

PA-AM-324

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FORESTRY AND FUELWOOD

IDCA/AID

LEADERSHIP PROPOSAL

FY 1982 - FY 1986

I. QUESTION: What is the Nature of the Deforestation Problem?

. Fuelwood Crisis

- Eighty percent of all wood used in the Third World and half of all wood cut in the world each year is burned as fuel (see pages 6 and 19 of TAB B).
- At current rates of tree planting, only one-tenth of the needed area of fuelwood plantations will have been established by the year 2000 (see page 8 of TAB B).
- Soaring prices for firewood force families to spend one-fourth of their incomes on wood and charcoal for cooking (see page 28 of TAB B).
- Firewood scarcity forces the poor to burn crop residues and dried cow dung, reducing crop yields in agriculture (see page 29 of TAB B).
- Up to 250 to 300 days of work each year are devoted to gathering of a firewood supply for one household in many LDCs (see page 29 of TAB B).
- Poor people in some fuel-short areas have had to give up one of their traditional hot meals each day (see page 29 of TAB B).

. Forest Destruction

- Forty percent of existing forests in less developed countries will be lost by the year 2000 (see page 23 of TAB A).
- Virtually all physically accessible forests in less-developed countries will have been cut by the year 2020 (see page 26 of TAB A).

. Desertification

- Cutting of trees and woody shrubs for fuel, combined with overgrazing and fires, was cited by the 1977 United Nations Conference on Desertification as a major contributor to the spread of deserts (see page 20 of TAB B).

. Local Wood Products Scarcities

- Forest depletion is forcing some countries to import paper, lumber and other forest products, increasing housing costs for the poor and creating balance of payments problems (see page 13 of TAB C).

### Soil Erosion and Sedimentation

- Seventeen major reservoirs in India are silting at three times the expected rate due to deforestation of upstream areas (see page 31 of TAB B).
- "The most urgent step necessary to save the Panama Canal is the immediate halt to deforestation of the upland watershed" (see page 23 of TAB F).

### Flooding and Water Scarcity

- Deforestation leads to depletion of groundwater, to intensified flooding and to aggravated water shortages during dry periods (see page 36 of TAB A).

### Species Extinction

- Tropical forest destruction will be accompanied by extinction of plants and animals at a rate unprecedented in the history of the world (see page 27 of TAB E).
- Fifteen to twenty percent of all species currently on earth could become extinct by the year 2000 (see page 37 of TAB A).

II. QUESTION: What is U.S. Policy in Regard to the Deforestation Problem?

. The United States is committed to improvement of worldwide management of vital forest resources (see page 4 of TAB C). It is the policy of the United States to:

- Recognize tropical forest vulnerability in conduct of U.S. domestic and international affairs.
- Pursue programs to sustain the integrity and benefits of tropical forests.
- Collaborate with others to increase benefits obtained from tropical forests while protecting environmental values.
- Support other nations' efforts to reduce destructive pressures on forest resources.
- Encourage an investment climate that rewards good forest management.
- Contribute to protection and maintenance of representative tropical forest areas.
- Protect and manage U.S. tropical forests in an exemplary manner.
- Conduct research to help protect and manage tropical forests.
- Expand training and education programs dealing with tropical forestry.
- Encourage and assist U.S. institutions to promote good stewardship of tropical forest resources.
- Promote public/private cooperation in support of this policy.

III. QUESTION: What are AID's Congressional and Presidential Mandates for Action on Deforestation, Forestry/ Fuelwood Problems?

- . AID has been given specific authorization by Acts of Congress beginning in FY 1977 and continuing through 1979 to provide assistance in forestry with emphasis on community woodlots, agroforestry, reforestation, protection of watershed forests, and more effective forest management (see TAB G).
- . AID has been charged with responsibility for assistance in fuelwood and other renewable energy sources in 1978 and 1979 amendments to the Foreign Assistance Act (see TAB G).
- . The House Appropriation Committee urged AID in 1979 to include reforestation, forestry and fuelwood in all rural development assistance projects (see TAB H).
- . President Carter directed AID to give high priority to deforestation problems in an August 2, 1979 Memorandum to the AID Administrator (see TAB I).

IV. QUESTION: What is AID Policy and Strategy in the Forestry/  
Fuelwood Area?

- . AID has been directed by the President and the Congress to expand its activities in the areas of energy, forestry and natural resources management (see TAB G on amendments to FAA).
- . In December 1979, AID produced guidance to the field on forestry-related issues (see text in TAB A). Missions were requested to examine the extent to which deforestation constitutes an impediment to development and discuss program opportunities with host governments. Areas of activity included:
  - Raising host government awareness of the problem through assistance in survey and analysis techniques, institutional development and improved research capability.
  - Support for protection, regeneration and production through programs for tree plantations, woodlots for fuel, agroforestry and testing of improved fast-growing tree species.
  - Support for easing pressure on forests by development of renewable and alternative energy sources and sustainable cropping systems through integrated rural development activities which incorporate intensified agriculture, off-farm employment and alternative energy sources.
  - Support for more efficient use of forests to promote better efficiency and local industries based on production of forest products whether for fuel, food or other economic uses.
- . It is AID strategy to respond to this important new program area by encouraging Missions and host governments to incorporate forestry and fuelwood activities in their programs through the CDSS process. This will enable AID to identify the urgency of the problem in each country, the commitment of the country to address the problem, and those activities in which AID can appropriately participate. The increases in forestry activities are outlined in the October 1980 Agency Report to the Interagency Task Force on Tropical Forests (see Report in TAB M).
- . For the "leadership package" it is AID's strategy to complement the World Bank initiative. The World Bank, in conjunction with the FAO and indigenous host country

forestry organizations, is now in the process of developing a concerted program to address the fuelwood deficiencies in the LDCs. This contrasts with the more general forestry lending program of the Bank which has made available about \$600 million in loans since 1968. The identification of the fuelwood issue as part of the broader forestry sector program in the Bank's Forestry Sector Policy Paper in February 1978 led the way in this programming change.

The World Bank is considering a lending program that would support planting trees on 2.5 million acres over five years in 49 countries. Modest as that objective is when compared with the need, it would still require a more than doubling of the lending now planned for such activities--up from the \$425 million originally planned for FY 1981-85 to approximately \$1.1 billion.

In reaching the proposed lending level, the Bank was seriously limited by a number of country-specific, socioeconomic constraints. Some governments are not committed to making the national effort essential to an adequate response. National programs in a number of countries have been poorly designed or implemented. In other countries, the governments have been unprepared to review the price and incentive structures that are critical elements of sustainable national programs. And national forestry services are frequently ill-equipped and ill-trained to undertake the required new tasks.

Thus, it is clear that the next several years will be a time for increasing the understanding of national governments about the ramifications of the fuelwood problem, much as we did on the population problem in the 1960s. It will also be a time for building up the technical skills and institutional infrastructure to support subsequent larger funding, principally by the multilateral development banks, unique to AID's experience and expertise. These areas include expanded fuelwood plantations, experimental village or family woodlots, research and development of improved tree species (particularly fast-growing trees and those appropriate for arid and semiarid lands), erosion control measures, improved analysis and survey techniques, and technical assistance in forestry and strengthening developing country institutions. A major effort would be directed to programs enlisting the widespread participation of all available voluntary resources--local, national, and expatriate (including the Peace Corps as well as private organizations)--at the village level.

An additional component is directed at the urgent need for a coordinated international research and training program. Recent landmark reports by the National Research Council on Research Priorities in Tropical Biology (see TAB E) and the Interagency Task Force on Tropical Forests (see TAB C) have revealed that basic scientific knowledge of the functioning of tropical forest ecosystems is scarce or nonexistent. The U.S. Forest Service Report on Forestry Activities and Deforestation Problems in Developing Countries (see TAB K, p. 32) indicates that investment in research is declining.

An applied research and training program implemented internationally on both humid and arid tropical ecosystems management is urgently needed to facilitate coordination on a global and regional basis and information exchange among developing countries, donor and scientific and technical institutions.

If tropical forests and other biological resources are to be successfully managed and utilized for increased supplies of renewable energy in the developing world over the next 20 years, there are many serious research questions which need to be answered relating to both humid and arid areas:

- How can environmentally and socially sound ecosystems be maintained, constructed or reconstructed in the tropics in order to produce biomass over the long term for energy production and other economic purposes?
- How can as yet "scientifically unknown" genetic resources be identified and "banked" for future needs before complete annihilation?
- What additional tree and plant species (both indigenous and introduced) are best suited and can be genetically improved for energy production in both arid and humid areas in terms of special attributes (speed of growth; resistant to local pests; BTU content; and adaptability to various soil, water, and climatic conditions)?
- What are the cost/benefit ratios of primary versus secondary grown forests in different geophysical locations for wood production as well as mono-culture versus mixed species?
- What are the appropriate technologies that will optimize establishment and growth rates of different species to reduce reforestation costs (type of planting, inoculation, etc.)?

- Are supplies of appropriate plant materials such as seeds, tissue culture, etc., of adequate quality and quantity available?

Because of the need for basic knowledge about these and other problems, the AID leadership proposal includes provision for that a centrally-funded research and training program starting in FY 1983 which focuses on:

- Ecosystem dynamics and management for long-term productivity in the arid and humid tropics, which incorporates social and institutional concerns.
- Identification and protection of worldwide genetic resources both in situ and in genetic banks.
- Testing and manipulation of a selected variety of tree species with potential for energy production.

To implement this program, AID proposes that \$55 million over 4 years (FY 1983-1986) be allocated for an AID centrally managed research and training program. A multi-year effort would be initiated which would seek contributions and support from other donors similar to previous efforts in tropical agriculture and disease.

This program would require 18 months to organize and approximately eight years to complete but could be initiated in FY 1983 through enhancement of existing research activities already underway in Africa, Latin America and Asia under the sponsorship of international, regional, and national organizations. There would be close consultation on the planning, funding, and execution with the developing countries and the UN system (UNEP, FAO, UNESCO/MAB, IBRD, UNDP) as well as the CGIAR network and IUCN. U.S. agencies and institutions such as DOE, the U.S. Forest Service, Park Service, Fish and Wildlife Service, National Academy of Sciences and U.S. universities and the nongovernmental community would also be involved.

Conceptually, this research initiative would apply its funds to increase the competence of the institutions receiving the research grants through training and other aspects of institution-building as appropriate. For example, funds for the International Center for Research in Agroforestry (ICRAF) would help to upgrade the ability of that organization to undertake a broadened research effort. In addition, all research activities would include the training of LDC scientists in order to leave a human resource capacity to continue these efforts.

Fuelwood projects designed and implemented by the AID Missions would also include components devoted to research and training in view of the sparse knowledge base in this area and our institutionalization strategy.

V. QUESTION: What Specific Forestry-Related Energy Activities Would AID Undertake in FY 1982 and Beyond Under the "Leadership Package"?

In FY 1982, AID plans to use the additional funds to support the following programs in Africa, Asia and Latin America totalling \$100 million:

- India-Maharashtra Social Forestry - \$35 million

The project has been identified and our AID Mission has entered into discussions with the Government of India and the State Government for design activities. The project will include tree planting on common communal lands, wastelands and degraded forests; establishment of nurseries; extension services to villages; survey and assessment of local resources, research and training and technical assistance to strengthen the social forestry unit of the State Government. The project design will build upon experience gained from social forestry projects ongoing or planned with the Indian States of Gujarat (IBRD), Uttar Pradesh (IBRD), and Madhya Pradesh (AID).

- East Africa - (Kenya/Somalia/Tanzania/Sudan) - \$25 million

All of these East African countries face severe deforestation problems created by increased demand for energy and land for food production. The World Bank has identified activities related to fuelwood. The projects will finance nurseries, extension village woodlots and strengthening of national and local institutions. In Kenya the Beijer Institute (Sweden) in cooperation with AID and the World Bank is now conducting a feasibility study of fuelwood production requirements. Projects are also being designed in the other countries.

- Sahel Forestry - \$25 million

The Club des Amis du Sahel and the CILSS donor agencies have identified a series of fuelwood activities in selected Sahelian countries (Niger and Senegal) which require donor financing. Activities include research and development of new species; establishment of nurseries and extension work for the development of village woodlots; development and dissemination of woodburning stoves; development and dissemination of improved charcoal ovens; and support for strengthening local forestry institutions

(national and local) with technical assistance, training and commodities. These projects will build upon the extensive World Bank/IFAD work and utilize Peace Corps resources to the extent possible.

- Caribbean States - \$15 million

The Caribbean and Central American states have been experiencing alarming deforestation. Programs are planned for Haiti where formerly productive areas are now barren wastelands; Honduras where forestation programs are required involving local people and aimed at developing a national technical capacity; and in Central America where a program is planned to involve regional institutions such as CATIE and ICAITI to address directly the shortage of fuelwood. Project activities will include growing seedlings, extension, plantings, research on new varieties and development testing and dissemination of more efficient stoves.

Data on program planned for the out-years FY 1983 - FY 1986 can be found in TAB O.

VI. QUESTION: How Do the Basic Budget and the "Leadership Package" Fit Together?

- . The IDCA Budget for fuelwood is:  
(\$000)

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Base Energy	<u>108</u>	<u>140</u>	<u>200</u>	<u>250</u>	<u>300</u>
Estimated Fuelwood Component	38	55	70	85	95
Leadership	<u>100</u>	<u>125</u>	<u>150</u>	<u>200</u>	<u>225</u>
Total Fuelwood	138	180	220	285	320

- . The Budget levels include fuelwood activities in the base budget and an additional amount per year for the "leadership proposal". For FY 1982, the level of funding would be \$38,000 in the base and \$100,000 in the leadership package for a total of \$138,000. These projects have been identified. For the out-years, the base budget will continue to include a percentage for fuelwood. The combination of base budget and leadership activities will rise over the budget period as the increase in fuelwood in the base combine with the leadership package.

VII. QUESTION: What Will be the Relationship of the Leadership Proposal to the Activities of the Other Donors?

- . AID is benefitting from the World Bank's country-by-country review of 60 countries and the analysis derived from that investigation specifically dealing with the shortfall in fuelwood availability compared to demand, and the cost in filling the gap.
- . AID in its forestry implementation strategy will complement the World Bank effort by means of such things as joint ventures with the Bank and the design of independent AID projects that supplement World Bank efforts, but provide AID's unique experience and expertise.
- . Numerous opportunities present themselves (some already tried and some new) to cooperate with entities in the international donor community in implementing the "leadership proposal". Examples of these organizations and their interests are: (see TAB C, Chapter 5)
  - Food and Agriculture Organization of the UN (FAO): trust and contractual arrangements are feasible to carry out joint or separate AID projects.
  - United Nations Environment Programme (UNEP): joint or group efforts to arrange professional meetings workshops, consultations, expert panels and international conferences.
  - UNESCO Man and the Biosphere Program (MAB): AID funds can support the MAB international network (especially the Tropical Forests project area) in training and research programs of interest to the Agency.
  - Consultative Group on International Agricultural Research (CGIAR): AID funds can promote research in forestry (especially agroforestry) through this group of specialized international agricultural research institutes in the developing world.
  - International Union for the Conservation of Nature and Natural Resources (IUCN): funding can be used to carry out AID projects through its six commissions and a network of about 700 professionals.
  - International Council for Research in Agroforestry (ICRAF): support is needed to promote and expand ICRAF's objective of engaging in agroforestry research, training and agroforestry information exchange.

VIII. QUESTION: Will the Projects Included in the Illustrative Budget be Ready for Financing? (See TAB O.)

- . In the projects identified for FY 1982 and FY 1983 design is already in process to be implemented either by AID, the World Bank, or other donors. For the out-years FY 1983-1986, project design may be carried out by AID, AID in cooperation with the World Bank, or by the host government.

IX. QUESTION: What is the Basis for the Figures Supporting the Fuelwood/Forestry Initiative?

- . The figure of 125 million acres of plantings required over the next 20 years was established by an internal World Bank country-by-country review of the fuelwood requirements of 60 countries.
- . The need for provision of fuelwood for 500 million people is derived from supplying fuelwood for four people per acre per year, based on World Bank experience.
- . The estimated savings of 10 billion gallons annually is based on a per capita consumption of fuelwood equivalent to 20 gallons of kerosene per person per year.
- . The \$7 billion cost of kerosene is based on \$.70/gallon estimate at today's price.
- . The financing costs are based on \$400/acre, derived from World Bank experience for its fuelwood/forestry projects.

X. QUESTION: How Did the World Bank Carry Out its Analysis of Fuelwood Requirements?

- The World Bank prepared a step-by-step analysis of 21 items identifying the fuelwood requirements and possible funding targets. The review was conducted by experts familiar with the forestry sector in each country from the World Bank, FAO, and several developing countries. The 21 items are shown below using Kenya figures from the analysis as an example:

	<u>Kenya</u>
1. Population in 1980 (Millions)	16
2. Projected population in year 2000	
Urban	6
Rural	28
3. Total	34
4. Current fuelwood consumption (Million M <sup>3</sup> )	16
5. Projected fuelwood consumption year 2000 (Million M <sup>3</sup> )	33
6. Alternative fuel substitution	25%
7. Residual fuelwood demand year 2000 (Million M <sup>3</sup> )	25
8. Areas of natural forest (Million ha)	1
9. Natural forest fuel supply potential (% of 7 in year 2000)	15%
10. Net fuelwood requirement (Million M <sup>3</sup> )	21
11. Area of plantations needed to meet #10 requirements (Million ha)	1
12. Present area of fuelwood plantations (Thousands ha)	30
13. Balance of new plantations needed to achieve #11 (Million ha)	1
14. #13 expressed as an annual program to year 2000 (Thousand ha/yr)	50

15. Actual current annual fuelwood planting program (Thousand ha/yr)	5
16. Factor by which #15 needs to be increased to achieve #14	10
17. Target planting area for a first five year project suitable for Bank support (Thousand ha)	25
18. Likely cost of plantation component from #17 (U.S. \$ Million)	25
19. Likely cost of additional wood-based energy project components (U.S. \$ Million)	15
20. Likely total cost of five-year project #18 + #19 (U.S. \$ Million)	40
21. Possible bank lending target (50%) (U.S. \$ Million)	20

(See Tab J for country-by-country listing of entire World Bank analysis.)

## REFERENCES

- TAB A "The Global 2000 Report to the President: Entering the Twenty-First Century", CEQ-Department of State, 1980.
- TAB B "Planting for the Future: Forestry for Human Needs", Worldwatch Paper 26, February 1979.
- TAB C "The World's Tropical Forests: A Policy, Strategy and Program for the United States", U.S. Interagency Task Force, Department of State, 1980.
- TAB D "Disappearing Species: The Social Challenge", Worldwatch Paper 22, July 1978.
- TAB E "Research Priorities in Tropical Biology", National Research Council, National Academy of Sciences, 1980.
- TAB F "Proceedings of the U.S. Strategy Conference on Tropical Deforestation", U.S. Department of State, AID, 1978.
- TAB G "International Development Cooperation Act of 1979", U.S. Congress.
- TAB H Excerpt from House Appropriations Committee Report No. 96-273 on "Deforestation" dated June 14, 1979.
- TAB I Memorandum from President Carter to the AID Administrator dated August 2, 1979, White House.
- TAB J Data on World Bank Fuelwood Program, 1980.
- TAB K "Forestry Activities and Deforestation Problems in Developing Countries", USDA, Forest Service, Forest Products Laboratory.
- TAB L "Guidance on Forestry and Related Issues", AID 1979.
- TAB M AID Report to the Interagency Task Force on Tropical Forests, October 1980.
- TAB N World Bank "Forestry Sector Policy Paper", February 1978.
- TAB O Illustrative Budget - Leadership Proposal (FY 1982 - 1986).