ANNEX II

TROPICAL FORESTS

USAID/SAN SALVADOR FY89/90 ACTION PLAN

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1. TROPICAL FORESTS WITHIN THE A.I.D. FRAMEWORK

Title III of the Foreign Assistance Act of 1986, Public Law 99-529 requires USAID Missions to analyze in each country development strategy statement or other country plans (1) the actions necessary in that country to conserve biological diversity and tropical forests, and (2) the extent to which current or proposed AID actions meet those needs. STATE 032584 of 3 Feb 88 gives guidance for the preparation of background assessments on biological diversity and tropical forests. This annex responds to that guidance with respect to the tropical forests of El Salvador. A separate annex was recently prepared for biological diversity. Much of the information in the biological diversity annex also applies to tropical forests and is not repeated here.

2. LEGISLATIVE AND INSTITUTIONAL STRUCTURE AFFECTING TROPICAL FORESTS OF EL SALVADOR

The current forest law was passed on March 13, 1973 and replaced almost all previous legislation on the subject. Unfortunately it has still not been adequately reglamented, a fact which makes its application difficult. It tends to be excessively control oriented, rather than attempting to encourage forest development. However, by far the critical problem is not quality of the legislation but its effective enforcement.

Responsibility for implementation of the forest law and for encouraging sustained use of the forest and other natural resources is vested in CENREN (Centro de Recursos Naturales). The national Forest Service is one of CENREN's subdivisions. The Forest Service including National Parks is currenly a small unit (19 professionals) whose main responsibility is norminative, that is the setting of standards and guidelines, and research. Forestry field operations are carried out through the Ministry of Agriculture's four regional offices. Thus most forest technicians, guards and inspectors depend on these regional offices. Frequent restructuring of the Ministry in recent years has shifted the responsibilities between the central Forest Service and the regional offices. The Ministry's dependencies suffer the well-know constraints and inefficiency of most GOES institutions.

Unfortunately very few non-government organizations are active in forestry in El Salvador, making it difficult to work outside government channels.

3. STATUS OF TROPICAL FORESTS

El Salvador has by far the lowest proportion of land under forest cover of any country in Central America. Table 1 summarizes the area of existing forests and Figure 1 shows distribution of the forests (El Salvador Perf 1 Ambiental 1985).

Table 1
AREAS WITH FOREST VEGETATION IN EL SALVADOR
(EXCLUDES COFFEE PLANTATIONS)

TYPE OF FOREST	Area (ha)	Percentage of total (%)
1. NATURAL FORESTS		
Coniferous	48,477	18
Broadleaf	90,759	34
Mangroves	45,283	17
Shrubland	77,789	29
2. FOREST PLANTATIONS	11,192	2
TOTAL	273,500	100
TOTAL LAND AREA OF EL SALVADOR	2,072,000	

Adapted from: El Salvador, Direc. Ral. de Recursos Naturales Renovables, Servicio Forestal y de Fauna, Anuario Forestal 1978, Soyapango 1979, p. 39.

The total forest area of 273,500 ha represents only 13% of the land area of El Salvador. However, about one third of the area classified as forest in Table 1 is shrubland. If this is excluded, then the area of coniferous, broadleaf and mangrove forest covers only 9% of the country's land

area -- a dangerously low proportion. It should be noted that other figures are occasionally quoted. The discrepencies are due to differing definitions of what constitutes forests and other methods of arriving at estimates. No comprehensive "snapshot" of land use is available for the country, such as might be produced from Landsat images.

The conifer forests, primarily Pinus oocarpa are concentrated in the mountains along the Honduran border. The areas of upland broadleaf forests are very fragmented, most being remnants in inaccessible areas.
The memoria of the ecological map of El Salvador (Holdridge, R.L. Mapa ecológico de El Salvador, y memoria explicativa. Documento de Trabajo No. 6. Proyecto PNUD/FAO/ELS/73/004. San Salvador. 1976.) contains a description of the ecology and lists of species of the various forest types which are summarized in the El Salvador Environmental Profile (1985).

In Central America the main threat to biological diversity is habitat destruction. Since natural tropical forests are one of the most diverse habitats, it is obvious that the conservation of natural forests is a requisite for the preservation of biological diversity.

4. MANAGEMENT OF TROPICAL FORESTS

Because the dense population creates a very high demand for wood and other forest products, the forests of El Salvador are under enormous pressure. Rational management is almost non-existant. By far the most important product derived from the forest is fuelwood. About 64% of all energy consumed in El Salvador is derived from biomass, most of it fuelwood. Probably more than 80% of all wood harvested is used for this purpose. Seventy seven percent of the population uses fuelwood. With a per capita consumption of 1.9 m^3 per year, this amounts to a total fuelwood consumption of 7.7 million m^3 annually (Reiche, C.E. Abastecimiento y mercado de la leña en America Central: Estudio de casos. Proyecto de Leña y Fuentes Alternas de Energía. CATIE. Turrialba, Costa Rica. 1985. 20p.). The uncontrolled harvesting of fuelwood is one of the more important causes of forest degradation.

Fuelwood also illustrates the link between forests, economic stability and development. Degradation of the forest resource is one of the main factors which has driven up the real price of fuelwood over the last few years. As

this price increases in relation to fossil fuels, more households and industries will tend to switch to these imported sources of energy, using up scarce foreign exchange which is desperately needed for other development efforts. An analagous chain of events applies to the import of other forest products (lumber, poles, posts) which are currently, at least partially, supplied by the country's meager remaining forests (Flores-Rodas, J.G. Supply and demand trends of mechanical wood products in Central America. AID/ROCAP. San José, Costa Rica. 1984.). (For a fuller discussion of these issues see: Loenard, H.J. Natural resources and economic development in Central America. Transaction Books. New Brunswick. 1987. 279p.)

A more realistic approach to forestry is needed to replace some of the romanticism and myth now prevalent, even among decision makers. Under the conditions of El Salvador good forestry is good economics. Proper forest management is a requisite for sustained economic development.

4.1 Pine forests

Management of the pine forests is limited to harvesting. Selective cutting removes the largest stems. Legally the minimum diameter is defined as 45 cm. Although permits have to be obtained from the forest service before any tree is cut, enforcement is very deficient. One of the urgent needs it to protect the forests from frequent fires which destroy regeneration. Over the years management plans have been prepared for various forest tracts, many through FAO assistance, but none are currently in operation (Zambrana, H. and J. Troensegaard. Factibilidad de las plantaciones forestales y manejo de los bosques de coníferas. Documento de Trabajo No. 11. Proyecto FAO/ELS/78/004. FAO. Rome. 1982. 81p.) Technically the management of pine forests is simple and well known. Constraints to management are primarily financial, organizational and the fact that most pine forests are located in the conflictive northern part of the country.

4.2 Broadleaf forests

The relicts of remaining broadleaf forests are scattered in relatively small patches throughout the country. They include the riparian forests along streams. Most of the land originally occupied by broadleaf forests has been cleared for agriculture long ago. Of special importance for reasons of biological diversity and water supply are the cloud forests of Montecristo, Volcán Santa Ana and El Pital, all of which have been declared protected areas.

Systematic commercial management of the broadleaf forests outside the protected areas is practically inexistant. Except for the protected areas most have been degraded by uncontrolled exploitation. The mix of species, years of high-grading, uncontrolled fires, disperse areas and low productivity of these forests tend to be serious constraints to management. Often their main value is as a soil cover and a source of fuelwood for local inhabitants.

4.3 Mangroves

The mangrove forests are concentrated in four areas: Barra de Santiago, Estero de Jaltepeque, Bahía de Jiquilisco and Bahía de La Unión. They suffer extreme pressure by the local population because of exploitation for poles, posts, firewood and tannin. Because of their high productivity, simple management practices and easy access mangroves present unusual opportunities for commercial management. The constraints are primarily organizational and control. By law, the mangrove forests are inalienable government domain, but the government can allocate concessions for their utilization.

The ecological importance of mangroves far exceeds their importance as producers of forest products. They are an irreplaceable habitat in the life cycle of many species of shrimp, mollusks, fish and other marine life, which spend their juvenile or reproductive stages in the mangroves. Destruction of the mangroves directly decreases these commercial

marine resources. In addition mangroves protect the coast from wave action and are the habitat of wildlife. The mangroves are threatened by coastal development, especially the encroachment of agriculture, the construction of shrimp and salt ponds, drainage for malaria control and the influx of agricultural pesticides.

4.4 Forest plantations

Because of the small area of natural forest with commercial potential, the establishment of plantations is urgent so as to avoid a prohibitive import bill for wood products and to decrease the pressure on the remaining forests and protected areas. The government has responded to this need since the seventies with various plantation programs. Unfortunately, there has been no coherent continuous reforestation policy accompanied with the necessary financing.

For years the Ministry of Agriculture has produced seedlings in centalized government nurseries for subsidized sale to the public. The result is an unknown number of dispersed plantations of numerous species, many of them ornamentals and fruit trees.

Since 1980, the GOES with financing from PL480 funds has carried out a sizeable plantation effort on Phase I farms of the land reform, under an employment generation project. Under direction of the four regional offices of the Ministry of Agriculture and the Forest Service, members of the Phase I cooperatives are paid to produce plants in nurseries, establish plantations on land of the cooperative and maintain them. Cumulatively about 10,600 ha of plantations have been established in blocks which range from 25 to 100 ha in area. Although there are no reliable data on survival, it is estimated that only about half of the plantations (5,400 ha) are still alive (Vega, L. Perspectivas de la reforestaci n en El Salvador. Documento de Campo No. 17. Proyecto FAO/ELS/78/004. FAO, Roma. 1983. 69 p.). Funding for this program will end in April 1988. This effort has had a demonstration effect and much has been

A more promising approach has evolved since 1984 to encourage small farmers to establish plantations on their own land so as to make them self-sufficient with respect to fuelwood, poles, posts and rustic construction wood, and to produce an excess for sale. The Forest Service and the regional offices of the Ministry of Agriculture help groups of farmers to grow their own seedlings in community nurseries. Each farmer plants his share of the seedlings along fence rows, around the house or in blocks in unused corners of his land. The program has been quite successful and has grown from one nursery in 1984 to 80 nurseries in 1987, operated by 1200 farmers producing 450,000 seedlings. There is now more demand for seedlings than the program is able to meet. This is an appropriate grass-roots approach to tree planting which merits more support. Financing is provided by PL480 funds, by the World Food Program and by the ROCAP/CATIE Tree Crop Production Project which also offers technical assistance. (Viveros Forestales Comunales. Report to the Organization of American States Multinational Mission on Employment-generating Projects in El Salvador. OAS, Washington, D.C. Feb. 1988)

Given the current extreme scarecity of investment capital and the insecurity in all facets of endevor in El Salvador, it is unrealistic to expect large private investment in industrial scale forest plantations. Nor is it realistic to expect the government to finance incentive schemes to encourage industrial scale reforestation. The most viable alternative and the one with the greatest social benefit is to encourage farmers to grow trees for self sufficiency in fuelwood and most other wood products and to produce an excess for sale. Evidence indicates that fast growing trees are becoming an attractive cash crop for farmers in El Salvador. Existing programs to encourage this trend need to be supported and new ones initiated.

5. TROPICAL FOREST CONSERVATION NEEDS

5.1 The declared protected areas and the remaining blocks of natural forest with commercial potential urgently require effective protection.

5.2 Government regulations controlling harvest and their enforcement need to be improved. The present system of obtaining cutting permits is complex, costly, inefficient and fraught with red tape and corruption. The irrationality of the system causes resentment and opposition to forestry on part of the rural population which needs wood for its survival.

5.3 In order to meet the country's need for wood and to decrease the pressure on remaining forests and protected areas the establishment of forest plantation must be accelerated.

5.4 If properly managed and protected from encroachment, the remaining mangroves represent an opportunity for supplying wood products while at the same time providing many ecological benefits, such as a habitat for marine life, an important commercial resource.

5.5 The government alone is not capable of dealing with the immense problems of forest destruction and the needs for plantations. Local non-government organizations (NGO) need to be identified and encouraged to take over some forestry activities, especially conservation and environmental education.

5.6 El Salvador has less than ten university trained and only two mid-level foresters. That is not enough for the task that face the country in forest development.

5.7 The public and decision makers need to be informed and educated as to the link between natural resources and their own welfare.

6. CURRENT A.I.D. ACTIVITIES RELATED TO TROPICAL FORESTS

As indicated in 4.4, USAID has supported reforestation on Phase I farms since 1980. There is general agreement among technicians not to continue this effort beyond 1988.

USAID does continue to support the community nursery program with a modest amount of PL480 funds, programmed on an annual basis.

The regional CATIE Tree Crop Production Project funded by ROCAP has been the initiating force behind the community nursery program and is expected to continue to play a technical leadership role until project termination in 1991. This project also has components in training, research and information dissemination concerning the establishment, management and commercialization of multi-purpose trees on farms.

7. RECOMMENDATIONS FOR ACTION BY A.I.D.

7.1 Concentrate forest protection on those areas that have been identified as priorities (see Biological Diversity Annex), instead of trying to cover the entire country with equal intensity. Strengthen protection and enforcement in these priority areas. Couple enforcement with positive forest development activities, such as rational utilization, forest plantations, stand improvements.

7.2 Accelerate tree planting and management. Encourage farmers to make themselves self sufficient in wood products and to produce a cash crop for sale. Agroforestry systems which integrate trees with crops and animal husbandry have proven most appropriate, rather than plantations in large blocks. Build on the experience available and the start that has been made. Because of limited absorbtive capacity, the total cost to USAID (PL480) over the next four years is not likely to exceed the equivalent of US$ 1 million.

7.3 Identify and strengthen NGOs for action in forestry and conservation, as a complement to public institutions.

7.4 USAID should consider design of a new project to increase the rate of tree planting and management. The project could emphasise small farmers, especially those benefitted by FINATA. It could also give technical assistance to management (thinning and harvest) of the plantations established with AID financing on the Phase I farms between 1980-86. The project should integrate tree planting into

traditional agricultural and animal husbandry practices (agroforestry) and for this reason need not be restricted to being a "forestry" project. Preferably it should be managed by NGOs. The species and techniques are known, organizational and motivational capability is progressing rapidly and an increasing number of farmers are willing to plant. The situation seems ripe so that a project could help propell farm forestry into a self-sustained movement.

7.5 Send five students per year to ESNACIFOR, the regional forestry school in Honduras, for mid-level training. It takes three years to obtain the "dasonomo" degree. Forestry conditions in Honduras are similar to those in El Salvador and training is oriented in a practical manner. A strong cadre of mid-level technicians is needed for the development of the forest resources of El Salvador.

FIGURE #1

FORESTS OF EL SALVADOR