

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
~~EXPERIMENTAL EXERCISES~~
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

December 13, 1979

MEMORANDUM

TO: ALL A.I.D. POSTS

FROM: AA/PPC, Alexander Shakov *A. Shakov*
AA/DS, Sander M. Levin *S. Levin*

SUBJECT: Guidance on Forestry and Related Issues

Over the past year Missions have received numerous documents and reports of meetings focused on the problems related to deforestation along with instructions to begin looking at individual country situations as a part of the CDSS process. All of these are a necessary part of a process leading to Agency policy dealing with the problems of deforestation and natural resource depletion.

The attached A.I.D. Guidance on Forestry and Related Issues constitutes one more step toward the formation of a clear strategy. It outlines opportunities for Missions to examine the extent to which deforestation and the loss of vegetative cover constitute an impediment to development, as well as the commitment of the country to alleviating the causes and effects. This is a request to Missions to start a dialogue with host governments and other donors where this has not been done and to build on and expand activities which have already been initiated.

Also attached is a new paper on Peace Corps Forestry Initiatives. It is being sent along with A.I.D. Guidance for two reasons: (1) to acquaint you with the type of initiatives which PC feels are appropriate to their goals and experience, and (2) to provide some further insight to the difficulties encountered in implementing certain types of projects.

The A.I.D. Guidance presents a wide range of objectives and appropriate initiatives. The Peace Corps paper focuses only on those which are appropriate for Peace Corps involvement. A.I.D. Missions in countries where the Peace Corps is located should discuss both papers with the Peace Corps staff, examining possible

new activities as well as collaboration on any existing Peace Corps projects. For Missions where there is no Peace Corps the details of this paper should prove helpful, especially if A.I.D. or PVOs should propose similar initiatives in the future. The Peace Corps welcomes comments and suggestions on their paper.

Missions are requested to report to A.I.D./W on those countries where deforestation and loss of vegetative cover constitutes a serious threat to other development activities and where there is an awareness and a commitment on the part of a country to bring about improvements in the situation. This will give us better information on the extent of the problems, the locations most severely affected and enable A.I.D./W to sort out the necessary financial and technical resources that may have to be committed.

We will soon provide you with an annotated bibliography of reference materials on this subject through the Office of Development Information and Utilization (DS/DIU). Included will be details on activities already completed, underway or planned by A.I.D. that might prove helpful to those preparing similar initiatives. As this inventory of activities becomes better defined it will provide useful information to others, both inside and outside A.I.D., particularly as the U.S. begins to define its contributions to a global effort to deal with problems related to deforestation.

Attachments:

1. Guidance on Forestry and Related Issues
2. Peace Corps Forestry Initiative

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
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WASHINGTON D C 20523

GUIDANCE ON FORESTRY AND RELATED ISSUES
December, 1979

I. INTRODUCTION: The President will soon receive a report outlining a policy, strategy, and program framework which the USG should pursue to cope with problems related to tropical deforestation. One of the major conclusions of the report, that A.I.D. along with other Federal agencies is helping to prepare, is that accelerated deforestation is rapidly depriving the rural poor of resources needed to meet basic human needs -- food, fuel and shelter. A.I.D. intends to help developing countries meet the challenge posed by deforestation and related problems. This guidance outlines a range of objectives and program options which Missions might take, either bilaterally or in concert with other donors, which will be responsive in a meaningful way to expected instructions from the President. A copy of the Report to the President will be provided as soon as available. This message provides background information and supplements AIDTO Circular A-210 on Preservation of Forests and elements of the Agricultural Development Policy Paper of June 3, 1978. It also outlines available A.I.D./W technical resources should Missions seek assistance and summarizes current activities in this field.

II. BACKGROUND: "Deforestation" is a development problem that extends beyond the loss of tropical rain forests. Forests, woodlands and grasslands provide people with essential food, forage, fuel, shelter, a wide range of commercially valuable products, employment opportunities and environmental benefits. These resources are a vast reserve for current and future generations--a resource that is being jeopardized in many parts of the world by the proliferation of unsustainable patterns of use and an inappropriate allocation of scarce human and capital resources often resulting in an inequitable distribution of income adversely affecting the economic livelihood of the poor.

Planned and unplanned use of forests, woodlands, scrub and savanna always involves difficult trade-offs. The gain of some immediate benefits--timber, fuelwood, space for planting food crops--must be balanced against the loss of values needed over the long term--soil fertility, water quality and quantity, genetic resources, ecological diversity, wildlife and aboriginal habitats, future commercial development, tourism and recreation.

Missions should be aware that in addition to the technical-horticultural aspects of tree planting (soil fertility and pH, water availability climatic conditions, altitude, appropriate species, diversity), there are other important

logistic and managerial activities that must be considered. Solutions to overcome deforestation must also incorporate social-cultural-economic-political-environmental considerations if natural forest conservation and reforestation activities are to succeed.

Our programs must be designed to meet the immediate food and fuel needs of the population by dealing with the causes of resource deterioration (fuel; agricultural land for food, pasture and fodder; and forest products), as well as with symptoms of the problem (tree loss, erosion, declining soil fertility). Careful assessment of individual cases will assure that no potential cause--and therefore no potential remedy--is unwittingly excluded from consideration. It should be realized that since energy/forestry/environmental components of projects cannot be separated clearly, the pursuit of some of the activities identified in this message will also be consistent with the high priority the Agency is placing upon energy programs.

Authority to address these problems is contained in the Foreign Assistance Act of 1961 as amended by the Congress in 1977, 1978 and 1979; specifically sections 102, 103, 103b, 118 and 119. The law authorizes A.I.D. to provide assistance with problems of environment and natural resources, forestry, soil conservation and water management, land use improvement, wildlife and renewable energy, in order to maintain resources essential to meeting basic human needs.

III. POSSIBLE PROGRAM ACTIVITIES: Missions should consult with host countries and help establish the major causes of deforestation and related problems, and determine their magnitude, areal extent, urgency and possible corrective actions. Since most restoration efforts are costly, both in terms of financial and technical resources, each Mission should ensure effective coordination of its forestry activities. One approach is to promote the formation of a "natural resource coordinating committee," with representation from other donor organizations and relevant host country agencies which will optimize the use of limited resources and enable Missions and developing countries to address problems beyond the capability of any single agency.

Varying degrees of awareness exist in LDC governments. Some such as Haiti, Costa Rica, Nepal, Panama, and Upper Volta have developed programs and obtained U.S. assistance. Others are trying to define the problems before designing specific activities. While the causes of deforestation and devegetation are different enough to require country-specific approaches, no

country is immune from the problem of expanding populations placing increasing stress on natural systems. Because of the diversity of problems and commitments, Missions should consider these broad areas of program activity:

- Analysis, planning and policy formulation (including natural resource inventories, and land-use assessments, capability classification, tenure security and legislation);
- Institution-building for natural resource management and conservation;
- Incorporation of forestry activities into agricultural and rural development programs;
- Afforestation or reforestation, and protecting natural/induced vegetation;
- Appropriate and alternative energy;

There are a number of means by which assistance may be provided:

- Collaboration with other bilateral or multilateral donors or direct assistance to host countries;
- Provision of technical assistance with an emphasis on multidisciplinary teams;
- Cooperation with the Peace Corps and Private Voluntary Organizations;
- Participation in consortia capable of sponsoring regional approaches to natural resource management and development;
- Provision of PL 480, Title II and Title III support.

The nature of deforestation and related resource problems suggests that a wide range of objectives and initiatives may need to be examined by Missions. This may be appropriate as a part of the ongoing CDSS process or as a separate element of an "environmental profile" as noted in AIDTO Circular A-210. Several possible initiatives have been associated with five basic objectives in order to demonstrate how some activities may provide direct as well as indirect support. Some initiatives could support several of the listed objectives. Missions may also be able to suggest others based on an assessment of country circumstance and needs. The objectives include raising the level of host country awareness, direct forestry improvements, reduction of pressures causing deforestation and natural resource degradation, and improvement in institutional capabilities to manage natural resources.

Each Mission will have to consult with the country on their needs and priorities and then select appropriate objectives and initiatives. It may be that only one of the initiatives can be given the level of attention needed or that several must be addressed simultaneously if results are to be achieved, but in any event, the approach by A.I.D. and the host country in planning initiatives must begin with a conscious effort to expand planning horizons to suit the long-term and ultimately large-scale process of natural resource development and management.

1. OBJECTIVE: To raise host government awareness of the problem of deforestation and natural resource degradation in order to increase their commitment of resources, both human and financial, to provide sustainable natural resource systems in order to meet basic human needs.

- . Help assess actual loss rates and analyze causes of deforestation to determine the magnitude and types of efforts needed.
- . Develop a comprehensive capability to survey forest resources and to monitor forest cover changes through both ground and remote-sensing technologies.
- . Assess with the host government, the economic consequences of existing forestry related practices and land-use patterns, including the associated indirect costs of deforestation, e.g. flooding, soil loss, siltation, disruption of agricultural cycles, rising costs of fuelwood and other forest forest products, loss of medicinal trees, bushes and wildlife.
- . Help develop a country strategy to systematically deal with deforestation and associated forest land and resource use problems.

2. OBJECTIVE: To provide support for protection, regeneration, production and restoration efforts.

- . Help identify, protect and manage critical catchments and watersheds, areas which contain representative genetic materials, and unique or fragile environments.
- . Develop planting materials and technologies and train people for a variety of forestry activities which can be locally initiated and controlled: tree plantations, agroforestry, woodlots, and private holding tree planting.
- . Assist in developing income generating programs for the rural poor based upon managing and marketing forest products (plant and animal) on a sustainable basis so that there is a local stake in maintaining natural and planted forests.

Over the past several years there has been growing recognition of, and support for programs which address the problem of deforestation. Section 118 of the Foreign Assistance Act instructs the Agency for International Development (AID) to assist developing countries in managing and protecting their natural resources. Acknowledging the implications of deforestation for achieving development goals, the Congress more recently added a provision to the Act directly authorizing support for forestry-related activities:

The Congress recognizes that the accelerating loss of forests and tree cover in developing countries undermines and offsets efforts to improve agricultural production and nutrition and otherwise to meet the basic human needs of the poor. Deforestation results in increased flooding, reduction in water supply for agricultural capacity, loss of firewood and needed wood products, and loss of valuable plants and animals. In order to maintain and increase forest resources, the President is authorized to provide assistance for forestry projects. . . . Emphasis shall be given to community woodlots, agroforestry, reforestation, protection of watershed forests, and more effective forest management.⁵

In June 1978, the Department of State and AID co-sponsored a Conference on Tropical Deforestation, which recommended the establishment of a U.S. interagency task force to draft a U.S. policy and strategy statement on this problem. The Peace Corps has played an active role in this process. And in August of this year, President Carter directed a memorandum to the Administrator of AID and the Director of Peace Corps instructing them to review current efforts to preserve and manage the world's forest resources, and develop programs

⁵U.S. Congress, International Development Cooperation Act of 1979 (Section 103b), P.L. 96-53 dated August 14, 1979.

and projects in the areas of reforestation, fuelwood, conservation and alternate sources of energy.

In short, there is now a general consensus in the U.S. that deforestation is a global problem which demands our immediate attention. Long-term planning, developing comprehensive strategies, designing and implementing projects, supporting research, systematically evaluating a wide range of past and current efforts, must all be addressed as the U.S. develops a strong program. The planning process for this effort requires both time and resources. We are proposing that while long-term planning is proceeding, Peace Corps support small-scale, experimental activities to establish and manage vegetation (trees, plants, grasses) required to meet local needs for wood products, and to reverse the trend of environmental degradation. Through these experiences, we hope to identify a range of interventions which address local needs, are harmonious with local cultures and environments, and can be replicated on a larger scale.

According to the U.S. Strategy Statement on Tropical Forestry, the major constraints to improved management of woodlands are: (1) lack of material support; (2) insufficient numbers of skilled people working at the community level; and (3) limited host country capabilities to address social and institutional constraints. By providing skilled volunteers and project support, Peace Corps, in cooperation with other members of the development community, can contribute to overcoming these obstacles.

Since 1961, in direct response to requests from over 70 host countries around the world, Peace Corps volunteers (PCVs) have worked at the grassroots level in program areas such as agriculture, public health, education, and forestry. Before beginning their two-year assignments, volunteers are given training appropriate to their role as development workers. They master cross-cultural, technical, and language skills through training which helps them to live and work closely with the people in their host countries. They learn to approach development problems with new ideas that make use of locally available resources and that are appropriate to the local cultures. But Peace Corps' contribution is essentially limited to providing volunteers, which is only one of several key elements of the pilot projects we're proposing.

For this initiative to succeed, we must ensure that both skilled personnel and attendant project support will be forthcoming. The effectiveness of skilled personnel, such as trained PCVs is sharply reduced if they do not have access to the back-up resources necessary to carry out their jobs. For example, a quick review of past forestry efforts in the Sahel reveals that repeatedly a major constraint to project implementation has been a lack of support, including transport (vehicles), project funds, and basic materials. It is also important to recognize that in light of their own grossly inadequate operational funds and staff, host country forestry departments may in fact not be in a position to demonstrate their support of these efforts

through direct material back-up. Also, in third world countries there is often a serious shortage of trained foresters. Many of them are already overworked and may be unable to assume additional responsibilities. Ironically, many countries are limiting new forestry efforts because they realize that project success is unlikely if trained personnel don't receive the necessary infrastructural support, and they simultaneously acknowledge their inability to provide that support. According to Fred Weber, a specialist on African forestry, many Sahel countries would welcome more volunteers and program expansion if they had the material and capital to support the expanded staff.⁶

In recognition of the importance of forestry efforts to overall development and to assisting people in meeting their basic human needs, P.C. is willing to commit itself to programming, recruiting and training greater numbers of forestry volunteers over the coming years. However, to assure the full range of needed ingredients--people, capital, and focus--we would like to supplement our own resources and experience by seeking opportunities to collaborate with other developmental organizations similarly committed.

In the next section of the paper, we present some possible approaches for addressing a range of forestry problems, illustrating each with examples of past or current P.C. efforts.

⁶Fred Weber, Sahel Peace Corps Directors Workshop Report: Conservation and Forestry Programming, Peace Corps Order No. 79-487-3005-A, November 5, 1978.

Section II: A Range of Possible P.C. Forestry Projects

Problems created by deforestation are diverse and numerous. This is due in part to the great environmental differences in the various regions of the world, and in part to the different environmental impacts of varying cultural and sociological factors. In response to these differences, we have identified 7 types of interventions which seem appropriate for addressing some typical forestry problems. Six of these activities are production-oriented, and primarily involve planting and managing vegetation. The seventh approach is conservation-oriented and focuses on the more efficient use of forestry products (e.g. improved charcoal making techniques and more efficient cookstoves).

Table I graphically presents the most important aspects of the six production-oriented project types. For each type, we have identified the principal project objectives, probable PCV tasks, and principal technical skills required of volunteers. As a careful reading of the table indicates, there are commonalities which run through all these projects. First, they all address the problem of environmental degradation through strategies reflective of P.C.'s basic human needs philosophy. Second, though their specific technical objectives differ somewhat, all projects share the following goals:

- heighten local awareness of the importance of resource conservation;
- transfer appropriate knowledge and technical skills to villagers;
- develop approaches replicable by host countries and other development agencies.

TABLE 1: A RANGE OF POSSIBLE PEACE CORPS FORESTRY PROJECTS

PROJECT TYPE	PROJECT OBJECTIVES	VOLUNTEER TASKS	PRINCIPAL SKILLS REQUIRED OF VOLUNTEERS
<p>Village Woodlots (Community-based forestry to meet local needs for fuel and wood products)</p>	<p>Develop community woodlots to supply fuel and wood products Generate additional income Heighten local awareness Transfer appropriate project technology Develop replicable projects</p>	<p>Establish/manage nurseries Organize and train local people to establish/manage small woodlots Train counterpart personnel</p>	<p>Nursery skills Knowledge of reforestation techniques Knowledge of local language/culture Community extension and development expertise</p>
<p>Reforestation of Cutover Land (Planting trees on cutover forest land to protect fragile environments, such as watersheds, and to provide supply of wood products)</p>	<p>Make forests more productive Protect watershed areas Increase fuel supply Halt soil erosion Heighten local awareness Transfer appropriate project technology Develop replicable projects</p>	<p>Establish/manage nurseries Organize and train local work groups to reforest and manage cutover lands Train counterpart personnel</p>	<p>Nursery skills Knowledge of reforestation and soil conservation techniques Knowledge of local language/culture Community extension and development expertise</p>
<p>Land Rehabilitation (Conservation of soil and water resources, or reclamation of degraded land, by extension work using vegetative and mechanical methods)</p>	<p>Control soil erosion Improve water quality Increase crop and forage production Heighten local awareness Transfer appropriate project technology Develop replicable projects</p>	<p>Establish/manage nurseries Organize and train local work groups for vegetative and mechanical work to combat soil erosion Train counterpart personnel</p>	<p>Nursery skills Knowledge of soil conservation techniques Tree/plant identification and propagation skills Knowledge of local language/culture Community extension and development expertise</p>
<p>Agroforestry (Land-use system that combines or alternates livestock or crop production with growing trees)</p>	<p>Increase fodder and fuel supply Halt soil degradation Achieve sustainable agricultural system Generate additional income Heighten local awareness Transfer appropriate project technology Develop replicable projects</p>	<p>Establish/manage nurseries Assist and instruct farmers to cultivate trees for food/fodder/fuel and to protect or enhance crops/soils Train counterpart personnel</p>	<p>Nursery skills Knowledge of reforestation and soil conservation techniques Familiarity with managing fruit, nut and fodder trees Knowledge of local language/culture Community extension and development expertise</p>
<p>Arid Zone Vegetation Resource Management (Management and exploitation of vegetation to halt and reverse resource degradation, protect farm fields, and supply wood products for local population.)</p>	<p>Protect farm fields and buildings from blowing sands Protect against wind erosion and stabilize dunes Increase fuel supply Manage well points Heighten local awareness Transfer appropriate project technology Develop replicable projects</p>	<p>Establish/manage nurseries Assist and instruct rural people to plant "living fences" or windbreaks, or stabilize dunes by vegetative/mechanical means Train counterpart personnel</p>	<p>Nursery skills Knowledge of arid land ecology Tree/plant identification, propagation skills Knowledge of local language/culture Community extension and development expertise</p>
<p>Forest Resource Management (Manage existing forests to improve current yields and initiate a sustained yield program.)</p>	<p>Plan forest management for sustained yield Improve forest management and technical training Maintain soil fertility Heighten local awareness Transfer appropriate project technology Develop replicable projects</p>	<p>Carry out forest and sociological/economic surveys Plan and implement appropriate forest management schemes Install minor roads and trails Train counterpart personnel</p>	<p>Natural resource planning/management skills Forest inventory skills Knowledge of reforestation techniques Knowledge of local language/culture Community extension and development expertise</p>

Peace Corps

Washington, D.C. 20525

To: PC Directors
PC Senior Staff
Regional Staff
Forestry Project Review Team

From: David B. ~~Levine~~, Director,
Office of Programming and
Training Coordination

As you know, for the past several months we've been working on pulling together some guidance on expanding PC's involvement in forestry and natural resources programs. We wanted to define a set of project types, and the attendant volunteer and material resources required. To a large degree we based the attempt on field efforts already underway.

We've now completed that work, and the forestry initiatives paper is complete, and attached for your information and follow-up.

Copies are being distributed to field offices, PC/W staff and to various donor agencies who may wish to participate with us in the described efforts. From all of you, we would like feedback on the ideas in the paper, suggestions for improvement, ideas as to how best to proceed, and specifics as to applicability to the various countries and regions in the PC world.

From the field posts, we'd be particularly interested in a close review of the document to determine:

- a) which specific project types would be most applicable to your country program;
- b) how do your current efforts tie into the typology presented;
- c) are you interested in participating in initial program development efforts relating to this initiative; and
- d) are there particular in-country collaboration opportunities related to this initiative which you'd want to pursue?



We would appreciate your feedback on these issues by cable, as soon as possible. We'd hope you'll also share the paper with your AID field mission.

We're quite excited by this effort and will keep you closely informed as we explore collaborative and funding opportunities. Please get us your feedback as soon as possible. Thanks and peace.

PEACE CORPS FORESTRY INITIATIVE

Office of Programming and
Training Coordination
M-701
Peace Corps
Washington, D.C. 20525
October 25, 1979

ACKNOWLEDGEMENTS

During the last year and a half, Peace Corps has been carrying out a serious reexamination and refocus of its efforts in forestry and natural resource conservation. These efforts are intended to strengthen our programming in this sector, and to bring it into general accord with our congressional and administrative mandates to address the most basic needs of the poor majority in the third world.

Significant leadership for this effort has been provided by Sam Kunkle, Peace Corps' Forestry and Natural Resources Sector Specialist. Sam, an employee of the United States Forest Service (USFS), U.S. Department of Agriculture, was detailed to Peace Corps' Office of Programming and Training Coordination (OPTC) almost two years ago as part of a revitalized collaborative effort between the two agencies. Special appreciation is owed Dr. Robert Brandt of USFS for his support in arranging this detail.

This initiatives paper culminates our efforts, spearheaded by Sam, to build the necessary foundation for extensive, significant work in the forestry area as part of the overall U.S. tropical forestry strategy. It, of course, represents only a beginning; and we are indebted to Sam for his guidance throughout this period.

Major contributions to this paper itself were provided in the conceptual stage by Pirie Gall and Flavia Rutkosky of OPTC. The actual molding and development of the paper were carried out by Carol Ulinski, in consultation to OPTC, and by J. J. Earhart, a Peace Corps Fellow. Valuable review input was provided by Peace Corps Director Richard F. Celeste, members of the Interagency Tropical Forest Working Group, and various individuals both in (Peace Corps, AID, National Park Service, U.S. Forest Service) and outside of the government structure.

It is with special gratitude to all of these people that we embark on what we trust will be a significant developmental program contributing vitally to world peace and understanding.

David B. Levine
Director
OPTC
October 1979

INTRODUCTION

Through this paper, the Peace Corps is attempting to provide a possible framework for a global, community based forestry program.

Deforestation, with implications for firewood availability, soil fertility and desertification, has attracted worldwide attention and concern. There is now general agreement that a concerted international effort is required to address this problem. However, such an effort must overcome some unique constraints which will require new and innovative approaches by Peace Corps and other donors, as well as by host countries.

- . First, development has neglected the planting of trees or caring for natural vegetation. In the past, a major thrust of agricultural development has been the expansion of arable land by clearing natural vegetation (trees, bushes, grasses). Few efforts have been directed toward planting and maintaining vegetation, either as a way to preserve the resource base, or to provide local products (e.g., food, forage, fuelwood, medicines, bark). Also, many cultures do not manage natural vegetation as a renewable resource.
- . Second, forestry activities are inhibited by the long timeframe between planting and harvesting. For example, it may be 7-10 years or longer before trees can be harvested for fuelwood. And in those instances where vegetation is established to halt erosion or prevent flooding, considerable labor will be required over many years, with little immediate reward. The time and effort required for these activities may exceed the resources of those most in need, the people already living on the margins of subsistence.
- . Third is the seeming lack of government commitment in many developing countries. Almost

without exception, the majority of the national budget is allocated to agricultural, health and industrial development, and the forest departments are normally underfunded and understaffed.

- And fourth, considerable material and technical support is required to implement forestry activities. For example, a nursery is an absolute prerequisite; and in many areas, fencing or guards will be necessary to protect the newly planted vegetation from encroachment by humans or animals. Some technical assistance will also be necessary to help villagers identify appropriate species, select sites, and learn cultivation and harvesting techniques. In many cases, however, the national forest service is too weak to provide these needed resources.

In the U.S., forestry-related activities are becoming a priority in foreign assistance programs, and substantial resources are being made available for efforts in this area. In fact, in a recent message (August, 1979), President Carter personally instructed the heads of AID and P.C. to place major emphasis on developing programs in the areas of forestry and energy.

Given its basic philosophy of working at the community level to help poor people effect change, Peace Corps can potentially make a significant contribution to addressing the critical development problems associated with deforestation. We have been involved in forestry related activities since 1961, and currently have about 400 volunteers working on conservation and natural resource projects in 40 countries. About half, 200 volunteers, are working directly in forestry.

This paper represents an early step in our attempt to develop a more focused P.C. program to address in a more concerted manner the problems caused by deforestation. Our overall goal is to increase forestry's contribution to improving the life of poor people in developing countries by aiding in their efforts to meet basic human needs for food, fuel and shelter. Given the different physical, social, and cultural situations within countries and regions,

it is clear that there is no universal solution to these problems.

For this reason, we offer a spectrum of ideas and suggestions for forging a Peace Corps forestry program that builds upon and strengthens current P.C. forestry related efforts. Recognizing that P.C. can only provide some of the resource requirements for a forestry program, we have also identified some potential opportunities for strengthening collaboration with other development organizations. We begin with a brief introduction to the problem, and a summary of recent U.S. efforts to develop a strategy for addressing it. Section II outlines a number of potential interventions, each illustrated with relevant past or current P.C. experience. The kinds of resource requirements implied by a P.C. forestry program are described in Section III. Possibilities for collaborative projects with other developmental organizations (e.g., AID, private voluntary organizations, World Bank, FAO) are identified in Section IV. In Section V a timeframe is presented for implementing the activities implied by this initiative, and the appropriate next steps are discussed.

Rather than attempting to pin down the details of this effort, we have tried to provide a departure point for defining the program in detail. We mean the paper to be a basis for several kinds of discussions: in the field, within each P.C. post and between the P.C. post and appropriate host country agencies; between the P.C. post and other development agencies; between each post and P.C./W; and between P.C./W and the headquarters offices of other development agencies. Based on these interactions, specific opportunities on a country and/or regional basis will be identified and project implementation commenced--as early as within this fiscal year.

Section I: Deforestation and the U.S. Response

Trees and other woody vegetation have substantial ecologic and economic value, and make an important contribution toward meeting basic human needs for food, fuel and shelter. Uncontrolled exploitation of this renewable resource is occurring on a large scale, as land is cleared for cultivation, vegetation is consumed by grazing animals, or trees are cut for timber and fuel. According to a recent study, deforestation is now occurring at an annual rate of 18-20 million hectares, mostly in the lesser developed countries (LDCs).¹

As supplies are rapidly being destroyed, demand is on the rise. In 1976, annual consumption of wood for all purposes came to 2.5 billion cubic metres, and is expected to increase to 4 billion cubic metres by 1994.² Although World Bank estimates are that 20 to 25 million hectares must be reforested before the end of the century in order to meet projected demand,³ at current rates of planting only 2 million hectares will actually be reforested by then.⁴

¹Council on Environmental Quality, The Global 2000 Report to the President: Entering the Twenty-First Century (Washington, D.C.: Government Printing Office, forthcoming).

²Erik Eckholm, Planting for the Future: Forestry for Human Needs, Worldwatch Paper 26 (Washington, D.C.: Worldwatch Institute, February 1979).

³Ibid.

⁴The multiple aspects of deforestation have been described in detail in numerous sources, and will not be repeated here. See among others: U.S. Interagency Task Force on Tropical Deforestation, The World's Tropical Forests: A U.S. Policy, Strategy and Program, draft working papers; World Bank, Forestry Sector Paper, 1978; Eckholm, Planting for the Future: Forestry for Human Needs, 1979; and Council on Environmental Quality, The Global 2000 Report to the President: Entering the Twenty-First Century, forthcoming.

- . Support efforts to learn and record local knowledge of plants and animals and the scientific basis for indigenous resource practices.
 - . Initiate, support and expand existing programs of applied research in agroforestry to identify, screen and evaluate trees and plants having characteristics useful to and aimed at solving problems of the rural poor: fast-growing, regeneration by coppicing, multi-purpose (wood, forage, fertilizer and soil fertility improvements) which complement food crops, or which provide other economic and environmental benefits.
 - . Consider Food for Work (Title II) and Food for Development (Title III) to provide the commodity support and local currencies needed to finance the substantial amounts of labor that might be needed in any large-scale efforts to restore degraded lands and critical watersheds.
 - . Encourage governments to implement necessary socio-economic and administrative changes, such as land tenure security, so that greater local participation will be forthcoming.
3. OBJECTIVE: To ease pressures on current use of forests and other vegetation by developing renewable and alternative sources of energy and appropriate and alternative, sustainable cropping systems for the rural poor.
- . Support village woodlots or urban tree plantations where there is an active pattern of communal landholding or communal oversight of activities. The necessity for involving the women of the community (who usually gather and utilize the fuelwood) in the identification, design, and implementation of such projects cannot be over-stressed.
 - . Increase productivity of currently cultivated land to reduce the pressure of expanding populations to use forest, savannas and marginal lands for agricultural expansion. This approach needs to be initiated with caution, looking at both the intrinsic capability of the land to support intensified agricultural production and the energy requirements (including fertilizers and pesticides) to sustain it.
 - . Develop alternatives and renewable energy sources including substitutes for wood fuel and charcoal. Also consider the field testing of solar devices with potential for drying grain, fish and tobacco as well as more efficient low-cost stoves and improved kilns for charcoal production.

- . Utilize the concept of agroforestry for the simultaneous and stabilized production of food, forage, and fuelwood especially in areas where shifting cultivation is practiced.
- . Evaluate possibilities for short-term subsidy programs for alternative fuels, especially for poor consumers. Such programs are, however, expensive and difficult to terminate.
- . Consider, if agro-forestry not appropriate, short-term supplementary financing of commodity support to compensate owners for the loss of productive assets. The timescale of forestry efforts means that land which is replanted to trees is withdrawn from other forms of cultivation for long periods of time.

4. OBJECTIVE: To increase utilization efficiency of forest and other natural resources through: (1) technological improvements--in production, extraction, processing and end use,-- and (2) more effective means of controlling the use rates of existing resources.

- . Develop local capability to formulate solutions which are specific to particular environments through long-term training at professional levels.
- . Provide short-term training programs in tree planting, propagation and harvesting. A.I.D.'s policies focus on community level training and support of community level efforts through extension services for forestry and soil/water conservation.
- . Support public education on resource conservation to provide stimuli for effective community or individual participation in natural resource use through Forestry for Local Community Development (FLCD) and school or backyard tree nurseries.
- . Consider small-scale or cottage industry development to utilize "noncommercial" species of trees remaining after selective harvesting for commercial purposes. This approach is limited and must be coupled with appropriate reforestation and environmental controls to ensure that such intensive use of the forest does not create environmental problems of its own.

5. OBJECTIVE: To assist governments to strengthen their institutional capability to manage natural resources through improved planning and regulation of lands for agriculture, energy and other uses at the farm, community and regional levels.

- . Upgrade the effectiveness of host country forestry personnel to manage existing reserves by providing appropriate training and equipment.
- . Provide technical assistance to host country agencies in analysis, planning, legislation and policy formulation, and environmental assessment activities.
- . Encourage host governments to initiate regenerative programs for lands which have deteriorated due to misuse.
- . Encourage and assist host governments to develop paraprofessional personnel able to advise small and marginal farmers on maintenance of existing tree crops and integration of tree and other crops in economically viable cropping patterns.
- . Encourage and assist host governments to develop and utilize local institutions to build community involvement and capacity for improved resource planning and management.
- . Encourage and assist host governments to develop and utilize regional institutions to strengthen system-based oriented (e.g., river basins or catchment areas) planning and management of natural resources.

While this message has focused on activities that might be undertaken in recognition of an identified need, the Missions must realize that many traditional development activities can lead to deforestation, including, land clearing for agriculture and cattle grazing, road construction (especially into unexploited areas), and population resettlement schemes. In these and similar activities, the Missions must ensure that A.I.D. activities do not cause unnecessary deforestation and that the environmental examination carefully evaluates and concludes that the cleared lands will sustain the intended uses and that the activity will go forward only if resource regeneration, or other sustainable use components are incorporated into the project. Missions should also be examining all ongoing and proposed major projects (e.g. integrated rural/agricultural development, irrigation, rural water supply, fish pond development, range management in arid areas) to ensure that appropriate elements such as erosion controls (windbreaks and vegetative plantings), woodlots, watershed protection, training, and nurseries are fully incorporated.

There are several technical problems related to projects in this area that must be overcome, but no project will be successful if technical criteria alone are examined. The host government and local communities must see the need for such activities and be willing to take the steps necessary to reduce natural resource depletion and destructive land-use patterns. Until that level of awareness and commitment is reached, our attention should be directed toward assessment type activities and those designed to upgrade the host country planning capabilities. Wherever the commitment exists, it should be supported and expanded.

Finally, it should be recognized that the economic and social benefits of projects in natural resource conservation, preservation and development may not be apparent in the short term. This should not deter Missions from proposing such activities, which will normally have a three to five year project life span. The measurable benefits when a project terminates may be in terms of institutional development, changed practice, reduced levels of environmental degradation; and these will be sufficient to posit as objectives when proposing activities in this area. It may well be that follow-on project support will be justified in individual cases; the long range nature of the problem, and the need to sustain and support an equivalent long term commitment by the host country, may argue for second stage projects.

IV. AID/W Resources: An interdisciplinary mode of intervention is necessary because of the complexity of the deforestation problem. In addition to the resources normally available from their regional offices, Missions can tap skills and expertise of Development Support Bureau personnel, programs and projects. These include: (1) IQC's in Environment and Natural Resources, (2) Several ongoing and planned DSB projects, (3) Consulting services from direct-hire and IPA personnel.

Six newly arranged IQC contractors in Environment and Natural Resources can provide some expertise in forestry. The list of IQC firms was attached to AIRGRAM A-210. IQC's and ongoing projects in other related subject areas such as Agriculture, Energy, or Rural Development can also provide needed expertise.

A number of DSB personnel and IDIs with formal training in forestry can be made available for support of Mission needs. An AID/W Forest Resource Group has been proposed to serve as a key point of contact on forestry matters. Other personnel having knowledge of related fields such as remote sensing, environment, hydrology, agronomy, soils management, energy, land use planning, land tenure, local organization, and community participation can also be made available in response to specific Mission requests. For some of the identified initiatives, personnel from the Peace Corps and other agencies, as well as Private and Voluntary Organizations, might be available.

Third, the basic skills required of all PCVs include:

- knowledge of specific technical skills;
- ability to work effectively with host country counterparts;
- ability to function as effective rural extension agents;
- familiarity with local culture and traditions;
- fluency in local languages;
- competency in basic community development techniques.

Finally, all may also face design and implementation difficulties, such as:

- lack of available land: Productive nurseries require good soil, fairly level sites, and abundant water supplies. This often means that farm fields must be converted to nurseries, raising potential land tenure or ownership problems that can be difficult. Locating marginal fields or other sites with potential for other forestry activities can similarly be difficult.
- soil conditions: Trees, like other crops, require soil to grow. Totally devastated lands -- eroded moonscapes -- cannot be used for village type forestry projects. Though planted trees might survive, their production would be minimal.
- shortage of water: A nursery requires a dependable water supply. Lack of adequate well or stream water can be a key constraint, obviously more so in the more arid zones. Where water shortages are severe, projects will have to contain water provision components.

- shortage of labor: The tree-planting season often coincides with traditional planting seasons. Farmers may be reluctant to involve themselves in forestry activities if this conflicts with other farm work.
- negative attitudes: Attitudes about forestry, and relationships between rural people and foresters are negative in some locales. In some settings, foresters have traditionally played an enforcement role, controlling and protecting government land against graziers, shifting cultivators, tree and animal poachers, or others encroaching on government land. In the worst cases, foresters have even participated in the poaching of government trees. Although in recent years forestry agencies in a number of countries have emphasized the concept of "forestry for people" and increased extension efforts, the old attitudes between foresters and rural people sometimes change more slowly than we'd like.
- relative priority to host country governments: Some degree of personnel and/or material support is essential to forestry projects. Often, forestry departments are small divisions within other government agencies, and have very limited budgets. As a result, it is critical to identify accurately the source of any staff and/or material support required for the specific project.

In the remainder of this section we describe each of the seven proposed project types in some detail, including Peace Corps' specific experience where applicable. We don't intend this list of programming possibilities to be exhaustive, but rather to illustrate a variety of activities which can be implemented by volunteers.

1. Village Woodlots

The objective of village woodlot projects is to provide a local source of fuelwood by planting and caring for indigenous and exotic species (e.g. eucalyptus, Cassia, Gmelina). The wood can also be used for poles, posts and construction material. By planting village woodlots, some of the pressure on natural forests can be relieved.

Peace Corps is implementing woodlot projects in both Niger and Upper Volta. In both projects, the volunteers (approximately 15) are working in collaboration with the International Development Research Center (IDRC), FAO and UNESCO. The main thrust of volunteer work is establishing nurseries, encouraging village participation, working with villages to care for and maintain the trees, and promoting greater awareness of the importance of trees in meeting a variety of local needs.

Some major constraints have included shortages of water (this is a problem particular to arid regions where seedlings must be watered both in the nursery and during the first two dry seasons), lack of transport for transferring the seedlings from the nursery to planting sites, and the low priority sometimes accorded these project activities by host country governments.

2. Reforestation

Reforestation is the planting of trees on cut-over or degraded forest land, usually on catchments or other areas suited only to forest use. This activity can help control erosion and improve water quality, as well as provide a source of wood for future consumption. A reforestation project might include

nursery establishment, planting trees, counterpart training and extension, and soil conservation (e.g. terracing, contour water ditches, revegetation and stream bank control).

In Guatemala, 35 Peace Corps volunteers are working with the host country agency, Instituto Nacional Forestal (INAFOR)

and CARE to implement a reforestation project. Local village counterparts work with the volunteers on a fulltime basis and

are paid by INAFOR. Material support and transportation are provided by CARE and INAFOR. CARE also provides the volunteers

with foodstuffs, which are given to farmers in return for their labor. Volunteers and counterparts work with local small

farmers to plant trees on private, communal and municipal land holdings.

Problems encountered during project implementation include the lack of vehicles during the planting season, administrative

difficulties within INAFOR, and inadequate training of counterparts.

The likelihood that reforestation sites may be distant from villages may require special efforts to establish trees

and protect them from animals, weather and people.

3. Agroforestry

Agroforestry is a system for managing land that combines

livestock or crop production (including tree crops) with growing

trees, either simultaneously or sequentially. Objectives are

to increase food productivity and ensure a supply of wood products

for fuel or construction materials, while conserving and

rehabilitating soil resources.⁷ This approach is appropriate in areas where land-use pressures are great and farmers cannot dedicate entire plots of land strictly to forest species.

One example of an agroforestry project is the planting of Acacia albida (gao). This unique arid land tree has the unusual feature of losing its leaves at the beginning of the rainy season, which permits the cultivation of crops beneath it. Field observations indicate that the Acacia (a leguminous species) is highly valued by the local people as a source of shade and fodder, as well as for its contribution to enhancing soil fertility (and agricultural output). The Acacia can also be intermixed with other species to form windbreaks and control erosion. It is found all over Africa, from the Nile Valley to South Africa, and from Senegal to Ethiopia.⁸ According to Weber, the average cost of planting one hectare of Acacia albida in the Sahel was approximately \$500.00 in 1978.⁹

In Chad, Peace Corps volunteers collaborated with CARE to carry out a agroforestry project funded by AID. The purpose of this project was to plant Acacia trees in farmers' fields for the purpose of enhancing soil fertility. A mid-point evaluation conducted in 1978 indicates

⁷K.F.S. King and M.T. Chandler, The Wasted Lands, The Programme of Work of the International Council for Research in Agroforestry (Nairobi, Kenya: International Council for Research on Agroforestry, September 1978).

⁸Fred Weber and Maryanne Dulansey, Chad Reforestation Project, Midpoint Evaluation (Washington, D.C.: Consultants in Development, April 1978).

⁹Ibid.

that the project has been successful: eight nurseries were established, and 350,500 trees planted, of which 178,000 (or 60 percent of the final goal) have survived.¹⁰ Also, farmer participation has been high, as has been the acceptance of the Acacia. (In Niger, a similar project was going well while funds were available, but came to a halt when external funding ceased.) In general, projects of this type are most likely to succeed if farmers' interest and participation are high.

Another example of an agroforestry project is planting the fast-growing Ipil-ipil, or Leuceana leucocephala. According to Michael Bengé, an agroforestry expert at AID, this humid tropical species can grow to a height of 60 feet in 6 years. Being leguminous, it also enhances soil fertility. Its leaves and fruit pods can be utilized as animal fodder. The Ipil-ipil can also be used for the production of fuelwood, charcoal, pit-pots, and pulp and paper manufacture. In the Philippines, a team of 18 PCVs, which includes both foresters and agronomists, is intercropping Ipil-ipil with citrus and coconut trees. All project support has come from local villagers who actively participate in establishing nurseries, planting trees on private lands, and establishing demonstration areas for extension.

4. Land Rehabilitation

The destruction of forest and vegetative cover is a major cause of soil erosion with implications for agricultural production and depreciation of water quality. These are issues that

¹⁰ Ibid.

cannot be ignored when dealing with the deforestation issue, due to the close interrelationship between trees and all other environmental factors.

Peace Corps has volunteers working on soil conservation projects in Nepal, Honduras, Paraguay, El Salvador and Guatemala. The objectives of these projects are to stop erosion before it occurs and improve the situation on lands already badly damaged. Techniques employed include reforestation, revegetation, improved agricultural planting methods, terracing, composting and land-use planning.

The project requires host country counterparts to take an active role in implementation; therefore, the lack of such personnel and/or funds to pay them will create difficulties. Additionally, village participation may be difficult to obtain because this type of effort requires considerable work, and results (e.g. increased soil fertility) may not be visible for many years.

5. Arid Zone Vegetation Resource Management

Desertification is perhaps most exemplified by dune encroachment and shifting sands. Blowing sands in arid regions (300-600 mm precipitation) can cover houses, roads, farm fields and trees, causing damage and taking fields out of production. Strong winds cause erosion, thereby reducing crop yields. One solution is to reduce the wind's damage by establishing windbreaks or shelterbelts on and around the dunes.

In Niger, PCVs are implementing a dune afforestation project, begun in 1977, with funding provided by CARE. The volunteers

establish nurseries of some 30,000 seedlings of eucalyptus, Prosopis, Acacia, Parkinsonia and Tamarix. The different tree species are interplanted at various spacing patterns along the front of the dune area and around crop fields. The volunteers have also used palm leaves, branches and millet stalks to form palisades to halt the blowing sand.

A prerequisite to the success of this type of activity is the protection of planted areas from human and animal encroachment. In the Niger project, CARE has provided funds for guards to patrol planted areas. Such outside funding seems mandatory for project success.

6. Forest Resource Management

Despite the growing pressures on tropical forests, many countries continue to maintain large tracts of publicly owned forest land. Although forestry officials often protect these lands from encroachment, they are rarely managed to their full potential. The purpose of forest resource management projects is to improve current and future forest yields.

In Honduras, Peace Corps is working with host country officials, foresters, land-use planners, soil scientists and natural resource specialists to manage national forest reserves. Activities include reforestation, surveys, thinning, systematic cutting, watershed management, environmental education, soil surveys, land-use planning, training host country officials in forest management practices, and village extension work.

Strong support from the national forest service is a prerequisite for the success of this kind of project. Access to transportation, survey equipment, nurseries and technical backstop personnel are also needed.

7. Introduction of Wood Conserving Technologies

Peace Corps has had some experience with projects whose primary focus is to improve domestic technology. Introduction of improved charcoal making techniques and more efficient cookstoves which conserve fuelwood could significantly contribute to easing the pressure on the world's woodlands.

a. More efficient cookstoves. In many countries, the primary source of energy for cooking is firewood. In countries where firewood is in short supply, crop residues and dung are also burned. Most traditional methods of cooking over open fires are tremendously wasteful with usually only about 3-8 percent of the heat generated utilized for cooking, while over 90 percent escapes into the atmosphere and is lost. The introduction of more efficient stoves could have a significant impact on easing demand for, and actual consumption of firewood. Efforts are now underway in several countries to develop cookstoves which allow for a more efficient transfer of heat to the cooking utensil, as well as improving the rate of fuel combustion. Stoves developed in India (the smokeless "Chula") and Guatemala (the "Lorena" cookstove) have reduced firewood requirements by 40 percent and 50 percent respectively.

Cookstoves can be built using locally available materials (e.g., stone or a mixture of sand and clay) and are relatively easy to construct. However, considerable experimental work is required to build and adapt a cookstove to local conditions. The local style of cooking, the nature of the food cooked, and the fuel used are all important considerations. Stoves need to be designed in such a manner that they can be constructed with available tools from locally available materials, and so that local cooking pots fit on them easily.

Working with local communities to build, test and disseminate improved stoves could become part of the role of many volunteers. As part of our overall initiative, we are proposing that where appropriate, volunteers learn to adapt basic designs and construct a stove as part of their training requirements. Step-by-step construction manuals could also be developed and provided to each volunteer.¹¹

b. Improved charcoal making techniques. In many urban areas of the third world, charcoal is a major source of domestic energy. Traditional conversion processes are, however, tremendously wasteful. By introducing simple charcoal kilns and retorts, losses can be reduced and yields increased by as much as 50 percent.

¹¹ These efforts could build upon the construction manual for the Lorena cookstove which was published earlier this year, and a guide to designing woodburning stoves which is now being prepared. See Ianto Evans, Lorena Owner Built Stoves (Stanford, California: Volunteers in Asia, Inc., 1979), and Stephen Josephs, A Design Guide to Wood Conserving Stoves (Mt. Rainier: Volunteers in Technical Assistance and Intermediate Technology Development Group, forthcoming).

As part of an FAO-UNDP project in Ziguinchor, Senegal, a PCV has developed and tested an oil drum kiln which meets the criteria of minimum capital investment, construction with locally available materials and tools, ease of operation, durability, and increased efficiency of carbonization.¹² (Experiments with the Jamaica Retort have also been promising, with yields increased by 30-40 percent.) Under a proposed AID Renewable Energy Project, these techniques will be transferred to other regions in Senegal.

PCVs could play a role in further developing these techniques, introducing them in other charcoal producing areas, and adapting them to the local environment.

¹²Construction details on 3 adaptations of a charcoal kiln developed in Senegal are provided in a paper by G. E. Karch, The Oil Drum Charcoal Kiln - An Appropriate Technology Approach, 1975.

Section III: Resource Needs

In Section II we described a range of illustrative projects which could be implemented by host countries in cooperation with Peace Corps and other donors. In this section, we discuss the range of resources needed to effectively implement these projects.

We have identified six general categories of project support requirements: material support, personnel, training, technical assistance, evaluation, and development education. Where possible we have attempted to provide some general estimates on needs, either in terms of cost or numbers. Both the level of effort and the cost of each project may vary, depending on the country, the region, and the final project design. For example, the cost of locally purchased nursery equipment in the Sahel might be much more expensive than the cost in Central America; or, a particular country situation might require different types and levels of infrastructural support; or, it may be that one project may provide a different scale of opportunity for focusing attention and resources than another. Estimates of resource needs cited here are based on our past experiences in different regions of the world. They are also based on a set of design assumptions which in certain instances may be overambitious. Needless to say, in most situations, effective

projects can be designed which require fewer resources or operate on a smaller scale.

1. Material Support

Nurseries, transportation and agricultural equipment are key resources for any forestry project.

a. Nurseries. Often, the first step of any activity which involves planting trees will be to establish a nursery if one doesn't already exist in the area. Nurseries vary in size, ranging from as small as 2,000 seedlings for a school garden nursery to as large as 200,000 seedlings to serve a region. The cost is largely determined by whether the environmental conditions demand that the trees be planted in plastic pots (in arid/semi-arid regions where precipitation is slight and soil conditions are poor), or whether they can be planted bareroot (in more humid or temperate regions where soils are productive and moist, and rain is plentiful).

The initial costs for nursery establishment include such items as fencing material, rakes, watering cans, dirt and in some areas, well-digging and pumping devices. The cost of a 50,000 tree nursery can range from as little as \$2,000 to as high as \$12,000 in 1979 prices. Other expenses include labor for out-planting, maintenance of reforested areas, and possible fencing of reforested areas.

The initial cost of nursery material is incurred the first year of operation; there is a substantial decrease in the cost per tree during successive years. However, as the

project evolves, recurring costs such as labor, transportation, and material replacement will increase with inflation and expansion. In some cases it may be possible to generate revenue by selling seedlings to individuals on an appropriately graduated cost scale.

b. Transportation. Lack of transportation can be a major limiting factor to the successful implementation of forestry related projects. Filled plastic pots can weigh 2kg each and a large, reliable, flatbed truck is needed to carry several thousand pots to a reforestation site. Depending on the distance traveled and the price of gasoline, transportation from the nursery to the planting site can run from \$.03 to \$.20¹³ per tree (Weber, Earhart) not including the cost of the vehicle. For projects with centrally located offices, each office should be equipped with one small truck to transport supplies such as organic fertilizer, sand or dirt. In some situations, the local development workers, whether host country counterparts or volunteers, can be a great deal more effective if they have access to some form of daily transportation. If distances between sites, or between villages and sites are long or terrain difficult, both volunteers and counterparts may need motorcycles for transportation and communication relating to extension and post planting work.

¹³Based on 1979 prices.

c. Agricultural and other equipment. Finally, additional tools and equipment may be required for project components other than the nursery. Such items as planting bars, fumigators, chain saws, forest inventory equipment, compasses, soil test kits or levels may be needed by counterparts and volunteers alike. In addition, agricultural equipment such as hoes, rakes, and machetes, and perhaps surveying equipment would all come in handy.

2. Personnel

Many different skills are required to implement a forestry project. These skills can be provided by volunteers, counterparts, technical back-up personnel, and other host country nationals such as project managers, regional officers, guards, and village level participants.

a. Peace Corps Volunteers. Peace Corps is committed to meeting all requests for forestry volunteers to work in good, solid projects. To do this, we will have to determine the specific skills and competency levels required to implement each project. Generally, we know that sensitivity to the volunteer role, expertise in community development, and fluency in local language are prerequisites for all PCV jobs, and these will be uniformly provided by Peace Corps. However, each job position will require a different level of technical expertise, and in fact each project will most likely include a variety of volunteer jobs, each requiring different skill levels and combinations. Some of these will best be filled by volunteers with formal backgrounds in

forestry or related disciplines; others will best be filled by volunteers who receive intensive pre-service technical skill training, to supplement a more general academic and experiential background. Table 1 (page 10 above) identifies several of the needed skills for each of the various project types. During the design of each project, P.C. staff will work closely with host country and other sponsoring agencies to identify in greater detail the specific skills needed for each job, and then to carefully match these requirements with the new recruits.

Frankly, our current recruitment efforts are inadequate to meet the personnel needs of a dramatically expanded forestry initiative, and we are now considering a variety of actions for expanding these efforts, including informing the U.S. forestry community of service opportunities within the Peace Corps. These actions include the following:

- Print and circulate a P.C. recruitment brochure focused explicitly on this initiative. The currently used brochure for "science majors" contains only four short paragraphs on forestry opportunities.
- Pull together some visual presentations, such as movies or slide shows, which depict the life of a PCV forester. Recruiters could show these on college campuses, at forestry conferences, and other appropriate forums. These presentations could also be used as part of a U.S. public awareness campaign on the problems of and potential solutions to tropical deforestation.
- Have recruiters encourage university forestry departments to contact them about upcoming forestry conferences where P.C. could make a presentation.
- Involve returned forestry volunteers in recruitment. Many may already be on university campuses, enrolled in graduate programs.

- Make greater use of the media (television, radio, forestry journals) to publicize opportunities.

We believe that through these and similar efforts we can recruit sufficient numbers of appropriately qualified volunteers to meet the projected demand. We are also encouraged by the fact that although in the past there has been a shortage of U.S. trained foresters available for overseas assignments, this situation appears to be changing. In fact, reportedly there are many forestry graduates who cannot find jobs. For example, the U.S. Forest Service receives job applications far in excess of its available job openings. We would like to reach these applicants and inform them of opportunities within P.C. where they can apply their skills, often in places where such skills are in seriously short supply. Upon their return from overseas service, such individuals should also be more attractive as prospective employees to various forestry and natural resource agencies. This would help overcome the U.S.'s own shortage of individuals with experience and expertise in tropical forestry. Upon completion of their assignments, some of these returned volunteers will most likely be interested in continuing their work with other U.S. agencies, thus greatly strengthening U.S. planning and programming efforts in the tropical forestry area.

b. Host country personnel. Counterparts (1 or 2 per site) are vital to continuation and replicability of projects. If local personnel can be trained to carry out duties taught

to them by volunteers, and if material input is ensured, projects can continue, and in fact expand after the volunteers have departed.

In the past, donors have often been reluctant to cover salaries of host country nationals; this has been viewed as an important contribution of the host country government. Although desirable, this may not always be possible given the often tight budgets of forestry departments in the very countries with highest indicators of need. As a result, in some cases project costs will of necessity include support for counterparts and other host country project management staff.

c. Non-professional personnel. Although counterpart roles and professional levels, as well as salaries, vary from region to region, many projects can utilize non-professional counterparts who often earn from \$1.50 to \$3.00/day. These would be full-time workers selected from the local community to carry out various project responsibilities. They might work alongside the volunteer in daily activities, learning both the skills and information required for their tasks. Additional personnel requirements might include several laborers to aid in the establishment of a nursery, or laborers to assist during the planting season. It may also be necessary to hire full-time guards to protect young trees from hungry animals. In some cases, some of these expenses might be covered by revenues generated from sales of trees to landowners.

3. Training

a. Current Peace Corps forestry training. Peace Corps provides all volunteers with the necessary skills to carry out their developmental roles. These skills usually relate to language, cross-cultural, technical and local development abilities.

At the present time there is no uniform approach to Peace Corps training of forestry volunteers. With the recent exception of a training program for volunteers going to Tanzania, little P.C. forestry training occurs in the United States. Rather, training has been generally conducted in the country of volunteer assignment, organized either by P.C. or by the requesting host country agency. In some cases, Guatemala for example, a contract for training is awarded to a local firm. Some volunteers have received in-service training courses at the USDA-run Institute of Tropical Forestry in Puerto Rico.

b. Counterpart training. To the greatest extent possible, counterparts at all levels should be encouraged to attend both pre-service and in-service technical training courses alongside the PCVs with whom they'll be working. Counterpart training goes a long way in emphasizing both to the counterpart and to the community the importance of their work as a vital contribution to the preservation of the local environment. This will also instill more self-confidence to the counterparts, thereby increasing their capability, credibility, and self-respect. Whenever necessary, project

support should include support for such training and related travel and per diem.

c. New training efforts. Both the number and range of forestry training programs will have to be expanded to accommodate the proposed increase in project types, volunteers and counterparts. Training efforts should be designed to prepare the volunteers and counterparts for their initial assignments, but also to provide them with periodic skill review and upgrading once they are in the field. In addition to expanding its contractual relationships with U.S. based forestry training institutes, P.C. could also explore the possibility of identifying forestry institutes in each geographic region or ecological zone to:

- Provide initial general training for volunteers and counterparts assigned to the region;

- Backstop country-specific training which could follow these;

- Assist in providing continuous technical back-up support to the projects;

- Serve as clearinghouses for project related information.

Efforts like these may require the addition of full-time P.C. technical personnel to be stationed at each institute to provide the overall focus, any requested on-site assistance, and assistance in developing future project opportunities.

Other options worth consideration as part of the effort to strengthen training includes:

- Exploring the possibility of conducting pre-service

training at U.S. governmental facilities such as USDA's Institute of Tropical Forestry in Puerto Rico;

- Designing standardized approaches to in-service workshops which provide opportunities both to share information and experiences, and to increase appropriate skills. Such settings could also be used to facilitate the exchange of information between researchers at regional institutes, and workers in the field;

- Providing in-service training to P.C. staff responsible for project back-up;

- Increasing the range of forestry-related, standardized training packets (books, materials) and technical support materials available to the development community through Peace Corps Information Collection and Exchange (ICE). P.C. has already published several manuals relevant for forestry project support. One of these, Reforestation in Arid Lands, includes information for designing and implementing projects in arid and semi-arid areas, as well as specific information on sub-Saharan West Africa (climate, soils, plants, and trees). Similar manuals for village and farm reforestation in the tropical areas of Central America and the Caribbean are planned for production in 1980;

- Identifying project by project possibilities for incorporating relevant forestry skills into other P.C. efforts, especially in the education and food production areas; and

● Developing generalized training modules for PCVs not directly involved in the forestry program to assist them in understanding and explaining the problem of deforestation, and to teach them the basics of planting trees, and conserving firewood by such means as constructing improved cookstoves. These secondary activities carried out by many volunteers could dramatically increase the forestry initiative's overall impact.

In pursuing these and similar efforts, P.C. will pay particular attention to the experiences of volunteers and counterparts who are currently working in related projects.

4. Technical Assistance

During the project design phase there will be instances where field posts could benefit from the services of consultant assistance, such as a forester and/or a community development specialist. During project implementation, volunteers and counterparts will have the skills necessary for carrying out project interventions at the community level. However, there will be times when they will be faced with problems or opportunities beyond the scope of this training. It is, therefore, important that forestry experts as well as appropriate printed materials be available when assistance is needed.¹⁴ The kind of assistance required will undoubtedly vary and could include sub-regional technical personnel back-up, information exchanges by letter, general background literature, specific

¹⁴Also see Section III, 3, Training, above.

technical data, networking, and actual on-site visits. All projects will require some back-up which will largely be determined by project size and complexity. One way to address this need is to appoint a full-time P.C. staff forester to a region. For example, an Associate Peace Corps Director who is also a forester is now stationed in Ouagadougou, Upper Volta. Given some travel funds and back-up support, he could assist other Sahel field posts in their programming efforts, and could coordinate overall P.C. regional efforts with those of the CILSS, the Sahelian regional development organization also based in Ouagadougou. Short-term technical assistance requirements could be addressed by drawing upon the pool of returned forestry volunteers.

5. Evaluation

Although Peace Corps has been involved in forestry programs since 1961, there have been no in-depth analyses of these experiences--of what has worked and why, what hasn't worked and why, and how the project design used could have been strengthened and replicated. A preliminary review of the literature on village forestry reveals that only a minor attempt has been made by any of the involved agencies to evaluate past and present efforts in this area. We believe that this information should be assembled as quickly as possible so that the findings and conclusions can provide the basis for strengthening current efforts and developing future programs.

To this end, we are planning to undertake an intense evaluation of our own efforts in village forestry. As a first step, we are now evaluating ten completed village level forestry and natural resource projects sponsored by the donor community. The purpose of this assessment is to identify factors contributing to project success or failure. Sociological factors, such as the nature and degree of local participation and pertinent cultural characteristics, will be given particular emphasis. The conclusions will provide some guidelines for project identification and design, as well as for identifying the resources needed for project implementation. We are also interested in learning more about the past and present experiences of other developmental organizations, and encourage the sharing of any existing studies.

It is important that the evolving U.S. forestry program include a strong evaluation and feedback system. Peace Corps is now considering ways to strengthen our own in-house project monitoring and evaluation systems, as well as ways to gather information from our volunteers in the field.

6. Development Education

For this forestry initiative, as for most development efforts, the extent and nature of local participation will most likely be a major determinant of success. Community meetings, information about similar successful efforts, audiovisual media presentations utilizing slide shows, films, and flip charts can be quite effective in building local support for reforestation. This is particularly

critical where a major project goal is to encourage the community to donate time and resources to project implementation.

Extension should not be limited to the recipient countries though. Deforestation is a problem that affects us all. As part of Peace Corps legislative mandate to promote awareness among Americans about life in developing countries, we propose to organize extensive efforts to bring the problems of world forestry to the attention of people in this country. We will also attempt to demonstrate how our own energy policies and resource utilization practices affect the entire globe's capability to meet its fuel and wood product needs. These efforts would be focused on community groups, high school and post-secondary students, and those directly involved in development efforts. Returned volunteers can play an important role by sharing their experiences at schools, universities, churches and other community organizations. This message could be reinforced with visual presentations, such as movies, slide shows, booklets or public interest media spots. Such efforts are also likely to have strong positive impact on our volunteer recruitment capability.

Section IV: Collaboration

The scale of deforestation is enormous. Solutions will require a concerted effort which draws upon a multitude of resources. Peace Corps can provide skill-trained volunteers to work with communities in identifying needs and seeking solutions. However, as mentioned earlier, we cannot provide other resources which are vital elements of a forestry program. In the past, we have undertaken joint projects with many diverse organizations, as illustrated in Table 2. We are now seeking additional opportunities for joining our resources with those of other developmental organizations committed to combating deforestation.

In Section III we identified some of the resources needed to implement forestry projects. Here, we briefly describe some of the developmental organizations we know of with strong forestry programs or special skills which could be applied to these projects. In the near future we would like to meet with these--and other interested organizations--to discuss ways we can share our resources to multiply our individual impacts in these areas.

1. AID

AID is the primary government agency responsible for administering the U.S. foreign assistance program. It supports bilateral activities in 54 countries. In the past,

Bilateral Aid Donor Agencies

Australia
Belgium
Canada
Democratic Republic of Germany
Federal Republic of Germany
Great Britain
Ireland
Netherlands
Norway
Sweden
Switzerland
United States

Official Volunteer Sending Agencies

United Nations Volunteer Programme
VSO (Great Britain)
Federal Republic of Germany/Volunteers
Japanese Volunteers

Other U.S. Governmental Agencies

Health, Education, and Welfare:Center
for Disease Control
U.S. Department of Agriculture
USDI-National Park Service
National Technical Information
Service
International Communications Agency
Embassy Self-Help Funds
U.S. Forestry Service

U.S. Universities

University of Arizona
University of Southern Mississippi
University of Louisiana/Gallaudet College
Auburn University
University of Utah
University of Massachusetts

Multilateral Aid Donor Agencies

World Bank/IBRD
European Development Fund
Interamerican Bank
Asian Development Bank
Caribbean Development Bank
Central American Bank for Economic Integration
UNDP
WHO (includes Pan American Health Organization)
(PAHO)
U.N. World Food Program
FAO
UNICEF
UNESCO
International Atomic Energy Organization
ILO
UNCDF
Organization of American States
Organismo Internacional Regional de Sanidad
Agropecuaria (OIRSA)
U.N. Economic Commission for Asia/Pacific
EEC
Instituto Interamericano de Ciencias Agrícolas
(IICA)
Asian Vegetable Research and Development
Center
International Institute for Tropical Agriculture
(IITA)

Host Country Domestic Development Agencies

CARITAS
COHAAT-Costa Rica
YMCA of Ghana
CONGAT-Togo
CATIE-Centro Agronomico Tropical de
Investgacion y Ensnanza
Mauritanian Red Crescent Society

Private and Voluntary Organizations and Foundations

International Planned Parenthood
Family Planning International
Pathfinder
CARE
Catholic Relief Services
Miserior-German Catholic Church
Volunteers in Technical Assistance (VITA)
Church World Service
Wings of Hope
Partners of the Americas
Presbyterian Church
Heifer Project International
Boy Scouts of America
World Wildlife Fund
American Leprosy Fund
Lutheran World Relief
National 4-H Foundation
World Council of Churches
Save the Children
Foster Parents Plan International
American Institute of Free Labor Development (AIFLD)
Salvation Army
Partnership for Productivity
OXFAM (United Kingdom)
Overseas Education Fund
Technoerve
Development Alternatives
Japanese Organization for International Cooperation in
Family Planning (JOICFP)
YMCA
Foundation for Cooperative Housing
National Council of Negro Women
American Leprosy Mission
Girl Scouts of America
League for International Food Education (LIFE)
Institute for Nuclear Issues
Cooperative League of the United States
Brothers Brother Foundation
Foundation for Research and Independent Development in
Africa
Lions Club of America
Kennedy Foundation
International Center for Tropical Agriculture
International Medical Research Center
AFRICARE
Interamerican Foundation
Rockefeller Brothers Fund
Asia Foundation

collaboration between AID and P.C. has been sporadic. There is now growing recognition that the two agencies share common goals, can provide complementary resources, and that closer cooperation and joint programming would increase the overall effectiveness of U.S. programs and projects in the third world. A letter signed by the P.C. Director and AID Administrator in April 1978 was sent to all P.C. and AID Mission Directors to encourage them to work more closely together. More recently, a joint AID/PC memorandum to President Carter emphasized our mutual commitment to programs in natural resource conservation, forestry and renewable energy. Specific mention was made of P.C.'s forestry initiative and the potential for collaborating with AID on this effort. An airgram circulated to all AID missions in Africa clearly states that the establishment of village woodlots or similar community forestry/conservation efforts is a priority, and strongly encourages all Mission Directors to work closely with P.C. Directors in project design and implementation.¹⁵ In the energy sector AID and P.C. are already jointly supporting a modest initiative which includes village energy use surveys and alternative energy project development.

Over the next few months we would like to explore possibilities with AID for designing and implementing a coherent forestry program which might draw upon a number of the different programming options in use by AID. Some of

¹⁵Department of State, Village Firewood Production and Other Cooking Fuels, AIDTO CIRC. A-157, dated July 3, 1979.

these which seem to have greatest potential are briefly described below:

- A Participating Agency Service Agreement (PASA): This is an agreement between two U.S. government agencies in which one agency provides the financial support for a project, which is implemented by a second agency. Peace Corps currently has a PASA with AID to undertake the energy initiative.
- Joint Project Design: P.C. and AID work together in the field on a country-by-country basis to design and implement a bilateral activity (e.g., Mali Livestock and Mali Renewable Energy).
- Accelerated Impact Project: This is a small AID project, with a funding limitation of \$500,000, which can be implemented in 2 years. Project preparation takes less time, and project documentation requirements are less stringent than for larger projects. The AIP is available only in Africa and Latin America.
- Operational Program Grants: A vehicle for transferring AID funds to private voluntary organizations, who manage and implement development projects. In some cases, such as the CARE Reforestation Project in Chad, P.C. volunteers have been involved in project implementation.
- Special Development Activities: This is a fund to support small community organized projects. In the past, P.C. has drawn upon this to finance the purchase of needed equipment and supplies.
- Improved Rural Technology: This regional project provides funding for small-scale activities in Africa. Total cost of any single activity is limited to \$50,000.

2. Private and Voluntary Organizations

There are between 400 and 500 U.S. private and voluntary organizations (PVOs) providing assistance to developing countries. Although their major focus has been to provide disaster and refugee assistance, some PVOs have also begun to sponsor development projects in the areas of food and agriculture, health and population, education, and forestry.

According to a recent report evaluating the effectiveness of PVOs in administering foreign aid,¹⁶ these organizations have been particularly successful in implementing a basic human needs strategy. They encourage and support self-help initiatives at the community level, often working with established local organizations. This support may be in the form of materials and equipment, and/or technical assistance. PVO's often display a high degree of sensitivity to the local culture, and often tend to be more innovative than other developmental assistance organizations due to their minimal reliance on government support.

The level of assistance provided by PVOs is significant. In FY 1977, for example, grants totalling \$840 million were made to developing countries. This represents 7.1 percent of total U.S. dollar flows to developing countries during this year. During the same period of time, PVOs administered an additional \$480 million of AID funds, for a total of \$1.3 billion. This exceeded the U.S. bilateral assistance program for the same year, which amounted to \$1.1 billion.¹⁷

In addition to the large amount of money administered by PVOs, it is noteworthy that a high percentage of these funds actually reach the beneficiaries. Also, PVO's generally are able to expend funds more quickly than larger organizations.

¹⁶ Elliot Schwartz, Private and Voluntary Organizations in Foreign Aid (Washington, D.C.: Special Studies Division, National Security and International Affairs, November 15, 1978).

¹⁷ Ibid.

In the past, Peace Corps has cooperated with PVOs on implementing a wide range of projects, including forestry activities. Examples include a reforestation project in Chad with CARE, and a natural resource conservation project in Guatemala with the Catholic Relief Service. Also, Peace Corps is currently working with CODEL--a coalition of 41 PVOs based in New York--to design training and awareness workshops on environmental topics.

3. World Bank

In the past few years the Bank's forestry lending program has undergone a major shift in emphasis, from support for industrial plantations to activities which contribute to rural development and environmental protection. Between 1953 and 1976 only four of the Bank's portfolio of 17 forestry projects were concerned with rural forestry; in contrast, over 50 percent of the Bank's current program will benefit people living in rural areas. The Bank will continue to place emphasis on rural forestry and will support a variety of activities including research, training, and institution building.

4. Food and Agriculture Organization (FAO)

A UN agency with headquarters in Rome, Italy, FAO has probably the strongest technical assistance program in forestry in the world. With a staff of almost 400 professionals, most of whom are working in the field, FAO is

supporting activities in 56 countries. Its current annual operational budget is approximately \$32 million.¹⁸

FAO is placing greater emphasis on the role of forestry in rural development and has recently published a guide on "Forestry for Local Community Development." Its extensive library and working files are a valuable source of information on tropical forestry.

5. United Nations Capital Development Fund (UNCDF)

Through the contributions of some 70 countries, 61 of which are developing nations, the UN Capital Development Fund provides financial assistance to small ventures in poor communities which do not qualify for loans or have otherwise been overlooked by more traditional sources. Based on consultation with the host country government and the community, seed money is channeled into community projects for the purchase of essential equipment and supplies. The amount of money per project is small, ranging from a low of \$60,000 to a high of \$1.9 million, with the majority going to projects in the least developed countries. The UNCDF currently has projects in 26 developing countries, many of which are countries where PCVs are serving.

6. International Development Research Centre (IDRC)

IDRC was established by the Canadian government to sponsor and conduct applied research and development on problems of developing countries. The Centre's

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The U.S. is a major contributor to FAO, funding about one-fourth of this agency's total annual budget.

program has focused on the semi-arid tropics and includes 20 projects in 12 countries in Africa and the Near East. Research is being conducted on the use of shelterbelts and windbreaks for desert reclamation (Sudan, Tunisia), new planting techniques for large-scale reforestation (Sudan), and the best species for firewood (Malawi). The Centre is supporting the newly established International Council for Research in Agroforestry (ICRAF) which is described below. It has also given a grant to the Philippines to undertake research on the species of Leucaena most suitable for small farms.

7. International Council for Research
in Agroforestry (ICRAF)

ICRAF was established in 1977 for the purpose of sponsoring, planning and coordinating research on agroforestry. Based in Nairobi, Kenya, it is an autonomous, non-profit international organization supported by voluntary contributions from governments, and public and private organizations. In addition to collecting and disseminating information on agroforestry, the Council will also support training of researchers and forestry/agricultural extension workers, and field activities.

Section V: Time Frame for Implementing
P.C.'s Forestry Initiative

In this paper we have identified a number of possible project activities where we believe we can make a contribution, and where it is possible to program groups of volunteers. We have also generally identified the resources needed to implement these projects. These activities are illustrative, and we do not intend that the potential range of P.C. involvement be limited to them. During the next 12 months we plan to further refine this initiative, strengthen our cooperative and collaborative relationships with other development organizations, reinforce P.C.'s internal capacity to mount an expanded effort, and begin implementing a coherent forestry program. Our time frame for achieving these objectives is outlined below.

TIME FRAME

<u>Activity</u>	<u>Date</u>
Obtain internal concurrence on program framework	September 1979
P.C.in-service staff training workshops to include explanation of new initiative.	September 1979
Explanation of initiative to P.C. Country Directors at worldwide directors workshop	October 1979
Complete final draft of initiative paper for wide distribution within the Development Community	October 1979

Explore possibilities for PC/AID collaboration; convene small PC/AID work group to review/modify general plan in terms of overall AID efforts	November 1979
Complete draft proposal for initial AID/PC collaborative effort; and begin AID/PC collaboration effort	November 1979
Explore possibilities for strengthening forestry related recruitment and training programs	December 1979- February 1980
Explore other donor agency collaborative possibilities	December 1979- February 1980
Develop appropriate collaborative agreements	January-April 1980
Convené regional/zonal forestry workshops related to initiative	Early 1980
Initiate overall evaluation strategy	Spring 1980
First initiative-specific volunteer input	Summer 1980

Our first step will be to work with our field posts to evaluate past experiences and identify project opportunities. At the same time we will take measures to strengthen our internal programming efforts as they relate to project design, recruitment, training, public awareness, and evaluation.

Whenever and wherever possible, we would like to work with others who are seeking solutions to problems related to deforestation. Toward this end we will make a special effort to share information on our experiences and plans, and to explore possibilities for undertaking collaborative projects.

We encourage and welcome any comments or recommendations related to the ideas stated in this paper, and look forward to working with a broad community of people and organizations.

The forests are being depleted rapidly; the urgency for our well-conceived but immediate action is great.