forestry: Ongoing and Recently Terminated PL-480-Supported Forestry Projects Worldwide, AID/ST/FNR, Forestry Support Program, USDA/OICD, Washington, D.C. March 1984, pp. 87.
3. Catterson, T. M., The AID Forestry Program in Africa: A Status Report, prepared for the Africa Bureau Forestry Program Evaluation Workshop, AID/AFR/TR/SDP, Washington, D.C., May 1984, pp. 23.
4. For example: the CILSS/Club du Sahel Forestry Sector Analysis country papers, and the companion summary/synthesis paper; the Club du Sahel paper: Forestry and Ecology Development in the Sahel-Overview and Prospects, prepared for the Fifth Conference of the Club, Brussels, Oct 1983; the paper by Taylor and Soumare on: Strategies for Forestry Development in the Semi-Arid Tropics: Lessons from the Sahel, prepared for the International Symposium on Strategies and Designs for Afforestation, Reforestation and Tree Planting, Wagenigen, The Netherlands, Sept. 1983; the paper by the West Africa Projects Department, World Bank, titled: The Fuelwood Situation in African Countries, March, 1984; Keita, M.N., Les Disponibilites de Bois de Feu en Region Sahelienne de l'Afrique Occidentale-Situation et Perspectives, FAO Forestry Dept., Rome, 1982; the paper by Bailly, Clement and Goudet of the Centre Technique Forestier Tropical titled: Les Problemes de la Satisfaction des Besoins en Bois en Afrique Tropicale Seche: Connaissances et Incertitudes, Paris, 1982; the AID paper: Fuelwood Research in Africa prepared for the Joint DAC/OECD Development Center Technical Colloquium on Fuelwood Research in Africa, Paris 1983; the upcoming (July 84) Ministerial Conference on a Concerted Effort to Reverse Desertification being convened by the Government of Senegal for the CILSS countries; the recently completed National Meeting on Desertification carried out in Maradi, Niger (May 84) by Government of Niger; a National Seminar on Desertification in Upper Volta, cosponsored by Government and UN Sahel Office; the Government of Mali convened,

National Roundtable on the Forestry Sector (Nov. 83); and the GTZ-funded CILSS meeting on Desertification scheduled for Nouakchott in Sept./Oct. 84 and presumed to be the Biannual Meeting of the CILSS Forestry/Ecology Working Group.

5. For further information on charcoal technology, see the recent publication: Simple Technologies for Charcoal Making, FAO Forestry Paper No. 41, FAO Forestry Dept., Rome, Italy, 1983, pp. 154. and on improved stoves, see: Improved Cooking Stoves in Developing Countries by G. Foley and P. Moss, Technical Report No. 2, Energy Information Program, Earthscan, International Institute for Environment and Development, London, 1983. pp. 175.
6. The United States is the lead donor for the Cooperation for Development in Africa (CDA) Forestry/Fuelwood Technical Committee which also involves the Governments of France, United Kingdom, Canada, Federal Republic of Germany, Belgium and Italy in concerted efforts to support forestry sector development activities in the Africa Region.
7. A detailed explanation, analysis and review of potential sector development impact for each of the four technology options is contained in the paper: The AID Forestry Program in Africa: A Status Report, mentioned above and from which much of this information has been drawn.
8. The technical key which has been somewhat difficult to achieve in block plantations in the Sahel centers on the need for quality control and adherence to a biological calendar whose timing and execution permit having maximum quantity and quality of seedling available at the on-set of the rains. Once embarked upon, there is little latitude for altering the pace without serious implication for survival and costs. Several useful publications exist which deal with the steps to reforestation, including: Guidelines and Criteria for Establishing Seedling Supply Services and Tree Planting Programs in Somalia (draft) by J. Seyler, AID, REDSO/ESA, Nairobi, n.d., pp. 43; Establishment Techniques for Forest Plantations, by G. W. Chapman and T. G. Allan, FAO Forestry Paper No. 8, FAO Forestry Dept. Rome, Italy, 1978, pp. 183; Tree Planting Practices in African Savannas, FAO Forestry Development Paper No. 19, FAO Forestry Dept. Rome, Italy, 1974, pp. 185; Reforestation in Arid Lands by F. Weber, Vita/Peace Corps, Manual Series No. 5, Washington, D.C., 1977, pp. 248; Plantations Forestieres en Afrique Tropical Seche, by J. C. Delwaille, Centre Technique Forestier Tropical (CTFT), Paris, France, 1978, pp. 178.

9. It has been estimated that even the best endowed (fuelwood-wise) African countries must plant 10000-15000 hectares a year from now to the end of the century to avoid falling deeper into deficit supply situations. For Sahelian West Africa, the annual plantations rate must increase by 16 times in order that production may keep pace with demand for fuelwood.
10. Several documents offer excellent discussions and background information on the community and institutional dimensions of the new wave of forestry projects aimed at involving people in meeting their own basic needs. See, for example, Forestry and Rural Development, FAO Forestry Paper No. 26, FAO Forestry Dept., Rome, Italy, 1981, pp. 35; Village Woodlots, Are They a Solution? by R. Noronha, NAS Panel on the Introduction and Diffusion of Renewable Energy Technologies, Washington, D.C., 1980; The Socio-Economic Context of Fuelwood Use in Small Rural Communities, AID Evaluation Special Study No. 1, PPC, Washington, D.C., 1980; Wood Fuel Surveys, GCP/INT/365/SWE, FAO Forestry Department, Rome, Italy, 1983, pp. 202.
11. There has not been a great deal of experience so far as part of AID forestry sector interventions in the area of natural forest management. Two projects with direct activities in natural forest management are: the USAID/Niger Forestry and Land-Use Planning Project (683-0230) and the USAID/Upper Volta Forestry Education and Development Project (686-0235); what has been done as well as the experiences in other countries over the years was recently summarized and analysed in a CILSS/Club du Sahel paper supported by AID: Management of the Natural Forest in the Sahel Region by J. K. Jackson, G. F. Taylor II and C. Conde-Wane, OECD/CILSS/AID, Sahel D(83)232, October 1983, pp. 94, (available in both French and English).
12. For a discussion of this potential, see: Guesselbodi Forest: Alternative Frameworks for Sustained Yield Management by J. Thomson, USAID/Niger Forestry and Land-Use Planning Project, Niamey, 1981, pp. 54.
13. See the proposal contained in: Gulick, F.A. Increasing Agricultural Food Production Through Selected Tree Planting Techniques - A Summary Memorandum with Selected References, AID/AFR/TR/SDP, Washington, D.C. March 1984, pp. 149.

14. A number of papers by CILSS and the donors were prepared in preparation for the Joint DAC/OECD Development Center Technical Colloquium on Fuelwood Research in Africa (May 1983). FAO likewise presented a paper for the Sixth Session (Arusha, Tanzania - Sept. 1983) of the FAO African Forestry Commission titled: Survey of Wood Energy Research Capacities in Africa and Suggestions for Improvement, Particularly through Regional Cooperation; as a result of these investigations they intend to hold a Technical Consultation on Wood Energy Research and Development in Africa (Nov. 1984 - Addis Ababa, Ethiopia). Furthermore as part of the increased attention and support IUFRO will provide to developing countries, they intend to organize (with numerous donors pledging support) a Forestry Research Workshop for Africa, tentatively scheduled for Spring 1985 in Nairobi. See also the CILSS/Club de Sahel paper, Situation de la Recherche Forestier dans les Pays du Sahel Membres du CILSS, prepared by R. Catinot, Sahel D (82) 182, Paris, Oct. 1982, and the FAO/World Bank paper, Forestry Research Needs in the Developing Countries - Time for a Reappraisal, paper for the 17th. IUFRO Congress, Kyoto, Japan, Aug. 1981.
15. See the paper, Fuelwood Research in Africa, prepared and presented at the Joint DAC/OECD Development Centes Technical Colloquium on Fuelwood Research in Africa, (May 1983) for more detail on the views of AID on this important subject.
16. See the annual report on such activites: Energy, Forestry and Natural Resources Activities in the Africa Region, Bureau for Africa, Agency for International Development, Washington, D.C., Jan. 1984. pp. 199.