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AFRICA BUREAU FORESTRY PROGRAM EVALUATION

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REPORT OF THE FORESTRY PROGRAM EVALUATION WORKSHOP

Lomé, Togo, 7-11 May 1984

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Bureau for Africa

Technical Resources Division

Agency for International Development

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EXECUTIVE SUMMARY

The Agency for International Development (AID) has had a long standing interest in reforestation projects in Africa, dating back to the 1950's when PL480 funds were used for a variety of tree planting efforts, particularly in North Africa.

The Sahelian drought, coupled with governmental recognition of the predominant role of fuelwood in Africa's energy balances, gave renewed impetus to AID's interest in the forestry sector, and a new generation of forestry projects was launched.

Over the past seven years, AID has committed a total of about $260 million in forestry and closely related natural resources and renewable energy projects in sub-Saharan Africa, an investment more than matched in projects undertaken by other donors during the same period.

The Africa Bureau Forestry Program Evaluation

Early in 1982, AID's Bureau for Africa decided to undertake an in-depth evaluation of its experience in this sector, beginning with previously scheduled mid-term and end-of-project evaluations of 10 projects launched since 1976.

In addition to these project evaluations which have now been completed, the Africa Bureau has had the advantage of other collateral US, donor and African forestry sector evaluations and assessments:

o The CILSS/Club du Sahel sponsored national forestry/ecology assessments which were conducted for Niger, Mali, Upper Volta, Gambia, Cape Verde, Mauritania and Senegal, the latter an in-depth review of problems and needs through the year 2000;

o Several more programatically oriented analyses of the sector for Sahelian West Africa by the Sahel Development Planning Team (SDPT), based in Bamako, Mali;

o Several analyses and evaluations by the REDSO/East Africa forestry advisor;

o About two full years of experience with the process of in-country African-donor cooperation and coordination under the US-led Cooperation for Development in Africa (CDA) Forestry/Fuelwood Initiative in five African countries--Somalia, Senegal, Upper Volta, Malawi and Burundi; and finally,

o The Forestry Program Evaluation Workshop held in Lomé, Togo, 7-11 May 1984, the findings and conclusions of which make up the body of this report.

Findings and Recommendations of the Workshop

The Workshop was intended to bring to the overall evaluation process the perspective of AID technicians and other Africa based participants who had been or are now directly engaged in full-time resident field experience with AID forestry and fuelwood projects in sub-Saharan Africa.

The results add the following important conclusions to the overall evaluation process and will provide field-informed guidance for future Bureau forestry and fuelwood strategy:

o Technical and Research Gaps

Technical and information gaps still remain for site and end-user specific tree species suitable for meeting both production and soil and water conservation needs in a wide variety of African situations. Nevertheless there are replicable research and/or project results available as prototypes for adaptation to individual country situations. AID, through the exchange of information with other donors as part of the CDA process, has begun to take stock of the experience obtaining in the sector in Africa with a view to careful identification of workable project prototypes. It should continue this review and encourage other donors to do so as well, seeking parallel financing of such prototypes in several African countries.

o Programming Emphasis

In terms of program emphasis more resources should be directed towards: on-farm tree planting; management of the natural woodlands and forests which presently account for almost all major fuelwood supplies; continued training and technical assistance to African personnel to increase their own capability to plan, support and manage forestry/fuelwood programs. AID should avoid investing in large scale block plantations in areas under 800 mm of rainfall.

o Policy Dialogue

Policy changes by African governments, particularly to address tree and land tenure rights, to provide for recurrent costs and to initiate practical steps towards the integration of forestry and agriculture will be necessary if the present and future support from AID and other donors is to be effective. AID Missions should include these issues related to the

forestry sector in its high level policy dialogue conducted by USAID with host governments and also in its discussions with associated donors, both at the country level and at the level of overall development assistance negotiations and planning.

o Project Design and Implementation

Future projects should be designed with more realistic goals and implementation schedules and with a clear understanding of the managerial support required from both USAIDs and host governments to insure timely and pertinent actions. In this light, certain larger projects may include implementation specialists as part of the project management. Project design should build in operational flexibility keyed to functional project monitoring and evaluation arrangements.

o Donor-African In-Country Cooperation

In-country cooperation and exchange of project experience by African and donor policy and project personnel is an important and necessary element for increasing the effectiveness of current and future investments in forestry and fuelwood. AID should continue to encourage in-country coordination, welcoming national African initiatives for closer host country-donor cooperation, evaluation and planning.

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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 multilaterals, in the post-Sahelian drought and recognition of the direct relationship between the problems of energy and the environment. Those early years saw a first recognition 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 and land clearing. Beginning in fiscal year 1978, a series of AID project designs and obligations came on stream to address these development problems and opportunities.

Over the past seven years, AID has committed approximately $55 million for forestry and fuelwood projects and another $80 million in closely related natural resources and renewable energy projects in Africa.* These totals represent an average (extrapolated) LOP obligation of $22.5 million per fiscal year. A sense of proportion and perspective emerges if this average yearly total is compared to, for example, the FY 1984 development assistance totals for the Africa Region (US $350.2 million**), showing a respectable 6.4 percent.

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 $125 million, including both USAID PL-480 and US supported World Food Program activities, could be taken as US contributions towards forestry and related activities for the Africa Region.***

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*Bureau for Africa, AID Energy, Forestry and Natural Resources Activities in the Africa Region, Jan. 1984, Washington, D. C. pp. 199.

**US Department of State, International Program, Special Report No. 108, April 14, 1983, Washington, D. C. pp. 18.

***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.

In December 1981, the Bureau for Africa, AID, organized a Workshop on Energy, Forestry and Environment in Nairobi, Kenya in order to better assess these problems, the experience accruing as a result of a burgeoning program portfolio and thereby clarify the Agency's role in the sector. The goals of that workshop were: to learn from field staff what issues seemed primary and how they should be addressed; to improve current information on designing and implementing projects; and, to present the Assistant Administrator (AA/AFR) with recommendations on an Agency action plan in these three areas.*

Among the action recommendations was one which directed the Bureau to carry out an in-depth evaluation of its experience in renewable energy and fuelwood. This recommendation was endorsed by the AA/AFR and in April 1982 he approved preliminary planning to carry out these evaluation exercises. It was subsequently decided to conduct a separate evaluation of USAID renewable energy activities and to hold a workshop on forestry after several already scheduled forestry project evaluations were completed. (See page 26 for the list of project evaluations included in this exercise.)

These evaluations, along with experience obtaining from the activites of other donors and host governments, constitute substantial new data and information. They serve as a basis for corrective actions, improved project and program directions and opportunities for greater effectiveness in AID interventions in this critical fuelwood and natural resources conservation sector. The specific objectives in bringing together field and AID/W forestry and natural resources staff at this Workshop were to:

-- review past and on-going forestry/fuelwood experiences, particularly but not limited to those of AID, in the Africa Region as the basis for improved program and project implementation;

-- better define methods of integrating forestry components in other AID supported rural development activities; and,

-- solicit ideas and collective concurrence on the main thrusts and relative emphasis to be incorporated into an Africa Bureau Forestry Strategy.

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*Bureau for Africa AID, Proceedings of Workshop on Energy, Forestry and Environment, Volume I--Workshop Summary, April 1982, Washington, D. C., pp. 58 + appendices.

The Evaluation Workshop was both wide-ranging and comprehensive, dealing not only with the technical aspects of forestry but also with the social, economic and institutional dimensions of development efforts in the sector. In addition, it reviewed the implications of USAID experience in the administration and management areas associated with project implementation.

The Workshop was organized to explore the following major aspects of AID experience to date: The state of forestry technology resulting from project experience throughout Africa; USAID administration and management experience with forestry sector projects; Agency country strategy and policy and program priorities and how they affect, or should affect, field project design and implementation in the sector; and, conclusions and recommendations about the involvement of the Africa Bureau-AID in the forestry sector in the Region and the Agency, particularly regarding the interface with agriculture and the role of research.

Among the thirty participants, regional and field project staff represented the following countries and subject areas:

Kenya--renewable energy project which uses agricultural training centers as sites for decentralized test, demonstration and distribution of tree seedlings

Sudan--renewable energy, reforestation and agroforestry

Gambia--general forestry development

Cape Verde--watershed management

Upper Volta--management of natural forests and training

Niger--planning and management of natural forests

Tanzania--community forestry

Guinea--community forestry

Mali--Sahel development planning team

While this is less than complete coverage of all climatic zones and all types of interventions, the view from the field sharply defined the limits as well as the possibilities inherent in the AID system, and therefore provided the needed practical and pragmatic overview to an otherwise primarily AID/W programming and project development exercise.

The first day and a half of the Workshop was devoted to general discussion among all of the thirty participants, led off by Mr. Catterson, on the relative emphasis which should be devoted to block plantations, village forestry, on-farm tree planting and natural forest management. This was followed by a discussion of technical problems and gaps, led by Mr. Weber; and political-social constraints, led by Mr. Thomson. Following these general discussions, the Workshop heard and commented on country specific project reports, including among others, Cape Verde, Gambia, Upper Volta, Kenya and Sudan.

After a field trip to a 4,000 hectare fuelwood plantation project, financed by France for the Government of Togo, participants divided themselves into four groups on: Policy issues and program priorities; project design and implementation; the agriculture and forestry interface; and research. On the final day, Friday, May 11, the findings and recommendations were reviewed, discussed and ammended by the participants collectively.

The following working group reports represent their consensus.

I. POLICY ISSUES AND PROGRAM PRIORITIES

The working group on policy issues and program priorities had the difficult task of attempting to articulate what the participants considered the more important general observations or conclusions which could be drawn from AID's experience to date, without pre-empting the conclusions of the other three working groups. It was recognized that there is no neat way in which this topic could be divided into the two categories of "Conclusions" and "Recommendations." Nevertheless, as clarified in discussion by the group as a whole, the findings of this working group confirmed a consensus that (i) more African and donor resources should be enlisted to support farm forestry and management of natural forests and woodlands and (ii) that high level policy dialogue on such crucial issues as tree/land tenure and recurrent costs should be introduced as an essential component of the Africa Bureau's future forestry and overall development strategy.

A. GENERAL FINDINGS

- Forestry has an important role to play in development in every country in Africa.

- Forestry activities are important in supporting larger traditional agency objectives such as helping people to develop themselves, generating income, and increasing agricultural development. Forestry efforts constitute promising tools for larger development objectives and thus should be linked to these larger efforts.

- Forestry has an important role to play in conserving and developing the renewable natural resource base, upon which people depend for their livelihood and survival. More specifically, forestry development activities in Africa have several important functions:

  -- Desertification control, environmental protection and rehabilitation of degraded lands in order to restore and conserve the long-term productivity of soil, forest, range and water resources.

  -- The development and improved management of renewable natural resources so as to better satisfy basic human needs by producing more food, forage, fuelwood and other forest products.

  -- Forestry activities can also play a role in providing income-generating opportunities for rural populations and urban entrepreneurs.

- AID should use forestry related activities to achieve development objectives. AID should seek out and support positive opportunities for using forestry resources for the benefit of host-country populations. This stress on opportunities implies a careful consideration of:

  -- what is "do-able" given current limitations on AID financial and manpower resources;

  -- what is a feasible manner in which AID can make a positive contribution. This entails consideration of:

  - host country interest and institutional capacity;
  - other donor activities;
  - ecological base (existing vegetation);
  - the social environment (existing activities of individuals and groups).

- The consideration of what opportunities AID might feasibly exploit necessitates a careful assessment of costs and benefits of various development alternatives. This requires an assessment of opportunity costs, as well as evaluation and research on where/how/why forestry activities have been successful in making impacts on larger development objectives and how these efforts can be most effectively achieved.

- Since resources are scarce, we thus need to think in terms of where we can make the largest impact in addressing priority problems. Perhaps making a small impact on large numbers--through policy changes or improvement of incentive structures for individual farmers--will be more effective than trying to make a large impact on smaller numbers, because we may not have sufficient resources to replicate small-scale solutions.

- In program planning on a country basis, consideration must be given to host country institutional and manpower capacity as well as commitment, even though available local resources may be limited in comparison to the overall task. The willingness and ability of the country to develop an overall coherent framework could be an essential element in insuring eventual program success. Such a program, in addition to deciding upon priorities, could also make it more feasible to develop inter-ministerial cooperation and to enlist the support of the local populations.

- Assuming this will be present, a corollary is a cooperation among donor groups, concerting their efforts with the host country government authorities to assure that there is a rational overall program rather than a variety of scattered projects.

- We must consider ways to develop and strengthen training programs which are consonant with long-term strategies for the sector. In Africa, human resources are often the limiting factor in implementation of forestry activities. AID must strengthen the ability of Africans to deal with African problems through education and training, focussing on technical as well as managerial skills.

- We support ongoing agency efforts to increase the number of direct-hire employees with broad-based agriculture and forestry backgrounds and recognize the potential of drawing on AID's joint career corps as an additional longer-term resource base.

B. POLICY ISSUES AND PROGRAM PRIORITIES (Not Ranked)

- Policy Dialogue on forestry issues can contribute significantly to development. Issues for discussion at the African donor policy making level could include:

  -- land and tree tenure, which may involve revision of the forestry code;

  -- practical steps toward achieving the long-term goal of greater integration of agriculture and forestry.

  -- effective management of part or all of remaining closed forests not only to protect watersheds and biological diversity but also to increase their productivity and use;

  -- improved management of natural woodlands to increase fuel, food and fodder supplies;

  -- recurrent costs;

  -- fuelwood and charcoal pricing structure and marketplace rationalization;

  -- rationalization of salaries and benefits.

The Feasibility--in social, ecological, technical, political, financial, economic, institutional and legal terms--of specific types of forestry development activities for AID involvement needs careful assessment and continuing evaluation of new and on-going efforts. Lessons to date suggest:

Large-scale fuelwood plantations in rainfall zones of less than 800 mm may not be feasible because of high establishment costs and low productivity, although opportunities in East and Southern Africa in higher rainfall zones should not be ruled out.

Communal village woodlots do not appear to be a forestry intervention in which AID has demonstrated particular competence, and therefore woodlot programs should be continued only in those situations where past experience and thorough social analysis shows it to be feasible.

Farm forestry appears to be one of the more promising areas for forestry intervention, as it operates on the assumption that individuals will grow the bulk of the trees on lands which they have rights to farm and that trees can play an important role in maintaining or improving agricultural and livestock productivity, particularly through its contribution to soil improvement and water conservation.

Management of natural forest formations, with first priority toward those lands presently forest areas under government control, is an area in which AID forestry may be able to make important contributions. However, the scale of management needed and impacts of various strategies of natural forest management on social uses of resources will need continuing test and experimentation.

We need to investigate whether there are more viable responses to improving the cooking energy situation than simply growing trees.

The incentive structures that motivate individual behavior need to be examined for possible improvement.

-- As a complement to extension programs, we should promote the development of incentive structures that will motivate individuals to plant and protect trees. This may require changes in land and tree tenure laws and practices and of markets.

-- There is a need to examine existing incentive structures for forestry agents and how they can be improved to orient agents more toward extension and service activities.

- Evaluations suggest that private voluntary organizations (PVOs) have been relatively more successful in implementing certain types of forestry interventions. The reasons for this difference merit close investigation. We should try to determine the feasibility of either making greater use of PVOs in implementing projects and/or of transferring lessons learned in PVO experience to other implementation structures.

- Forestry activities are--by their very nature--long term. All the experience to date shows that forestry projects take a long time to implement. Long-term projects need a certain flexibility, but one built on internal monitoring and evaluation and feedback systems which detect problems and progress in a timely fashion and allow for necessary adjustments to project implementation.

II. PROJECT DESIGN AND IMPLEMENTATION

As previously noted, projects represented in the first generation of AID and other donor interventions covered many aspects of forestry assistance: block plantations intended primarily for fuelwood; village woodlots; some assistance to small agricultural holders, mainly through PVO or Peace Corps projects; and the beginning of assistance to explore ways of managing natural forest management.

There is likely to be a fairly substantial redirection of emphasis in the particular kind of intervention to be supported by AID: Little, if any, block plantation support, with the exception of Eastern and Southern Africa if strong support for such comes from USAIDs in that area; more attention to on-farm forestry, including agro-forestry; improved management of natural forests and woodlands; and research to improve the yields, quality and adaptability of seedlings and seeds as well as the means by which they are distributed and used. Policy reforms will also be a major element in the redirection of AID's Africa Bureau forestry activities.

However, whatever the change in emphasis, the form of aid in the immediate and near term is likely to continue to be through project assistance. It was especially important, therefore, in this workshop, to obtain the benefit of the experiences of project personnel, whether financed by AID as direct hire, PVO's, contractors, or through PASAs directly or indirectly with the Department of Agriculture.

Members of this working group chose to divide the assignment into two parts, dealing with Project Design and Project Implementation separately.

A. PROJECT DESIGN: GENERAL CONCLUSIONS

- Inadequate initial forestry sector and project social feasibility analysis permitted wood production concerns to often crowd out other forestry sector development interventions during the first generation of US assistance in this sector.

- In addition to technical miscalculations, AID experience with serious social and political conflicts and constraints would appear to rule out block plantations and village wood lots as cost effective US forestry assistance interventions.

- The goal of project design should be to put a premium on both initiative and intelligent learning from experience. Projects should be regularly adapted in the light of new information and changing conditions as determined through purposeful internal monitoring and feedback systems.

- Project design has not built in sufficient flexibility to facilitate the development learning process.

- Recurrent costs of production systems have often been overlooked in project designs.

- Many project designs have programmed too many activities too soon.

- Failure to exchange information has resulted in unnecessary duplication of effort.

- Examples, some dating from as early as 1973, of efforts focused on sector planning, training, natural forest management, soil conservation, windbreaks, have begun to establish more promising orientations for forestry.

- New type of foresters now exist in the AID system, most of them with previous field experience as Peace Corps Volunteers or with private voluntary agencies in African forestry and rural development activities. This experience can be used to design realistic projects as well as to assure improved implementation and reorientation in the course of project operations.

A-1 RECOMMENDATIONS ON PROJECT DESIGN

- Use a multi-disciplinary team and approach in project design to thoroughly assess feasibility: technical, ecological, economic, financial, socio-cultural, legal and political.

- Portfolio simplification implies integration of agriculture and forestry.

- Determine forestry and agroforestry project priorities in light of participants' felt needs and on-going environmental management activities.

- Project designs must reflect HCN absorptive capacity, especially regarding personnel constraints. Where necessary, counterpart training must be provided before project implementation activities begin.

- Consider a phased approach to project activities. Build up project staff gradually; prepare realistic work scopes as tasks emerge. Build on little successes.

- Prove that forestry pays. Develop mechanisms to make activities self-sustaining so recurrent costs are covered.

- Promote local-level as well as national and regional networking and donor coordination.

- Include on-going monitoring and evaluation capability in the initial project design to insure continuous learning and flexibility in implementation.

- Mission personnel should actively participate in design.

- Executive committee project review (ECPR) meetings should include someone from the design team.

- Don't rush to pay people to do things they are not willing to do. Think about rewards and incentives: provide for necessary security for participants in the project when risks are high, but do not subsidize non-sustainable programs.

- Forestry sector development is a long-term proposition: LOP calculations must reflect this. Ten years is a minimum term.

- Begin with activities participants can easily adopt before moving to more complicated operations.

- Those who invest in managing forestry resources, whether for on-site or commercial use, should reap the benefits.

- Use forestry activities when possible to maintain and develop food production possibilities.

B. PROJECT IMPLEMENTATION: GENERAL CONCLUSIONS

- Project implementation capability is severely hampered because missions are over-programmed and under-staffed.
- Those responsible for program implementation often lack sufficient authority to make necessary decisions.
- Project implementation procedures are cumbersome and complex.
- Poor counterpart relations exacerbate implementation problems and vice versa.
- Implementation schedules cannot always be adjusted to accommodate delays, given the fixed seasonal rhythms of the biological calendar. This means, when it rains, you have to plant. If the PIL isn't signed yet, you miss a season.
- Implementation problems are not detected and rectified early enough.
- PVOs have shown promise as implementing agents for forestry projects.
- Participant training has improved absorptive capacity, and competence of HC forestry departments.

B-1 RECOMMENDATIONS ON PROJECT IMPLEMENTATION

- The project team should include an implementation specialist so that technicians can concentrate on technical matters and project officers (USDH) on monitoring.
- Missions should focus on reducing personnel constraints for project implementation by using third party contractors.
- AID should be willing to consider shouldering the burden of operations costs of projects to support technical assistance when exceptional circumstances make this necessary.
- Implementation plans should provide for an adequate start-up period, especially concerning commodity procurement and personnel selection and recruitment.
- HCN participation in project design, implementation and evaluation is part of the development and is important to project success.

- Authority for implementation decisions should be delegated to those who bear responsibility for project operations, as per the recommendations of the AID task force on Project Implementation. (It seemed particularly incomprehensible that PVOs had the authority to order commodities and recruit consultants and local staff, whether under Cooperative Agreements or OPGs, with more independence than could PASA-recruited teams.)

- Monitoring and evaluation should be a frequent, iterative and responsive process, so that projects build progressively on experience, eliminating unproductive activities and integrating or expanding successful ones.

- Counterpart relations require constant attention; they condition implementation possibilities. To this end, documents must be translated where necessary in a timely fashion and communications must be constantly maintained and cultivated with personnel of relevant host country government agencies.

III. AGRICULTURE AND FORESTRY INTERFACE

Among the forestry related activities included in AID-supported projects to date, the role of farm trees and the larger topic of the agriculture/forestry interface was singled out for separate attention by workshop participants. As can be seen in the reports of the other three working groups, it is a concern inseparable from policy issues and program priorities, project design and implementation and particulary the research agenda. Given more time, it would have been useful to set up working groups to give equally detailed attention to the problem and task of natural forest management, large-scale plantations and communal woodlots, but within the time constraint, the workshop participants decided this aspect deserved some consideration in more depth. Following are the general findings and recommendations of the working group as revised and corrected by the members of the workshop meeting as a committee of the whole.

A. GENERAL FINDINGS

- A basic economic and development problem of sub-Saharan Africa is to provide enough food to feed a rapidly expanding population. Declining soil fertility is a major constraint impeding this task and the rate of decline is accelerating as additional areas are clear-felled to meet subsistence needs. This situation is seriously damaging the regional ecology.

- African farmers have traditionally used trees as part of their efforts to maintain soil fertility in a range of indigenous farming systems. These systems are breaking down as population pressures increase. However, as recent research and general observations tend to demonstrate, the practice could be modified, even for sedentary farmers, by formalizing these same traditional practices and improving upon them.

- Such assistance, with special attention to testing and providing species carefully tailored to local climate, soil and popular needs, could aid the basic food production and environmental stability task in several ways:

  -- Improved soil fertility and structural integrity can produce net increases in total farm output.

  -- More people can be supported on the same unit of land, providing some amelioration for population growth and at the same time easing sporadic labor constraints.

-- Fruit, foliage and other tree products provide food and fodder as well as cash income as a bridging food during the crucial nutritional gap which often emerges between harvests.

o Growing fuelwood deficits further exacerbate agricultural production potential and erode rural and urban nutritional supply. We do not expect that promotion of on-farm tree planting can fully meet rural fuelwood needs, but expanded programs could provide significant incremental supplements.

o It should be emphasized that it is unlikely that expanded on-farm planting will take place unless tree and land tenure questions are clarified in terms which confirm that resulting benefits can be at the disposition of the farmer or agent who has invested the capital and labor.

o Bleak as the prospect for any improvement may seem, there are biological advantages provided by soil and climatic conditions peculiar to sub-Saharan regions which favor the growth and survival of farm trees:

-- High solar radiation provides year round insolation promoting continuous growth, once tap roots have reached ground water supplies.

-- Nutrients otherwise lost to annual crops through leaching during sudden and short rainy seasons can be retrieved and recycled through tree roots.

-- Pollarding and coppicing, common farm tree management practices in Africa, can increase the total stem and branch wood available over the life of the tree.

o Favorable trends in the political climate make it advantageous now to place greater emphasis on this aspect of agricultural extension and aid in donor programs:

-- African governments are moving in the direction of much greater interest and support of on-farm forestry (for example, Kenya, Gambia and Cameroun).

-- International agricultural research institutions--e.g., ICRISAT, IITA, CATIE, CIMMYT, ILCA, IRRI--have begun after several years, to move increasingly from their earlier concentration on laboratory research on plant improvements geared to the capabilities of larger scale producers and export crops to research which emphasizes on-farm and farming systems research. The research agendas of these organizations now have begun to

include the use of trees and other low input development techniques as means of increasing net and combined agricultural yields and farm family income.

B. RECOMMENDATIONS

The working group concentrated on identifying ways within the AID system to introduce the role of trees into agricultural and educational projects and programs and made the following suggestions:

- o Prepare a briefing for senior level officers, A/AID, AAs and Regional Directors on the practical steps to and reasons for increased integration of agriculture and forestry.

- o PIDs should be reviewed to determine whether they could be enhanced by the addition of tree planting, extension, seed and seedling supply, training or forestry related research. For projects so identified, the design team should include technical capability to develop such inputs and to support the inclusion of other soil and water conservation techniques.

- o Develop a research agenda to improve the data base, including, but not limited to:

  - -- early follow-up to test the hypothesis and identify the conditions under which improved crop yields can be obtained from selected tree planting techniques.

  - -- test and demonstration of site-specific, soil-specific and farm community-specific species of a wide variety of trees.

  - -- Consider a grant for retrieval and development of existing case studies which involve the role of trees in agriculture and explore whether Title 12 US University-African program exchange links can be used for more complete and continuing retrieval of field experience.

  - -- Provide a grant to strengthen and institutionalize the Sahel Institute's existing agro-forestry documents library.

  - -- Ask the CDA Agricultural Research Technical Committee to solicit farm tree and other agro-forestry research proposals from their African partners and to be sure

that the inventory being developed includes agro-forestry research.

- Reinforce and expand existing technical information and seed services, particularly farm tree supply services. These should be decenralized to meet the needs of existing extension and distribution systems, providing additional geographical coverage as extension capability and farmer demand expand. Oversupply of such services is less costly than would be failure to be ready to meet local farmer demand when it occurs.

- Senior AID official should include the following closely related issues in the policy dialogue accompanying periodic donor consortia negotiations on overall development aid:

  -- Clarification of tree and land tenure questions to assure that farmers and other agencies who plant trees will benefit from the investment of their own capital and/or labor;

  -- Improved collaboration among ministries in those cases where Forestry, Agricultural or Energy Ministries have separate jurisdictions. Negotiation of amendments to existing projects or new starts will provide opportunities for dialogue on this topic.

IV. RESEARCH

Among the most important lessons of the seven years of experience by the US and other donors is that there are still very basic technological constraints:

-- Yields of virtually all sub-Saharan tree species used in donor financed projects in areas of 800mm rainfall or less have been much lower than as estimated in project planning.

-- Survival rates after planting are very low, often because of social factors which were overlooked or ignored.

These constraints can be ameliorated or even removed by research ranging from pure tree and seed genetic research to socio-economic studies designed to find out how to enlist and increase local participation and support.

The working group on research did not consider it to be their assignment or prerogative to define research priorities for the Africa Bureau in this exercise. Rather, members felt their most useful contribution would be to provide some general observations about the research environment in sub-Saharan Africa and some suggestions, both short and longer term, as to how AID could proceed to enlist and strengthen the assistance of research in the process of continuing involvement in forestry activities to support on-going development operations.

A. GENERAL FINDINGS

- There are technological yield and seedling survival constraints impeding the successful operation of tree-planting activities in Africa which can be relaxed, if not removed, by research.

- This can be "projectized" on a country-by-country basis through site, soil and community specific test and demonstration trials of many varieties of tree species, as well as by genetic improvement in trees and seeds.

- Depending on how accurately the soil, rainfall and social constraints are identified, some of these results could be transferable to other areas in the same country or to other countries with identifiably similar soil and climatic zones. Transferability, however, should not be assumed.

- It must be recognized that the state of forestry research in Africa is in its infancy and the human and institutional capability is weak. Before Africans can deal with the research problems, priorities need to be determined, and the human and institutional capacity increased. A research program for Africa, therefore, appropriately would include measures designed to increase that human and institutional capability at the national level where possible.

- A basic premise on which any regional research program is developed is that "research" should be broadly conceived to include more than species trials. All of the following are considered to be important and legitimate aspects of forestry development in Africa which can be serviced directly or indirectly by research: agro-forestry; land use management, particularly the management of natural forests; rural sociology, including land and tree tenure and studies of small nurseries and private tree planting; forest economics, which includes the valuation of vegetation used for purposes other than firewood, pricing policy and marketing systems; seed and tree genetic resources, including the acquisition, production, storage and distribution of improved seeds;* regeneration techniques to lower the cost and increase survival rates, such as better nursery practices, direct seeding; conversion improvements; and with particular reference to East Africa, research on block plantations, including the potential of irrigated plantation systems.

- Pending the development of the institutional capacity to plan and conduct indigenous research, AID should support the collection and exchange, or "networking," of information which already exists, to bridge the gap between the major regions in Africa, including on a selective basis, translation and distribution of research results which may not need to be replicated.

- So far, the Africa Bureau, DAC and the CDA Forestry/Fuelwood Technical Committee have agreed to defer to the upcoming multi-donor financed IUFRO (International Union of Forestry Research Organizations) African Forestry Research Workshop to present forestry research priorities and recommendations before making independent bilateral decisions on significant new initiatives on forestry research. Given the

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*It was noted that Canada's IDRC is proposing to fund a regional seed multiplication and distribution system in Zimbabwe and that France is promoting a multiplication and distribution system based in Upper Volta.

slippage in scheduling of this workshop--from early 1984 to, as of now, early 1985--the Africa Bureau should not wait until next year to begin some immediate, even if short-term initiatives.

- Workshop participants supported the ST Bureau's policy, as outlined in the Forestry/Fuelwood research implementation plan and draft project paper, of involving USAID missions in defining research projects on a voluntary cost-sharing basis.

- The workshop approved and encouraged the efforts of the Africa Bureau to design and obtain funding for a regional fuelwood/forestry research project, as a complement to the ST Forestry/Fuelwood project, approved in principle but not yet funded.

B. RECOMMENDATIONS

Forestry research strategy must have both short-term activities and longer term institution-building components. Suggestions for action adapted to existing and proposed projects and processes underway in AID follow, organized generally in terms of what can be done at an early stage, almost immediately, and continuing into longer term initiatives.

- AID should support existing and proposed projects to establish sector planning and monitoring capability in African countries if not already in place, in order to help set research priorities. The AID-supported workshops on "Strengthening Forestry Research" in Kenya could provide a prototype.

- Pending the development of indigenous African institutional forestry research capacity, the Africa and ST Bureaus should use existing financial linkages and commitments to ILCA, ICRAF, ICRISAT, IITA and other international research organizations to carry out forestry and related agricultural research.

- AID should create Collaborative Research Support Programs (CRSPs) between US and African institutions devoted to natural resources and agricultural research.

- Tree planting and other forestry-related components should be included, where appropriate, in USAID-funded farming systems research, agricultural research and extension projects, using the PID review approach recommended by the third working group.

- The Africa Bureau should ensure that the computerized research inventory system being developed under the CDA Agricultural Research program includes, at a minimum, all existing agro-forestry research. The Bureau should explore whether the same system could be used to store other forestry research not so closely linked to agriculture.

- Pending results from the IUFRO African Forestry Research Workshop, CDA Forestry/Fuelwood Technical Committee should invite the IUFRO Coordinator to present an interim report on findings to date and on planning for the workshop.

- Research projects developed pursuant to the agro-forestry research agenda recommended by the third working group should be started as soon as possible, drawing on existing ST and Africa Bureau funds and programs. These include but should not be limited to the Forestry Support Program, AID and Africa Bureau PD and S funds, as well as ICRISAT, IITA, ICRAF, ILCA or other international research organizations already supported by AID through core and selected national outreach programs. Such projects will constitute the first phase of the Africa Bureau's research program complementing ST's Agency-wide initiatives and programs.

- A more comprehensive Africa Bureau forestry research agenda and plan should be developed, to be coordinated with the results and recommendations of the IUFRO workshop. This should provide for, as appropriate for and tailored to individual African countries and regions--and to funding availability under USAID country and regional programs--research services, projects and other activities in the topical areas outlined in the findings, namely: agro-forestry, land use management, rural sociology, economics, seed and tree genetic resources, regeneration and conversion techniques, and where appropriate for the climatic zone, block plantations.

CONCLUSIONS

The collective recommendations of the working groups, both general and specific, will be taken into account in developing Africa Bureau Strategy for the forestry, fuelwood and wider natural resources efforts in sub-Saharan Africa.

To date, AID's program in this sector in sub-Saharan Africa has been no more than the sum of the lessons learned in the quite large number of individual projects launched during the past seven years. Deteriorating agricultural production levels, eroded watersheds and the closing of the frontier--in the form of grazing lands and bush commons formerly available for Africa's traditional system of shifting agriculture--now make it necessary to devise a new strategy.

This can be done, given the will to concentrate policy, manpower and financial resources to remove the technical and socio/political gaps, now reasonably clearly identified.

Fortunately, AID has in hand not only some of the tools but also political, financial, institutional and technical resources by which such a revised and more comprehensive and programmatic strategy can be launched, beginning with opportunities and project or program approvals already on the books.

o <u>The Technical Gaps</u>

The Agency has already authorized priority attention to and resources for research in forestry and fuelwood for all developing regions.

Site, soil and climate-specific research projects for multi-purpose trees have already been identified as the first key intervention points for Agency fuelwood research.

The conclusions of this Workshop, together with the technical judgments and experience of French, German, Canadian and British colleagues, provide us with research prototypes which can be modularized for individual countries and their specific soil-climatic zones to reduce the technical gaps at three interrelated research levels:

-- <u>Improving the Gene Pool</u>

To maintain and improve the basic tree gene pool and seed stock for selected indigenous and exotic species. FAO has a prototype research program

underway in, among other world-wide countries, Senegal and Sudan.

-- Site-Specific Tests and Demonstration

To improve and demonstrate site and soil specific tests of a wide variety of tree species (hopefully already selected from improved seek stocks) in order to adapt the new seed stocks to specific African sites and to demonstrate increased yields and sustainability.

-- Improved Seed Multiplication, Storage and Distribution Systems

As improved seeds are tested and demonstrated in site-specific locations, concurrent efforts must be placed on developing seed multiplication, storage and distribution systems capable of meeting local demand for a wide variety of species, including those desired for fruit, fuelwood, poles or other tree product needs.

o The Socio/Political Caps

A major handicap in enlisting rural small holders for new on-farm tree planting efforts is the existing legal prohibition against felling of threes by farmers (or other users) without permission of the forestry service. There are many land tenure problems which cannot easily be resolved by policy dialogue, but the identification of this particular problem ought to lend itself to discussion and resolution in AID's policy dialogue process. A major initiative in a new strategy for the African Bureau in this sector must be to include high level policy influence and pressure to permit small holder farmers to dispose of trees they hae planted or protected on their own lands. AID will need to spend more time and resources on local participatory schemes for farm forestry and natural forest management.

o The Agriculture Tree Planting Interface

Without any additional expenditure of funds, AID's resource investment in agricultural production could be improved by screening all current and proposed Farming Systems Research Projects, Agricultural Production and Extension Projects, and Agricultural Production Sector Grants, to determine whether tree planting techniques which could enhance agricultural production could be added, tested and demonstrated. Additionally,

funds now devoted to CDA Agricultural Research could be used, as appropriate, for on-farm tests and demonstrations.

o Policy Dialogue

In addition to the specific item noted above, it is important that at the A/AID level, the AA/AFR level and all other policy level interfaces, forestry and fuelwood policy issues should be introduced as subjects to be discussed at regular donor consortia meetings as well as in the course of in-country continuing discussions on policy issues. Mission Directors will need to be alerted to the importance of expanded revegetation efforts in achieving overall agricultural and water management objective and will need to be briefed and provided with documentation and agreements to promote increased priority in African economic development plans.

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APPENDIX A

AID FORESTRY ACTIVITIES IN AFRICA: 1976-1983

A SUMMARY ASSESSMENT

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SUMMARY AND INTRODUCTION

The Agency for International Development (AID) has had a long standing interest in reforestation projects in Africa, dating back to the 1950's when PL480 funds were used for a variety of tree planting efforts, particularly in North Africa. Most of these activities were, however, peripheral to bilateral development strategies developed for countries considered of priority importance in U.S. foreign policy.

The Sahelian drought and recognition of the predominant role of fuelwood in Africa's energy balance gave renewed impetus to AID's interest in the forestry sector and a new generation of forestry projects was launched.

Over the past seven years, 1976-1983, AID committed approximately $55 million for forestry and fuelwood projects in Sub-Saharan Africa. Another $80 million was committed in closely related natural resources and renewable energy projects in the region. To this should be added some $125 million in PL480 supported forestry activities, including those undertaken in U.S. supported World Food Program projects. This U.S. investment of about $260 million has been more than matched by a multitude of projects undertaken by other donors durig the same period.

The purpose of this paper is to review AID and other donor experience gained in Africa with different types of project interventions intended to assist in resolving fuelwood and forestry problems as these have been identified over the last decade. The focus of these activities have, 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.[1]

1 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.

In reviewing past activities it is fundamental to fully understnad the typology of the different schemes. Enough experience has now accummulated to allow for careful analysis of what has and has not been effective.

For the purpose of this paper, four principal interventions are discussed, namely:

Block Plantations
Village, or Communal Forestry
Farm Forestry
Natural Forest Management

Each of these is defined, their advantages and disadvantages are reviewed and their potential impact for meeting the objectives of the sector in the future is explored.

Block Plantations

This option is defined here as the rather large-scale efforts (often envolving hundreds or thousands of hectares) to plant contiguous blocks of trees usually with the exclusive objective of generating forest products, mostly fuel-wood 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, despite the relative youthfulness of national African forestry institutions, the establishment of block plantations are a traditional, learned professional skill that occupies a significant place in the technology employed in the sector worldwide. They are something for which both information and credibility exist, something forest services are expected to be able to

accomplish. Decision-makers and development planners rarely quibble with this affirmative action option. As they are planted and grow, they produce 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 tend to attract capital, both national and international. By undertaking massive efforts, they can be expected furthermore to achieve economies of scale which will add to a positive cost/benefit analysis. As they are usually composed of one or perhaps two species of trees, they offer the advantage of seemingly simplified silviculture and management needs.

Block plantations provide significant indirect benefits as well. Perhaps the greatest of these is the employment generation potential they create, both for their establishment, maintenance, management and harvesting as well as the jobs implicit in the need to process and market their products. Because they contribute to total vegetative cover, they will also have macro-effects on environmental stability, an importart contribution of the sector in the wood-poor regions of the world where these plantations are being carried out. Likewise they provide an excellent training ground for forestry staff concerned as well as important demonstration effect that something can be done to ameliorate the pervasive 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 undermined its effectiveness. The most crucial and intractible aspect of these disadvantages are those related to the cost/benefit ratio associated with these capital intensive undertakings. Despite the fact that fuelwood as a crop has increasingly entered into the cash economy, its value in the marketplace is still historically encumbered by the fact that until recently it was considered a free good. Even today in many places, plantation grown fuelwood will have to compete, as any substitute energy source, with fuelwood being harvested either illegally without payment of royalties or under permit systems which charge a nominal fee far from the residual stumpage value or cost of replacement. Furthermore, it seems unlikely that many goverments which currently control the fuelwood and charcoal market will be politically much inclined to let the prices rise on this very basic commodity despite the obvious need to do so.

It is thus apparent that anything which affects the cost/benefit ratio of block plantations will have significant impact on their effectiveness as a strategy for meeting fuelwood needs. Regretably there are presently many circumstances which mitigate directly in opposition to keeping costs down. One of the greatest difficulties for block plantings is the availability of land for these purposes. Fuelwood scarcity particularly in the arid areas of Africa is more often than not directly related to population pressures. Having cleared the land to produce the food for a expanding population means that large tracts of suitable land, capable of decent growth and returns are probably not readily available. More marginal soils or lands degraded through intensive agriculture are similarly of problematic utility because of the effect on tree growth. Where so-called common land or "barren" land may be found, these may be subject to other pressures not readily apparent at the time of selection, e.g. their utility by local people for collecting fuelwood and forest products, as alternative grazing areas or as land banks or fallow areas for local villagers. Where these conditions obtain, the imposition of a large-scale government controlled plantation may create conflict with the local people which will exacerbate the protection problems and increase costs. Carried to an extreme, and there have already been examples in Africa, local people set fire to plantations. Even where conflict itself may not set in, the plantations perceived by the local communities as state enterprises will require protection and maintenance. Villagers will be unconcerned whether fires or animals get into them because they stand to lose little or are unable to muster the additional resources for more careful herding or closer control of fire in land preparation for agriculture. It will come as no surprise to the reader that where growth is slow, high protection costs must be borne over a longer period, often three years. Arrangements for protection can and should be made and those costs must be factored into the overall cost/benefit analysis. At the same time, however, the efficacy of plantation protection must be viewed against the backdrop of the traditional difficulties forest services have experienced in protecting reserve forests.

Another important factor affecting the cost/benefit ratio of block plantations is overall growth of the trees, or expressed in economic terms the earnings or benefits realized on capital invested. Block plantations, it is worth noting, cannot be expected to provide extensive secondary benefits off-site in terms of soil and water conservation effects that translate into production gains for agriculture. The

environmental benefits that do accrue will be limited to the site or the land immediately adjacent to the plantation area. This point is raised because it has become increasingly clear that the number one problem in agriculture and rural development in Africa is declining overall soil fertility which is eroding the productive basis for feeding the people of the Region. Forestry activities can and must have dual objectives; forest production and soil protection must be taken into account in designing the interventions in the sector and making best use of available resources, both human and financial. This subject will be further discussed below in the section dealing with farm forestry.

The need to maximize production still remains problematic. The tendency of the past has been to favor the so-called fast-growing exotic species, often those of the genus Eucalyptus. The key to plantation forestry, however, has always been correctly matching the species (and/or provenance of that species) to the site. There are few shortcuts in that process. Information on soils at both the macro and micro levels in Africa are often inadequate to assure a proper match of species and site. Likewise localized information on climate may also be lacking. In the semi-arid areas where plantation efforts seem most urgent, it has proven extremely difficult to predict the amount and periodicity of rainfall because these appear to be highly variable -- a variability which the youthful weather stations systems have as yet to be able to fully document. Plantation yields rarely match those obtained on research trial plots for a variety of reasons. Knowledgeable individuals suggest that a factor of 60% should be assumed in comparing research trial data with large scale plantation.[2] Because of the projectized nature of these development assistance efforts, funds, manpower and time are rarely available beforehand for the in-depth studies on soil, climate and species that could guarantee a closer match of species and site. Overcoming these difficulties in the immediate future means building in realistic margins of latitude in yield predictions so as to be certain of the cost/benefit ratio.

2 For more information on problems of this nature, see the Report of the Third Year Evaluation of the USAID/Senegal Fuelwood Production Project (685-0219), USAID/Senegal, April, 1983, pp. 161 + annexes.

A considerable amount of species adaptation trials have been undertaken but this information is often fragmented and/or difficult to retrieve because of the present inadequacies of the forestry research institutions in Africa which should be the repositories for this data.

Nursery practices from seed collection to transport of the seedlings to the planting site often breakdown under the pressure of hithertofore unknown large-scale efforts. Of particular importance is proper root/shoot ratios for quality seedlings, hardening-off of seedling stock so that it can better resist the harsher conditions of the planting site and greater attention to seed sources so as to guarantee genetic consistency of plantation stock. In short there is a need for quality control and adherence to a biological calendar whose timing permits having maximum quantity and quality of seedlings available at the on-set of the rains.[3] Once embarked upon, there is little latitude for speeding up or slowing down the processes of a nursery production/plantation calendar without serious implications for survival and costs. Not to be excluded in assessing the feasibility and technology required of block plantations are the inherent dangers associated with species monoculture such as insects, diseases, soil depletion and the loss of biological diversity. Little research data and experience has accummulated todate on these important aspects of plantation technology.

3 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, 1982, 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. Delwaulle, Centre Technique Forestier Tropical (CTFT), Paris, France, 1978, pp. 178.

Equally important in controlling costs and achieving effectiveness with large-scale block plantations have been the administrative and managerial arrangements for these projects. Faced with possibly unprecedented level of efforts required for block plantations and a tightly controlled biological calendar, many of these projects have broken down. Because of the need to concentrate various plantation activities, it is necessary to organize and mobilize a large labour force. A well trained work force (professionals, technicians, field foremen and labourers) who have been briefed on the detailed work plan combined with systematic data control, monitoring and feedback into the system is crucial to the effectiveness of this organization. As plantation efforts frequently coincide with the season of maximum agricultural activity, labour availability may be a constraint. While mechanization is possible, this, as often has not, raises overall costs because of the dependence on high cost foreign exchange inputs such as tractors and plows.

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 budgets to make any impact at all on the fuelwood supply problem will be extraordinary. It has been estimated that even the best endowed (fuelwood-wise) African countries must plant 10,000-15,000 hectares a year from now to the end of the century to avoid falling deeper into deficit supply situations. Tens of millions of dollars are simply not available in the national treasuries to undertake planting at this scale nor is the donor community, given the present world macro-economic difficulties, likely to come forward with such funding. 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 Africans and donors alike, must also recognize that it is no longer sustainable to go ahead replanting behind an ever-increasing wave of land clearing and unmanaged exploitation of natural forest areas. More will be said about this below in the section on natural forest management.

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, the forestry development community focussed on the need to insure greater involvement of rural people in reforestation efforts. The reaction was new efforts aimed at village or communal forestry; referred to as "bois de village" in French. This strategy option has occupied perhaps the second tier of importance in the effort to meet the fuelwood problem. It is 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. USAID efforts in this direction have occurred, for example, in Senegal, Mali and Upper Volta; many other donors have also undertaken such projects as well as African governments themselves. Sufficient experience has now accrued to permit a level of analysis to identify some of the advantages and disadvantages as well as the overall potential as a strategy option for responding to the fuelwood problem in the future.

The principal advantage is the fact that such an approach responds to the need to get the rural people themselves involved in the solutions to the fuelwood problem. In addition to the direct impact it may have on fuelwood production, the village forestry approach has important potential for demonstration and training of rural people and government personnel about the problem and potential solution to the fuelwood supply deficit. It can and should be the center for greater multiplier effect for extension efforts. Its decentralized nature means that government can achieve wider impact nationwide in raising consciousness about the fuelwood problem than with a localized large scale effort. It means as well 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.

Because the villagers may use labour opportunities that occur during the off-season for agriculture, opportunity costs affecting the overall cost/benefit ratio can be lowered. The potential for employing food-for-work schemes in these village plantations provides added economic opportunity. In addition to the direct benefits of production and employment generated by the woodlot, it may be possible to use it to maximize production on an inadequately used site or even to rehabilitate degraded areas. If woodlots can be spread through the landscape, the environmental amelioration effects may also prove worthwhile.[4]

Village forestry, however, shares many of the disadvantages mentioned above in regards to block plantations. The technical issues of species choice and match with site and growth rates are just as critical and perhaps more so. There is some opportunity to reduce costs but the overall importance of a positive cost/benefit ratio is still fundamental particularly because if negative 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 towards future reforestation efforts.

The community dimensions of village forestry appear, however, to be even more crucial to efficiency and effectiveness with this strategy option. By correctly including people's participation in attempting to address the fuelwood problem, a previously unknown and rather heterogeneous element is added to the matrix of project design elements -- the rural people themselves and their needs, aspirations and ways of doing things. 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

4 In-depth evaluations of village forestry projects were carried out in 1983, see: Mid-term Evaluation of USAID/Mali AIP (625-0937 Village Reforestation, Bamako, July 1983, pp. 97, and, Evaluation Report to USAID/Senegal/Africare Diourbel Village Reforsetation Project (685-0247), Dakar, July 1983, pp. 55.

goal. By their very nature, in order to be successful, village woodlots require a particular set of circumstances which manifest themselves in an overall understanding of the undertaking and a general consensus among the villagers to proceed with this course of action. 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.[5]

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. In many traditional African societies, all land is held in trust for the people by village chiefs and elders who make decisions about how and who will use it. This would seem likely to facilitate a communal woodlot approach; rarely, however, is the case as simple as that. Often there is little land actually unused and that which may appear unused could be vital for grazing or even fuelwood collection, or could be land 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

5 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.

customary for projects likely to benefit the entire community. The problem in this respect with village woodlots is that villagers would often then prefer to see the outcome of their efforts before repeating the exercise which can mean years between repetition of planting thus slowing impact considerably. 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 remains unanswered. The perceptive observer has in many cases already ventured a less than optimistic outcome, holding that village chiefs and elites are likely to siphon off the gains for their own benefit. Indeed it may even be implausible to conceive an equalitarian distribution system, justly accountable over time to all concerned. Such would require an almost perfect level of understanding of the fuelwood production enterprise to assure that all parties were satisfied. It will probably be preferable to convert the outputs of the plantation into cash and employ it for a community endeavor such as a school or clinic. In some societies, the chiefs may be expected to benefit disportionately, despite the eqalitarian western notions of collective action incorporated into project design, because they traditionally receive compensation in many forms for their role and responsibilities as leaders. The simple reality 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.

Most village forestry projects have been conceived with a strong emphasis on promotion and extension. The key, however, would appear to be a more legitimate role of service and extension designed to inform and respond to peoples' felt needs and their own abilities to organize themselves for action. Hence the present tendency of many village forestry efforts has been a gradual evolution towards increasing the availability of seedlings through decentralized nurseries (minipepinieres) and greater attention to extension and outreach functions. Village woodlots despite their well-minded intentions can only succeed if community development and cooperative efforts are socially feasible. That there are opportunities for village woodlots is certain, especially among some of the more traditional and still cohesive societies. But the typical African village today is in a state of both flux and tension trying to cope with the burdens of demographic pressure, evolving new life styles and a change from tribal to modern society, as well as the change from shifting cultivation to sedentary agriculture as the land frontier disappears.

Significantly many African countries have embarked upon grass roots political reorganizations, such as the "rural communes" of Senegal or the "local development societies" in Niger. These attempts at political reogranization, aimed at greater representativeness and social guarantees for villagers hold bright promise for the future and will likely, if successful, offer additional opportunities for village woodlots. All of the above admittedly are gross generalizations whose only aim is to offer a cautionary note about the potential for success or failure in embarking on village woodlot programs.

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, imposition instead of extension, and thus a very high ratio of interventions external to the villages to achieve rather modest plantation gains. The extension function should come into play right from the start of the project during the design phase by finding out among the villagers themselves whether and to what degree they would be interested in tree planting, either communally or as individuals. A clear perception of their 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 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.[6] The tendency to complicate the activities of the project, usually manifest through an increase in the number of species, must be avoided because of the stultifying managerial overload it generates. Decentralized and responsive decision-making is paramount thereby avoiding the need and lag-time associated with the urge to refer every minor aberation of the project back to the center. 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.

6 A fuller discussion of extension approaches can be found below in the section on farm forestry.

Farm Forestry

As mentioned in the introduction of this paper, a good deal of the early interest in forestry activities in Africa on the part of governments and donors alike grew out of their 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 emphasized. 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 which is the key to agricultural productivity in many parts of the Region. Forestry sector development specialists and their agriculture and rural development colleagues 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 the ameliorating effects of vegetative cover in sustaining and promoting agricultural production and environmental stability. The forest services of Africa are 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 in the context of this paper 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.

A few somewhat parenthetical remarks about farm forestry and the emphasis the Agency is placing on the private sector seem warranted at this juncture before proceeding with an analysis of the advantages and disadvantages of this strategy option. Much of what will be said here applies to some extent to previous sections and also to what will follow, but it seems to find greatest resonance in the discussions on farm forestry.

In the minds of many forestry sector development specialists and in the deeds and actions of many of these sector projects and programs, the role of the private sector has acquired new meaning in recent times. This interest arises from the experience that in many of the developing countries of the world the forest services alone cannot cope with the needs for plantation and production or the adequate management of previously little regarded natural forests. It should be noted that across the globe, even in the countries where forestry production through exploitation of rich tropical hardwood resources generates important foreign exchange earnings through export, the forest services have rarely been allocated the government funding sufficient to properly control that exploitation, let alone manage and rehabilitate forest lands. It is small wonder then that given the somewhat meagre wood resources of many African countries (relatively speaking) the forest services have failed to attract adequate government support to put them over the threshold for action. The situation is improving, to be sure. Many countries are, as stated earlier, coming to recognize the value and principal role played by fuelwood in their national energy budgets. Other important lessons are also emerging including an appreciation, both qualitative and quantitative of the place of forests and brushlands in supplying other basic human needs (food, medicines, materials for shelter, forage, and raw materials for artisan needs). Even more significant is the awakening by policy-maker, practitioner and farmer alike to this fundamental role of trees and brush in maintaining the fragile environmental stability on which agricultural productivity, and thus basic human prosperity and survival, so critically rests. The truth is that, in many places, man's destiny is inextricably linked, tangibly and economically to the destiny of the land and the trees and forests which protect it.

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 emerged 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 but 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 (the farmers) can play a significant role.

Similar opportunities exist for tree planting through a farm forestry strategy approach, albeit with similar constraints. 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 inaccessible to farm crops and deposit these nutrients in the fields or by trees that fix nitrogen in the productive 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 conservation and 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. Reiterating briefly then, farm forestry offers great opportunity for impact through 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. Perhaps 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. There is, at the same time, a need to avoid the trendiness that has characterized forestry and fuelwood activities in Africa manifest in the righteous declarations and reactions to having found "at last" the perfect solution to the problems. It will take time and

intensive action, something that may not be inherently compatible with a projectized approach to development. There will be need for a sense of perspective aimed at moving from the stages from pre-feasibility through research and testing, to demonstration and pilot activities and on to full-scale diffusion and investment. There will be a need as well to plan and set priorities, a task farm forestry shares with just about all the other sector development options.

The commitment to forestry development actions in Africa has been taken up very quickly, often, however, without time for or benefit from comprehensive planning. This has led to ineffective use of the scarce human and financial resources available to the sector; neither priorities nor opportunities have been properly assessed in many countries. It will be important to begin these basic sector assessments, looking at the short, medium, and long-term needs for the products and services of the forest, no matter how imperfect the models may be due to the lack of adequate data and information.

Farm forestry will also require changes 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 underminded 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. Previous attempts ranged from the "encadrement" approach meaning literally boxing people in so they would do what the technocrats knew was necessary, to "vulgarization" which categorized the extension process into one of finding the best way to get the message across to the "target" group. The former led only to conflict because of its paternalistic underpinnings; the latter, an admittedly more beneficent posture, degenerated into mindless audio-visual exercises in which the medium became more important than the message. 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. It is predicated on the idea, known as cultural relativity, that acknowledges the basic rational nature of people and the fact that they do things because circumstances oblige them to do so, even if it is seemingly destructive behavior. The 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.

While relatively little experience has accrued to-date with farm forestry in Africa, those examples that do exist combined with the economic opportunity of a cash marketplace for fuelwood hold 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. 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.[7] [illegible] 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 funded by AID.[8] Because of this recent report and the distribution and attention it has received, an in-depth review of the natural forest management strategy is not considered necessary in the present paper.

7 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).

8 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.

The advantages of natural forest management despite the limited experience 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 represent. Even modest gains in productivity could have significant impact on the fuelwood supply. Large areas of natural forest formations still exist in Africa; the report cited above estimates that for 8 CILSS countries (Mauritania, Senegal, Gambia, Mali, Upper Volta, Niger and Chad) there are almost 40,000 square kilometers of reserved forests (foret classe). While in many cases, these have been highly degraded, there are vast areas of natural forests and woodland formations in the public domain.

Despite the intentions of the authorities who first reserved the forest areas in colonial times that they be managed for multiple and sustained uses, the classical notion of the tall timber forests of conifers or tropical hardwoods have relegated these areas to consideration as "useless brush". 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 and woodlands 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 forest areas. This must be compared with the much larger establishment costs of plantations in the first year. Furthermore it is becoming obvious that even 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. By rationalizing the management and use of natural forests, employment opportunities can be created which to a modest extent can contribute to taking the pressure off the land for subsistance agriculture.

The disadvantages and constraints, not the least of which is the newness of this endeavor, should not be overlooked. Here again trendiness and a mad rush to another "right" solution must be avoided. 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. In addition to the field level pilot activities that should commence soonest, affirmative action at the policy level will also be required to stem the tide of random destruction now taking place.

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 certain areas at critical stages in the management scheme. Both of the USAID exercises presently underway have given considerable attention to the present uses of the forests by surrounding villages. The solution would appear to 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.[9] This notion, of course, goes against the grain of tradition which over the years has been

9 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.

characterized by the policeman-like efforts to exclude people from the reserve forests. 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 suceed. 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 Africa region. This is stated here more as a hope and aspiration than a prediction.

APPENDIX B

TECHNICAL UPDATE ON FORESTRY EFFORTS IN AFRICA

By

Fred R. Weber
Consultant

Preface and Summary

Experience gained during the first generation of AID and other donor financed forestry and fuelwood projects in sub-Saharan Africa has demonstrated that serious technical gaps remain which need to be remedied before the task of slowing the process of devegetation of Africa can have a reasonable chance of success.

This paper was commissioned to provide the Workshop with some more specific assessment of where the technical gaps exist and suggestions as to how they might be remedied. The paper was prepared by a consultant who has more than two decades of hands-on, dirt farmer experience with AID and other donor forestry and soil conservation technical, evaluation and training experience.

The writer identifies the more serious of the technical gaps, chief of which is that "in the average nursery, we are still raising genetic garbage."

Higher priority must be given, in on-site, site-specific test, demonstration and seed source collection projects, to remove this major and remediable handicap.

The paper also includes personal observations on how AID could usefully begin to reorient its project, policy and programming assistance so as to give greater attention and priority to management of natural forests, or more broadly conceived, "management of all natural renewable resources."

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Introduction

A review of what has worked, what has not and where we stand today, can be undertaken in many different ways.

To begin with, different people have different views of what a good forestry project is, or should be. The thinking which prevailed in early efforts dating back to pre-independence days and which was applied, essentially unchanged, when world-wide concern over deforestation, desertification and drought stress gave forestry a considerable boost also to the drier parts of Africa (about two-thirds of it), was simple, straight forward and seemingly infallible:

> Because of mounting population pressure and ensuing increased needs for wood, grazing and agricultural land, the natural vegetation cover, particularly trees, are disappearing; therefore the obvious answer is to plant some; the more, the better.

Forestry-related efforts in the Sahel, USAID funded and Peace Corps supported, followed this pattern as early as 1969 (Niger).

Already then, the first signs of problems appeared. While the most basic technical improvements were introduced without major difficulties, it was quite apparent from the beginning that land was not nearly as easily available as interested donors were assured by host-country governments or as they believed. Also it soon became evident that the correct or "fair" distribution of benefits (the wood that could be harvested) varied according with who thought was the rightful owner. These problems are still with us today. They are not technical in nature. Rather, they involve a seemingly never-ending interaction of economic, social, political and cultural factors which are the subject of other presentations and discussions of this meeting.

Meanwhile, large inputs from the outside have been made in the forestry/ecology sector across Africa. In the Sahel alone, the Club du Sahel has been tracking an estimated 160,000,000 dollars that have been spent on "forestry" in various projects, counting also sizeable sums spent by PVO's from private, that is non-government sources since 1972.

What have we learned?

Converted into statements of the technical problems which can and need to be resolved, one can say the lessons learned are these:

-- TREES: Serious technical gaps remain which require improving the genetic quality and incorporating better regenerating techniques.

-- LAND: There is very little good land left on which to plant trees. Hence, techniques which can encourage interplanting of trees and agricultural crops need to be reintroduced.

-- PROTECTION: Many planted trees die. Both technical and social improvements are needed to increase the survival rates.

-- BENEFITS: Inequitable distribution of benefits handicaps private and public efforts for increased tree planting in Africa.

-- NATURAL FOREST AND VEGETATION MANAGEMENT: A better data base must be developed concurrently with improved legal reforms, popular incentives and more effective forestry services.

Although costs and extreme climatic variabilities pose major problems, most of these technical and social barriers can be lowered by research, coupled with test and demonstration efforts tailored to specific sites and social situations.

I. THE FOUR INGREDIENTS OF A "GOOD" FORESTRY PROJECT

Basically it takes four different components for a forestry project to succeed: trees, land, protection and a benefit distribution arrangement, satisfactory to everyone concerned -- including, to be sure, the local people.

A. Trees

Obviously, forestry without trees is impossible! The surest, fastest way to produce trees is to raise them in nurseries. Today there is hardly a country left in Africa without some forest tree nurseries. Technically, people know how to raise trees. However, there still are some major problems:

Genetic Quality

In the average nursery, we are still raising genetic garbage. Seeds are collected in the last moment; they are hustled-up wherever they are easiest to get, nobody knows where they came from, what the parent trees looked like or, worse, what the site conditions are where they were picked.

While genetic improvement techniques and procedures continue to attract considerable interest and debate on scientific-academic and programming levels, even the most basic first step improvements (site-matching with source of origin, seed selection from sound, healthy parent trees, proper cleaning, extracting, storage and protection, etc.) are generally still a low priority in many places, especially the production nurseries.

Heavy Root Balls

Plastic bags (poly pots) are the rule; 8 cm diameter, 25 cm deep is the norm; each seedling thus weighs about 1.5 kg at transport time and takes up considerable space.

Meanwhile, elsewhere, trees with similar root development patterns are raised (and hauled) in much smaller containers. The USFS in Central California, for instance, uses plastic containers of 1 inch diameter (8" long) for Eucalyptus (grandis, alba, camaldulensis, etc.). A weight and bulk savings of about 4:1.

Proper nursery care and especially planting become more tricky; luck also will play more of a role as far as subsequent rains go. Still, experimenting with smaller and different containers should be encouraged, particularly for locations where transport costs are high and probability of rainfall immediately after planting reasonably high (above 800 mm mean annual in West Africa, for example).

Alternate Regeneration Techniques

Of all techniques establishing forest trees at a given site, raising them in containers in nurseries is probably the most expensive, particularly if large scale, government-run systems are involved.

A firm in Florida, by the way, is now selling tissue-cultured eucalyptus on a commercial basis, I have been told.

As result of more people-oriented approaches, a first reduction in costs (though still using the same technique) is to establish village-nurseries that are located closer to the planting sites, provided sufficient water is available when it is needed during the hottest part of the year. This, indeed is very repetitive and should not appear in a technical paper such as this, but we still see far too many nurseries installed up-country from Senegal to Kenya without making sure adequate water of reasonable quality -- beware of high salt content -- is reliably available.

Cheaper to raise and to transport are open rooted seedlings or stumps. There are compelling reasons why this is often not possible (rapid taproot development, for one) but this technique should be considered and not ruled out from the beginning, as it too often is.

A switch to smaller containers, per above, can be regarded as a middle-ground solution: greater survival risks are traded off against transportation cost savings.

Direct seeding is another step in the direction of the natural approach. True, it takes more seeds and more depends on adequate rains. Weeding also can be a problem. But generally speaking, more direct seeding should be tried. If, by chance it is successful, reforestation costs could be greatly reduced.

Finally, the ultimate goal would be to manage the forest stands, or the vegetation cover, so natural reproduction will occur. For most of the exotic species this may not be possible. It does happen, however more often than many project-foresters realize. Natural neem reproduction has been observed down to 550 mm, prosopis even near Nouakchott, Acacia mellifera in an Euclayptus alba stand in Morocco, etc. Where forests are managed with accent on local species, this definitely is a possibility, although repeated fires may greatly narrow down species diversity.

B. Land

This heading already gets us away from purely technical considerations, but it must be pointed out that even the most prolific nursery production serves little unless there are places where trees will and can be planted. Is this a redundant

statement? Yes, but there are thousands of trees raised in nurseries, with donor funds, without any consideration to where they will or should be planted.

Anyone thinking there still is a lot of unused land available in Africa should be placed in charge of identifying viable reforestation sites. In desperation, some have advocated setting aside good sites, namely agricultural land, for trees. Although this approach may clearly run afoul of sensible concepts of optimal land use planning, it would not be so bad if the previous owners or users at least would be compensated. Instead, in the vast majority of cases, the land is simply expropriated. Small wonder the traditional users oppose such tactics and plantations happen to burn or get damaged otherwise when project personnel is not around.

Sahelian foresters, during a recent USAID/ETMA seminar on agroforestry offered an interesting observation on trees and land: regardless of how well all other rural development efforts may succeed, a Sahel without trees is dead. What counts, they continued, is not so much actual areas covered by "forests", than the total number of trees in the landscape.

C. Protection

More accurate information still lacking, I have the very worrisome feeling that even today four out of five trees leaving the nurseries are dead by the time they should be one year old. While the survival rate in many forest projects is quite satisfactory (though in some it is not that much better either) the survival rates are very low when one counts all efforts combined -- tree planting weeks, massive, more or less spontaneous popular movements, etc.

Planting trees is one thing, keeping them alive long enough to be out of the first danger-years, something else.

Why do so many of them die?

Partly for "technical" reasons: species requirements exceeding site conditions, slip-shod planting, low quality and undersized planting stock, insects and diseases, unusually little rain during the first weeks or months after planting are the major reasons.

Not all, but certainly some of these constraints can be mitigated. More emphasis should be placed on:

- Proper species selection
- Higher quality and full-size seedlings
- Improving micro-site around each tree by appropriate soil and water conservation measures (mini-catchments, gradonis, benches, etc.)

The majority of trees, however, do not survive their first months because:

- Animals eat them,
- They burn (especially in block plantations), or
- They get weeded out or "cleared" by farmers needing more land to produce food.

Why do people not protect them better? This is one of the most important questions that needs an answer before forestry efforts across dry Africa can be more successful. Obviously this is not primarily a technical issue; rather it involves the social and political science field.

D. Adequate Distribution of Benefits

To begin with, pre-project predictions of positive rates of return, some as high as 20 percent in both financial and economic terms are now, at least for the Sahel, in shambles.

Generally and on the average, it turns out that one hectare costs $800 to clear and plant and that yearly protection costs (essentially against people) run about $200 per hectare, while yields generally run at 50 percent of the predictions.

In addition, experience in a number of large scale projects has shown that firewood that has become available (since trees have quit growing already several years ago) cannot be sold. At least not at "market" prices. It turns out that the only hope of getting any appreciable amount of money from the trees is from poles; certainly not from firewood. The apparent paradox of the firewood crisis and large stacks of firewood cut from plantations still waiting for buyers only shows that many factors are at play which lie beyond the reach of simplistic money market economics.

Beyond economic miscalculations, more deep-rooted problems exist: land-tenure, surface use and tree ownership rights, besides, mere socio-political powerplay and host-country technical agencies having no previous experience how to manage accruing benefits from public land, all lead to one bottom line -- under present uncertainties and given existing laws, rules and regulations coupled with the way they are enforced, it makes no sense to local people to plant trees, let alone protect them.

II. MANAGEMENT OF NATURAL FORESTS

While much has been said in recent months of "management of natural forests", it is proposed that a better and more accurate title should be "management of all natural renewable resources".

This concept is greatly supported today by many as soon as local participation is considered. From a socio-philanthropic view, involving local people makes good sense in itself. Even if only cold, hard foreign policy criteria govern, it soon becomes evident that in managing large tracts of forest land, natural or other, the surveillance and protection costs far exceed giving the local people a piece of the action and thereby obtaining their cooperation or at least their consent not to continue abuse. If specific proof of this statement is needed, a study of some of AID's own forestry projects in some of the Sahelian countries will do.

A. Management Requires an Objective

Forest or natural vegetation management is no exception to this rule. This does not mean, however, that forestry activities cannot begin before the objective(s) are finally articulated and approved. To begin with, we need to know what resources exist at the site. If trees or forest products are of importance -- and to the local people they always are -- we must know what is there, which normally leads to conducting a resource inventory. Soils, rain/runoff, vegetation, wildlife, etc. are the usual categories.

Secondly, it must be established what the present (as well as past) use and exploitation patterns are. The inventory obviously should measure and establish how much is (still) there of what is being harvested/used. Here is where our problems really begin.

If people gather firewood or leaves, or honey or gum, it seems that our information would be woefully incomplete, if we would measure only the trees with a minimum d.b.f. of 20 cm. In addition, if grazing is an important activity, it seems inevitable that we also should look at "range" productivity. The problems compound themselves.

We know that especially in the dry season and/or during periods of prolonged drought, browse from trees and shrubs may become crucial tying over local livestock. How do we measure it?

Then there is the problem of merchandable timber. In the U.S. we inventory everything someone can cut at least a board from; the rest certainly is not "timber". Where do we cut off our inventory here where artisans make masks from one species and kitchen utensils from small chunks of wood and dug-out canoes from another?

B. Vegetation Inventory

While more emphasis is being placed on managing natural stands, efforts to find practical, useful answers to these questions multiply. Quite often, and quite naturally, different people starting in different areas all have their own approaches. If only these could just be better coordinated.

Some commonalities are beginning to take shape. While many different systems and procedures are being tried and firmed up, some overall aspects appear:

- Composition: List of species and their relative frequency. If nothing else by dominant and sub-dominant species. Ultimately by vegetation types, associations and successions.

- Density: How many of each per hectare?

- Size, dimensions: For "regular" trees, dbh and height. For shrubs, coppice or pollards, things are more difficult. Adding crown diameter and some description of form helps. For shrubs, the "bush" - the most important source of firewood for many areas in Africa, dbh-height-volume relationships simply do not exist. The solution? Measure, cut and weigh. Height and crown diameter can be correlated (by species and site conditions) to volume, or -- more meaningful in the case of fuelwood -- weight. More observations are needed: total green weight vs, dry weight vs. the weight of the sellable portions. Ultimately, it's the B.T.U.'s that count.

  A first stab in that direction was made by FLUP: multiple regression analysis, courtesy College of Forestry, U of Idaho. Results? Wide variety of sites, species mix, etc., but based on recording species and height, some guess can be made directly of how may kg of firewood are standing on one hectare.

- Growth, Yields: While starts have been made establishing volume and yield-tables for rapid growth species (mainly eucalyptus and gmelina), little, if anything, is available for local species. Adding to the uncertainties, we do not yet know what cutting regimes or cycles would be best.

C. Forest Use, Resource Stress

While knowing what is there is one of the keys to all subsequent efforts, knowing what the forest presently yields and is used for is just as important.

A second activity, and one which also can begin long before management objectives and a management plan are described, is a forest product and marketing study. We know that natural vegetation (forest, savanna and even steppes) is used by local people for much more than "just" fuelwood, sticks, posts, poles and other wood products. Secondary use involves food and forage; food for human consumption as well as pasture, grass and bush-browse for animals.

Tertiary products include everything else: non-wood, non-food or feed. The list is long, varied and as far as the local people are concerned, very diverse, varying from village to village. Grass for thatch, roots for dyes, pods and bark for tanning, all form essential ingredients of the traditional economy and society. Most everybody is aware that bush medicine depends to a great extent on "stuff" that comes from natural vegetation, but nobody from the outside can appreciate, let alone evaluate, how much bush and forest products contribute to local living standards, as modest as they may be, until questions are asked and a serious effort is made to determine (before "improvements" are made, not afterwards) the delicate, intricate and complex relationship between people and the vegetation -- the environment -- around them.

Such a study also will indicate reasons and trends for what outsiders view as indiscriminant over-use. Underlying reasons -- economic, social and cultural -- will be discovered which need to be factored into management decisions to avoid non-cooperation or open antagonism which will be costly, in economic as well as socio-political terms, to prevent.

D. Management Objectives

Understandably, national priorities will focus on the production of wood products: poles, timber, fuelwood, etc. If this is chosen as sole management objective, accents will invariably be placed on high yields, maximum biomass production, etc.

Not surprisingly, the local people living nearby then will be left out; fences and/or guards will appear, previous benefits will be lost and friction, even on national forest reserves, will erode the net benefits drastically.

There are other approaches. As experienced in some of the European countries several generations ago, it makes sense for the government to come to terms with the needs and views of the local people. Their objectives can be factored into the overall management concept. Well thought through compromises are possible which, in the end, are much more likely to bring about agreement between national government interest and surveillance capabilities and the interest and cooperation -- also in protecting the forest -- on the local scene.

E. Multiple Use - African Style

Village interviews, in spite of their recent origin, have furnished interesting results. People, not surprisingly, are interested and care what is going on inside the forest reserves. While at one time it may have been their land, and their main desire is to, once again, cultivate it, they just may be willing to abide by some general and sound conservation practices. This, under the right set of circumstances, may well lead to the sustained harvest of some forest products, even if it is not primarily fuelwood, of interest to people far beyond the immediate neighborhood, while at the same time some of the local needs and aspirations can be met.

In the next village, people may place their accent on grazing. There too some "special use" formulas may eventually lead to some joint, or multiple use arrangement which makes sense to the local people and the national overall goals.

Be that as it may, the first requirement is to know what's there and how, at present, it is being used. Secondly, national objectives should be matched with local needs and a willingness to cooperate. Once the various views have been combined into a multiple use formula, the management objectives can be defined. From this point on, the problems and potential solutions revert back to the technicians and economists, and work can begin.

F. Potential Problems

Lack of Homogenity

What at first site may look like reasonably homogenious soils, bush or forest, turns out, upon closer examination, as extremely variable and complex. Soils vary every 100 feet and with it growth conditions. Uniform vegetation proves to be anything but. Not surprisingly, preliminary test results vary from station to station and from crew to crew. Socio-economic patterns are widely scattered as well: old villages, new villages, different ethnic compositions, a never-changing mix of farmers and pastoralists which varies by seasons and depends on how much it rained the previous growing season all complicate the pattern.

The Future Cost of Administration Coverage

While the large surface areas of natural vegetation are a definite production advantage, it will be extremely costly to provide the network that is required to administer even the simplest set of management activities. Not only will supervision costs be great in terms of transport and number of field agents

required, but a more basic question is: who is going to do all that work? Based on the strength and experience level of existing technical services (with next to zero experience in managing natural resources other than through repression), it will take years before even a small team of fully qualified field agents is available.

The Economics of Improved Forest Management

The majority of existing areas of natural vegetation has in the past been high-graded so much that only a fraction of the potential volume presently remains. Although forests can, ideally, produce considerable wood, it will take a full tree growing generation -- at best -- to get the volume up to where it can produce. The very first volume figures from Savanna Woodlands and Tree Savanna indicate orders of magnitude of 50 m3/ha standing volume. Even if all of it were sold to raise the necessary cash to begin intensive management (which is not exactly the way foresters would go about it) this would not produce enough money to build firebreaks around the forest.

Conclusion

Not one of us here did not have to, in the past, reconcile false and over optimistic expectations in terms of what we could or should be able to contribute.

Some tried for awhile, gave their best but left more or less discouraged, or at least shaking their heads all the way to the airport.

Looking over almost twenty years of all this, I sometimes wish some of those who left disappointed would or could come back after awhile. Things have changed and progress has been made. Slowly, but surely, a new generation of host-country technicians is coming along. Among them are some that begin to be as discouraged as some of us were. But, there are others, sharp, articulate, who know the score and who keep trying and working against greater odds here than we can fully appreciate, let alone understand.

We now have a more realistic picture of the forestry situation in Africa and even if the future is not as rosy or bright as we at one time may have thought it would be, our local colleagues keep plugging away as best as they can and know how. Although many efforts have gone by the wayside, some have worked. Some villagers and some herders today are a little bit better off than they were when we started, thanks -- in part -- to our efforts and the efforts of our colleagues.

Whether that is enough to keep going, is everybody's own business. Thanks for listening. I'll see you out there where it's at.

Fred Weber

APPENDIX C

AGROFORESTRY AND NATURAL FOREST MANAGEMENT: POSSIBILITIES AND CONDITIONS FOR INCREASING POPULAR PARTICIPATION

By

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Consultant

Preface and Summary

Agroforestry and natural forestry management are social as well as technical activities. Even if all the technical problems identified in the previous paper were to be resolved, social constraints could handicap or prevent the technical solutions from being adopted.

This paper was commissioned by the Bureau for Africa to explore in greater depth the range of constraints which need to be recognized and dealt with in any project or program plans being developed for subsaharen Africa.

The author, James T. Thom son, is a political scientist associated with ARD, Incorporated, Burlington, Vermont. He has had extensive experience, particularly in francophone Africa, in designing and evaluating forestry and fuelwood projects whose success or failure has in most cases been determined by whether, how and why rural participants have supported (or failed to support) activities which presumably were designed for their benefit.

His analysis discusses constraints on participation from the perspective of the rural populace as well as of the governmental entities and associated political and legal factors involved.

Three rules of thumb are suggested as ways of identifying appropriate institutional frameworks that can enlist increased local participation and support:

- Do more of what people are already doing themselves in the realm of agroforestry or natural forest management.
- Start small, and probably private : Exploit the easiest gains first.
- Work from existing tree management models, by little increments, to more complicated operations.

The strategies, project, policy and program activities which evolve will be different for, and need to be adapted to, local situations prevailing with regard to private lands, bush commons and state forests.

In all of these, more attention must be given to policy reforms or changes which can lower the risk to rural participants and enhance the possibilities for expanding popular participation.

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Introduction

This paper reviews the need for, constraints on and realistic potential for involving rural Africans in natural forest management and agroforestry activities. Analysis in the paper focuses heavily on the range of institutional frameworks and activities which will be necessary to secure real local participation in and effective government support for these sector activities.

The paper contains three sections: (1) the need for popular participation in management of African renewable natural resources, particularly forests; (2) a discussion of constraints on participation from the perspective first of rural people, and then from the viewpoint of governments; and (3) a discussion of some potential frameworks for promoting participation in natural forest management and in agroforestry. The third section weighs relative merits of individualistic or privatized versus group or collectivized approaches to participatory resource management.

It is argued that private options should be pushed to the hilt, but not beyond into blind opposition to all group, community or collective frameworks for resource management. Indeed, in many cases the latter provide indispensable, complementary support for private activities, and in fact make the latter possible. Some resource management activities, furthermore, should be or must be undertaken on a collective basis.

The trick in each specific setting is to identify and create gradually the mix of public and private approaches which will attract broad support by making attractive resource management opportunities available to both rural people and relevant government policy officials and technicians. In many situations it will not initially be possible to do this. In such cases it must be decided whether the situation can be modified, given the level of effort and money promoters - generally donors and governments - are willing to invest. Where the answer is no, the answer is no: some things cannot be done. The investment is better made elsewhere, or not made at all.

I. POPULAR PARTICIPATION IN MANAGING RENEWABLE RESOURCES

A. Definitions

The word "participation" implies different things to different people. Participation may occur in any of the three major stages of a project: design, implementation and evaluation. "Full" participation is defined here to mean active involvement in all three stages. "Partial" participation designates imvolvement limited to the participation stage. Full participation thus suggests people not only execute, but help decide what should be done, and have a hand in assessing results. Underlying this definition is the assumption that people have insights to contribute and can, like planners, learn from the successes and failures of project experience. Partial participation, by contrast, suggests participants are limited to executing others' plans, whatever their real abilities. Note that it may be difficult in some cases to distinguish sharply partial from full participation. If controls over implementation are lax, "partial" participants may end up partly designing the project. As they implement it, they interpret and execute others' plans to some extent as they deem appropriate.

B. The Need for Participation

Should people be involved in managing natural resources? The answer to this question appears nowadays to be a qualified "yes." This does not preclude legitimate doubts however about whether "the people" can be trusted to do the right thing by the resource base all the time. Indeed, when institutional frameworks are ill-adapted, resource abuse rather than management must be expected.

Popular involvement in industrial forestry projects generally remains low, which is probably as it should be. But in the marginal lands of Africa, resources occur often in small amounts, in widely separated locations, rather than in rich, easily controlled concentrations. It is difficult to envisage effective environmental maintenance or management unless management occurs where the resources are. This implies partial participation at least is indispensable. In many circumstances, resource management may depend on the capacity to promote full participation.

Renewable resources in Africa, starting with topsoils, are generally thin on the ground. They vary in character, often dramatically, from place to place. Given this wide disbursement and heterogeneity of African renewable resources, participation appears the only feasible path to sustained-yield management on a large scale. Foresters can, by working with rural people on a full participation basis, eventually build up the foundation

for effective environmental management. Working alone, supported only by hired workers, they can at best properly control only very small parts of the resource base, or much larger parts poorly.

II. CONSTRAINTS ON PARTICIPATION: POPULAR AND GOVERNMENTAL PERSPECTIVES

The approach adopted here is relatively uncomplicated, but often generates insights about resource management problems and possible solutions. It involves simply the sytematic attempt to adopt, in turn, the perspective of parties interested in the problem. This often reveals the bones of contention which prevent people from doing those things which appear, from another perspective, rational.

Two topics are covered in this section: felt needs, in this case for sustained-yield management of renewables; and feasibilities analysis of possible management options, once popular interest in actions to promote sustained yield is clear.

As a general rule of thumb, there is little point in starting a project to be based on participation unless both an objective need exists and target participant populations clearly identify it. Projects can be and often are implemented in the absence of a felt need. Support can be purchased by direct payments, salaries or through food for work transfers. Or it can sometimes be coerced by government action. But unless sales of the resource itself generate revenue to cover costs, once subsidies or threats are allowed to lapse, such projects rarely persist for the time necessary to secure effective results in the environment. Even assuming positive impacts are produced, if people are not interested in perpetuating those results, activities, which in the eyes of presumptive participants have higher priority, will drain away support. The project will die.

A sub-category of this sort of artificially-induced operation may however prove successful. If it is possible to put natural forests on a profit-making basis, or exploit them on a non-subsidized but sustained-yield footing, highly participatory, self-managed enterprises may be developed over a period of years. This may occur even in cases where participants initially have no intrinsic interest in resource mangement, but acquire one - and the related skills necessary to sustain the yield - once they realize a market exists for products which they can generate. The desire to make money for the enterprise, or to keep salaries coming, may motivate a great deal of adaptive behavior as participants seek better ways to manage the resource.

A. Management Constraints from the Perspective of the Rural Participant

Assume people see the need for managing trees. They know fuelwood has become scarce and would like more. They perceive falling crop yields associated with shortened fallows and reallocation of dung and crop residues from fertilizer to fuel uses. They know wind or water erosion is destroying already marginal topsoils. They want to slow resource degradation. Where population densities are increasing, people may also wish to enrich the resource base to enhance carrying capacities.

Does this sort of felt need guarantee effective participation in efforts to manage resources for sustained yield?

Sorry, no easy answers. It all depends. On what? To reduce the answer to the crudest form, it depends on participants' belief that they will be better off if they carry out that activity - resource management in one form or another - rather than competing activities, and that they can cover all costs of the operation.

A more adequate answer can be had by simply separating out various categories of potential costs or constraints which might burden the activity, make it unattractive to participants, and endanger its success. One useful analytic framework of this sort directs attention in turn to technical, economic, financial, legal and political constraints. Any one of these factors can derail an otherwise promising project by convincing participants they will not come out ahead by engaging in the activity because they cannot master all necessary elements. It will be helpful to deal with these categories one by one, to point out a few main considerations relevant to each. Any full feasibilities analysis must of course be much more detailed, systematic and probing. And it will probably have to be reiterated several times over the life of the project, as new information, constraints and opportunities come to light.

Technical Factors

Most foresters begin assessing project potential by examining known technical packages. Given project site environmental conditions, what species if any will produce wood there?

Peasants make the same kinds of judgements, based on whatever information they have about local and exotic species. But many, as confirmed intercroppers, will want to know, in addition to what kind and how much wood a species will produce, whether it generates other on-site or consumptive benefits like soil fertilization or fruits, and what its possible negative affects might be on crop production, if the application is an agroforestry one.

Rural people may be willing to accept foresters' assurances that a new or known species will prosper under conditions in question. But peasants have often received inaccurate or irrelevant information from project workers. They will likely prove skeptical unless a local experiment demonstrates the feasibility of a proposed species. On balance, rural people will be more comfortable with species they know to be reasonably adapted to local constraints even if slow growers, than with new exotics. But if improved exotics or locals prove viable, as a result of genetic engineering, they may well be adapted with relative ease.

Economic Factors

Rural people have to decide whether a particular forest resource management activity will be worthwhile. It will leave them better off, in economic terms, only if the cash, material and labor inputs are more than covered by improved outputs (better crop yields, a marketable product such as building poles, browse for animals or fruits). Multiple purpose trees may offer solid advantages here from the peasant perspective, because they permit people to hedge bets: if the market for fruit or building poles becomes saturated farmers may still find trees which build soil fertility or help prevent soil erosion worthwhile.

Financial Aspects

Can the costs of the necessary inputs be financed? Establishment costs in labor terms must be compatible with agricultural labor requirements. Especially when seedlings must be planted during the rainy season, when cultivation cycles peak, trees are likely to suffer in comparison with crops. If that is probable, other reforestation strategies must be sought. Natural regeneration may offer a low-cost feasible alternative in some situations.

Farmers must also be able to finance the land necessary to raise trees and the delays in production of useful products until trees mature.

Legal Considerations

The prime considerations here are land tenure rules, tree tenure rules and enforcement costs. If trees on fields are automatically owned by those who control the land, it will simplify calculations and decision making. But tree tenure in Africa often proves complex. Sometimes planters own trees, without regard to ownership of land on which they are planted. Sometimes those who plant trees on borrowed land only own them if the landowner tolerates them for a certain period of time.

The period will vary with locality, and perhaps with changes in personnel of legal agencies which deal with such cases.

Throughout francophone countries in West Africa, tree tenure is, on paper, subject to extensive regulation by state forestry code provisions. Often enough in practice some version of code rules does influence tree tenure. If landowners are prohibited from freely harvesting trees on their land, as frequently happens under code regulations, this lack of effective control over trees may make them extremely reluctant to allow protected species to regenerate naturally on their fields. Under such circumstances planting trees in fields, for instance as part of an agroforestry organic fertilization operation, may be simply out of the question because of the additional work involved.

Whenever community woodlots are set up, tenure issues may also pose problems. Responsibility for producing the wood must be clearly specified and accepted. Even more important, distribution of wood produced must be clearly spelled out and agreed upon by all participants, and by any other parties involved (e.g., foresters or local political or administrative personnel).

In all these situations, clear distinctions must always be drawn between paper rules and working rules. This is the old issue of formal versus effective laws. People who have to bear the cost and risk of an operation will generally care more about the reality of working rules than about paper provisions.

Working rules are a function, in any setting, (1) of the formal rules; (2) of the power and authority of those designated to interpret and enforce them, and to decide in cases of dispute which rules should apply and how; and (3) of the recourses available to those whose property claims to trees have been violated.

If officials cannot enforce rules, or if they can manipulate them at will to meet their own ends, then tree tenure rights will be highly uncertain, and investments in managing trees risky. If tree owners cannot afford to invoke recourses when wood is stolen or destroyed, either because the game is not worth the candle (the resource is being nibbled to death, but no single nibble justifies a reaction), or because it is impossible to identify those who violate formal property rights, property claims will not be invoked, and investments will remain risky.

Political Considerations

The kind and quality of organizational structures available for resource managment purposes strongly conditions viable collective options. So does the facility with which appropriate, effective structures can be created if necessary, and the ease or difficulty with which relevant rules can be modified.

The nature of the resource management problem will do much to determine the kind of organization appropriate in a given setting. Where natural forest or agroforesty activities can be undertaken effectively by individuals or by small voluntary groups composed of individuals who deliberately choose to work together, political feasibility of sustained-yield resource use will be high. This will be the case, for instance, when peasants live in dispersed compounds on their own fields and can control use of natural regeneration within sight of the compounds without too much trouble.

In many other settings, some degree of group or collective organization will be necessary to establish a framework for woodstock management. This will likely be the case when the resource in question - perhaps a natural forest - is a common property good, to which many different groups have claims and liberty of access. If supplies are abundant and demand slight, management may be quite unnecessary. But if supplies do not cover demands, competing claims will have to be adjusted. Where possible, complementary activities which enrich the resource base should be developed. In most situations where resource management is necessary, some means will have to be worked out to bring demand into line with carrying capacity. If users involved have no options elsewhere - alternative sources do not exist, or users cannot get access to them - then decisions on carrying capacity will be hard ones to make, though indispensable.

B. Management Options from the Perspective of Governments

The same sort of constraints analysis can be used to assess government perspectives. Limited technical feasibility of rainfed plantation forestry in arid areas at present has led to the current interest in managing natural forests. Economic constraints likewise discourage plantation forestry. The value of wood produced often simply does not cover establishment and maintenance costs. This may only change if genetically-improved species can be made available at reasonable cost in the field. Particularly in arid areas, drought resistance qualities at least comparable to those of local species will be a condition for success. Until such time as these types of innovations are widely available, forestry in arid areas will simply not be economically feasible.

Financial constraints have also arisen as a result of the general failure of earlier emphases on plantation forestry and village woodlots. Donors have begun to question the wisdom of plantation forestry especially. So have some governments. Funds to finance such projects have become much scarcer. The debt burden of many African governments is increasing. Immediate

priority items such as famine relief food imports cl im an increasing portion of the budget. Against this background, loans at market rates cannot be secured, even if governments are willing to indebt themselves further.

Legal feasibility may also pose difficulties, even when activities are accepted and promoted by governments. Rural dwellers' resistance to certain programs (e.g., village woodlots, because of concerns about distribution of production), may raise problems of legal feasibility. In other types of projects where participation is equally important, peasants now hesitate because of unfavorable or uncertain land and tree tenure rules. Yet existing government resource management rules may not permit appropriate modifications to accomodate rural people's concerns.

Political feasibility of many forestry projects based on popular support may be problematic because appropriate local organizational frameworks simply do not exist. In effect, local communities may have to be authorized to make certain binding decisions about resource management practices if renewables are to be placed on a sustained-yield footing instead of being progressively degraded.

Governments may be quite reluctant however to decentralize power to the local level. Officials may fear such local organizations could be turned against them. They might also foresee unacceptable conflict at the local level among different types of resource users, as dominant groups or individuals seek to impose their own use regulations with which others may not agree. In some situations it may also be politically infeasible to obtain the kinds of rule modifications necessary to make projects work (e.g., modifications of forestry codes, or of civil servants' status and relations with clientele groups).

III. FRAMEWORKS FOR PARTICIPATORY AGROFORESTRY AND NATURAL FOREST MANAGEMENTS

The challenge of designing agroforestry and natural forest management projects in which full participation becomes a reality turns, in Africa, on the relative poverty of the continent's renewable resource base, and of the people who make their livelihood from that base. Solutions which will endure must pass feasibility tests of the sort just outlined. They must be both productive and low cost. Such are not easy to come by, as anyone familiar with the last two decades of forestry in Africa can testify.

Collective action may be necessary in agroforestry or natural forest management. But it will almost always increase costs of

resource management, whatever positive or negative effect it may have on benefits, because organizations don't run for free. Time, money and effort must be devoted to field and maintain effective ones. Thus resource management solutions based on private initiative should be stressed whenever possible. But private solutions will not work in most cases without some form of collective back-up, if only in the form of an appropriate set of property rights and a judicial system capable of enforcing them when rights are violated. Such a system can well be highly localized; but even at that level, it must involve some collective decision making about sanctions, and thus, organizational costs.

Other forestry resource management problems cannot be handled entirely on the basis of private initiative because the difficulties far exceed abilities of individuals or small voluntary groups to cope with them. Areas where deforestation threatens maintenance of a water regime in a drainage basin provide an example of this sort of problem. The basin must be managed in part as a common property resource, even though it may well be possible to handle some aspects through private initiative, e.g., reforestation by individuals. This might perhaps be linked to soil erosion efforts on their own land. Where, however, the problem exceeds the capacity of a single individual or family, coordinated measures must be envisaged. Reforestation of common lands in the drainage basin, or control of major water erosion sources illustrate this kind of situation.

A. Institutional Design for Participation: Rules of Thumb

Several rules of thumb can be noted which help identify appropriate institutional frameworks for participatory agroforestry or natural forest management projects. All these rules reflect an assumption that reforestation will be difficult. Local people will be uninterested because forest supplies remain abundant or other problems are more pressing. Or, because carrying capacity has been overtaxed, necessary inputs will be hard to come by. Labor migration may complicate things by cutting back on labor supplies during the non-agricultural parts of the year.

1) DO MORE OF WHAT PEOPLE ARE ALREADY DOING THEMSELVES IN THE REALM OF AGROFORESTRY OR NATURAL FOREST MANAGEMENT.

Identify first the positive, going forms of resource management. Almost always something exists along these lines. For example, people may allow certain valued species to regenerate on fallowed or even on cultivated lands. In West Africa, fields full of Acacia albida or Butyrospermum parkii surprise

no one. Neems (Azadirachta indica) in compounds and on village streets are a common sight and people regularly plant more. Eucalyptus in Ethiopia and Acacia seyel in Sudanese rotational land use systems, Commiphora africana and Euphorbia balsamifer around gardens everywhere in the form of live hedges, provide other examples.

That these activities occur suggest they pass, or in the past passed, the feasibilities tests. The technology is known. Many people have mastered it. They currently draw benefits from their investments in managing these resources. Note that these investments may be miniscule in terms of time, effort and money involved. That should be an important clue as to why those particular resources, and others in the same category, exist and are being managed.

Initial efforts to promote agroforestry and natural forest management in a milieu should focus on these successful indigenous or adopted strategies. Remember: there is nothing wrong with a cheap, uncomplicated, easily applied method if it gets the job done. Indeed, there is everything to be said for it. Such solutions should be actively sought, in collaboration with fully participant users.

2) START SMALL, AND PROBABLY PRIVATE: EXPLOIT THE EASIEST GAINS FIRST.

All but the richest peasants seem to be conscious risk avoiders rather than profit maximizers. Big, high cost, high risk/high gain schemes frighten people concerned about survival security. In this context, a two-acre village woodlot may be a high risk/high gain scheme, assuming of course it is technically sound given site conditions. Apparently many have been very costly.

Low cost, low risk schemes avoid these problems. Planting one tree next to the compound wash area reduces the risk and increases the chance of success. The tree can be easily protected and will be automatically trickle irrigated every time someone bathes. This make scarce water do double duty. If the tree grows, it will produce wood, shade, and perhaps other forest products depending on species. That means it will be a success in the eyes of those who planted it. By shifting the wash area, they can replicate the success.

Is there room for more trees in compounds? If so, encourage people to fill their yards with trees. Six or seven neems could be raised in many compounds. Wood harvested when trees mature may not produce a great profit, but it may cut down on outlays for building poles, beams and firewood - also toothbrushes.

In the meantime, trees provide shade and modify the micro-climate around the house. The negative impacts of harmattan winds and sandstorms may well be markedly reduced in well-wooded villages. The most astute villagers will notice this, in a process of non-formal education through experience. This point can be easily made as well in radio or television spots directed to rural audiences.

Within limits, these kinds of micro-efforts help build a local pro-tree constituency. This is terribly important, because it begins to give insiders, at the local level, and outsiders, leverage to press for greater investments in renewables management, for new kinds of behavior favorable to management, and for changes in tree tenure rules where that seems appropriate. Such changes may involve modifications in the forestry code. They may take the form of local, autonomous efforts to privatize an unmanaged natural forest commons, or to collectively regulate access to such a commons in light of carrying capacity.

3) WORK FROM EXISTING TREE MANAGEMENT MODELS, BY LITTLE INCREMENTS, TO MORE COMPLICATED OPERATIONS.

Farming system and livestock system research strongly suggests that peasants and herders have calculated resource management options available to them with a good deal of finesse. It also suggests they have made the choices they have because these increase personal security. Resource management promoters have to deal with that mentality. Peasants will view radical departures from existing systems, however badly the latter may be working at the moment, with some skepticism. To introduce such innovations and have them accepted, popularizers must overcome participants' mental resistance. Miracle clones may someday perform well enough to accomplish this. Otherwise, efforts to identify areas where improvements can be introduced at the margins will likely be most productive in terms of actually encouraging people to manage renewables better.

Bullshit forestry potentials may illustrate the point. Much natural regeneration seems to start in the intestinal tracts of small ruminants. Seeds are packaged in high-grade nutrients, for later random distribution throughout pasture and stable areas the animals frequent. By slight modifications of behavior, it would be possible to collect digested, manured seeds from stabled animals. These could then be planted in locations desired by farmers. If the seeds in question are Acacia albida, the extra investment of effort is probably already covered by nutritional gains to the consuming animal. Again, short media spots could promote this strategy, as could agricultural or forest extension agents.

Planting could be reduced to the absolutely minimal act of pushing a sharp stick into the gound, inserting a few goat pellets, and covering them with a quick stomp of the heel. Germination rates might be very low, and survival rates lousy. But then planters would not have invested eight or more months working up seedlings in local nurseries.*

Other operations of this sort could be envisaged. They require close study of existing systems. Modifications must then be worked out gradually, with full input from participants, until the strategy becomes a really low-cost, effective reforestation method. None is likely to revolutionize African social forestry. Nor will any alone, or all together, resolve the wood supply and environmental crises which now afflict many African rural areas. But they do offer the promise of something low cost and high potential in terms of involving people in active efforts to manage renewable forest resources.

B. Mixed Strategies

Once the easy opportunites of this sort have been exploited, more difficult activities will have to be envisaged. Inevitably these will involve some element of collective decision-making, and perhaps collective action as well.

Wood poaching may not be a problem, because virtually everyone respects a clear set of land tree tenure rights. On the other hand, this issue may arise during the period of quick gains. People may find trees they plant or protect are being harvested without authorization by others. Passing herders may cut browse for their animals. Fellow villagers may collect fuelwood or building poles on the sly. If so, technically effective reforestation strategies will appear uninteresting because of risks that

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*Weaknesses in the B.S. Forestry curriculum to which I have been exposed have undoubtedly led me to miss important soft spots in this strategy, or opportunities to improve it. Should seeds be treated with insecticide? How can pellets picked in December or January best be preserved until the appropriate planting time? When is that? Could it be manipulated to avoid conflicting with agricultural labor requirements?

Abul Gasim Seil El Din, a Sudanese forester, first discussed B.S. Forestry, option dechets des chevres, with me in Zinder, Niger one night in December 1979. Others have undoubtedly had similar half jocular discussions of the topic elsewhere. This suggests the idea is far more than a mere joke.

investors will merely be making sacrifices to provide free riders* with more wood.

A solution must be found to this problem, whether the wood be located on private land, in a bush commons, or in some type of state forest. Land and tree tenure rules prevailing in the Sahel will be determined by forestry codes in francophone Africa. In other places, a combination of land law and forestry regulations will establish terms and condition of access to land. In exploring this topic, private lands will be discussed first, then commons lands and finally state lands. In each case, suggestions will be offered about appropriate institutions, and methods of achieving them.

Private Lands

They key to legal feasibility in managing woodstocks on private lands and in commons is some form of localized tree tenure system. Local control over land tenure rules may also be critical. Francophone African formal legal systems tend instead to centralize control over tenure in state conservation agencies.

State control over tree tenure rules formally applicable to those parts of the woodstock located on "private" lands fails because enforcement systems break down. Most state conservation or forestry agencies lack the personnel necessary to maintain effective authority over woodstock use in much of the country. If they claim that authority, nonetheless, and make a half-way effective attempt to assert it, they do not create the conditions for adequate resource management. Instead they block the development of local tree tenure systems which could begin to provide a climate for investment in new woodstock increments when people perceive the need. Such is the case in much of francophone Africa. Local systems of tree tenure rules in these states may arise. Indeed, in some places they have begun to already. But at present they have the status of local privileges, tolerated by this or that forester, or they exist as outlaw regimes only, in conflict with formal state rules.

These state-imposed restrictions on local experimentation to develop workable tree tenure systems should be carefully scrutinized. They should be supplanted on a trial basis by local control in those areas where people seem most interested

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*An individual who uses a scarce renewable resource without contributing to the effort others are making to reproduce it for sustained yield.

in regulating woodstock use. It is by no means clear that such experiments will succeed everywhere. They face formidable hurdles, some of which will be briefly referred to here.

Rules only influence behavior if they are regularly enforced when infractions occur. Otherwise, as old Thomas Hobbes had it in 1651, "they are mere paper promises, and of no strength to secure a man at all."

Enforcement, as a hundred T.V. police serials have taught us all, is an expensive and potentially risky business. Citizen arrests are a rare phenomenon, though the occasional liquor store bandit does die at the counter when the owner decides he will protect his own. African peasants sometimes try the same thing with herders, and often end up regretting it.

The point to be stressed here is that rule enforcement cannot be left to happenstance. It must be organized and funded. In the least expensive scenario, costless, informal but relatively constant surveillance reduces the opportunity for wood poaching to a minimum. Rarely do people try to steal wood from live trees in others' compounds.

But trees will not often be subject to such easy control. In agroforestry applications they are scattered far and wide on fields little used outside the agricultural seasons. Then use can be controlled only in one of two ways. A supernatural detection system - not Landstat, but a fetish whose power all accept - may make use infractions impossible to carry off in secret. If this low-cost control method is not available, because of conflicting belief systems, then humans will have to do the job themselves. That means someone must guard trees during those periods when costless surveillance is not available for field trees, e.g., during the non-agricultural periods.

This requires organization. Organization depends on the capacity to make rules and raise revenues. Assuming adequate manpower is available, guard duty might be handled on a rotating basis. But when guards fail to show as required, they must be subject to punishment or the system will collapse in short order. If adequate manpower is not available, or the rotation cannot be enforced, someone will have to be paid to provide surveillance.

Revenue then becomes the immediate constraint. It may be raised through local rates, if local communities are authorized to tax themselves, and if the necessary support for the tax can be developed. It may be possible to allocate funds from other sources to this end. Cooperative surpluses, proceeds from collective fields or from harvesting and sale of wood in bush commons come to mind in this regard.

Guards will always require residents' support in enforcing tenure rules. Such "co-production" of tree policing services by residents will reduce somewhat the need for organized surveillance. It will depend in every case however on people's willingness to finger neighbors as well as outsiders who violate tree tenure provisions. This may not occur easily or quickly. Particularly where trees have long been abundant common property goods, people may consider such behavior unneighborly, even though they recognize wood is now becoming scarce.

Local residents are the best judges of probabilities here. The consensus may be that few will report illegal wood use when they observe it. Then the only course may be to allow the wood supply situation to deteriorate to the point where community members are willing to take action against observed infractions.

It will speed the process of local people shouldering enforcement burdens if they merely begin to prevent unauthorized cutting on their own lands when they detect it. If enough local residents begin producing to meet their own needs, community tolerance of free riders will gradually fade. Such generalized social pressure might even in some instances suffice to stop most unauthorized cutting.

Bush Commons

Organizing to manage bush commons involves three steps. The first is a decision to manage. It may take the form of a subdivision of the commons into discrete parcels, allocated to named and known individuals or groups. It may, on the other hand, take the form of a community decision to establish use controls while maintaining the legally joint status of the resource.

The next step involves establishing a set of use rules. These should take account of all different user groups and their needs and claims. If use regulations are to inspire confidence, they will have to be seen to create equitable relationships among users of the resource. Otherwise, losers' dissatisfaction - expressed perhaps in an occasional attack of pyromania - may bode ill for attempts to manage the resource for maximum sustained yield. It seems highly likely that local people must fully participate in elaboration of these rules if controls are to be effective. Likewise, provision must be made to change the rules when necessary, in light of changes in use patterns or supply conditions. It will undoubtedly be necessary every year to determine the annual carrying capacity of the resource. The "stint" commission should probably include representatives of all user groups, chosen by group members.

The third step will be organizing enforcement of use regulations. Discussion above outlines the major elements of this

activity. It might be easier in some respects to set up a policing mechanism for a commons if a marketable good is being produced. Funds raised through sale might well partly finance salaries of guards charged with policing the commons.

State Forests

Because forestry agencies generally exercise full formal control over state forest resources, participation in designing management strategies may not be necessary. Decisions must be made about goals of the management effort. If the primary purpose is to put the resource on a sustained-yield footing, or stem degradation, it may be useful, but not absolutely necessary, to have forest users or potential users participate in working out use regulations. Participation at the implementation stage may be limited to merely serving as hired laborers or paid guards. These individuals may only execute orders which flow from an imposed management program. This seems most appropriate, for instance, at the experimental stage of a project, when management strategies are being tested for technical validity. If the primary goal is to produce wood for sale to nearby urban populations, this mode may continue to be the most appropriate.

At later stages, full participation, in the sense of setting management plans as well as implementing them, will likely figure as a medium or even short-term goal. This will be particularly likely in projects where the goal is to enhance resource value for direct users, in hopes that they will then work to maintain the resource.

APPENDIX D

THE FORESTRY SUPPORT PROGRAM: WHERE IT'S BEEN, WHERE IT'S GOING AND HOW IT CAN HELP YOU

By

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Administrative and Organizational Background

The Forestry Support Program (FSP) is a unit of the USDA Forest Service, International Forestry Staff, established in 1981 to provide technical assistance in forestry and related natural resources to the U.S. Agency for International Development (AID). FSP is jointly managed by the USDA Forest Service and the Office of International Cooperation and Development (OICD) with funds provided through the Forest Resources Management Project (936-5519) of AID's Bureau for Science and Technology, Office of Forestry Environment and Natural Resources (ST/FNR).

The original AID project was approved for FY'80-83. In late 1982, the project was evaluated by the Society of American Foresters, finding the project fulfilling the purposes for which it was designed and concluding FSP should be continued and expanded. AID then authorized an extension of the project, including FSP, through FY 1988, with additional funding.

The original objectives of FSP were to:

- Provide AID's regional bureaus, regional offices and field missions with technical advice on tropical forestry and natural resources management, including advice on project design and feasibility;

- Manage a roster of forestry and natural resources expertise which is used to identify qualified individuals for long-term or short-term AID or cooperative AID/Peace Corps assignments overseas;

- Identify and evaluate qualified forestry institutions for participation in AID forestry projects; and

- Provide general forestry information to AID and Peace Corps staff and facilitate the exchange of technical information between natural resources project personnel;

In late 1982 a fifth dimension was added:

- Organize forestry training courses, develop training materials and aids, advise overseas forestry schools on curriculum design a assist AID in designing adequate training components into forestry projects.

The Forest Resources Management Projects's components other than FSP are the support for three Regional Forestry Advisors (RFA) and strengthing the Peace Corps programs in forestry including USAID collaboration. The regional forestry advisors are Jim Seyler with REDSO/ESA in Nairobi, Kenya; Henry Tschinkel with ROCAP in San Jose, Costa Rica; and Deanna Donovan for Asia in Jakarta, Indonesia. For Peace Corps in Africa, studies of the potential for AID/Peace Corps/Host Country collaboration were conducted in 11 African countries. Those countries were Benin, Botswana, Kenya, Liberia, Mauritania, Mali, Niger, Senegal, Tanzania, Upper Volta, and Zaire. A Peace Corps Forestry Workshop sponsored by this project was held in Mombasa, Kenya in May, 1982 and in Ouagadougou, Upper Volta in June, 1983.

Under the amended and extended project, FSP continues to work toward the above objectives, but also began new initiatives as follows:

- o Technical support to AID in forestry research;
- o Stimulus to private forest enterprise by identifying and developing forest products market opportunities in AID-recipient countries; and
- o Continuing investigations on the relationship between agriculture and forestry in the Tropics

Peace Corps under the expanded project has been asked to conduct an investigation of AID/PC forestry programming opportunities in PL 480 activities. A three person team has visited Ghana, Ivory Coast, Senegal, Niger, Kenya, Somalia, Rwanda, Lesotho and FAO in Rome, Italy.

Staff

The Washington unit of the Forestry Support Program consists of six professionals and three secretaries. No changes in the staff of Regional Forestry Advisors have occurred since the original three were recruited in late 83/early 83. Figure 1 shows the existing structure of FSP, and Appendix A provides brief resumes of FSP professional staff.

Sam Kunkle was program manager from March 1981 to December 82, Les Whitmore was program coordinator for Asia August 81 to June 82. Dave Harcharik was promoted to Director of USFS International Forestry Staff in July, 1984.

Additional FSP staff are expected in the near future. Under recruitment by North Carolina State University, with funds from the FSP RSSA, are a Forestry Enterprises Coordinator (FEC), Market Development Specialist (MDS) and a secretary. The FEC and secretary will be assigned to work closely with FSP in Washington; the MDS will be based in Latin America.

Early next year an individual will be hired to investigate Agriculture and Forestry relationships

The extension also provides authorization, without appropriation, for five regional forestry advisors through FY 88 and support for the current three to February, 1985.

Technical Consultations

FSP provides direct on-site technical assistance to AID missions in three ways; by (1) making its own staff available for overseas duty travel, (2) hiring outside contractors through the RSSA, and (3) securing in-kind contributions from the Forest Service. Much of this acitvity has been outside of the normal USAID funding streams and in many instances activity that might not have occurred but for FSP.

Regional Forestry Advisor Jim Seyler has provided, in his two and one half years with REDSO/ESA, a continous stream of consultancies to the AID missions in east and southern Africa as well as advice to AID/W. His activities and

observations will be the subject of a separate discussions at the workshop and not detailed here. Examples of FSP technical consultations to the Africa regions other than the above include:

- Forestry and Natural Resource sector assessment for Somalia in preparation for their first CDSS;

- Preparation of an issues paper and assistance in the workshop "Sahel Resource Inventory and Mapping Coordination Workshop" held in Bamako, Mali May 20-24, 1982;

- Analysis of the Senegal's Master Plan for Forestry Development;

- Consultant to CILSS Forestry/Ecology Team meeting in Banjul, the Gambia November 16-21, 1982.

- Two Consultants (travel) to this workshop to advise on appropriate forestry interventions.

Criteria for provision of FSP services include: (1) no other appropriate source of funds (2) activities likely to provide significant technical/professional improvement to AID activities (3) concurrence by Africa bureau/W, ST/FNR, FSP program manager, OICD contract management, missions and affected governments (4) availability of personnel (both skills and timing).

Roster Devlopment and Referrals

A major service provided by FSP is to advise AID offices on the qualifications and availability of foresters and related natural resources specialist for short-term or long-term assignments, usually overseas. To do this, FSP manages a roster of forestry and natural resources expertise. The roster consists of both detailed resumes and coded information on applicant's backgrounds which is stored for rapid access in a electronic data storage and retrieval system.

The roster has grown rapidly and steadily since FSP was established. At the end of FY 83 the roster contained 1,586 entries. By August 1984, the number of applicants increased to 1,950, representing an average increase of about 8 per week.

Applicants represent all facets of the professional forestry community. At the end of FY 83 the organizational affiliation of candidates was as follows:

USDA Forest Service	19%
Other U.S. Government agencies	9%
Universities and Colleges	30%

Private Consultants	31%
Private industries	6%
Other	5%
	100%

FSP has made a concerted effort to attract senior-level experienced people to the roster. The effort has been highly successful. Of the 1,784 persons in the roster, 591 have Ph.D's, 504 M.S.'s and 445 B.S.'s (highest degree obtained). Over 900 have research experience, and 774 are considered to have senior-level experience (equivalent to a GS-13 or above).

Most of the applicants have prior development experience overseas. Some 478 have experience with the Peace Corps, 334 with AID, and 238 with FAO. Geographically, there are 807 applicants naming experience in Latin America, 606 in Asia, 512 in Africa, and 165 in the near East.

FSP roster services are widely sought throughout AID. In FY 83 FSP provided referrals in response to an estimated 95 requests, or two per week. The roster is managed primarily on behalf of AID. Upon request, however, FSP does assist international development agencies with troublesome recruitments. This sevice takes the form sending job announcements to potentially qualified individuals on the roster suggesting they contact the sponsoring agecy directly if interested in the assignment. FSP does not generally provide names and resumes direct to private firms or to international agencies unless they are engaged in work for AID. International organizations assisted by FSP with recruitment include the World Bank, the Inter-American Development Bank, the Organization of American States, and the Food and Agriculture Organization of th United Nations.

Maintenance of the roster is a major task, For it to be useful, the roster must be kept current. In FY 83 FSP began updating the roster by contacting all applicants with whom we had little substantive contact for a year and a half or more, requesting that they update their biodata in FSP's files. A major cleaning and reorganization of the resume files was also undertaken.

The roster has served as an inspiration to other organizations seeking qualified personnel for overseas assignments. To date, FSP has explained the roster organization and management to: The Environmental Planning andlManagement Project managed for ST/FNR by the International Institute for Environment and Development (IIED), the USDA Cooperative Extension Service, and USAID Africa Bureau, the Society of American Foresters (SAF), the International society of Tropical Foresters (ISTF), OICD and several private consulting firms.

AID Forestry Program Studies

As a service to AID, FSP attempts to monitor the overall level and nature of the AID forestry portfolio. In FY 83 FSP undertook four such forestry program studies:

> Public sector forestry projects funded by the U.S. Agency for International Development, by Paul A. Lundberg and FSP staff,

- Research, training and technical assistance components of AID forestry projects, by Paul A. Lundberg and FSP staff,

- The AID forestry community, by FSP staff and

- Forestry-related implications of AID's private enterprise initiative, by Pat Durst.

A fifth study was carried out early in FY 84:

- Food aid and forestry, by Peg Clement.

All of these studies except the AID Forestry Community were carried out with assistance from outside contractors or in-kind contribution of professional time from the Forest Service, working together with FSP staff.

Another activity related to the program studies undertaken by FSP in FY 83 was the preparation of a poster illustrating the main elements of the AID Forestry Strategy. The poster, prepared on vinyl backing, was presented at the International Symposium on Reforestation Strategies held in Wageningen, the Netherlands, in September, 1983. It was also exhibited by FSP at th Annual Convention of the Society of American Foresters in Portland, Oregon and will be used at the upcoming World Forestry Congress in Mexico City, Mexico.

Special Technical Studies

In FY 83 FSP began the first of its special technical studies undertaken to shed light on specific technical forestry problems afflicting on-going or planned projects in a number of AID-recipient countries. The studies of significance to Africa were:

- Review of CILSS forestry sector program analysis papers, by Fred Weber.

- Managemet of the natural forestrs in the Sahel Region, by J. K. Jackson and

- Forestry and Forestry Research in the Sahel; an overview, by John Blumgart.

Forestry Training

In January 83, FSP began a new thrust in forestry training. The strategy for implementing the training component is: (1) advising on training during AID project design, (2) forestry curriculum development, (3) organization of forestry short-courses, and (4) development of instructional materials.

Perhaps the most important impact that FSP can make on forestry training is to ensure that adequate training components are designed into future AID forestry projects and that appropriate U.S. institutional support is provided. In FY 83 FSP made major training inputs to two forestry projects: the ASEAN Watershed Management Project and the ROCAP Regional Watershed Management Project.

Through its own staff or by hiring outside contractors, FSP is able to advise developing country forestry schools on curriculum design. At the request of USAID/Honduras, in FY 83 FSP provided a short-term contractor to advise the Honduran National Forestry School (ESNACIFOR) on restructuring its curriculum for technician-level training and a consultant to Landivar University, Guatemala on developing the institutes environmental sciences program.

Through the FSP RSSA, funds are available for the organization and teaching of short-courses relevant to the needs of foresters in AID-recipient countries. In FY 83 funding was arranged for a short-course on agroforestry to be conducted by the Center for Research and Training on Tropical Agriculture (CATIE) in Turrialba, Costa Rica. The course was given in Spanish in November, 1983, for AID staff and host country participants.

Progress was made in FY 83 on the proposal of Henry Tschinkel, Regional Forestry Adviser for Central America and Panama, to develop a Spanish language training manual on agroforestry. The manual will serve as instructional material for self-guided study or for course work in forestry schools in Latin America. Agreements are now being drawn up between OICD, CATIE and the Organization for Tropical Studies (OTS), a U.S. based university consortium, with field facilities in Costa Rica, for preparation of the manual.

Also as part of the training component, FSP has funded the travel and participation of developing country foresters to international meetings and training activities. Assistnce to Africans traveling have include a Ugandan to the IUFRO Conference on Forest Products Research in Madison, Wisconsin; researchers from Upper Volta and Madagascar to the IUFRO conference in Forest Tree Improvement in Harare, Zimbabwe; A Malian to the Wageningen Symposium on Reforestation to present, with George Taylor, a paper on the Sahel experience in forestry; and students in MS and Ph.D programs in the U.S. to the SAF National Convention in Portland, Oregon and Quebec City, Quebec.

Proposed activities or activities from other regions, include travel assistance for graduate students, both foreign nationals and U.S. citizens, to collect thesis data (FSP fellowships) and travel assistance to U.S. faculty on sabbatical to work with USAID or national governments.

Of special interest to this group are proposals for FSP investigation of the status of training and advanced education for Africa. One such is a proposal to uderstand (and perhaps influence) the participant training in forestry sponsored throughout the region. The effort would review both long and short term training provided to date, establish a means of periodically updating this infornmation, review in a systematic was the relationships between training and program priorities, and get results of those reviews into the hands of missions HRD and program offices.

Another similiar proposal results from a 1982 SAF Internationl Forestry Working Group study that identified 127 Africans studying at U.S. Forestry schools and an additional 45 in Canadian forestry schools. The proposed study would update these nunbers and identify individuals, their country of origin, program of study, sponsorship, and duration of study. The purpose would be to intercede, when appropriate, to improve the quality of their education and stateside experience and to be able to tap their expertise in support of USAID activities.

A third proposal is to inventory Africa-wide forestry training and education needs and capability. This assessment would look into what has been done; capture the data from historic FAO studies plus the information now being received by FAO, but not published; make contact with other donors (e.g. CIDA, ODA, GTZ, EEC, FAC, BANK) on what they have done or are doing, and make selected country visits. The objective would be to find out what needs to be done and evaluate if what has been done has been adequate.

The inventory would develop answers to the following questions, among others that might also be treated:

(1) Regional versus national schools -- how many and where? This question has been argued for some time. The answer should look into the best mix to serve higher education needs.

(2) What and where should M.S. and Ph.D candidates receive education? What is appropriate to be received in the U.S., Europe or Africa. The initial high priority to be identified from the inventory is the question of appropriate post graduate training particularly for West African foresters, taking into the Anglophone vs. Francophone distinction.

(3) Are the existing institutions meeting needs? If they are not, what is needed to bring them up to par? To obtain the answer there would be an evaluation of existing curriculums and course structure.

(4) Can existing manpower programs and projects be restructured to include more forestry participant training if the priority is identified? The information from task (1) above would be used here.

(5) What are the technician and continuing education needs?

FSP is sponsoring, the University of Michigan and the USFS an International Seminar on Forest Resource Administration and Management to be held in nine locations in the Eastern United States starting October 6, 1984 in Boston, Massachusetts and finishing November 3, 1984 in Atlanta, Georgia. The seminar is designed for senior forestry administrators responsible for the establishment, operations and management of forest servies in developing countries. Specific details are included in State cable 109848.

The course objective is to transfer to developing country forest managers concepts of policy, administration and management of U.S. public and private forests which are relevant to LDC situations. When viewed from a developing country perspective, the mistakes and successes of forestry as practiced in the U.S. can be instructive to many developing counties. The approaches

practiced by local, county, state organizations and the federal Forest Service can be seen to be responsive to many of the same factors which impact developing countries today. Therefore, emphasis will be on forestry practices, activities and concerns which are independent of specific ecosystems, but can be applied to some degree in all regions of the world where people interact with forests and trees.

University Liaison and Institutional Profiles

In FY 83 FSP made two important initiatives aimed at greater involvement of the U.S. forestry university community in AID's development assistant work. The first of these was the establishment of direct liaison with the ad hoc International Affairs Committee of the National Association of Professional Forestry Schools and Colleges (NAPFSC). The five-member Committee has convened twice in Washington. The agenda consisted of a series of discussions with AID, OICD and Forest Service staff (including FSP) on how U.S. forestry schools could contribute to AID's work. A report of the 1983 meeting, entitled "Collaboration between USAID and U.S. Forestry Schools" was issued.

The second major initiative directed toward the university community in FY 83 was a systematic expansion by FSP of the institutional profiles it had begun developing on U.S. forestry schools. The information base for the profiles was expanded by requesting college catalogs and related course material from all U.S. professional forestry schools, by visiting a number of schools, and by making telephone inquiries to other schools. In FY 83 FSP staff visited the forestry facilities of the Universities of Arizona, Texas A&M, Stephen Austin State University, Wisconsin, New Hampshire, Maine and Vermont. Richard Kelly, a short term contractor to FSP, assisted in develooing the profiles and in collating the incoming material. This activity was successfully completed in early calendar year 1984. FSP distributed to AID Missions and offices a set of profiles on the 44 professional forestry schools in the United States which are accredited by the Society of American Foresters. The profiles are expected to be useful in identifying institutional capacities of American forestry schools to undertake contract work for AID and in placing foreign forestry students in educational programs in the U.S.

Information Exchange/Technology Transfer

FSP has established a modest technical information referral service used to provide AID direct hire and contract forestry staff with information on forestry technology. A reference collection of information relevant to AID forestry projects overseas is maintained in FSP offices. The collection is used by FSP to respond to queries from the field and by foresters visiting FSP offices either on their way to or from tropical countries. Articles of particular relevance are obtained in quantity by FSP for distribution to AID field projects. Rare, obscure and out of print documents are secured by FSP, reproduced and circulated. Citations of items of particular interest to Africa are listed in Appendix B. A mailing list of AID direct hire, contract and other staff is maintained to facilitate dissemination of technical information. In addition to dispatching technical information, FSP communicates with the AID forestry community and other AID staff backstopping forestry projects through it's periodic News Memo. The New Memo contains information on FSP, forestry project activity (both AID and other donors),

upcoming forestry meetings, forestry literature and other noteworthly items on international forestry. So far the News Memo has been issued seven times. it now appears on a regular, quarterly basis.

News of current FSP activities is disseminated to key AID staff directly concerned with the FSP project through the FSP weekly Reports.

A means of communication initiated by FSP among Washington-based individuals interested in international forestry issues is the technical seminar series. In FY 83, 8 of these informal "brown-bag seminars" were organized by FSP. To date, 5 have been held in FY 84. These seminars are organized on an irregular basis as time permits and speakers are available.

Assistance to AID Forestry Research Initiatives

Although the original FSP RSSA was sufficiently comprehensive to allow FSP to provide AID with a broad array of forestry backstopping services, including research, the amended an extended project requested FSP to place increasing funds to support the development and initial implementation of the Forestry/Fuelwood Research and Development (F/FRD) Project by the Bureau of Science and Technology. To date, an additional $172,000 has been transferred to the RSSA by ST/FNR to help launch F/FRD activities.

Other research support services provided by FSP can be catagorized as follows: 1) assistance to project design and implementation, 2) workshop and training and 3) direct, small-scale, applied research. Of these, FSP's most meaningful impact is perhaps on project design. Even without the above mentioned add-on, FSP has made some input to the design of the F/FRD project. FSP, for example, contributed to the development of a background study entitled "Institutional Framework for a Forestry R and D Project" and the preparation of profiles on university consortia which were used to identify alternative mechanisms for project implementation. Subsequently, FSP reviewed drafts of the PID and PP and served as resource points for the PP design team. Among the other projects with research components which were designed with FSP assistance in FY 83, mention should be made of the ASEAN Watershed Project and the Regional (ROCAP) Tropical Watershed Management Project.

FSP's major activity in organizing research workshops took place in Kenya in November 83. Through funding assistance and the provision of two course organizers, FSP was instrumental in assisting the Kenyan Government to convene a workshop on forestry research. This first step toward setting forestry research priorities is detailed in "Report on the Workshop for Strengthening Forestry Research in Kenya" by George Armstrong.

Arrangements are now well underway for the FSP RSSA to provide assistance to two small-scale applied research projects. One project deals with the nutritional content of leafmeal made from trees in Indonesia; the other, which is being jointly funded by FSP, FVA Bureau, and CARE, with the effectiveness and influence of windbreaks in the Majjia Valley in Niger.

Mission and Bureau Add-Ons

The amended and extended FSP project allows for the RSSA to receive additional funds from AID missions and bureaus for greater FSP involvement in selected forestry activities. In addition to the above-mentioned funds for research, the FSP RSSA has received $72,000 in new funds from ST/FNR to undertake an AID Forestry Program Review. The review is being done by an outside panel of five highly experienced foresters and development specialists. Although the review will largely be an independent assessment, FSP will contribute to the exercise by advancing the preparation of four new or updated AID Forestry Program Studies: 1) AID's use of institutions in project design and implementation, 2) a review of forestry research, training and education in AID, 3) a summary of private sector AID forestry projects and components, 4) AID forestry staffing.

Figure 1 shows the existing structure of FSP. Brief resumes of FSP professional staff are given in Appendix A.

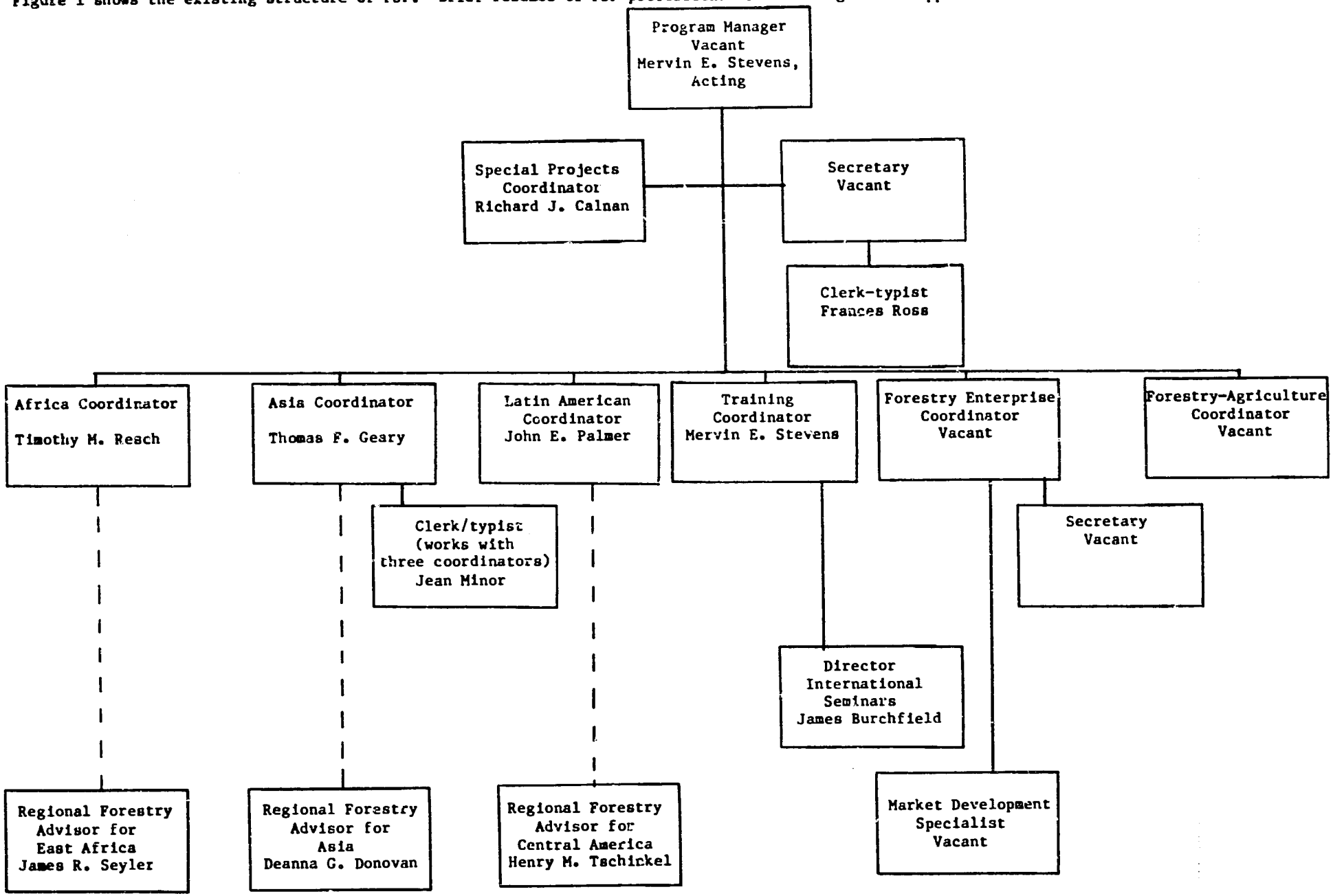

Figure 1. Organizational Structure of the Forestry Support Program.

APPENDIX A
RESUMES OF FSP PROFESSIONAL STAFF

David A. Harcharik, the Program Manager to July 1984, has some twelve years of professional forestry experience, including about ten years of international work. His technical experience is primarily in silviculture and forest tree improvement. He has held long-term assignments with FAO and the Peace Corps, and has done short-term work for North Carolina State University, the World Bank, the World Food Programme, and various consulting firms. He holds a B.S. in forest management from Iowa State University, an M.F. in forest ecology from Duke University and a Ph.D. in forest tree improvement from North Carolina State University. Prior to becoming Program Manager, he was the FSP Coordinator for Latin America and the Caribbean. Languages: very good Spanish; some Italian; a little French.

Mervin E. Stevens, the Training Coordinator, is a forester with specialties in soil science and watershed management. His career spans 26 years with the Forest Service, including 10 years of international work. His long-term overseas assignments have been in Viet Nam, Nepal and Italy with AID and FAO. He is a graduate of Paul Smith's College, holds B.S. and M.S. degrees in forestry from the University of Montana, and has done post graduate work at Iowa State and Colorado State Universities.

Timothy M. Resch, the Africa Coordinator, with twelve years of forestry experience, including 5 years of international work, received an M.S. in forestry from Colorado State University with emphasis on arid and semi-arid zones and artificial regeneration. He also holds a B.S. from the University of Minnesota. Following his undergraduate studies, he spent 3 1/2 years in Morocco with Peace Corps as a research forester. Prior to joining FSP, he worked about seven years with the USDA Forest Service and the South Dakota State Forestry in forestry research and management positions including shelterbelt management, community forestry, silviculture, pest management and forest harvesting. Languages: good French, fair to good Arabic depending on dialect.

Thomas F. Geary, the Asia Coordinator, has twenty one years of experience in physiology, genetics, silviculture and pathology of tropical and subtropical forest trees that has included fourteen years of research project leadership. He has work professionally in countries of Asia, Africa, the Mediterranean, Caribbean, Latin America, and the Middle East. His B.S. is in botany from the University of Rhode Island and his Ph.D. in forest pathology from the University of Wisconsin. Languages: good Spanish; some French, Portuguese and German.

John E. Palmer, the Latin America & Caribbean Coordinator, has ten years of professional forestry experience, including over three years of international work. He has experience in timber management planning, silviculture, and communications with the Peace Corps, private industry, and the USDA Forest Service. He graduated from Humboldt State University with a B.S. degree in forestry. Languages: good Spanish.

Richard Calnan, recently hired as Special Projects Coordinator, has seven years forestry experience including two years with the Peace Corps in Nepal and four years with the USFS in California and Kentucky. he has a B.S. in forestry from the University of New Hampshire and completed his M.S. coursework. Languages: some French, Spanish, Nepali and Hindi.

James A. Burchfield, recently hired as Seminar Coordinator for International Training Seminar on Forest Resource Administration and Management, has seven professional years forestry experience. We was also a Peace Corps volunteer in Guatemala for three and a half years. He has worked in Ecuador, Jamaica and the Dominican Republic as part of the project's AID/PC collaboration. he holds a B.S. in forestry from the University of Michigan and a M.S. in silviculture from the University of Washington. In addition, he has substantial training and experience in modern beekeeping technologies. Languages: very good Spanish.

James R. Seyler is the Regional Forestry Adviser for East Africa, stationed in Nairobi. He was Associate Director, Peace Corps, Bourkina Fasso (Upper Volta), and also spent five years in Upper Volta and the Central African Republic, as Peace Corps staff. Earlier he was a forester in French Guiana and served as a Peace Corps Volunteer in Cameroon. He has also worked as a forester in Pennsylvania, after completing forestry studies at Pennsylvania State University. He has had additional specialized courses in tropical silviculture in Puerto Rico. Languages: very good French; good knowledge of some West African languages.

Deanna G. Donovan, the Regional Forestry Adviser for Asia stationed in Jakarta, Indonesia has served as a private consultant, working on topics of forestry economics, fuelwood use and social forestry. She worked for four years in Nepal with the Institute of Current World Affairs. She has familiarity with many Asian countries. She has taught and done research at the University of California and conducted energy research at the East-West Center, Hawaii. She has graduate training from California in multiple-use forest management and an undergraduate degree in economics, emphasis on development. Languages: good French; some Spanish; Nepali.

Henry M. Tschinkel, the Regional Forestry Advisor for Central America stationed in San Jose, was FAO Project Manager in Honduras for five years. His work there also included close cooperation with the Peace Corps. Earlier he served FAO in Tunisia, Costa Rica and Colombia, in all for 15 years. He also taught forestry in Costa Rica, and has worked for CATIE. He has graduate degrees in watershed management (Germany) and undergraduate training in forestry from North Carolina (Duke). He has served as FAO consultant in all regions. Languages: fluent German; very good Spanish; good French; fair Swedish.

APPENDIX B

Publications Available from FSP of Interest to USAID/Africa

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