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**HONDURAS FORESTRY DEVELOPMENT PROJECT
MID-TERM EVALUATION**

**Contract No. PDC-5517-I-00-0103-00
D.O. No. 6**

**Prepared for:
USAID\Honduras**

**Prepared by:
Chemonics International Consulting Division**

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PREFACE

The Honduras Forestry Development Project (FDP) was evaluated by a team from Chemonics International Consulting Division, which included: Robert L. Nelson, a forest management specialist; Michael Krones, a wood industry specialist, Michael Cornelius, a public administration specialist; Dr. Stephen Stewart, a rural sociologist; Dr. Jan Laarman, an economist; and Dr. Marko Ehrlich, an environmentalist.

The team wishes to express its appreciation to the staff of the Honduran Forestry Development Corporation and to the USAID/Honduras for their assistance and support throughout the evaluation.

PROJECT IDENTIFICATION DATA SHEET

1. **Country:** Honduras
2. **Project Title:** Forestry Development
3. **Project Number:** 522-0246
4. **Project Dates:**
 - a. **First Project Agreement:** December 28, 1987
 - b. **Final Obligation Date:** FY
 - c. **Most Recent Project Assistance Completion Date:** December 30, 1994
5. **Project Funding:**
 - a. **AID Bilateral Funding (grant and/or loan):** US\$20MM
 - b. **Other Major Donors:** US\$---
 - c. **Host-country Counterpart Funds:** US\$12MM

Total: US\$32MM
6. **Mode of Implementation:** Host Country
7. **Project Designers:** USAID/GOH
8. **Responsible Mission Officials:**
 - a. **Mission Director(s):** John A. Sanbrailo - Marshall Brown
 - b. **Project Officer(s):** John Warren - John Jordan
9. **Previous Evaluation(s):** None

LIST OF ACRONYMS

AHE	Asociación Hondureña de Ecología
AID	Agency for International Development (Washington, D.C.)
AMADHO	Honduran Association of Sawmill Operators
COHDEFOR	Honduras Forestry Development Corporation
DIRCO	An agency of the Ministerio de Recursos Naturales
ESNACIFOR	Escuela Nacional de Ciencias Forestales
FDP	Forestry Development Project
FMU	Forest Management Unit
GOH	Government of Honduras
LUPE	Land Use Productivity Enhancement Project
MBF	Million Board Feet
MRN	Ministerio de Recursos Naturales
NGO	Nongovernmental Organization
NRMP	Natural Resources Management Project
PP	Project Paper
TA	Technical Assistance
TFAP	Tropical Forestry Action Plan
USAID/Honduras	AID Mission in Honduras
WID	Women in Development

EXECUTIVE SUMMARY

The Honduras Forestry Development Project (FDP) has its origins in the 1982 United States presidential commission, which expressed concern for the management and utilization of Honduras' pine resource. On December 29, 1987 the governments of Honduras and the United States signed an agreement to implement the FDP, which consists of three components:

- Institutional reorientation of the Honduran Forestry Development Corporation (COHDEFOR)
- Improved forest management of selected resources
- Strengthening of the private sector forest industry

The purpose of this evaluation is to assess current implementation status, attainment of project objectives, and the impact of the project on the environment.

The evaluation team reviewed project documents, interviewed relevant individuals from COHDEFOR, USAID/Honduras, private industry, and other interest groups. Each component was examined first from the expectations as outlined in the logical framework of the original project design and second, based upon the experience and capabilities of the evaluation team members as they reviewed field activities. Verifiable indicators were conceived during the project design to enable a comprehensive evaluation using baseline data. This was not done in every area of concern. However, a baseline study was not carried out at the beginning of the project.

The findings of the evaluation are summarized in the following paragraphs.

Institutional Reorientation of COHDEFOR

This component consists of three basic objectives:

First, the introduction of a standing timber sale program to replace *laissez faire* traditional methods and to incorporate a residual value appraisal to the standing trees to be harvested. The new timber sale program has been installed nationwide as of January 1, 1991. New sale contracts contain provisions for mitigating environmental impacts by requiring COHDEFOR to locate roads, skid trails, and landings according to sound environmental standards. Residual value appraisals have not been initiated and field supervision and quality control of the new sale program needs to be improved.

Second, COHDEFOR, having curtailed its lumber manufacturing operations and having returned to the private sector the activity of exportation, is now to function as a

monitor of quality and quantity exported. Also, it is to upgrade its marketing department to better accomplish this goal. The technical assistance unit of COHDEFOR has developed a grading manual for industry but it has not yet been implemented. COHDEFOR does monitor exports and has implemented the collection of export commissions as well as timber sale fees. The marketing department has yet to be upgraded.

Third, overall managerial improvement within COHDEFOR has not been accomplished due to the lack of professional managers as opposed to political appointees in key management positions. Certain specific objectives outlined in the project goals have been met, such as reduction of past due receivables, operating costs not to exceed revenues, and manuals to guide operations. However, the accounting system does not report according to generally accepted principles, because there is no one in COHDEFOR with the knowledge, experience, or authority to see that it is done.

Improved Forest Management of Selected Areas

Two model forest management units (FMU) have been selected. La Unión FMU has been in operation from the start of the project and was evaluated. Salamá has had a management plan developed but has not begun timber sale operations yet. A third area is to be selected by the end of the project.

La Unión FMU has been the training and development unit for the new timber sale program. Sale preparation and administration have been introduced by a combination of long- and short-term technical assistance participants. COHDEFOR technicians within La Unión appear to be well trained and motivated. Many of the project goals have been accomplished or are in process. Still lacking is the complete integration of communities in the project area to the objectives of the project. Extension work within the communities needs to be reinforced. Employment opportunities within the forest need to be increased to improve awareness of the forest's value to the local people (i.e., if more people were dependent upon the forest for their livelihood, perhaps there would be less incendiary fires). The establishment of two wildland refuges has been accomplished and their development and management will provide a basis for COHDEFOR's new mandate of managing Honduran protected areas.

The selection of model areas within the FDP has caused some jealousy within the other offices of COHDEFOR. This is a natural result of pouring inputs in the form of vehicles, computers, expenses for gasoline, etc. into La Unión and the project office in Tegucigalpa within COHDEFOR's main office. The FDP, through its training courses, has included many personnel outside the FMU but there has been very little on-the-ground follow up to training in areas outside the FMU. Within the main COHDEFOR office the entire accounting and computer section has no interface with the FDP. The forester in charge of the forest districts where the timber sale is being implemented has no relationship with the project.

Strengthening of the Private Sector Forest Industry

The purpose is to enable industry to more fully use the forest resource, to produce better products, and thus make a greater contribution to the Honduran economy.

Project technical assistance to industry has been well received and monitored. Band sawmill lumber production has increased from 60 percent at project start to 74 percent as of the evaluation. By project end the goal is 90 percent. Sawmill efficiency has improved in many of the medium and larger sawmills. The project goal was 245 bd.ft./m³. In the mills sampled, efficiency increased from a baseline of 191 bd.ft./m³ to 220 bd.ft./m³. All mills are receiving a large volume of logs in the 6 to 10 inch range, which is a direct result of the new timber sale program. The increase is over 100 percent.

Although better log utilization has occurred, improvement in timber harvesting methods of private industry has been nil. Only one short course addressed logging, a directional felling course.

Due to a cumbersome loan process that required buying new equipment in the United States, very few mills took advantage of the credit portion of the FDP, which is now being suspended. The larger and medium-sized mills, which produce the 75 percent of the volume using band saws, have met the project goals using private financing.

The Honduran Association of Sawmill Operators (AMADHO), has been strengthened as a result of the FDP providing a technical assistant. AMADHO has produced a new action plan for the organization that stresses improved relations among industry, the government, and the public. However, a hands-on forest industry specialist is needed to assist sawmill operators in making mill improvements. It was found that most sawmills could be improved by making both operational and mechanical changes.

The training program has been quite successful although it has not functioned through the Escuela Nacional de Ciencias Forestales (ESNACIFOR) as originally planned for various administrative and fiscal reasons. For example, the school operates on a fixed budget and is reluctant to assume additional chores without additional payment.

An environmental impact update was made and the project contribution to conservation and sustained use of the forest resource is a major accomplishment. The new timber sale program provides the vehicle for this accomplishment with its control of harvest volumes and its contract provisions for mitigating environmental impacts; however, compliance with sale contracts is a continuing problem. Also through the project, the establishment and management of the two mentioned wildlife refuges creates a precedence for COHDEFOR that will carry over nationwide. It is important that sale administration be strengthened and technical assistance continue in this area.

A. Conclusions

- 1. The TA team did not establish baseline data for evaluating the project nor did they monitor the project in a professional manner.**
- 2. Many managerial positions in COHDEFOR are held by political appointees who do not have professional backgrounds.**
- 3. To meet the FDP goals on management improvement, COHDEFOR must undertake major changes in light of the constraints on its ability to generate revenues and to control its costs. Such changes can only be brought about by professional management quality and continuity throughout the corporation. Any real improvement in the performance and administration of COHDEFOR must depend upon total support and cooperation of the GOH.**
- 4. Important achievements include the establishment of the standing timber sale program. Still lacking is the adoption of a residual value appraisal methodology for pricing the standing timber, which was to have been implemented in year 3 of the project. There has been no explanation by the TA team as to why this hasn't happened.**
- 5. Timber sale contract provisions provide ample safeguards for environmental protection if they are enforced. Compliance with the contract regarding road location, skid trail location, construction standards, and erosion control practices like water-barring roads and skid trails has been adequate within the La Unión FMU but not on sale areas in other parts of the country.**
- 6. Although a number of environmental assessment activities have been performed, COHDEFOR and the FDP have not acquired an in-house capability to conduct impact evaluations and environmental analysis.**
- 7. The allowable annual cut concept—i.e., harvesting only what the forest can sustain on a permanent basis—has not been adapted by COHDEFOR nationwide. The FDP has made the determination in both model FMUs selected. Within the La Unión FMU, the harvest level for 1991 has been excessive compared to the allowable annual cut calculation.**
- 8. Forest fire prevention is poor. COHDEFOR only reports fires that it combats, hence, statistical data on fire control is inadequate and misleading.**
- 9. Strengthening of the forest industry through technical assistance of the FDP has had positive results among medium and larger producers. However, over half the sawmills in Honduras have made little or no changes in their operations.**

10. The FDP has been lax in not distributing to forest industry the manuals that have been produced by the COHDEFOR technical assistance unit.
11. Introduction of skid logging has been a positive change in logging method in environmentally sensitive areas. However, traditional tractor skidding, timber falling, and truck loading have not changed and are inefficient.
12. More education and consciousness-raising concerning the environment is needed nationwide among the population in general and resource professionals and the forest industry in particular. Although some educational material has been produced, a strategy and plan for its distribution and use in schools and elsewhere is still missing.
13. Timber sale preparation and administration (supervision) as well as the work of social promoters is hampered by a lack of transportation.
14. Women social promoters in the La Unión FMU have been more successful than men because they work better with both genders. Community selection for social promoters needs to focus on communities that demonstrate apathy and negativism.
15. ESNACIFOR has made little contribution to the FDP training effort, which is not what was originally intended.
16. The project has produced methodological and institutional changes, which over time will meet the objectives of the FDP.
17. The FDP is a straightforward technical project with clear and well defined objectives. At this midpoint in the project, it is evident from the above conclusions that continued long-term technical assistance support is needed.
18. The project should consider a change in direction in three areas:
 - Address the need for additional support, training, and supervision of the timber sale program nationwide.
 - Increased fire prevention support for COHDEFOR.
 - Assist COHDEFOR in extending nationwide the concept of the allowable annual cut.
19. The project to date has not had a visible impact on COHDEFOR's levels of awareness, commitment, and ability to formulate and meet its management objectives. The project's underlying objective—interpreted as improvement in all management levels—has not been achieved. If looked upon as a step-by-step implementation of specific requirements, the project has undoubtedly

moved in the right direction and achieved much since its inception. See progress chart in annex J.

20. Providing incentives to groups rather than individuals has proved more successful. Forest protection funds are a positive influence in improving COHDEFOR relations with selected communities. For example, 24 vigilantes in 15 communities were hired to protect the forest from fire and these funds are used for community projects. Small enterprise development, improving income levels by starting small businesses, has not been operative long enough to derive any real conclusions about its ultimate success.
21. In lieu of continued USAID/Honduras support in credit, a stronger emphasis should be placed on technical courses provided by short-term experts. This need is reflected in continuing losses in the smaller sawmills due to lack of quality control, poor or no machinery maintenance programs, poor milling practices, and inefficient wood drying processes.
22. AMADHO has been strengthened and FDP inputs have provided an advisor who has helped develop an action plan for the organization. AMADHO has been ineffective in assisting its members with hands-on technical help.
23. FDP has no capability regarding improving traditional practices in range management.

B. Recommendations

1. USAID/Honduras should install a new TA team to develop baseline data for the balance of the project, to monitor the project by providing monthly reports (which has not been done), and to provide the needed on-the-ground training and follow-up evaluation for the timber appraisal system, sale layout, preparation and supervision, road location and construction supervision, etc. The team is needed to assist over half the sawmills in the country, which have made no improvements. Because of the workload to be accomplished and the delay in hiring a TA team the project should be extended until June 30, 1996.
2. GOH should eliminate political appointees that have no professional background and build COHDEFOR into a competent professional organization at all levels with incentives for all employees. If this is not accomplished, it would justify a halt to the project because the long-term project objectives will not be met.
3. Complete the FDP objective of instituting a residual value appraisal system for pricing standing timber sales. This will go a long way toward encouraging private industry to modernize both its harvesting and milling operations.

4. **Include in the timber sale contract the requirement for a performance bond to enforce compliance with timber sale contract clauses. If this is not accomplished, it would also justify halting the project.**
5. **Establish an "environmental unit" within COHDEFOR to direct monitoring activities on timber sales and contribute to forest management and extension activities. Also coordinate actions related to the establishment, protection, and management of critical ecosystems within the project area.**
6. **FDP should assist COHDEFOR in determining the allowable annual cut nationwide using the model FMUs as examples.**
7. **FDP should fund a separate forest protection activity to address fire prevention and suppression on a nationwide basis. The education program should include environmental awareness as well. A first step would be an in-depth analysis to determine needs and costs.**
8. **Provide additional and continuing technical assistance to that segment of the industry that has not made changes in their operations. Continue to support with technical assistance that portion of industry that has made changes.**
9. **FDP should publish and distribute COHDEFOR technical assistance manuals.**
10. **FDP should establish a model logging unit to demonstrate environmentally sound harvesting and roading practices and to introduce a uniform cost accounting system for the industry. This unit could also function as a teaching example for the timber appraisal portion of the new standing timber sale program.**
11. **Further implement an environmental education program involving public at large, forest industry, students, and the communities directly affected by project activity.**
12. **FDP should closely monitor transportation maintenance and allocation and provide additional vehicles and motorcycles to timber sales supervisors and to social promoters, where necessary.**
13. **Provide male social promoters with more training so as to increase their effectiveness in working with both genders.**
14. **Strengthen ESNACIFOR, make an in-depth analysis of the school to determine its needs, and assist it accordingly. This is particularly important as the school becomes independent. Bring it back into the FDP as a primary training vehicle.**

15. FDP should provide additional support, training and supervision to the timber sale program nationwide.
16. FDP should continue to provide short-term technical assistance in the form of short courses for industry and COHDEFOR.
17. One of the TA team members should be a forest industry expert with hands-on ability to work out of AMADHO's office in conjunction with the COHDEFOR technical assistance unit.
18. The FDP needs to provide a capability regarding traditional practices in range management within forested areas.

C. Lessons Learned

Overall, the objectives of the FDP of four years ago, continue to be highly appropriate in the present national context. Lessons learned include:

1. Successful technical assistance depends upon individuals selected, not on parent organizations.
2. Management by objectives requires team leaders to monitor the project by reporting, which hardly occurred under the long-term TA team.
3. Good, hands-on technical assistance in the field can influence change.
4. Managerial effectiveness and improvement depends upon hiring professionals, not on political appointees.
5. USAID/Honduras' technical advisor to FDP needs to spend more time on the project—it is a full-time responsibility.

SECTION I INTRODUCTION

A. Purpose of the Evaluation

The key objective of this evaluation is to assess the project accomplishments to date and its success in achieving the project purpose as measured by verifiable indicators. This evaluation will test assumptions regarding the project design and will recommend design and/or implementation changes. It will examine the project contribution to important higher level goals, such as the preservation and sustainable use of the natural resource base, as described in the environmental assessment of the project and in the project paper.

B. Evaluation Methodology

To address the requirements of the scope of work, the evaluation team reviewed the objectives of the project, which involved using the logical framework in the project paper. To identify important issues for each component, project documents were reviewed, such as the agreement between both governments, quarterly reports, La Unión management plan, technical reports, financial reports, and the project paper. Annex B includes a list of documents reviewed. In addition, interviews were conducted with a wide range of individuals representing COHDEFOR, the forest industry, USAID/Honduras, and other interest groups. Annex C includes a list of individuals interviewed.

Each component of the project was examined first from the expectations as outlined in the logical framework of the original project design and second, based upon the experience and capabilities of the evaluation team members as they reviewed the work being done in the field. This particular evaluation required field sampling of both timber sale conditions after harvesting and the sampling of sawmills to determine operating efficiency. Annex E and annex H provide the specifics of these sampling techniques.

C. Data Limitations

As indicated in the logical framework, objectively verifiable indicators were conceived during the project design to enable evaluation teams to conduct a comprehensive evaluation. Data gathered at the beginning of the project would form a baseline from which to judge ongoing results. Unfortunately, this was not done in every area of concern and as the components are evaluated these shortcomings will be noted.

There has also been a lack of project monitoring, setting of goals by the technical assistance team, and follow up as to what has happened and why.

SECTION II

POLICY AND ECONOMIC CONTEXT

CHEMONICS

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SECTION II POLICY AND ECONOMIC CONTEXT

The design of the Honduras FDP was prepared in late 1987 on the basis of conditions, assumptions, and outlooks prevailing at that time. This section identifies and interprets changes in political, macroeconomic, and sectoral conditions during the last four years. (Refer to annex D for more details.) These changes have implications for FDP's component on reorientation of COHDEFOR, on the direction of forest management in Honduras, and on the economic condition of the country's forest industries.

A. Political Changes Affecting Forestry

1. Transition in COHDEFOR's Functional Role

When the project agreement was signed, COHDEFOR was already moving in the policy direction of shifting its functional priorities away from wood manufacturing and exports towards forest protection and management.

In 1986-87, COHDEFOR already had taken several steps towards divesting itself of its subsidiary companies. Secondly, COHDEFOR had initiated the process of permitting private participation in sawnwood exports. Also, by this time COHDEFOR had made the decision to sell pine timber on the basis of standing volume in the forest rather than scaled volume arriving at processing plants.

Within Honduran forestry, the interrelated themes of privatization, market orientation, and competent resource protection and management have very strong political support at top levels of government. Thus, the current policy environment is highly favorable for the philosophical content and general objectives of the FDP.

2. Recent and Pending Developments

Current policy emphases in Honduran forestry can be inferred directly or indirectly from recent meetings, documents, and observed activity. Recent policy initiatives and proposals are as follows:

- **Sale of Standing Pine Timber.** Beginning in 1989, COHDEFOR has been selling pine timber on the basis of standing volume. As of January 1, 1991, 100 percent of timber sold is on the new system. The next logical step of using variable prices to sell timber (based on appraised timber value) has not been introduced to date, despite the existence of analyses proposing how and why this might be done. The TA team did not introduce the system that was to begin in year 3 of the project nor did it give an explanation of why it did not.

- **Export Liberation.** Recent proposals would phase out COHDEFOR's export tax in graduated steps and eliminate its policy of controlling export prices. If this strategy is enacted, it is almost certain to have profound consequences for export competitiveness and private profits in Honduran sawmills. Indirectly, removal of the export tax and the price controls will affect all other wood-processing enterprises as well. It will, of course, affect COHDEFOR revenues and should strengthen the need to implement the timber appraisal system.
- **Divestment of Forest Industries.** When the project paper (PP) was prepared, its economic analysis made no attempt to account for the benefits to Honduras if and when COHDEFOR's subsidiary companies are transferred to private owners. The inefficiencies of COHDEFOR management have produced large losses in these subsidiary companies, which include CORFINO, CASISA, FIAFSA, SEMSA, LOCOMAPA, and PROMAGUA. These companies have ceased operations, and two of them, FIAFSA and LOCOMAPA, have been divested. Ideologically and financially the divestiture issue is at least as important now as when the FDP was initiated.
- **Privatization of Forests.** Under the proposed law on agricultural reactivation, the ownership of forests on private lands would pass from COHDEFOR to the land owners (both individual owners and municipal owners). In the long run, this transfer of forest ownership to municipalities and individual owners may be one of the most instrumental forces for their protection and management because it will provide personal incentives. However, in the short run, the transition is certain to run into difficult conflicts and political volatility because it will diminish revenues to COHDEFOR.
- **Incentives for Reforestation and Forest Protection.** A law before the Honduran congress would grant incentives to private owners to reforest (or afforest) and protect forests on their lands. This has considerable linkage with the privatization of forests, noted previously, but also exists independently where land ownership is undisputed. To implement the incentives law, COHDEFOR would need to develop a managerial system to handle technical, administrative, and financial mechanisms. Ongoing incentives programs for tree planting in Ecuador, Costa Rica, and elsewhere suggest that they are time-consuming to develop and implement, and vulnerable to many abuses. To be successful, the incentives program for Honduras will need to be carefully designed and implemented.
- **Institutional Reorganization in COHDEFOR.** In 1991, COHDEFOR was given responsibility for the management of wildlife and protected wildlands. This represents a dramatic opening for COHDEFOR, an agency previously considered to be almost exclusively focused on timber and wood products. Moreover, COHDEFOR has stated its intentions to assume an increasing role in integrated watershed management in conjunction with municipalities, rural communities, and nongovernmental organizations (NGOs). USAID/Honduras should consider support in this area as part of the reorientation of COHDEFOR. Thus the

multiple-use aspect of forestry will increasingly dominate COHDEFOR's formal agenda, even if it takes several years for the agency's organization and projects to catch up with this expanded function.

- **Tropical Forestry Action Plan.** In Honduras, Round Table III of the Tropical Forestry Action Plan (TFAP) was held in early 1988. The FDP was designed before the TFAP was fully initiated. Hence the fit between FDP and the TFAP for Honduras is an open question. The extent to which USAID/Honduras does and does not participate in TFAP should be considered in the context of USAID's future structuring and management of FDP.
- **Macroeconomic Pressures.** The country's difficult macroeconomic situation puts even greater emphasis on COHDEFOR's need to manage its resources efficiently and to avoid creating resource distortions in the market economy. Thus FDP's work to raise GOH returns from timber sales is a notable accomplishment of immense importance for both COHDEFOR and for resource efficiency. At the same time, much more has to be done to speed the divestiture of COHDEFOR's subsidiary companies, streamline its accounting system, clear up its accounts receivable, and fill its revenue gap if and when its export tax is terminated. Given the gravity of these issues, it would appear that FDP is currently underinvesting in field personnel and budget allocation needed for institutional development.
- **Legislative and Policy Shifts.** The new policy arena for forestry in Honduras is one of forest privatization, forestry incentives for private landowners, increased emphasis on multiple-use management, and increased commitment to social and community forestry. These elements were not central in the design of FDP, but affect its current viability and relevance. Moreover, they directly enter FDP's scope in relation to the institutional reorientation and strengthening of COHDEFOR.

The principal policy matters affecting FDP include: (i) COHDEFOR's legal and administrative capacity to contribute towards the transfer of ownership in cooperation with the National Agrarian Institute, the National Cadastral, and the municipalities; (ii) demands placed upon COHDEFOR to help develop, inspect, and approve forest management plans on private and municipal lands; (iii) social conflicts that might arise in FDP's project areas should the privatization process lead to the eviction of campesino groups living in what will become private forests; (iv) proportions by which COHDEFOR and private and municipal owners will share timber sales revenues under the new policy; (v) possible opposition to the privatization policy by the established forest industries, whose planned supplies of raw materials may be upset by the transfer of forest ownership; (vi) implications of the policy for the timing and volume of timber available in the market; and (viii) financial impacts of the policy for COHDEFOR's income and budget.

- **Interaction with Other Donors.** USAID/Honduras, through its FDP, has the opportunity to take a more active role in the TFAP should it decide that this is an

appropriate strategy. The TFAP took form in Honduras mainly after the FDP was designed and on its way to implementation. However, this mid-term evaluation of FDP provides a timely reflection on donor coordination in Honduran forestry, and the place of USAID/Honduras in relation to the efforts of the other players.

B. Sectoral Conditions

Goals stated in the PP are to increase the production of the Honduran forestry sector by seven percent by 1994, and sustain wood products exports at 121 million board feet per year (Sector Goal, logical framework). In light of recent trends and current conditions, these goals appear overly optimistic.

Since the preparation of the PP in 1987, outputs of the principal industrial primary products (except plywood) have been falling. The most important of these products for the Honduran economy is sawnwood, of which production fell 26 percent between 1987 and 1990. Because this drop partially reflects the closing of inefficient sawmills and COHDEFOR's tighter control over timber harvests, the decrease is not entirely negative. Yet, based on the production indices observed for the first half of the project, the sectoral production goal as stated in the PP is unlikely to be attained.

Similarly, exports have been falling. Export value (FOB) declined substantially (by 39 percent) between 1987 and 1990. The devaluation of the lempira will drive up export earnings for 1991. On the other hand, export volume in 1991 will very likely fall short of export volume in 1990 (based on preliminary data through September 1991). In addition to less production due to closing of COHDEFOR's sawmills, the fact that exporters can no longer retain 30 percent of their earnings in U.S. dollars may well account for reduced export sales. Thus the project's goal of sustained exports depends on the choice of volume or value measures, but in either case will demand dramatic shifts in export policy (e.g., the planned removal of COHDEFOR's export tax).

C. General Implications for AID's Work in Honduran Forestry

The observations presented in the preceding sections indicate the considerable economic and political turbulence affecting Honduras since the design of the FDP four years ago. The challenge for USAID/Honduras is to reinforce those aspects of FDP that continue to be central to Honduran forest policy and management, while modifying FDP's direction where political and economic changes imply the need for such adjustments.

- **Continuing Downward Trends in Sectoral Output and Exports.** This argues for renewed and forceful intervention by FDP to avert losses of income and employment in the Honduran economy. The time has been too short for FDP to have made an impact in sectoral trends. The forest industries continue to be an appropriate target for USAID/Honduras because of their large economic importance for the country, their rural location and high labor intensity, and their link with environmental issues in Honduras.

SECTION III
INSTITUTIONAL REORIENTATION OF COHDEFOR

A. Timber Sales Systems

1. Traditional

This was a system that permitted the buyer to select those trees within a sale area he desired to harvest. No consideration was given to silvicultural needs of the particular timber stand nor of utilization standards. Essentially the stand was high-graded in both tree and log selection. The buyer paid for the logs extracted on a cubic meter measurement of truck deliveries to the sawmill. No restraints were imposed upon the harvest operation: roads could be built in whatever manner wished with no regard to location, grade, drainage or surfacing, logs could be extracted to landings of choice with no regard to streams and from slopes of whatever steepness, and no concern for the environment was evidenced by either COHDEFOR or the industry.

2. Standing Timber

The FDP addresses the need to change the traditional sale system by introducing a lump sum sale of timber on the stump. COHDEFOR is now charged with determining where the trees are to be harvested (the sale area), which trees are to be cut considering the silvicultural requirements of the particular timber stand (marking the cut trees), and how much useable volume can be extracted (making an inventory of the trees to be cut). They are also to determine access road locations and to supervise construction to specific standards. They are to locate skidding trails and landings, all with the objective of minimizing environmental impacts.

In addition, the FDP was to include the determination of the residual value of the standing trees to be harvested. Such a system would begin with market value of products that could be manufactured from the logs to be extracted from the sale and then to deduct the various manufacturing costs (for example, sawmill costs, transportation costs of logs delivered, harvest and road costs) which would leave a residual value from which the stumpage value could be derived. Current stumpage value in Honduras is L.36.00 per cubic meter across the board, regardless of location.

As of January 1991 the entire country is being harvested on the standing timber sale program. This was premature in that COHDEFOR does not have sufficient field staff to cope with the activity. A review of the current employees within the FDP indicates that no women are involved in the timber sale field activities. This is probably due to lack of skilled persons available.

3. Supervision

Under the traditional system, supervision of harvest operations was minimal. No standards existed. The new standing timber sale program has built into its formation a definite set of standards by which to judge the performance of the buyer or his contractor. (Most harvesting is subcontracted by the sawmill buyers to logging contractors). Only certain trees may be cut; all useable logs down to 15 centimeters must be utilized by the sawmill; and roads, landings, and skid trails need to be built and located according to specifications. This phase of the program needs to be strengthened because field observations indicated that roads and skid trails were not always built to specifications and that availability of transportation for sale supervisors is a continuous problem. This is addressed in the lessons learned, conclusions, and recommendations sections of this evaluation.

4. Residual Stand Conditions

Annex E details the sampling procedures used to compare residual timber stand conditions for both traditional and standing timber sales in six timber sale areas sampled (description in annex E).

The following table represents the amount of timber remaining in the various sampled areas. Traditional sales had 13 percent of defects in residual timber; standing timber sales had 9 percent. Almost all of the logs graded in the residual trees were classified No. 3 in a one to three grading scheme. Studies conducted by the technical assistance team indicate a drastic change in residual logging waste, a reduction of about 20 percent. Of the areas sampled, those within La Unión FMU, whether traditional or standing timber, had very little logging waste. None was recorded on plots taken. Outside La Unión, both a traditional sale in the Central District of Francisco Morazán and a standing timber sale in Talanga had some high stumps and poor log utilization although neither were recorded on sample plots taken.

On the average, both types of sales met the minimum criteria of 15 seed trees (or residual trees) per hectare. Traditional sale areas had a lower net residual volume per hectare compared with the new standing sale areas.

INDIVIDUAL TIMBER SALE SAMPLING RESULTS

Location	Sale Name	Type	No. Plots	Residual Volume-M ³ /ha		Trees per ha	
				Gross	Net	12"+	4"-10"
La Unión	Guamilon	VP	17	4.13	3.74	13	-
	Vellecito	VP	13	5.56	4.99	23	-
	Los Blancos	T	25	3.62	2.82	24	-
Talanga	Savana Redonda	VP	14	.86	.75	10	344
Central Dist. Fran. Morazan	Los Chorrillos	VP	11	2.26	2.14	24	119
	Guarizma	T	25	.47	.44	9	314
	Saracaran						
Totals/Average			105	VP-3.195 T-1.865	2.905 1.63	17.5 16.5	116 60

1. VP - Standing Timber Sale (Venta en Pie)
T - Traditional

5. Logging Roads

Within the La Unión FMU, roads observed were usually built to sale specifications. Maintenance with proper ditching and culverts could be improved. Outside La Unión, neither in traditional nor standing timber sales, were the roads built or maintained to specifications.

6. Environmental Impacts

Spur roads, landings, and skid trails improperly located, often too steep or too wide and without adequate ditching and cross drainage represent the single most important cause of soil erosion in the logged areas outside the La Unión FMU. Landings are typically too large because trees are skidded tree length rather than being bucked into log lengths in the woods.

In those areas where oxen skidding is done, both within the FMU and outside, the difference in environmental disturbance—soil erosion—is significantly less.

As mentioned above, within the La Unión FMU, roads and skid trails are being built to contract specifications, have a lower density, and are built along contours or in diagonal patterns across the slope. Skid trails and landings are usually closed off after harvest and water-barred to reduce erosion.

Outside the project area, few if any soil erosion prevention measures are applied during or after harvest.

The gravest single impact of logging operations involves the hydrologic resources of the site. Although stream protection is better in the FMU, trees are still felled across or into ravines, and slash and shattered logs are left in them. In all cases observed, too little concern was given to stream protection.

Annex G contains the detailed report by the environmental specialist.

7. Cost Comparison

The financial and economic arguments for the new system of timber sales are: 1) increased log harvest per unit area (implying the construction of fewer kilometers of roads and skid trails per volume of wood extracted), and 2) improved residual stocking and forest regenerative capacity (greater future forest productivity). The financial benefit of the new system is the net present value of additional future timber harvests, together with adjustments for changes in road construction costs. The economic benefit incorporates a shadow price for stumpage value, and allows for an unpriced but realizable reduction in soil erosion because of improved log skidding and road construction standards. The discounted values of the benefits streams—financial and economic—determine how much can be spent to justify changing over to the new system. (Refer to annex D for details.)

With the new system, annual allowable cut is 750,000 cubic meters. Without it, it is assumed that pine harvests diminish by 5 percent per year from a higher but unsustainable cut. This difference implies that over a time horizon of 20 years, the project has the effect of increasing pine harvests by 2.9 million cubic meters.

At a discount rate of 5 percent, this additional harvest has a financial present value of Lps. 46.4 million if timber is priced at the current charge of Lps. 36 per cubic meter.

The combined benefits of additional future timber harvests plus savings on roading costs sum to Lps. 100.5 million (US\$18.96 million), discounted to present value. This implies that Honduras could invest up to this amount in implementing the new timber sales system, or an annual equivalent of Lps. 7.68 million (US\$1.45 million) over the 20-year period. Actual annual expenditures for the new system (mainly salaries, vehicles, and training) are estimated to be under US\$0.5 million. Consequently, the new system provides a substantial payoff for Honduras.

The net benefit is still higher if applying a shadow price that approximates an appraised stumpage value for pine timber. If a reasonable yet conservative appraised stumpage price for pine timber is Lps. 55 per cubic meter (see annex D), the shadow price multiplier is 1.53 (i.e., Lps. 55/36). This raises the discounted present value of the new timber sales system to Lps. 153.77 million, or Lps. 11.75 million annually for 20 years. So long as the economic costs of implementing the new method of timber sales are under Lps. 11.75 million per year, the program has net benefits for Honduras.

8. Quality Control

As could be expected, with the introduction of a lump-sum timber sale in which the volume of timber paid for is based on standing timber estimated, there has arisen differences between COHDEFOR and private industry. COHDEFOR has addressed the problem by initiating studies of defect and breakage and checking of felled sample trees to compare with volume tables being used.

When the sale system advances to include the appraisal of the residual value of standing timber it will be even more important to ensure that volume estimates are within ± 10 percent. Buyers should be fully informed that the purchase of timber on the stump (standing) is at their risk and that volumes are not guaranteed.

Another measure of control is to continue to check scale cut volumes particularly where timber is very defective.

It is also important to check-cruise those who are marking the cut trees and estimating their volume and defect. A check-cruising party from the regional COHDEFOR offices could operate among the various sale areas.

B. Lumber Export Regulations

When it phased out of the lumber export business COHDEFOR began fulfilling a marketing support function, of which one aspect was to ensure that Honduras received maximum benefits from its lumber exports. Under the terms of reference COHDEFOR was to:

- Facilitate the export of lumber by the private sector
- Supervise and confirm volumes and quality of lumber shipped
- Establish the appropriate level of income from exports
- Maintain detailed records of activity

The above guidelines were to become effective under its commercial department starting sometime in early 1988. In March 1991, COHDEFOR disbanded its commercial department leaving four individuals responsible for processing export documentation. These individuals now form part of the finance/administration department (finance/accounting subdepartment) where the lumber export documentation is now processed and controlled.

It is not clear on the basis of existing documentation and recollections whether a manual of export sales procedures was used in COHDEFOR. A written procedure however does exist and is currently being implemented. A complete outline of procedures was prepared in November 1990 for approval by top management.

Present procedures for export sales—the only procedures—are *de facto*, a mix of old and new, and they appear to meet the corporation's objectives as outlined at the time it went out of the direct export sales business. The main thrust of these procedures is to ensure verification of volumes exported, compliance with contract specifications as well as determination and collection of COHDEFOR's dues at 14 percent and 18 percent on the value of export sales. In addition, the process is quite rapid in itself given the fact that it is based on manually-produced, traditional, government-format documentation and the speed with which this documentation is sent/received. Within COHDEFOR, export operations are kept on computer—the only direct access application in the finance/accounting subdepartment.

C. Management System

1. Objectives

Given the variations in description and emphasis associated with this segment of the project as contained in the several project-related documents accessed, it was considered appropriate in the interests of a functional reporting mode, to regard all the disparate elements of those descriptions as part of a single underlying theme, namely improvement of COHDEFOR's overall management and its financial/administrative procedures so as to enable it to meet its government-mandated objectives in an efficient manner. (A detailed outline and discussion of project terms of reference and assumptions is included in annex J of this report). Only in this broad context, it was felt, could the project's objectives be a significant factor in the operational re-orientation of COHDEFOR.

All this notwithstanding, nowhere in the project terms is its objective referred to in as many words. Instead there is copious mention of, and emphasis on, only the procedures that support the management effort and this is only in the area of accounting/administration.

2. Methodology

The groundwork for the evaluation was carried out at COHDEFOR and included meetings with the finance/administration, planning, forestry, personnel, and legal departments all of which report directly to the general manager and together substantially make up the corporation's headquarters structure. ESNACIFOR and the regional offices were not included because they are not closely related to the question of COHDEFOR's overall management/administration.

The evaluations were based on personal interviews and available documents as well as corroborative evidence from other individuals and sources such as the corporation's independent auditors.

3. Project Status

As shown in the progress chart in annex J, COHDEFOR has developed procedures for income and expense projections, recording and control of revenues and disbursements as well as a new timber sales system and export sales regulations. All of these are in place and apparently functioning correctly.

Areas in which significant progress was not noted—and this is a by-product of COHDEFOR's management structure and priorities—are: (a) updating of the organization and procedures manual, (b) the development of a management information system, and (c) financial reporting based on generally accepted accounting principles. There is no one in COHDEFOR with the knowledge, experience, or authority to see that these aspects are duly and properly addressed. Admittedly this is a strong characterization but it is based upon three weeks of observation, interviews, and reviewing of COHDEFOR's functions in these areas.

The organization and procedures manual (developed by Arthur Young & Company in the 1970s) was allowed to lapse when COHDEFOR's Office of Organization and Methods was eliminated. A management information system (totally obscured by the urgent question of re-orienting the data processing function) has not yet been contemplated. Financial reporting has not kept pace with the changes that have taken place in the operations of COHDEFOR.

Other significant considerations for the project as it stands today are:

- Affecting COHDEFOR as an ongoing concern is the question of its legal status. Although able to function from day to day on the basis of its receipts and expenses, using the existing accounting system and practices, the corporation is bankrupt in legal terms. This is because if due recognition were given to the numerous matters impacting its balance sheet and which are not reflected therein, its equity position would result in a substantial negative amount. So far, the government has not recognized the gravity of the situation, which has both short- and long-term implications for the entity.
- In considering a turnaround and restructuring of COHDEFOR it must be remembered that one is dealing with a regular government organization that is always subject to political pressures, traditional public administration, and strong union influence. The present status and financial condition of COHDEFOR may be seen as a direct result of these factors as much as a lack of administrative know-how.
- Also affecting COHDEFOR is the situation of its workforce. Since it comes under the Labor Code, COHDEFOR cannot have career employees. The resulting job uncertainty, coupled with the lack of an adequate pension scheme, virtually ensures a low level of motivation throughout the organization.
- This evaluation, as evidenced by the previous comments in this section, is pointing to a radical change in the corporation's management composition, purpose, and style. For this to succeed, it will require not only willingness but also a firm commitment and active cooperation on the part of the government.

SECTION IV

FOREST MANAGEMENT OF SELECTED AREAS

CHEMONICS

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SECTION IV FOREST MANAGEMENT OF SELECTED AREAS

A. Objectives

The objective of the FDP was to create three model forest management units (FMU) by the end of the project that COHDEFOR could replicate throughout its' forest regions. La Unión was the first area selected and is within the Olancho Forest Department. Existing 1980 photos and inventory data were used to develop the management plan.

The second area selected was Salamá, also in Olancho, in year 3 of the project. A new forest inventory has been executed for the basis of the management plan.

The third area will be chosen in the final year of the FDP. This evaluation addresses the FMU at La Unión.

La Unión FMU has a total of approximately 100,000 ha of which national lands represent 67 percent, private 27 percent, and municipalities 5 percent. Natural forest areas cover some 73,000 ha and traditional agricultural area use some 28,000 ha. Commercial forest land under management is approximately 49,423 ha.

The selection of model areas within the FDP has caused a certain amount of jealousy within the other offices of COHDEFOR. This is a natural result of pouring inputs in the form of vehicles, computers, expenses for gasoline, etc. into La Unión and the project office in Tegucigalpa within COHDEFOR's main office. The FDP, through its training courses, has included many personnel outside the FMU but there has been very little on-the-ground follow up to training in areas outside the FMU. Within the main COHDEFOR office the entire accounting and computer section has no interface with the FDP. The forester in charge of the forest districts where the timber sale is being implemented has no relationship with the project.

B. Technical Analysis of Activities

1. Forest Management Plan

The forest management plan has been written and appears to be comprehensive. It includes a description of the types of cut, determination of the allowable annual cut, development of a five-year cutting plan, development of a road construction plan, outline of a forest protection plan, and a plan for protecting the biological reserves and municipal watersheds. One problem area has been continuity of management personnel. For example, in 34 months of project execution the La Unión FMU has had four managers.

The allowable annual cut has been determined using a 40-year rotation age and cutting 1/40 of the productive forest area. A five-year harvest plan has been made, the average area cut is 1,205 ha per year and the average annual volume is 58,546 m³. A review of volume harvested 1988 through 1991 indicates a variation from 39,630 m³ in 1988 to approximately 84,000 m³ in 1991. This averages 59,160 m³ per year, which is slightly over the allowable annual cut. An adjustment down is indicated for 1992. However, what is alarming is the 1991 cut of 84,000 m³. The forest industry operating within this FMU must be advised that this is an unacceptable level of cut and that it will not be maintained. Arguments by industry that their installed capacity requires more volume should be ignored. They should be advised that additional volume must come from the allowable annual cut in other FMUs.

In the second five-year cutting plan, the allowable cut will be based upon a new inventory using photos to be taken in January 1992.

2. Forest Protection and Regeneration

In August 1991, an evaluation of the fire prevention program in La Unión FMU prepared by COHDEFOR for 1991 indicated that the area under intensive protection was 13,221 ha and under extensive protection was 27,658 ha, for a total of 40,879 ha.

In the intensively protected areas, 81 fires were fought covering 334 ha and in the extensively protected areas 188 fires were fought covering 679 ha. This represents almost 2.5 percent of the total area. The target goal in the project paper was 2 percent. Thirty-six percent of the area burned was caused by incendiary fires and 38 percent were caused by cattle-grazing interests. Seventy-eight percent of the fires occurred in mature timber stands, 11 percent in young timber stands, and 7 percent in regeneration. Of the forested area affected 96 percent was conifer.

There were six permanent personnel and 257 temporary personnel participating in fire control activities. Women generally do not participate in fire suppression activities.

Among several problems mentioned in the report, two appear critical:

- Payment of day-labor took up to 10 days.
- Most fire brigades were from urban areas and this created resentment among those living in the zones under protection.

There is a great need for forest extension within the FMU and nationwide. Other sections within the FMU need to be involved and integrated with the forestry sector in the combating and prevention of forest fires.

One fire tower has been constructed to date.

Concerning natural regeneration, the evaluation team, on a visual basis, felt the particular areas visited had adequate regeneration. The La Unión FMU has recently

completed a regeneration survey and, although not published yet, basic data recorded indicated that of some 487 samples 422 had seedlings. Twenty four percent regenerated was in poor condition having 900 seedlings per ha. The balance of the area had at least 1,200 seedlings per ha. The total area inventoried was 244 ha.

3. Road Networks

Road construction goals for 1989 were the reconstruction of 30.5 kilometers, the actual was 34.5 kilometers. No goals were set for 1990, but in 1991 the goal was 50 kilometers and as of September 18.6 kilometers have been built. Within the FMU all spur roads and skid trails are located on the ground by the timber sale preparation team. Sale supervisors are responsible for enforcing compliance—seeing that the contractor actually builds the roads to specifications.

As mentioned elsewhere in this evaluation this activity needs strengthening. That is, supervisors need access to transportation to visit and direct operations in the sale area. They also need more training, and more of them are required for the sale program outside the FMU.

4. Wildland Areas

The FDP goal of decreeing two wildlands areas within the FMU has been met. The first is La Muralla with an area of 6,093 ha, which includes a virgin cloud forest above an altitude of 1,500 meters. The area includes primarily lower montane life zones, both moist and wet forests. Biological diversity in this broadleaf forest is very significant and most typically represented by the quetzal and other numerous endemic and rare bird species. Mammals include the tapir, peccary, mountain lion, ocelot, jaguar, and howler and white-faced monkeys.

La Muralla is receiving a lot of attention from the FDP. Boundaries have been marked, a visitor center built, and technical staff assigned to make a management plan and wildlife inventory.

The second area is the El Armado refuge in which boundary demarcation has occurred but little else. Although it does not have the biodiversity of La Muralla it has importance as a hydrologic reserve. A management plan is needed to address specifically community participation in its protection due to its value in supplying water for the population.

See annex G for a comprehensive discussion of the wildland refuges.

5. Comparison With Other Areas

The model FMU at La Unión was established because COHDEFOR throughout the country is in an extensive management mode and it was the objective of the

FDP to develop a methodology to efficiently manage forest resources that could be replicated throughout the country.

A comparison of the management activity on the FMU at La Unión with the rest of COHDEFOR's operating area is as follows:

- The FMU has a calculated allowable annual cut the other areas do not.
- Logging utilization is comparable in both the FMU and other areas where harvesting is on the new sale system. Logs in the 6"-10" range now account for 35 percent of the volume harvested, which is an increase of 18.5 percent over traditional sale areas.
- Residual stand volume—that is, the volume of remaining timber after harvesting—is higher in the FMU than in other areas, an average of 3.85 m³/ha compared to 1.11 m³/ha.
- Seed trees per ha are greater in the FMU, an average of 20 compared to 14 in other areas.
- No logging cost data exists in either the FMU or other areas, but, based upon observation and experience, it is probable that harvest costs are less within the FMU than in other areas (roads are better, trucks probably can make more trips per day, skidding patterns are more logical; tree to landing costs are probably lower). This whole area of costs will be dealt with once the residual value appraisal system is installed.
- Concerning income generated, no baseline data is available. No uniform accounting system exists within the industry.
- Standing timber sale supervision is better within the FMU than in other areas.
- Transportation availability for sale supervisors is better in the FMU.
- Concerning fire control, both within the FMU and other areas, COHDEFOR only reports fires with which it comes in contact, statistics on fire control are thus misleading.
- Implementation of the standing timber sale program has been slow outside the FMU because of the loss of trained technicians from COHDEFOR to private industry.

C. Social Analysis of Activities

1. Agricultural and Agroforestry Activities

a. Cattle Grazing and Range Management

The FDP at present has no capability in improved traditional practices in cattle grazing and range management in the forested areas. Social promoters have no training in these areas, and while their supervisor does have specific training in these areas, he has not emphasized it in his work with the promoters.

The Land Use Productivity Enhancement (LUPE), which collaborated with the FDP in 1990 and still works in the area, also has this expertise, but has not focused on improving traditional practices. What LUPE has done is to foster agroforestry by planting leucaena and maderado, the leaves of which are excellent cattle forage. However, the plantings are too recent to have any effect on cattle nutrition.

b. Traditional and Improved Hillside Agriculture

The agriculture and grazing improvements were to be implemented through the Honduras Natural Resource Management Project (NRMP), however, a new project, LUPE, actually carried out this function until December of 1990.

All sources concur that there are only two important and traditional crops in the area: corn and beans. The FDP has not worked in this area, lacking the necessary technical expertise. LUPE has worked to improve hillside agriculture through improved soil conservation techniques, including contour plowing, contour ditches, live and dead barriers, planting multi-use trees, and planting barrier grasses (King grass). However, they have no data on farm budgets with or without their interventions, which in any case are too recent to have an effect.

More importantly, in many cases it will not be possible to measure the effect of LUPE on its own, since LUPE often works in conjunction with DIRCO, a Ministerio de Recursos Naturales agency supervising loans to small farmers for basic grains. DIRCO interventions have produced improvement of from less than 3,000 lbs./mz. to 4,000 lbs./mz. for corn, and from 800 lbs./mz. to 1,600 lbs./mz. for beans. These interventions involve improved seed, fertilizers, herbicides, and pesticides. The loans are usually around L.1,000 per *manzana*, and DIRCO provides close supervision to see that the loans are paid back to BANADESA. The DIRCO loan portfolio currently contains loans to 48 farmers, none of whom are women.

2. Effect of Program on Local Economy

To determine what effect project intervention has had on the local economy, including on the average income of local population, its major sources, and distribution by economic strata and sex, a baseline study would be required. This baseline has not been

prepared for the La Unión area. And, although a baseline exists for future use in the second management area of Salamá, income data are not broken down by sex and economic strata.

In spite of this limitation, there is no doubt that the project has had a positive effect on the local economy through the spread effects of the establishment of a large COHDEFOR office and jobs created by the establishment or expansion of the three logging operations in the area. For example, there are at least 30 oxen team drivers working with the logging operations (Honduply, Yodeco, San José), a cooperative of pit sawyers working to prepare logs for extraction (San José), a group of individuals carrying out resination (San José), four people making broom handles from forest waste, 80 Honduply sawmill employees (eight of them women, although not all the employees are local hires), truckers' assistants, and road crews. Prior to the FDP there was no harvesting in the area, hence, none of the above listed activities.

3. Utilization of Incentives

Originally, the incentive system was to reward individuals for agricultural, livestock, soil conservation, agroforestry, or women-in-development activities. There were numerous problems with this system. First, people who did not receive incentives accused the FDP of favoritism, both political and personal. Second, people received the checks but did not receive sufficient guidance regarding how the money was to be spent and the need to back up expenditures with invoices. Third, there was insufficient supervision regarding actual use of the funds for which they were destined, and in some cases there was no record of whether beneficiaries actually spent the money on the expressed purpose. Fourth, the sheer number of applications overwhelmed the FDP administration to some extent, and there were delays in cutting checks.

The system has been improved during 1991. Incentives now go to groups, not individuals, which avoids many of the problems of the previous year. The groups are usually those formed by the promoters or those already organized and reactivated; and always involve five or more people.

The investment plan is worked out and includes the names of all members of the group, although just one check is cut in the name of a representative of the group. The application is sent to Tegucigalpa and turnaround time is about five days. Two checks are then cut, one for 70 percent and the other for 30 percent of the total. When the 70 percent is spent and the invoices for that amount sent in, the second check is sent out.

One of the principal problems of the incentive program is how to determine what kinds of projects should be eligible for funding. To date, project selection has been limited to the types of projects in the list of activities in the Project Agreement. However, the promoters have identified, as important to the community, projects in potable water and latrine construction. The FDP has approved projects involving vegetable gardens, improved wood stoves, and potable water.

4. Program Impact on Traditional Use of Forest

a. Why People Burn the Forest

The involvement of local people in the forest has less to do with what they do with the forest than with what they are not allowed to do, that is, have free use of trees on and near their lands.

This lack of a perceived vested interest in the forest, coupled with the perception that it is the government that owns the forests, has led rural people to use the forest to attack government when they feel resentful. The resentment can be sparked by any number of reasons on the surface. Examples include a poor harvest and no government assistance, a change of government favoring a political party other than one's own, a personal slight (real or imagined) by someone in government (usually COHDEFOR), or the perception that other communities or individuals are recipients of government help while one is not.

The attack on the government/forest is simple: set it on fire. The feeling is that the forest, shorn of its value for the rural individual, still represents value for the government which, through COHDEFOR, is continually trying to protect it. The resentful individual, therefore, destroys what he knows the government values, thereby causing harm to the government.

The above sketch is simplistic, but few knowledgeable people in Honduras would deny that it is essentially valid. It is true that there are other causes of forest fires, particularly those deliberately set by cattle owners to improve forage for their cattle and those set accidentally by rural farmers who burn the brush off their land before planting.

b. Present Forest Use

In spite of the above, local people still can access the forest in most cases. They need to apply for a permit to fell a tree from COHDEFOR, a permission that is granted in most cases. These trees are used for house construction and fencing. There is no shortage of fuelwood, and the project has not affected the gathering of fuelwood because there is generally enough forest "trash" wood to provide more than enough firewood for the area. It has thus had no effect on either men's or women's activities.

5. Women's Participation in Management Activities

The Project Agreement stipulated that women-in-development (WID) activities were an integral part of the forest management activities. The project has carried out this mandate both through LUPE and through the social promoters in the FDP. Two of the six promoters are women and work principally, although not exclusively, in WID activities. The men promoters are also charged with forming women's groups in the communities they serve, and they receive visits from the women promoters to assist them with WID activities. The LUPE team also includes a WID specialist working exclusively with women's groups.

The WID activities for the FDP and LUPE are similar, and they achieve greater coverage by not working in the same communities. These activities include home improvement (improved wash stands, improved woodburning stoves, improved floors, room divisions, screened cupboards), agroforestry (nurseries producing fruit, ornamental, and multi-use trees, including leucaena and maderado), vegetable gardening, and animal husbandry (chicken coops, pig pens, cattle corrals).

SECTION V STRENGTHENING OF PRIVATE INDUSTRY

A. Objectives of Project Toward Industry

The FDP has as one of its components the strengthening of the Honduran forest industry to enable it to more fully use the forest resource, to produce better products, and to thus make a greater contribution to the Honduran economy.

1. Technical Assistance Program

To help achieve these goals, the FDP strengthened the COHDEFOR technical assistance unit by providing a long-term member from the AID technical assistance team. Also, short-term technical assistance was provided in the form of short courses. These included such subjects as quality control, wood drying, saw sharpening, lumber handling, and the introduction of better log recovery practices. The unit also demonstrated and promoted the use of more efficient technologies such as band sawing versus circular sawing and kiln drying versus air drying. Various manuals have been produced covering many of the above subjects. A classification manual for Honduras dimension lumber and a lumber grading manual have also been developed. These manuals have not been distributed to industry members.

2. Forest Industry Results

The project-financed assistance to the industry was very well received throughout the entire private sector, as well as being properly monitored by COHDEFOR. A segment of industry has responded by investing in band saws to replace circular saws in the primary log-breakdown operation and/or the introduction of thin kerf band resaws to further improve lumber recovery. In 1990, 74 percent of the total pine lumber production was accomplished with band sawmills. The project goal is to reach 90 percent.

B. Timber Harvesting

This area is perhaps the weakest in attempting to strengthen the private sector. Of 14 short-term technical assistance assignments only one addressed the subject of logging methods. The industry generally subcontracts the harvesting function for a flat negotiated price and as such is not involved in this activity directly. COHDEFOR contract stipulations concerning road location and construction, road maintenance, directional felling, skidding, skid trails and landings are, on paper, adequate to ensure proper performance, however, in practice they leave much to be desired.

The following comments were made in June 1990 by a logging expert and remain valid today as observed by the evaluation team.

"Fallers do not use wedges, a single bit axe or a measuring device. Poor directional felling is creating skidding time loss. Bucking trees into logs on the landing needs improvement as buckers do not use tapes and trim allowance is usually wasteful. The single line skidding system with tractors or skidders is slow and production could be doubled with choker and presetting practices."

C. Sawmill Efficiency

Ten sawmills were sampled and most were operating with band saws as the main log breakdown equipment. Only one had an automatic self-loading log system and log turner on their log carriage. Most mills depend on high manual labor inputs for these functions. Some larger mills use a front-end log loader to feed the mill from the log yard. Only one mill made use of a log debarker on a continuous basis. Sawn lumber moving through the edging, sorting, and trimming processes used rollers and manual labor. None of the mills had a laser projected line-marker device as part of their edging equipment to help obtain better recovery.

Dipping of sawn lumber to prevent blue stain, except in one facility, was manually performed. Dipping tanks had problems with chemical leaking and splash guards were not used to prevent workers from being in contact or sprinkled with chemicals.

Sawdust removal is mostly done with manual labor using shovels and wheelbarrows. Most edger operations had an installed dust pick-up system.

1. Baseline Data—Current Data

Within the La Unión FMU one sawmill, San José, had sufficient data to make comparisons. Their original 163.4 board feet lumber recovery per cubic meter of log input compared to the evaluation team recovery factor of 217.7. This was an improvement of 33 percent. The other industry within the FMU, Honduply, has a current recovery factor of 223.1.

Outside the FMU, all sawmills are now receiving logs from the standing timber sale program. The El Bijao sawmill had a previously established recovery factor baseline of 228.3 board feet per cubic meter and currently has a slight improvement to 231.6 board feet per cubic meter. The other sawmill evaluated was the San Antonio mill at Danli. It had no baseline data but today has a recovery factor of 219.5 board feet per cubic meter. Field sampling methodology is presented in annex H.

2. Quality Control

Of all the mills sampled, variations in the overall thickness of dimensional lumber or boards were within 1/8 inch tolerance. Variations were less prevalent where thin band resaws were used. Poor maintenance on head-rigs accounted for maximum tolerance.

The lack of a quality control manual, for the allowed measurement variation, among producers has left many of them second guessing the extent of the problem. One solution to improved practices is to have the COHDEFOR technical unit distribute their manual. AMADHO has yet to review and accept this manual and thus make it available to its members.

3. Log Distribution Analysis

In July 1991, the COHDEFOR industry technical assistance unit made an analysis of truck tickets representing logs transported. One thousand logs were sampled with the following results comparing 500 logs from traditional sales and 500 logs from the new standing timber sale program.

Percent Volume Utilized			
Dia. Range	Traditional	Standing	Difference
6"- 7"	0.3	5.1	4.8
6"-10"	17.0	35.5	18.5
10"+	83.0	64.5	-18.5
Percent of Logs Utilized			
6"-10"	27.7	52.7	25.0

These results compare with the evaluation team findings in two sawmills:

San José	- 6"-10"	-	20 percent
	10"+	-	80 percent by volume
Honduply	- 6"-10"	-	37.6 percent by volume
	10"+	-	62.4 percent by volume

The sampling indicates that the industry is utilizing a log mix that includes a high percentage of small logs—a situation that demands higher efficiency. It is interesting to note that in these mills the product quality recovered in logs 6"-10" was 6 percent high grade in San José and 30.5 percent in Honduply. See annex H.

D. State of Technology of Industry

The forest industry has improved, as indicated above: 74 percent of the volume of lumber produced in 1991 was from band sawmills. Six large dry kilns with a total capacity of 250 million board feet (MBF) are under construction. A wood waste recovery process, the first in the country, has been installed at the Yodeco mill near Yoro to produce charcoal bricks. Also at Yodeco, a steam-boiler generator to produce electricity from wood wastes has been designed and purchased although not yet in production. Many mills have installed single band resaws.

Another positive example is the value added process evidenced in the establishment of a medium-sized, pine-furniture business that derives its wood from one of the La Unión FMU mills. This industry utilizes a higher grade material and, although only two years old,

exports assembled furniture as well as paneling and moldings to Europe and the Caribbean market.

1. Investment and Credit

The FDP had originally set aside almost 5 million dollars to provide credit to the forest industry as part of the strengthening of industry. Due to a cumbersome process, the need to buy in the United States and to buy new, very few mills took advantage of the credit line. Most of the industry has used private sources, such as exporters lending on production; others have been successful within the national banking system. Many small sawmills have not been able to use credit and have made no improvements. It would be helpful to keep the AID credit line open to these small producers but it would be necessary to change the rules by which such credit is made available, allowing them to buy improved machinery regardless of source.

2. Production

Sawmill production has decreased in Honduras from 165 MBF in 1986 to 159.6 MBF in 1990. This change is due to several factors:

- By 1990, about 75 percent of the timber sold was on the new sale program. Harvest volumes are more in tune with what the forest can sustain. Industry has been forced to use smaller diameters as noted above.
- Since 1986, the number of sawmills operating has decreased from 109 to 85. Of the 85 mills producing, 11 accounted for 43 percent of the 1990 production. These 11 sawmills had an annual production of 3.0 MBF or more. The remaining 57 percent of production was from 74 sawmills with 2.9 MBF per year production or less. Approximately 48 sawmills out of 85 have made no changes in their sawing methods and still operate with circular saws. Some additional attrition among the smaller mills will no doubt take place. However, this segment of the forest industry is still very much in need of additional technical assistance.
- COHDEFOR owned and operated sawmills have gone out of production. Their combined annual production was 20 MBF.

E. AMADHO

As stated in the agreement between the GOH and USAID/Honduras, the COHDEFOR technical assistance unit will be complemented by the provision to AMADHO of a forest industry expert for a period of one year. This advisor will serve as a counsel to the Association Directorate. AMADHO now has a technical advisor and has recently completed an action plan for the organization. Among the most important tasks stated in their plan are to:

- **Improve the image of the Honduran forest industry**
- **Promote and strengthen unity among AMADHO members**
- **Provide training and technical assistance in management and administration of forest-based industries**
- **Contribute to forest management policies giving emphasis to environmental issues**
- **Promote better relationships among municipalities, local inhabitants, and forest owners**
- **Organize an information center that will serve AMADHO members**
- **Take part in drafting and contributing to new forest policy that affects the forest industries**

Almost all sawmills can be improved by making both operational and mechanical changes. The Honduran forest industry, for the most part, is eager to make such changes but basically doesn't know how. AMADHO is a vehicle to meet this need and should have a hands-on expert to work with industry. The FDP should again provide a long-term advisor as part of the TA team to work full time in assisting both AMADHO members and other sawmill operators in making these improvements. This advisor will also need to assist AMADHO members and other sawmill operators with economic feasibility studies and loan applications helping to obtain loans in the local credit market, especially now that AID is curtailing its program.

SECTION VI

TRAINING PROGRAM

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SECTION VI TRAINING PROGRAM

A. Goals

According to the project paper, the FDP will finance the training courses to be held at ESNACIFOR on harvesting methods for private sector loggers—both technicians and laborers. These courses are to address logging and road construction/maintenance practices, environmental assessment and impact mitigation, equipment maintenance, residue use, accounting, and other technical constraints to loggers.

Also, some 35 short courses were to be offered on sawmill practices and directed at private sawmill owners and their employees. These courses were also to be offered at ESNACIFOR and cover sawmill maintenance, wood drying, lumber handling, mill residue utilization, management, accounting, and other technical constraints to sawmills.

In addition, study tours to the United States to observe both harvesting and sawmill operations for industry and COHDEFOR personnel are part of the training package.

On a longer term, the FDP was to provide scholarships for candidates to attend ESNACIFOR and for technicians to pursue academic degrees in the United States.

B. Results

For various reasons, ESNACIFOR has not been able to meet the goals of the project as a prime source of training. Some of these reasons are administrative, and one is that the school simply does not have sufficient qualified instructors willing to develop short courses without additional compensation. The school has a demonstration sawmill and a saw filing shop. The latter does contract sawfiling with some sawmills, but the sawmill is in such a sorry condition that it cannot be used for demonstrating anything but how to function improperly.

In spite of ESNACIFOR, the project has implemented about 25 short courses in mostly industry related fields. Of 14 short-term consultants brought in for training, only one was an experienced logger. The training that has occurred has been usually well received and it has had practical applications.

Many COHDEFOR technicians and professional foresters who have received training in the timber sale program—both in the preparation of sales as well as in administration and supervision of sales—have been hired by private industry. In the long term, this may be good for Honduran forestry, however, in the short term it has created a problem for COHDEFOR.

The FDP has provided scholarships for ESNACIFOR and currently has 21 in attendance and 15 more planned for next year. From 1989 to September 1991, approximately 309 person-months of academic training have been given, out of a goal of 469. Non academic training in the same period was 668 person-months, which exceeded the goal of 517.

The COHDEFOR technical assistance unit has translated a number of technical manuals to provide material for training courses. The evaluation team recommends these manuals be published in sufficient quantity to supply interested forest industry members.

The training coordinator should remain in his position for the life of the project. The evaluation team feels that he has done a very good job.

SECTION VII ENVIRONMENTAL IMPACT UPDATE

A. Project Contribution to Conservation

The standing timber sale program has had major achievements in the protection of the environment while sustaining the productivity of the forest resources of Honduras.

Whenever proper follow-up and supervision of the timber sale occurs, as in the La Unión FMU, the environmental impacts of forest harvest activities are significantly reduced, soil erosion and stream siltation is minimized, fragile areas are not disturbed, habitat is protected, and forest regeneration is facilitated so as to enable the resource base to sustain yields over time.

As mentioned under section VI, many foresters have left COHDEFOR for the private sector. Thus, increased awareness about environmental consequences of forest related activities is becoming part of industry's own concern.

Through the FDP, one cloud forest area of considerable ecological significance (La Muralla) has been protected and the proper steps taken to implement a management plan. A second area was also delimited (El Armado) and plans are to provide it with proper management and protection in the near future.

Environmental education for local communities and nationwide was a part of the project paper environmental assessment. This activity was to focus on the community watershed and wildlands management components as well as on the community's participation in forest management. Funds were to be provided for a national program of environmental education focusing on forestry and related environmental management techniques. Some educational interest has been produced but the program has not really "taken off."

B. Project Contribution to Sustained Use

Within La Unión FMU, the FDP has introduced the concept of the allowable annual cut—i.e., that volume which the forest can sustain on a continuing basis. It will also be determined for the second model FMU at Salamá. The issue confronting forestry experts in Honduras is the period COHDEFOR should apply this basic principle throughout the entire commercial forest area. Without it, forest depletion will continue in an indiscriminate manner.

Proper timber sale preparation and supervision will achieve positive results. The regeneration capacity of the forest is strictly dependent upon proper supervision of harvest

activities, upon the implementation of certain erosion control measures, and upon effective fire control.

C. Environmental Assessment Update

The analysis and discussion is based upon field observations rather than objective measurements, because no baseline data has been established (erosion/sedimentation plots, weather stations, wildlife inventories, etc.)

- **Tropical Forest Protection**

Broadleaf forests of the ecologically significant cloud forest type have received considerable attention as per the two wildland refuges set aside, La Muralla and El Armado. Slopes in excess of 50 percent have been kept out of harvesting plans until harvest systems compatible with the environment can be introduced. COHDEFOR has recently been assigned responsibility over all protected areas in the country so that the lessons learned by the FDP can be transferred nationwide.

- **Watershed Management**

Within the La Unión FMU, four community watersheds have been identified and management plans are being prepared. This provides COHDEFOR with an excellent opportunity to interact and cooperate with the communities on issues critical to their own subsistence. A watershed management department within COHDEFOR exists, but its presence and work within the La Unión FMU is less than evident. FDP efforts in watershed management need to be strengthened. This is an area for additional women's participation if competent professionals are available.

- **Forest Road and Trail Development**

It is evident from an environmental viewpoint that forest road and skid trail development remain a major concern. Timber sales contract provisions clearly assign responsibility and establish technical specifications for all aspects of location and construction. Execution and adherence to the contract varies considerably as a function of sale administration and on-site supervision.

- **Silvicultural Practices**

The project has concentrated on preparing for and implementing the new standing timber sales system. Although the system has clear implications for the adoption of sound silvicultural practices, their application requires more technical personnel with greater experience and training and increased presence on the ground. Paratechnicals and recently graduated technicians without experience are not qualified to apply silvicultural treatments without more training and professional supervision.

- **Forest Harvesting Practices**

This is an area of greater achievement by the FDP in that better use of the resource has occurred. Improvements can still be obtained by directional felling of trees, more precise measuring of logs prior to bucking, skidding of log lengths rather than tree lengths, use of a choker system to increase efficiency, and ultimately the introduction of cable systems for steeper slopes. Using a lop and scatter slash disposal method for erosion control on skid trails and landings would be environmentally significant.

- **Wildlife Management**

Forest fires, cattle grazing, and indiscriminate hunting practices account for conditions observed whereby the forest appeared to have little wildlife, birds, and mammals present. To include all aspects of the ecosystem, wildlife management should have more emphasis and could provide a way of engaging the local communities in protecting the forest.

- **Biological Diversity**

The FDP has achieved more than expected in the original project paper in terms of setting aside areas of greatest biodiversity such as La Muralla. COHDEFOR needs to strengthen its institutional capacity to protect and manage an entire system of wildland areas nationwide.

- **Grazing Practices**

COHDEFOR has not defined a clear and decisive policy to protect harvested areas from illegal fencing for cattle grazing. A policy exists precluding cattle grazing for up to eight years after harvesting, but it's evident that enforcement of the policy is weak. As a result it is possible that management plans based upon natural regeneration under undisturbed conditions (no grazing-no fire) will not be realized completely. It is evident that a good number of fires are set by ranchers to improve forage.

Considering that traditional grazing practices are low-cost affairs associated with social status, attempting to change them is not an easy task, but clearly one that needs to be addressed with urgency.

- **Forest Industry**

Major problems arise when the sawmill purchaser of timber subcontracts the harvesting to small contractors. These latter being underfinanced and under pressure to produce, tend to "operate as they always did." FDP needs to address

this aspect most urgently, as they appear to endanger the proper application of the standing timber sale system especially where supervision and sale administration are weak.

- **Soil Erosion and Sedimentation**

On practically all of the sites visited by the team, very little has been done to prevent soil erosion. The most commonly observed activities included: improper layout of roads and skid trails, inadequate ditching and drainage along roads, poor location and size of landings, inadequate stream crossings, and inadequate water barring of roads and skid trails after harvesting.

- **Mineral Exploitation in FMU**

Since preparation of the environmental assessment, a gold mining operation (partly open pit, partly tunnels) has started at Los Blancos, north of Mangulile. Environmental impacts of such an operation are obviously quite considerable. COHDEFOR should coordinate with the Ministry of Natural Resources to supervise mining operations to evaluate environmental impacts and propose an effective mitigating plan.

ENVIRONMENTAL COMPONENT -SCHEMATIC SUMMARY EVALUATION

KEY ISSUES/COMPONENTS	JUSTIFICATION	ACHIEVEMENTS TO DATE	PROBLEMS	RECOMMENDATIONS
TIMBER SALE PROGRAM a. roading systems (layout & supervision)	<ul style="list-style-type: none"> • reduce environmental impact • reduce cost of construction and maintenance • improve forest regeneration • reduce soil erosion/siltation * control forest extraction activities 	<ul style="list-style-type: none"> * specifications in contract • trained and motivated personnel • timber sale system applied country-wide • better utilization of timber resources • reduced environmental impact 	<ul style="list-style-type: none"> • poor logistic support • poor field supervision • poor enforcement of contract clauses * timid stand vis-a-vis grazing • no community participation (fuelwood/grazing activities) 	<ul style="list-style-type: none"> * long-term technical assists • motorcycles for sale admin. * incentives for sale superv. • stricter enforcement * full closing of site * no-fencing after harvest • trails and demonstrations
b. harvest planning (area selection)	<ul style="list-style-type: none"> • reduce impact on fragile areas • protection of genetic resources • sustainable forest management • protection of biological diversity • control forest management activities 	<ul style="list-style-type: none"> * oxen logging operations * habitat and stream protection • better idea of harvest potential * increased environmental awareness 	<ul style="list-style-type: none"> * inadequate supervision • poor enforcement of contract * weak watershed management • no wildlife management 	<ul style="list-style-type: none"> * improved logging techniques • better supervision * better logistic support • short-term technical assist
PROTECTED AREAS a. protected area mgt. (La Muralla Refuge)	<ul style="list-style-type: none"> * model management unit * training for planning purposes * institutional building 	<ul style="list-style-type: none"> • wildland refuges established • management and operational plans • visitor center/nature trails • inventory/reconnaissance forthcoming 	<ul style="list-style-type: none"> • El Armado W.R. not actively protected and managed * poor community involvement • weak patrolling (guards) • weak personnel training * poor logistic support 	<ul style="list-style-type: none"> • short-term technical assist • management/operat. plan for El Armado W.R. * training of guards/personn. * community extension/partic. * motorcycles/horses
b. conservation extended beyond protected area	<ul style="list-style-type: none"> • community involvement * training of forestry personnel * protection of biodiversity 	<ul style="list-style-type: none"> * municipal watersheds identified • trained personnel • environmental education program 	<ul style="list-style-type: none"> • weak community participat. • lack of specialized personnel • weak extension activities 	<ul style="list-style-type: none"> • short-term technical assist • specialized training * focused extension/environmental education programs • small business oportun.
ENVIRONMENTAL MONITORING a. environmental monitoring	<ul style="list-style-type: none"> * learning/training opportunity * problem identification/evaluation • feedback mechanism * improvement/adaptation of mitigating technology • building institutional capacity 	<ul style="list-style-type: none"> • some equipment purchased • some impact assessment done 	<ul style="list-style-type: none"> * no monitoring systems * no baseline data • no specialized personnel • training opportunities lost * no in-house capability for impact assessment 	<ul style="list-style-type: none"> * short-term technical assist * special training/equipment * establish "environm. unit" • set baselines • develop monitoring system
b. environmental education	<ul style="list-style-type: none"> • raise environmental awareness • induce community participation • contribute to forest protection • contribute to conservation of biodiversity 	<ul style="list-style-type: none"> • generic environmental education programs and materials * some community extension/organization 	<ul style="list-style-type: none"> • no community participation * weak personnel training • weak problem identification • weak problem focus 	<ul style="list-style-type: none"> * short-term technical assist * greater community involvem. • better training of personn. * focused env. education prog. * promote local environmental protection groups (ONG)

SECTION VIII

PROJECT COMPLEXITY

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SECTION VIII PROJECT COMPLEXITY

The evaluation team agreed that the FDP was a straightforward technical project. Although having various phases, all of which contribute to the total, it is not considered complex in the sense of having confusingly interrelated parts.

All things considered, the FDP has been a success. The project has been well defined and its objectives clear, with perhaps the exception of the managerial reorientation of COHDEFOR. Having said this does not diminish the need for continued long-term technical assistance. Many of the criticisms of the project evolve from the continuing need for supervision and training which will only be met by a long-term continuing presence on the ground.

A change in direction or emphasis for the FDP is indicated in three areas:

- Since COHDEFOR expanded the standing timber sale program nationwide prematurely, the FDP should address the need to supply training and monitoring in both the timber sale program and the appraisal system nationwide.
- Since the success of forest management in Honduras is based upon successful natural regeneration of the forest and COHDEFOR lacks an adequate fire prevention program, a new element of the FDP should be to address this need.
- As pointed out previously, the concept of the allowable annual cut has only been applied to the two model FMUs. The FDP should also work with COHDEFOR to assist in meeting their needs in determining this allowable annual cut and in implementing it nationwide.

This broadening of the project would be a major contribution to improving forest management in Honduras. It would also take the project out of its cocoon and allow it to project its influence throughout COHDEFOR nationwide.

SECTION IX

CONCLUSIONS

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SECTION IX CONCLUSIONS

1. The TA team did not establish baseline data for evaluating the project nor did they monitor the project in a professional manner.
2. Many managerial positions in COHDEFOR are held by political appointees who do not have professional backgrounds.
3. To meet the FDP goals on management improvement, COHDEFOR must undertake major changes in light of the constraints on its ability to generate revenues and to control its costs. Such changes can only be brought about by professional management quality and continuity throughout the corporation. Any real improvement in the performance and administration of COHDEFOR must depend upon total support and cooperation of the GOH.
4. Important achievements include the establishment of the standing timber sale program. Still lacking is the adoption of a residual value appraisal methodology for pricing the standing timber, which was to have been implemented in year 3 of the project. There has been no explanation by the TA team as to why this hasn't happened.
5. Timber sale contract provisions provide ample safeguards for environmental protection if they are enforced. Compliance with the contract regarding road location, skid trail location, construction standards, and erosion control practices like water-barring roads and skid trails has been adequate within the La Unión FMU but not on sale areas in other parts of the country.
6. Although a number of environmental assessment activities have been performed, COHDEFOR and the FDP have not acquired an in-house capability to conduct impact evaluations and environmental analysis.
7. The allowable annual cut concept—i.e., harvesting only what the forest can sustain on a permanent basis—has not been adapted by COHDEFOR nationwide. The FDP has made the determination in both model FMUs selected. Within the La Unión FMU, the harvest level for 1991 has been excessive compared to the allowable annual cut calculation.
8. Forest fire prevention is poor. COHDEFOR only reports fires that it combats, hence, statistical data on fire control is inadequate and misleading.
9. Strengthening of the forest industry through technical assistance of the FDP has had positive results among medium and larger producers. However, over half the

sawmills in Honduras have made little or no changes in their operations.

10. The FDP has been lax in not distributing to forest industry the manuals that have been produced by the COHDEFOR technical assistance unit.
11. Introduction of skid logging has been a positive change in logging method in environmentally sensitive areas. However, traditional tractor skidding, timber falling, and truck loading have not changed and are inefficient.
12. More education and consciousness-raising concerning the environment is needed nationwide among the population in general and resource professionals and the forest industry in particular. Although some educational material has been produced, a strategy and plan for its distribution and use in schools and elsewhere is still missing.
13. Timber sale preparation and administration (supervision) as well as the work of social promoters is hampered by a lack of transportation.
14. Women social promoters in the La Unión FMU have been more successful than men because they work better with both genders. Community selection for social promoters needs to focus on communities that demonstrate apathy and negativism.
15. ESNACIFOR has made little contribution to the FDP training effort, which is not what was originally intended.
16. The project has produced methodological and institutional changes, which over time will meet the objectives of the FDP.
17. The FDP is a straightforward technical project with clear and well defined objectives. At this midpoint in the project, it is evident from the above conclusions that continued long-term technical assistance support is needed.
18. The project should consider a change in direction in three areas:
 - Address the need for additional support, training, and supervision of the timber sale program nationwide.
 - Increased fire prevention support for COHDEFOR.
 - Assist COHDEFOR in extending nationwide the concept of the allowable annual cut.
19. The project to date has not had a visible impact on COHDEFOR's levels of awareness, commitment, and ability to formulate and meet its management objectives. The project's underlying objective—interpreted as improvement in all management levels—has not been achieved. If looked upon as a step-by-step implementation of

specific requirements, the project has undoubtedly moved in the right direction and achieved much since its inception. See progress chart in annex J.

20. Providing incentives to groups rather than individuals has proved more successful. Forest protection funds are a positive influence in improving COHDEFOR relations with selected communities. For example, 24 vigilantes in 15 communities were hired to protect the forest from fire and these funds are used for community projects. Small enterprise development, improving income levels by starting small businesses, has not been operative long enough to derive any real conclusions about its ultimate success.
21. In lieu of continued USAID/Honduras support in credit, a stronger emphasis should be placed on technical courses provided by short-term experts. This need is reflected in continuing losses in the smaller sawmills due to lack of quality control, poor or no machinery maintenance programs, poor milling practices, and inefficient wood drying processes.
22. AMADHO has been strengthened and FDP inputs have provided an advisor who has helped develop an action plan for the organization. AMADHO has been ineffective in assisting its members with hands-on technical help.
23. FDP has no capability regarding improving traditional practices in range management.

SECTION X

RECOMMENDATIONS

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SECTION X RECOMMENDATIONS

1. **USAID/Honduras should install a new TA team to develop baseline data for the balance of the project, to monitor the project by providing monthly reports (which has not been done), and to provide the needed on-the-ground training and follow-up evaluation for the timber appraisal system, sale layout, preparation and supervision, road location and construction supervision, etc. The team is needed to assist over half the sawmills in the country, which have made no improvements. Because of the workload to be accomplished and the delay in hiring a TA team the project should be extended until June 30, 1996.**
2. **GOH should eliminate political appointees that have no professional background and build COHDEFOR into a competent professional organization at all levels with incentives for all employees. If this is not accomplished, it would justify a halt to the project because the long-term project objectives will not be met.**
3. **Complete the FDP objective of instituting a residual value appraisal system for pricing standing timber sales. This will go a long way toward encouraging private industry to modernize both its harvesting and milling operations.**
4. **Include in the timber sale contract the requirement for a performance bond to enforce compliance with timber sale contract clauses. If this is not accomplished, it would also justify halting the project.**
5. **Establish an "environmental unit" within COHDEFOR to direct monitoring activities on timber sales and contribute to forest management and extension activities. Also coordinate actions related to the establishment, protection, and management of critical ecosystems within the project area.**
6. **FDP should assist COHDEFOR in determining the allowable annual cut nationwide using the model FMUs as examples.**
7. **FDP should fund a separate forest protection activity to address fire prevention and suppression on a nationwide basis. The education program should include environmental awareness as well. A first step would be an in-depth analysis to determine needs and costs.**
8. **Provide additional and continuing technical assistance to that segment of the industry that has not made changes in their operations. Continue to support with technical assistance that portion of industry that has made changes.**
9. **FDP should publish and distribute COHDEFOR technical assistance manuals.**

10. **FDP should establish a model logging unit to demonstrate environmentally sound harvesting and roading practices and to introduce a uniform cost accounting system for the industry. This unit could also function as a teaching example for the timber appraisal portion of the new standing timber sale program.**
11. **Further implement an environmental education program involving public at large, forest industry, students, and the communities directly affected by project activity.**
12. **FDP should closely monitor transportation maintenance and allocation and provide additional vehicles and motorcycles to timber sales supervisors and to social promoters, where necessary.**
13. **Provide male social promoters with more training so as to increase their effectiveness in working with both genders.**
14. **Strengthen ESNACIFOR, make an in-depth analysis of the school to determine its needs, and assist it accordingly. This is particularly important as the school becomes independent. Bring it back into the FDP as a primary training vehicle.**
15. **FDP should provide additional support, training and supervision to the timber sale program nationwide.**
16. **FDP should continue to provide short-term technical assistance in the form of short courses for industry and COHDEFOR.**
17. **One of the TA team members should be a forest industry expert with hands-on ability to work out of AMADHO's office in conjunction with the COHDEFOR technical assistance unit.**
18. **The FDP needs to provide a capability regarding traditional practices in range management within forested areas.**

SECTION XI LESSONS LEARNED

Overall, the FDP corresponds well with the aims and strategies of current Honduran development policies. The broad objectives of FDP, as conceived four years ago, continue to be highly appropriate in the present national context. Lessons learned include:

- Concerning the AID technical assistance team, it is apparent that the individual, not the parent organization, is the key to success.
- The integrating of projects in the project area of La Unión, for example LUPE and FDP, was a mistake. The LUPE team was supervised and administered by both projects—people need only one boss.
- Although many in COHDEFOR and the industry initially resisted the new timber sale program, project execution at the technical-field level was good and both groups have responded very positively. Response to technical assistance at the sawmill level has been positive. The lesson learned is that if hands-on expertise is observed, it can influence change.
- Team leaders who do not set goals and manage by objectives fail to provide necessary baseline data and adequate project monitoring, such as no monthly, quarterly, or annual reports.
- In the project component concerned with the reorientation of COHDEFOR's management segment, the specific purpose could have been more clearly defined. Effectiveness of management on a top-down scale was apparently not perceived as significant or was dealt with indirectly through emphasis on procedural matters.
- The importance of the managerial effectiveness objective was not emphasized or communicated throughout COHDEFOR. For a policy to be implemented it must be known and understood by all.
- No one of executive rank was given the responsibility of monitoring the managerial effectiveness objective and reporting this to top management. Without someone in charge with authority to act, little can be accomplished.
- The sense of responsibility of middle-lower levels should not be underestimated. In the FDP, all procedural project improvements were achieved by these levels and these individuals are still working for overall improvement in administrative procedures.

- **The USAID/Honduras technical advisor to the FDP needs to spend more time on the project—it is a full-time responsibility.**

SECTION XII
PROPOSED IMPLEMENTATION PLAN

To implement the recommendations of the mid-term evaluation of the FDP it is important to engage a long-term technical assistance team as soon as possible. The remaining project time should be extended until June 1996, which will allow AID six months to recruit the team and give it four more years to accomplish the goals of the project. The selection of the team should be among candidates who are committed to work in Honduras for four years. This implies cultural sensitivity and willingness to communicate in Spanish. The technical abilities of those selected should be without question. See annex I- technical assistance team requirements. The following exhibit illustrates a proposed plan of implementation.

EXHIBIT-PROPOSED IMPLEMENTATION PLAN

Major Implementation Actions	Project Activity	Responsible Party	Estimated Time of Initiation	Target Completion Date
Contract for TA team TA team arrives in country • Procurement of vehicles and equipment (motorcycles).	All activities	AID-COHDEFOR	Dec. 91/Feb. 92	March 1992
	All activities		April/June 92 Jan 1992	LOP June 1992
<u>Activities - Year 4</u>				
<ul style="list-style-type: none"> • TA develops detailed work plan Evaluation plan developed Training plan prepared • Baseline data collected for purposes of final evaluation; data requirements established by COHDEFOR, TA, AID • Continuation of training of COHDEFOR personnel in standing timber sale preparation and administration • Preliminary guidelines for enacting the residual value stumpage appraisal system to complete the standing timber sale program • Design logging model Purchase equipment Set up model in Salama FMU <p>Establish an environmental unit within COHDEFOR</p> <p>Continued T.A. to forest industry in form of short courses-short term consultants</p> <p>Assistance to industry through economic analysis and preparation of loan requests</p> <p>Year end evaluation and annual work plan for 1993 prepared</p> <p>nationwide educational/public campaign</p>		TA-COHDEFOR	June 1992	August 1992
		TA-COHDEFOR	June 1992	August 1992
		TA-COHDEFOR	June 1992	August 1992
		COHDEFOR-TA	June 1992	August 1992
		TA-COHDEFOR	June 1992	LOP
		TA-COHDEFOR	June 1992	August 1992
		TA-COHDEFOR	July 1992	July 1992
		AID	August 1992	Dec. 1992
		TA-COHDEFOR	Dec. 1992	LOP
		COHDEFOR-AID-TA	June 1992	LOP
	TA-AMADHO-COHDEFOR	June 1992	LOP	
	TA-AMADHO	August 1992	LOP	
	TA-COHDEFOR-AID	Dec. 1992	Annually-LOP	
	COHDEFOR-TA	Continuation strengthening	LOP	
<u>Activities - Year 5</u>				
<ul style="list-style-type: none"> • Implement new pricing procedures for standing pine timber-nationwide 		Forestry Dept. COHDEFOR	July 1993	LOP
<u>Activities - Year 8</u>				
<ul style="list-style-type: none"> • Carry out project and evaluation • Close out contracts with LT and ST technical assistance 		TA-AID	February 1996	April 1996
		AID	June 1996	

A. Budget

Element	<u>Units</u> (in person-months)	<u>Value</u> (in millions)
Technical assistance:		
Long-term		
Team Leader/Forest Mgt. Spec.	48	
Logging engineer	48	
Timber sale specialist	48	
Lumber Mfg. specialist	48	
Management consultant	48	
Total	240	\$ 3,300
Short-term		
Marketing specialist	12	
Sawfiler	24	
Wood drying specialist	24	
Timber falling expert	24	
Skidder/tractor operator	12	
3-man cable yarding crew	36	
Timber sale specialist	24	
Management consultants	12	
Environmental component	21	
Total	189	\$ 2,200
ESNACIFOR (strengthening		\$ 1,300
Training-local		1,300
-Os		700
Vehicles		300
Equipment		600
Buildings		200
Project Management		350
Small for-industry		300
Roads		1,500
Incentives		350
Model logging equipment		500
Subtotal		\$ 11,900
Fire protection project		3,000
Total		\$ 14,900
Fire protection project:		
Equipment		1,000
Technical assistance and training		1,000
Nationwide education program		1,000
Total		\$ 3,000

B. Environmental Action Plan

This plan is designed to enable the FDP to meet its environmental objectives, to ensure proper implementation of mitigating measures, and to continue promoting environmentally sound forest management practices.

- **Environmental Unit.** It is critical that the FDP institutionalize a team composed of initially two and increased gradually to four professionals. Currently only one person is assigned to this activity and is overwhelmed by the workload. This team will direct monitoring activities, contribute to forest management and extension activities, coordinate educational activities, establish community-based interest groups, and coordinate actions related to the establishment, protection, and management of critical ecosystems within the project area.
- **Technical Assistance/training.** To meet staffing and training requirements, an initial input of external technical assistance is required to help the team get started. Twenty-one person-months over the remaining four years of the project is anticipated, at a maximum expense of approximately US\$284,000.
- **Components of the Action Plan.** These consist of forest management, protected area management, and environmental education/forestry extension.

The forest management component will integrate environmental consideration in management practices, including selection of harvest areas, road location, and logging activities. The purpose is to support the standing timber sale system and incorporate a monitoring system that will identify environmental impacts, their source and magnitude, and demonstrate alternative techniques to improve impact mitigating procedures.

The protected area management component will oversee the planning and management of the La Muralla and El Armado wildland refuges, and support and assist COHDEFOR's activities related to the planning of a national system of wildland areas. This component will also coordinate training for project personnel on matters related to biological conservation within the areas and in buffer zones. It will also coordinate scientific activities in support of protection and proper management and help induce the participation of local communities in the protection and proper use of resources of the protected areas and their buffer zones.

Environmental education/forestry extension is a vital component of this plan. It will coordinate and supervise the generation, distribution, and effective application of educational materials and programs. This component also assumes the responsibility of organizing and coordinating training activities of project personnel related to environmental protection, education, and agroforestry extension. The personnel in charge of this component should work closely with the project's social promoters and the small business enterprises component of the FDP to identify common purposes and strategies and work them more effectively.

The "environmental unit" will require external monitoring on a periodic basis. It is recommended that the FDP involve the USAID regional environmental officer as required by the project paper, or alternatively contract with a specialist to monitor the environmental component of the project. This activity should be conducted over the life of the project at regular intervals—i.e., three times a year for a duration of two weeks each visit.

ANNEX A

STATEMENT OF WORK

CHEMONICS

**5000 M St., N.W.
Suite 500**

**Tel: (202) 466-5340 or 833-1176
Fax: | 331-8502**

STATEMENT OF WORK

I. BACKGROUND

The United States of America and the Republic of Honduras signed a Project Agreement on December 29, 1987 to implement the Forestry Development Project (522-0246).

The purpose of the Project is to improve the management and sustainable productivity of commercial pine forests and the efficiency of industrial conversion and marketing of wood products. The Project addresses one of the most critical problems facing Honduras, the rapid depletion of the country's forest resources and the parallel decline of the lumber industry, leading to substantial environmental impacts. Over the past 20 years, the broadleaf forests have declined by approximately 50 percent, falling from 4 million hectares to 2 million hectares. During the same period, the volume of pine forests has been reduced from 48 million cubic meters to 28 million cubic meters. Since 1978, lumber production has declined from 260 million board feet to about 180 million board feet per year. If the forest depletion trend is not reversed, in less than two generations there will not be sufficient resources to sustain the commercial wood product industry, leaving thousands of families without employment and causing a severe hardship on the nation's economy. Moreover, the environmental quality and productivity of the country will be irrevocably and severely damaged.

The project consists of three integrally related components: (1) institutional reorientation of the Honduran Forestry Development Corporation (COHDEFOR); (2) improved forest management of selected resources; and (3) strengthening of the private sector forest industry. Under institutional reorientation, the most important innovation is the change in the practice of

selling timber in order to better use the existing resource and create the conditions for forest protection and regeneration. The other areas of involvement under this component control lumber exports and managerial efficiency.

The forest management of selected areas emphasizes rational utilization, fire protection and natural regeneration. The local population is involved in both the management activities and the utilization of the forest. Agricultural stabilization, agroforestry and range management are also considered as part of the program in order to achieve the integrated development of the area.

The private sector strengthening component is composed of technical assistance, training, and credit to support improvements in the productivity of the wood products industry.

The planned life of project is seven years, with a Project Assistance Completion Date (PACD) in December of 1994, with a total cost of \$32 million. The A.I.D. contribution consists of \$20 million (\$15,959,000 in grant funds and \$4,041,000 in loan funds). The Government of Honduras (GOH) contribution, cash and in-kind, consists of slightly over \$12 million. As of March 31, 1991, \$17,919,000 has been obligated (\$14,385,000 in grant funds and \$3,534,000 in loan funds), and cumulative expenditures have been \$10,453,653.

Within the past year, the GOH has implemented far-reaching monetary and fiscal reforms including adjustments to its exchange rate and tariff regimes. In response, the A.I.D. Mission is moving towards a program directed at removing sectoral policy constraints and which emphasizes trade and investment, democratic institutions, and the environment.

The study required in this work order will independently evaluate the Project's success to date; the appropriateness of project design given recent economic changes, the new Economic Assistance Strategy for Central America, the growth of awareness and concern in the United States of worldwide environmental issues such as global warming and tropical forest depletion; and will recommend options regarding future project implementation.

II. TITLE

Midterm evaluation of the Forestry Development Project, 522-0246.

III. OBJECTIVE

The Project Purpose is to improve the management and sustainable productivity of commercial pine forests and the efficiency of industrial conversion and marketing of wood products. The key objective of the evaluation is to evaluate the Project's accomplishments to date, and its success in achieving the Project Purpose as measured through the verifiable indicators.

The evaluation will test assumptions regarding the project design and will recommend project design and/or implementation changes. In this regard, the evaluation will examine the Project's contribution to important higher level goals, such as the preservation and sustainable use of the natural resource base, as described in the Environmental Assessment of the Project and in the Project Paper.

IV. Methods and Procedures

The evaluation team will review all relevant documentation including the Project Paper, A.I.D. Project files and baseline data available at COHDEFOR, and will interview GOH, FASA, and USAID personnel. The team will develop and the report will indicate (1) a full understanding of the Project, and (2) the basis for this full and independent analysis. The evaluation will focus on

current implementation status, outlook (i.e., attainment of project purpose and outputs, project administration, etc.), and the impact the Project is having on the environment. It will make recommendations regarding lessons learned, the future of the Project, and on the long-term effects on the environment with and without U.S.G. support for forestry activities in Honduras.

The evaluation will examine the continued appropriateness of planned outputs now that some basic economic conditions and sectoral policies have changed, and based on experience in executing the Project to date. The evaluation will examine (1) assistance to the commercial forestry industry and whether or not it is essential to achieving the Project Purpose, (2) the magnitude of the environmental problem in Honduras related to forestry, the Project's contribution to environmental conservation and whether or not this area merits adjustment, including the introduction of hardwoods into the Project, and (3) the relationship of the Project to the Mission's priority on increasing exports of manufactured wood products. Other specific areas are articulated in succeeding sections.

V. STATEMENT OF WORK

A. General Tasks

The contractor's team will analyze and review project documents and records, baseline data, verifiable indicators, purpose and goal, in order to get a basic understanding of the Project's objective, philosophy, implementation plan and accomplishments.

In all of the areas that will be evaluated, the contractor will analyze the following issues as they relate to project progress:

- a. What are the prevailing forest and marketing conditions in similar geographic areas that do not receive project support?
- b. What has been the effectiveness of the technical assistance team in organizing, planning and executing project activities?
- c. What capacity has been developed within CONDEFOR to carry out the required project activities?
- d. What is the relationship and coordination of project efforts with the other offices of CONDEFOR?
- e. What is the level of political will and capacity of the Government of Honduras to support project activities and relevant policy changes?
- f. Have the Project's environmental impacts been consistent with Environmental Assessment guidelines? Should the Project place more emphasis on environmental protection, such as wildlands and reserve management?
- g. Is the complexity of the project an issue; i.e., is the project organization and/or the structure of components having a negative impact on project expenditures or achievement of the Project Purpose or outputs and are project design changes needed?

For all of the areas analyzed, the contractor will evaluate the present situation and make specific recommendations. Recommendations should be prioritized with major recommendations shown in the body of the report, and secondary recommendations listed in an annex, and should include specific objectives and actions that are to be taken, as well as the inputs required and the cost of implementing the recommendations. The contractor will also provide a separate chapter on the Project's environmental impacts which will bring the Project's Environmental Assessment (EA) up to date based on current knowledge and the prognosis for the future. In addition, environmental issues and impacts will be integrated throughout the body of the report. Women-in-Development issues will also be covered under this evaluation to determine women participation in project activities, any constraints for their participation (cultural, lack of adequate promotion, extension services, etc.), and benefits from the project. The evaluation will also examine the impact the project has

B. Specific Tasks

1. Standing Timber Sales System

The evaluators will devise a sampling methodology and will analyze an appropriate number of timber harvesting operations, stratifying the sample among operations under the new timber sales program and those under the traditional method, to compare the economic and financial effectiveness and environmental impact of both systems. To the extent data is available the contractor may find it useful to analyze historical data regarding commercial extraction of pine forests.

The contractor's report will contain observations, quantitative and qualitative data, and analyses of such data regarding both systems on the following issues:

- a. What is the amount and quality of material remaining in the forest cutting areas, both cut and standing?
- b. What are the losses due to felling and bucking techniques?
- c. What is the quality of logging roads, relative to specifications set out in project documents?
- d. What are the soil conservation and erosion control techniques being put in practice, and what is the environmental impact of both systems?
- e. What is the cost comparison of the traditional and new standing timber sales system? The comparison must indicate the cost to CONDEFOR and to the private wood industry.
- f. What conclusions can be drawn from an economic analysis of both systems?
- g. Is the amount and effectiveness of forest supervision under each system adequate?
- h. Has the quality control of the new timber sales system assured accurate timber volume assessments?
- i. Do women participate in these two systems activities? If not, what are the constraints?

The contractor will evaluate the Project's future plan for the implementation of the program nationwide, in terms of COHDEFOR'S commitment to the system and the availability of vehicle, equipment and technical resources to maintain the system in operation, at an acceptable level of efficiency and quality control.

2. Forest Management in La Unión

The Project activities in the management area of La Unión have been carried out only in part of the area. The contractor will establish a methodology to determine the magnitude and effectiveness of various technologies of the Project's impact in the area and establish comparisons between the areas with Project intervention and those areas still unaffected by the activity. The contractor will evaluate Project activities in the area to determine technical and socio/economic benefits gender-disaggregated as appropriate, drawbacks and cost effectiveness, based on baseline data and the results of the comparison analyses. If gender disaggregated data is not being collected, the Contractor must make a recommendation, specifying indicators. These analyses will characterize the following specific areas:

- a. What has been the effectiveness of Project-related initiatives to improve traditional practices in cattle grazing and range management in the forested areas?
- b. What are the results of a comparison of traditional and improved hillside agriculture activities in the area, including estimated farm budgets with and without the Project, for most important crops? Is there a difference for women-headed households?
- c. What effect has project intervention had on the local economy, including average income of local population, major sources and distribution of the income by economic strata and sex?
- d. What effectiveness have the economic incentives had in promoting project activities and improving the local economy?

- e. What has been the amount and type of forest management activities during the last five years, including estimates of the quantity and cost of work, number of persons involved (by gender) and income generated?
- f. What has been the impact of the program on "traditional" or non-commercial use of the forest for fuelwood, or other family or community needs? How has this affected women daily activities?
- g. What are the results of a comparison of the area's forest management activities with the other management areas being implemented by COHDEFOR, in terms of timber yield, sustainability, income generated, and/or other impact indicators established by contractor?
- h. What has been the effect of the Project's interventions in the areas of tree regeneration and in intensive fire protection and controlled burns?

3. Reorientation of COHDEFOR

The contractor will review conditions prior to Project implementation and present institutional, managerial, human resource, financial and other conditions in order to analyze the improvement and/or deficiencies that have occurred during the life of the Project.

The study will list the procedures and regulations proposed by the Project, will analyze their adequacy, and will examine the stage of implementation of each proposal. The study will assess how well the Project is moving toward the objective of the reorientation of COHDEFOR. It will identify the accomplishments, impediments and draw conclusions regarding lessons learned. The study will analyze the relevance of the Project interventions in this area, their degree of effectiveness in improving COHDEFOR's efficiency, and the level of acceptance and commitment to change by the institution, and will propose concrete steps required for full implementation by COHDEFOR.

4. Assistance to the Forest Industry

a. Logging

The contractor will establish a methodology and sample for evaluating operations using the new timber sales program and "traditional commercial practices". This methodology will include field work and will be divided among operations using the new timber sales program and those under the traditional method in order to establish verifiable comparisons, making reference to baseline data and project indicators.

The contractor will evaluate logging practices under each system and indicate the areas where improvement is necessary. The evaluation will contain observations and an analysis of quantitative and qualitative data regarding the following issues:

- (1) What is the amount and quality of material remaining in the forest cutting areas both cut and standing? This will include observations and analysis regarding the genetic quality of trees left standing.
- (2) What is the quality of logging roads?
- (3) What are the environmental impacts of both types of logging practices, and what are the projections for the future regarding sustainability, etc?
- (4) What are the losses due to felling and bucking techniques?
- (5) What is the amount of harvest being carried out under each system over time?

b. Sawmilling Practices

The contractor will establish a methodology and sample to determine changes in sawmilling practices over the past several years, the

effect of Project inspired changes in timber sales, forest management, logging and the effectiveness of the activities being carried out and the results obtained by the technical assistance unit of the Forestry Project. The contractor will analyze the impacts the Project has had on the sawmilling industry. The forest industry that has received project support must also be analyzed in order to determine if the assistance is well received and what actions have taken place as a result of the Project's assistance.

The sampling methodology will be capable of thoroughly evaluating manufacturing results of an appropriate number of sawmilling operations, covering their processes, from delivered logs through final saleable products. Some of the sawmills sampled should receive logs from forests being utilized under the new timber sales program, and some should work with logs harvested under the traditional method. Comparative quantitative and qualitative data (baseline and evaluation-generated) regarding at least the following indicators should be analyzed and reported:

- (1) What is the average recovery, board feet/cubic meter, per log diameter class?
- (2) What is the amount of waste in sawmilling, planing and drying operations and what is the source, type of waste, and progress toward utilization?
- (3) How much size variation tolerance, and progress in quality control is being achieved?
- (4) What are the results of an analysis of log size and quality being received by the sawmills including distributions according to diameter?

- d. Should the Project place more emphasis on wildlands and reserve zone management in view of CONDEFOR's recently expanded mandate in this area?
- e. Is the Project's original Environmental Assessment still valid?

C. Qualifications of Team

The Project will be evaluated in the areas of timber sales, forest management (including agriculture and range management aspects), administrative support to CONDEFOR, assistance to the forest industry (including credit and small industry components), environmental effects and training. Women-in-Development (WID) will be treated explicitly in all areas. Data will be compiled and analyzed by gender (contribution to the project, and benefits).

This evaluation will require a team of six individuals, all of whom will have English/Spanish fluency at the FSI R3/S3 level, as well as prior experience in Central America and in evaluation of forestry or natural resource-related bilateral development projects. **Specific requirements are as follows:**

- a. Team Leader/Forest Management Specialist (60 workdays). Requires at least ten years field experience in managing large evaluation teams, prior evaluation of forest management activities in Latin America, design experience in forestry management projects, pine forest management activities, and a B.S. degree in forestry.
- b. Wood Industry Specialist (25 workdays). Requires at least 10 years experience with wood harvesting and processing activities, including pine lumber and secondary product activities and evaluation experience.

- c. Public Administration Specialist (25 workdays). Requires 8 years experience in the private sector with some public administration experience, especially with parastatal businesses preferably in the forest sector, including knowledge of budgeting, financial analysis, control procedures and credit administration.
- d. Rural Sociologist (30 workdays; may be local hire). Requires ten years experience in managing and/or evaluating agricultural or integrated rural development activities in developing countries, including expertise in hillside cultivation and pastures, WID, and social forestry.
- e. Economist (15 work days). Requires at least five years experience in economic analysis of Natural Resources Management Projects and Ph.D. level studies.
- f. Environmentalist (30 work days). Requires at least ten years field experience in forest conservation and management, demonstrated experience in reviewing and preparing Environmental Assessments and a Ph.D. in Environmental Sciences.

The timing of travel for positions b. through f. will be up to the contractor, but must be within the time frame of the 60 days provided for the team leader. All travel will be consistent with US Government travel regulations and any restrictions which may be in effect at the time.

The Team Leader will be responsible for the writing, editing and submission of the draft and final reports.

VI. REPORTS

The evaluation team will fulfill the following reporting requirements:

- A. After the first week on site, a draft workplan and outline of the report, to include the methodologies proposed for generating any primary data requirements (such as sampling and stratifying procedures) will be presented orally and in writing to USAID for discussion and approval.

B. No less than twenty work days prior to departure, the Team Leader will present five copies of a draft report in English to the USAID Project Manager. USAID/Honduras will review the draft and provide comments within ten work days. Prior to departure, the evaluation Team Leader will present 14 copies of the final technical report which addresses USAID comments. This report will contain the following:

1. Executive summary:

Containing development objectives of the project or program to be evaluated, purpose of the evaluation, study method, findings, conclusions, recommendations, lessons learned, and comments on development impact. The Executive Summary must be a self-contained document.

2. Project identification data sheet.

3. Table of contents.

4. Body of Report: The body of the report should be no more than 40 pages and provide the information (evidence and analysis) on which the conclusions and recommendations are based. The body of the report will include the purpose of the evaluation, the economic, political and social context of the project, team composition and the role it played in the evaluation, methodology, findings of the evaluation organized by subheadings (any deviation from the SOW must be explained), conclusions, recommendations, lessons learned will be in separate sections. Conclusions will be supported by findings, and recommendations will be based on conclusions. Conclusions and recommendations will be organized by subheading, the conclusions and recommendations should be short and succinct. Lessons learned should describe the causal relationship factor that proved critical to project success or failure, including necessary political policy, economic, social and bureaucratic preconditions within the host country and A.I.D. These should also include discussion of the

techniques or approaches which proved most effective or had to be changed, and why. Lessons relating to replicability and sustainability must also be discussed. Detailed information/justification should be provided in the annexes with references to these annexes in the text where appropriate.

5. Proposed revised implementation plan, budget, logical framework, and Environmental Assessment.
 6. Appendices, including scope of work, list of individuals and agencies contacted, documents utilized, etc.
- C. In addition to the above, the evaluation Team Leader will complete the Abstract and Narrative sections of the A.I.D. Evaluation Summary Form.
- D. Within 30 days of submission of the final report in English, 5 copies of a Spanish translation of parts 3 and 4 (Table of Contents and body of report) will be submitted to the Mission.

VII. RELATIONSHIP AND RESPONSIBILITY

The contractor shall report directly to the Director of the Office of Rural Development or his designee and will work on a day-to-day basis with the Forestry Project Officer, the Forestry Advisor, the Forestry Project Technical Assistance Team and the head of CONDEFOR's Forestry Project Unit.

VIII. WORK DAY ORDERS

185 work days are ordered; the contractor is authorized up to a six-day work week with no premium pay.

IX. DUTY POST

Tegucigalpa, Honduras and travel within Honduras.

X. LOGISTIC SUPPORT

CONDEFOR agrees to give the team full access to any relevant information or data it might need and provide office space. The team will collaborate closely with CONDEFOR's management staff, particularly with the Forestry Project 0246 and the Forestry Department. For maximum efficiency, the team will provide its own vehicle and cover its own secretarial, translation and vehicle operating expenses.

XI. DATA RESOURCES

Upon arrival, the team will be presented with a series of documents, both from USAID and CONDEFOR, for review and reference. This will include at least the following:

1. FDP Project Paper, with annexes.
2. FDP Project Agreement with Amendments.
3. CONDEFOR documentation prepared in compliance with conditions precedent.
4. CONDEFOR Project reports.
5. Reports prepared by USFS TA team and S-T advisors.
6. Honduras Country Environmental Profile and Perfil Ambiental 1989.
7. Project Semi-Annual Reports.
8. Documentation on Credit Program
9. Current FDP Implementation Plan, Budget and Log Frame.

ANNEX B
DOCUMENTS REVIEWED

1. **Alternativas de Incremento por Tronconaje 6-11-90**
2. **Complemento de los Compromisos del Gobierno de Honduras sobre el Subsector Forestal para la Misión de Evaluación del Préstamo de Ajuste Sectorial Agrícola (AGSAL)**
3. **Contrato de Compra-Venta de Madera en Pié**
4. **Final Report on Project Training-Linda Lynen 8/1/91**
5. **Perfil Ambiental de Honduras 1989-English Summary**
6. **Plan de Implementación AGSAC Subsector Forestal**
7. **Plan de Manejo Forestal-Area No. 1-La Unión**
8. **Planificación de Ventas**
9. **Project Agreement-Honduras y USA 12-29-87**
10. **Project Paper-AID Prog. # 522-0246**
11. **Project Reports By COHDEFOR**
Feb. 1, 1988 - Sept. 29, 1989
April - June 1990
July - Sept. 1990
Nov. 1 - Dec. 31 1990
Oct. - Dec. 1990
Jan - March 1991
12. **Short-term Technical Assistance Reports-14 in all**
13. **Situación Actual de la Venta de Madera en Pié, Logros y Problemas**

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1. Boone R Idney, "Lumber Drying/Kiln Drying," Lumber Drying Specialist, COHDEFOR/AID, Honduras, March, 1990.
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4. COHDEFOR, *Boletín Estadístico*, Departamento de Planificación, Proyecto Hon/88/003, FAO/PNUD, Tegucigalpa, Honduras, 1980.
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ANNEX C
PERSONS INTERVIEWED

Alvaréz Ramón, USAID
Archaga Luis Fernando, COHDEFOR
Alvares Ramón, liaison officer PDF-USAID
Antúnez Angel Roberto, social promotor
Argueda Rubén, production manager, Promot Industries in Talanga
Barborak Jim, Paseo Pantero
Betancourt Jorge, Cuerpo de Paz
Barahona E. Carlos, Forest Protection, PDF-La Unión
Barahona Lizardo, legal advisor
Barborak Jim, wildland mgt. spec., Universidad para la Paz (Costa Rica) and "Paseo Pantera" representative
Barrientos de Guillén Carolina, incentives coordinator
Bennaton Abraham, executive president, Honduras Plywood, S.A.
Betancourt Jorge, natural resources coordinator, Peace Corps
Bueso H. Arnaldo, timber sale administration, PDF-La Unión
Berberich Karl, owner, MAHPROSA, wood preservation facilities
Carlos, AMI, Ojojona coordinator (COHDEFOR)
Carranza Gabriel, chief accountant
Cruz Guerrero Arnulfo, executive director, COLPROFORH and former PDF Environmental Officer
Cabrera René Roberto, head, COHDEFOR, Forest Industries Department
Carias Duval, owner, Promat Industries in Talanga
Cortés Luis, general manager of TRAMAVEL
Davis Paul, USAID
Durán Hugo, Technical Assistance Unit, COHDEFOR
Durón Ramos D. Hugo, Chief, Agricultural Program
Escoto Danilo, COHDEFOR
Erazo Ana Maria, COHDEFOR/Juticalpa and GEO (Grupo Ecológico de Olancho)
Escoto Umanzor Danilo H., project director, FDP
Espinoza Tulio Hernán, production manager, Tracoma, broomhandle factory
Flores Gloria Lorena, COHDEFOR
Fortin Rolando, technical assistance in timber sales/wood industries
Gamero René, COHDEFOR
Gandy Robert, Tropical Research and Development
Guevara Jorge, PNJD
Guillén Leonel, COHDEFOR
Galeano Muños Edas, chief, Protected Areas United, COHDEFOR
Griffin Katherine, P. Corps volunteer, La Muralla
Gatlin John, owner and general manager, Yodeco Co. (Yoro)
Gutierrez Gabriel, general manager, Aserradero "El Bijao"

Hearn Peter, liaison officer, LUPE-USAID
Hernández Oscar, agronomist responsible for agroforestry
Jordan Jack, AID project officer
Jorge, COHDEFOR/Distrito Central, Timber Sale Admin.
Lara René G., chief, La Unión Management Unit, PDF-COHDEFOR
Lanza Mariana de Jesús, social promoter
Lobo Fredy Roberto, social promoter
Lamas Salvador, owner and president, Aserradero José Lamas
Lima Ricardo, owner-president, MADORSA
Maradiaga Enrique, coordinator TR&D component, PDF
Medina Roberto, COHDEFOR
Mejia Ethelinda, manager, Finance/Administration Department
Molina Alejandrina, Personnel COHDEFOR/AID Project
Moncada Jose Reynaldo, assistant chief, DP Department
Molina Mateo, COHDEFOR
Muñoz Edas, ESNACIFOR
Matamorros Henry Omar, social promoter
Matero Molina Edwin, technical advisor to general manager, COHDEFOR
Merlo Medina Livio R., timber sale administrator, PDF
Morales Gustavo A., director, ESNACIFOR
Maradiaga Enrique, Tropical Research Development
Martinez José Alfredo, COHDEFOR forestry sales technician
Medina Roberto, AID training officer
Nuñez Rigoberto, Técnico Forestal Dasónomo Principal de Honduply
Peña Pavón Norma, COHDEFOR
Pérez R. D. Noe, in charge of preparing Salamá unit Management Plan.
Pineda Oscar de Jesús, social promoter
René Serrano, AMADHO
Reyes Aida, Honduran American Chamber of Commerce
Reyes de Maduro Sonia, Honduran American Chamber of Commerce
Rey Manuel, biologist, assistant administrator, La Muralla W.R.
Romero Gloria Maria, social promoter
Rivas Miguel Angel, production manager, Bijao, Sawmill, Talanga
Rivera Lisandro, técnico forestal Dasónomo and asistente de Honduply
Rosario Rafael, AID project officer
Salazar A. Miguel, chief, Forest Protection Department, COHDEFOR
Serrano René, technical advisor, AMADHO
Sinclair Saul, manager, COHDEFOR Forestry Department
Taylor Winston, production manager, Aserradero José Lamas
Torrealba Orlando, financ. analyst infraestructure, IDB-Hond.
Tovar Edy, partner, Tovar Lopez y Asociados
Trochez Carlos Alberto, Payroll Administration
Urrutia Juan Pablo, Privatization Commission
Valle Luis, technical assistance advisor in COHDEFOR
Velasquez Luis, owner, Aserradero "San José" and TRAMAVEL
Villatoro Carlos, chief internal auditor

Weelock Jerry, administrator, La Muralla W.R.

Weuenschwander Alquiles, FAO

Zelaya Carlos Orlando, owner, Tracoma, a broomhandle factory in Talaga

Zelaya Jorge, administrator, COHDEFOR/AID Project

Zelaya Jose Francisco, personnel manager

Zelaya Manuel, representative of Olancho Province in the National Congress and President of AMADHO

POLICY AND ECONOMIC ASPECTS:
MID-TERM EVALUATION OF FORESTRY DEVELOPMENT PROJECT, HONDURAS

[ANNEX D]

Jan G. Laarman
Chemonics International

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I. POLITICAL, MACROECONOMIC, AND SECTORAL CHANGES SINCE PROJECT DESIGN AND APPROVAL

The Project Paper (PP) for the Forestry Development Project (FDP) was prepared in late 1987 on the basis of conditions, assumptions, and outlooks prevailing at that time. This first section identifies and interprets changes in political, macroeconomic, and sectoral conditions during the last four years. This has implications for FDP's component on reorientation of COHDEFOR (functional, structural, and budgetary aspects), on the direction of forest management in Honduras, and on the economic status of the country's forest industries.

A. Political Changes Affecting Forestry

1. Transition in COHDEFOR's Functional Role

When the PP was signed four years ago, COHDEFOR was already moving in the policy direction of shifting its functional priorities away from wood manufacturing and exports towards forest protection and management. The intent of FDP has been to assist COHDEFOR make the major transition from parastatal wood processor and export monopolist--functional roles in which COHDEFOR has been notably deficient--into an on-the-ground steward of the forest resources of Honduras.

According to COHDEFOR's "Policies, Measures, and Priority Strategies/Actions" for 1986-1990, COHDEFOR intended to place major emphasis on: (i) forest management and integrated forest use in selected priority areas of the country, (ii) integration of the rural population into forest protection and reforestation, (iii) assistance to the private sector in better utilization of forest resources, and (iv) diversification of forest-related commercial activities (PP, p. 75). This stated emphasis on multi-purpose resource management and rural participation was accompanied by demonstrable evidence of COHDEFOR's willingness to set aside its commercial orientation in favor of other functional goals.

Hence in 1986-87, COHDEFOR already had taken several steps towards divesting itself of its subsidiary companies. Secondly, COHDEFOR had initiated the process of permitting private participation in sawnwood exports. Also, by this time COHDEFOR had made the decision to sell pine timber on the basis of standing volume in the forest rather than scaled volume arriving at processing plants. Together, those three initiatives represented bold strategic steps towards restructuring Honduran forestry along lines recommended by the United States Presidential Agricultural Commission in 1982 (PP, p. 74), and subsequently reinforced by analyses for USAID/Honduras carried out by Winrock International (Winrock International 1984a, 1984b, 1984c).

Particularly under the administration of President Rafael Leonardo Callejas, these efforts have been continued, reinforced, and made increasingly visible. Within Honduran forestry, the interrelated themes of privatization, market orientation, and competent resource protection and management have very strong political support at top levels of government. Thus the current policy environment is highly favorable for the philosophical content and general objectives of FDP. Yet FDP's intended outputs and specific activities need to be reviewed and either validated, modified, or discarded in relation to the continuously evolving political and economic framework of Honduran forestry. The following subsection identifies a few of the most important recent evolutions in relation to FDP.

2. Recent and Pending Developments

Current policy emphases in Honduran forestry can be inferred directly or indirectly from recent meetings, documents, and observed activity. Key documents include: (i) COHDEFOR's "La Política Forestal de Honduras de 1990," (ii) COHDEFOR's report at the most recent meeting (February 1991) of the Latin American Forestry Commission ("Informe Nacional de Honduras, 1988-1990"), and (iii) COHDEFOR's response to the Inter-American Development Bank and World Bank relative to the proposed Agricultural Structural Adjustment Loan (AGSAL) for Honduras. Recent policy initiatives and proposals are as follows.

a. Sale of standing pine timber

Beginning in 1983, COHDEFOR has been selling pine timber on the basis of standing volume rather than volume logged and extracted. COHDEFOR reports that the proportion of all pine timber sold on a standing basis was 23 percent in 1989 and 74 percent in 1990. This share is 100 percent in 1991 (Duron 1991), presumably to stay at 100 percent for the foreseeable future. Secondly, the price of pine timber was raised in September 1990 from Lps. 12 to Lps. 36 per cubic meter, roundwood volume.

Together, these changes go far towards meeting FDP's "most important innovations" with "fundamental implications on all components" (PP, p. 19). The next logical step of using variable prices to sell timber (based on appraised timber value) has not been introduced to date, despite the existence of analyses proposing how and why this might be done (e.g., Ryburn 1990; Aubert et al. 1990).

b. Export liberalization

Breaking sharply with past policy, COHDEFOR now permits private companies to conduct their own export marketing of sawnwood and other primary forest products. However, due to legal constraints, the official sales channel remains COHDEFOR. Also, COHDEFOR controls export prices. COHDEFOR continues to charge an export tax (or "commission") on these shipments, raising revenue for itself with the inevitable side effect of holding down prices at the level of producers. This export tax has been substantial. For example, in 1990 COHDEFOR generated commissions of US\$2.90 million from sawnwood exports valued at \$13.37 million. That is, COHDEFOR captured 22 percent of export revenues (equivalently expressed, COHDEFOR added a margin of 28 percent to a base purchase value of \$10.47 million).

Recent proposals would (i) phase out COHDEFOR's export tax in graduated steps and (ii) eliminate COHDEFOR's policy of controlling export prices. If this strategy is enacted, it is almost certain to have profound consequences for export competitiveness and private profits in Honduran sawmills. Indirectly, removal of the export tax and the price controls will affect all other wood-processing enterprises, as well.

Issues of considerable economic and policy significance are likely to include: (i) overall increase in the prices received by Honduran sawmills; (ii) increased market demand for sawmill inputs, i.e., capital investments, logs, and labor; (iii) market reallocation of wood between domestic and export markets, as well as between secondary and primary products; and (iv) major implications for fiscal and structural reorganization at COHDEFOR.

c. Divestment of forest industries

When the PP was prepared, its Economic Analysis made no attempt to account for the benefits to Honduras if and when COHDEFOR's subsidiary companies are transferred to private owners. The inefficiencies of COHDEFOR management have produced large losses in these subsidiary companies (originally CORFINO, CASISA, FIAFSA, LOCOMAPA, SEMSA, PROMESA). These companies have ceased operations, and two of them have been divested. The most recent independent audit of COHDEFOR's accounts shows that for year 1990, the remaining subsidiary companies lost approximately Lps. 50 million to be deducted against accounts receivable, and approximately Lps. 19 million to be charged against the asset value of capital investments (Tovar Lopez y Asociados 1991).

As of the end of 1990, the accumulated losses of CORFINO (the single largest subsidiary) were Lps. 122 million, or more than double COHDEFOR's annual budget (Tovar Lopez y Asociados 1991). Total indebtedness of COHDEFOR may be some Lps. 80 million, and current annual debt service may be approximately Lps. 4 million.

Additionally, COHDEFOR is owed approximately Lps. 78 million because of past loans to its subsidiaries, unpaid invoices on sawwood exports, unpaid fines, and other accounts receivable (Flores et al. 1991). Many of these accounts are uncollectable. The figures presented here are merely estimates, given that the independent auditor refused to approve COHDEFOR's financial statements because of inadequate data and inappropriate accounting practices.

The divestiture of GOH companies and improved fiscal management within GOH entities are dual and closely interrelated priorities under the Callejas administration and under AGSAL. Ideologically and financially, the divestiture issue is at least as important now as when the FDP was initiated.

d. Privatization of forests

Under the proposed law on Agricultural Reactivation endorsed by AGSAL, the ownership of forests on private lands would pass from COHDEFOR to the land owners (both individual owners and municipal owners). Perhaps one-half of the country's pine forests would become privatized, according to very rough estimates. In the long run, this transfer of forest ownership to municipalities and individual owners may be one of the most instrumental forces for their protection and management. However, in the short run, the transition is certain to run into difficult conflicts and political volatility.

Principal policy matters affecting FDP include: (i) COHDEFOR's legal and administrative capacity to contribute towards the transfer of ownership in cooperation with the National Agrarian Institute, the National Cadastral, and the municipalities; (ii) demands placed upon COHDEFOR to help develop, inspect, and approve forest management plans on private and municipal lands; (iii) social conflicts that might arise in FDP's project areas should the privatization process lead to the eviction of campesino groups living in what will become private forests; (iv) proportions by which COHDEFOR and private and municipal owners will share timber sales revenues under the new policy; (v) possible opposition to the privatization policy by the established forest industries, whose planned supplies of raw materials may be upset by the transfer of forest ownership; (vi) implications of the policy for the timing and volume of timber available in the market; and (vii) financial impacts of the policy for COHDEFOR's income and budget.

e. Incentives for forestation and forest protection

A law before the Honduran congress would grant incentives to private owners to reforest (or afforest) and protect forests on their lands. This has considerable linkage with the privatization of forests, noted previously, but also exists independently where land ownership is undisputed.

In other countries of Latin America, experience shows that government tax breaks or cost sharing for private forestation raises a large number of concerns about economic efficiency and distributional equity. Issues include cost levels in tree planting, minimum and maximum allocations of GOH resources per applicant, limits on species and locations eligible for government assistance, and a great many other policy and technical matters bearing on the eventual success or failure of the private forestation.

To implement the incentives law, COHDEFOR would be required to develop a managerial system to handle technical, administrative, and financial mechanisms. An interesting policy question is the possible inconsistency between subsidies for forestation in a government otherwise espousing free-market policies and a retreat from subsidies. Ongoing incentives programs for tree planting in Ecuador, Costa Rica, and elsewhere suggest that they are time-consuming to develop and implement, and vulnerable to many abuses. To be successful, the incentives program for Honduras will need to be carefully designed and implemented.

f. Institutional reorganization in COHDEFOR

While reorganization is a natural and constant occurrence in a large agency like COHDEFOR, the scope and magnitude of change may be unprecedented over the next few years. In 1991, COHDEFOR was given responsibility for the management of wildlife and protected wildlands. This represents a dramatic opening for COHDEFOR, an agency previously considered to be almost exclusively focused on timber and wood products. Moreover, COHDEFOR has stated its intentions to assume an increasing role in integrated watershed management in conjunction with municipalities, rural communities, and non-governmental organizations (NGOs). Thus the multiple-use aspect of forestry will increasingly dominate COHDEFOR's formal agenda, even if it takes several years for the agency's organization and projects to catch up with this expanded function.

COHDEFOR also seems increasingly committed to "community forestry" and "social forestry" to an extent not before seen in Honduras. This is reinforced by the recent Municipalities Law, the formal policy of GOH to decentralize power and transfer resources to local levels. Among recent stated efforts by COHDEFOR to move in the direction of a more socially-oriented forestry are: (i) development of a national strategy for silvicultural treatments (e.g., forest thinning) and the collection of pine resin as a means to generate rural income; (ii) attempts to promote efficiency and diversification in small and medium forest-based enterprises; (iii) training of the rural population for forestry work, and (iv) participation of COHDEFOR in inter-institutional arrangements to promote environmental education, to campaign against forest fires, and to encourage tree planting at local levels. These aims surely

existed in 1987 at FDP's inception, but undoubtedly have been rooted more deeply as forestry in virtually all developing countries has moved increasingly in this direction.

g. Tropical Forestry Action Plan

In Honduras, Round Table III of the Tropical Forestry Action Plan (TFAP) was held in early 1988. Both in theory and practice, this marked the beginning of intensified efforts to increase donor funding for Honduran forestry, and to hope to improve cooperation among the different donors.

Presently, COHDEFOR administers 17 different forestry projects sponsored by donor assistance. In 1990, these projects provided about 40 percent of COHDEFOR's funding for operations. The FDP was designed before the TFAP was fully initiated. Hence the fit between FDP and the TFAP for Honduras is an open question. USAID/Honduras has not been active in TFAP to date, although USAID/ROCAP is the lead donor for TFAP activity at the regional level (i.e., Central America and Panama). The extent to which USAID/Honduras does and does not participate in TFAP should be considered in the context of USAID's future structuring and management of FDP.

B. Macroeconomic and Sectoral Conditions Affecting Forestry

1. Macroeconomic Conditions

The Honduran economy is passing through difficulties which directly or indirectly affect the performance of FDP, especially its component on forest industries and its strengthening of COHDEFOR. These macroeconomic issues include a heavy debt burden, pressures to increase government revenues while trimming government expenditures, consequences related to devaluation of the lempira, a recent surge of monetary inflation, and tariff reforms.

a. Debt service and fiscal management

In 1980, service on the public debt was 15.5 percent of GOH expenditures. This share has steadily increased until in 1990 it reached 38.6 percent. The obvious consequence of rising debt service is less budget available for all other purposes. All units of GOH--including COHDEFOR--are under pressure to trim expenditures and enhance revenue. Most effort to date has concentrated mainly on the second objective, and expenditures trimming (e.g., through employment reduction) has been far more sensitive and difficult to achieve.

b. Devaluation of the lempira

After several years of an exchange rate of two lempiras per U.S. dollar, the devaluations in 1990 to as high as Lps. 5.50 per dollar came as a shock--both psychologically and economically--to Honduras. One effect was speculation that the lempira would fall even lower, fueling the black market to buy more dollars. Also, while once exporters were allowed to retain 30 percent of their earnings in dollars, the Central Bank now requires that all dollars be converted to lempiras. Nevertheless, the devaluation provides an enormous stimulus for exporters to earn dollars.

c. Monetary inflation and interest rates

Throughout the 1980s, GOH maintained very strict monetary and credit control to hold down inflation. This successfully contained price levels, and inflation at the consumer level never went over 10 percent per year. However, with the change of government came a major change in economic policy and a large increase in money supply. At the consumer level, prices rose 23 percent between 1989 and 1990, and inflation is expected to stay high between 1990 and 1991. Price increases have been particularly accentuated for wholesalers, importers, agriculturalists, and certain other segments of the economy. While real interest rates were consistently positive (range of 4-10 percent) during the 1980s, the recent surge of inflation suggests that they have turned negative. The effect is to increase the demand for and decrease the supply of the country's loanable capital.

d. Tariff reforms

Honduras has used high tariffs to attempt to foster and protect infant industries from international competition. This has diverted capital into inefficient urban industries at the expense of investments foregone in agriculture, forestry, and other commodity production. Recent reforms in the tariff structure reduce the duties on imports, as well as narrow the spread of these duties across import categories. From a maximum nominal tariff of 90 percent in the past, the maximum tariff in 1992 will be 20 percent (plus a few surcharges not yet eliminated). The overall result should subject Honduran production to greater external competition, while also allowing capital goods (e.g., wood-processing machinery) into the country at lower costs. The reduction of tariffs helps direct investments into sectors in which countries have comparative advantage. For Honduras, it could be argued that one sector of comparative advantage (or potential comparative advantage) is forest products.

2. Sectoral Conditions

Goals stated in the PP are to (i) increase the production of the Honduran forestry sector by seven percent by 1994, and (ii) sustain wood products exports at 121 million board feet per year (Sector Goal, logical framework). In light of recent trends and current conditions, these goals appear optimistic.

The best measure of forestry output (or production) is value-added to raw materials at the level of primary production, a measure which is not available on a consistent basis in Honduras. Proxy measures are output levels in physical units, as shown in Table D-1.

Table D-1. Production of Selected Forest Products in Honduras, 1985-1990.

Year	Sawnwood cu.m	Plywood cu.m	Resin tons	Seed kg
-----t:housands-----				
1985	429	NA	5.6	0.9
1986	397	NA	6.3	0.9
1987	454	5.0	5.3	2.7
1988	428	NA	5.1	1.7
1989	406	NA	5.6	1.8
1990	337	9.4	4.3	1.2

NA=Not Available

Source: COHDEFOR

Note that since the preparation of the PP in 1987, outputs of the principal industrial primary products (except plywood) have been falling. The most important of these products for the Honduran economy is sawnwood, whose production fell 26 percent between 1987 and 1990. Because this drop partially reflects the closing of inefficient sawmills and COHDEFOR's tighter control over timber harvests, the reduction is not entirely negative in its interpretation. Yet based on the production indices observed for the first half of the project, the sectoral production goal as stated in the PP is unlikely to be attained.

Similarly, exports have been falling. On a volume basis, exports of rough sawnwood have been steadily declining every year since 1982. From 131 million board feet in 1982, sawnwood exports were only 31 million board feet in 1990. On a value basis, which is the more reasonable index of export performance, Table D-2 shows export trends since 1986.

 Table D-2. Honduran Export of Primary and Secondary Forest Products, 1986-1990.

Year	Primary	Secondary	Total
	Products	Products	
	-----million US\$-----		
1986	30.0	10.7	40.8
1987	36.5	18.4	54.9
1988	31.6	20.8	52.4
1989	28.3	17.9	46.2
1990	18.3	15.3	33.7

Source: CONDEFOR

Like primary forest production, export value (FOB) declined substantially (by 39 percent) between 1987 and 1990. The devaluation of the lempira will drive up export earnings for 1991. On the other hand, export volume in 1991 will very likely fall short of export volume in 1990 (based on preliminary data through September 1991). Thus the project's goal of sustained exports depends on the choice of volume or value measures, but in either case will demand dramatic shifts in export policy (e.g., the planned removal of CONDEFOR's export tax).

C. General Implications for AID's Work in Honduran Forestry

The observations presented in the preceding sections indicate the considerable economic and political turbulence affecting Honduras since the design of the FDP four years ago. The challenge for USAID/Honduras is to reinforce those aspects of FDP which continue to be central for Honduran forest policy and management, while modifying FDP's direction where political and economic changes imply the need for such adjustments.

- o Continuing downward trends in sectoral output and exports.--This argues for renewed and forceful intervention by FDP to avert losses of income and employment in the Honduran economy. The time has been too short for FDP to have made an impact in sectoral trends. The forest industries continue to be an appropriate target for USAID/Honduras because of their large economic importance for the country, their rural location and high labor intensity, and their link with environmental issues in Honduras.

- o Macroeconomic pressures.--The country's difficult macroeconomic situation puts even greater emphasis now than in the past on COHDEFOR's need to manage its resources efficiently and to avoid creating resource distortions in the market economy. Thus FDP's work to raise GOH returns from timber sales is a notable accomplishment of immense importance for both COHDEFOR and for resource efficiency. At the same time, much more has to be done to speed the divestiture of COHDEFOR's subsidiary companies, streamline COHDEFOR's accounting system, clear up COHDEFOR's accounts receivable, and fill COHDEFOR's revenue gap if and when its export tax is terminated. Given the gravity of these issues, it would appear that FDP is currently underinvesting in staff and budget allocation needed for COHDEFOR's institutional development.

- o Legislative and policy shifts.--The new policy arena for forestry in Honduras is one of forest privatization, forestry incentives for private landowners, increased emphasis on multiple-use management, and increased commitment to social and community forestry. These elements were not central in the design of FDP, but affect its current viability and relevance. Moreover, they directly enter FDP's scope in relation to the institutional reorientation and strengthening of COHDEFOR. FDP's future structure and mix of activities will have to fully take into account the sensitive, difficult, and crucial issues at stake--particularly as they have evolved over the last four years.

- o Interaction with other donors.--USAID/Honduras, through its FDP, has the opportunity to take a more active role in the TFAP should it decide that this is an appropriate strategy. The TFAP took form in Honduras mainly after the FDP was designed and on its way to implementation. However, this mid-term evaluation of FDP provides a timely reflection on donor coordination in Honduran forestry, and the place of USAID/Honduras in relation to the efforts of the other players.

II. ECONOMIC ASPECTS BY PROJECT COMPONENT

A. Institutional Reorientation of COHDEFOR

1. Timber Sales and Stumpage Valuation

The financial and economic arguments for the new system of timber sales are increased log harvest per unit area (implying the construction of fewer km of roads and skid trails per volume of wood extracted), and improved residual stocking and forest regenerative capacity (greater future forest productivity). The PP's Economic Analysis constructed a "sustainability thesis" on the basis of these interventions, deriving one element of net benefits from the marginal area and yield of future pine forests that would not exist without these changes in the method of timber sales.

The financial benefit of the new system is the net present value of additional future timber harvests, together with adjustments for changes in road construction costs. The economic benefit incorporates a shadow price for stumpage value, and allows for an unpriced but realizable reduction in soil erosion because of improved log skidding and road construction standards. The discounted values of the benefits streams--financial and economic--determine how much can be spent to justify changing over to the new system.

The series of pine timber harvests with and without FDP are given in Table D-3. With the project, annual allowable cut is 750 thousand cubic meters, starting in 1992. Without the project, pine harvests diminish by 5% per year from a higher but unsustainable cut. This difference implies that over a time horizon of 20 years, the project has the effect of increasing pine harvests by 2.9 million cubic meters. At a discount rate of 5%, this additional harvest has a financial present value of Lps. 46.4 million if timber is priced at the current charge of Lps. 36 per cubic meter.

Estimates of roading costs with and without the new timber sales system are difficult to make. Here it is assumed that the area of timber sales to achieve a given volume of harvest is reduced because of higher logged volumes per ha. Moreover, because the boundaries of timber sales are established in advance of the sale, the layout of roads and skid trails becomes more efficient. Total extension of roads into timber sales may be trimmed by some 30% because of these two factors. Under the traditional system of timber sales, 4.0 km of logging roads are constructed for each 2,500 cubic meters extracted (25 cubic meters logged per ha; 4 km of road per 100 ha logged--see Winrock International 1984c). If unit costs for logging roads are Lps. 20,000 per km, logging road costs are Lps. 32.00 per cubic meter, given the preceding assumptions. These costs fall to Lps. 22.40 per cubic meter under

Table D-3. Assumptions on Annual Harvests of Pine Timber and Costs of Logging Roads, "With" and "Without" the New System of Timber Sales.

Year	Annual Harvests		Costs of Logging Roads	
	"With"	"Without"	"With"	"Without"
	--thousand cu.m--		---million Lps.---	
1988	874	950	19.6	30.4
1989	814	902	18.2	28.9
1990	707	857	15.8	27.4
1991	698	815	15.6	26.1
1992	750	774	16.8	24.8
1993	750	735	16.8	23.5
1994	750	698	16.8	22.3
1995	750	663	16.8	21.2
1996	750	630	16.8	20.2
1997	750	599	16.8	19.2
1998	750	569	16.8	18.2
1999	750	540	16.8	17.3
2000	750	513	16.8	16.4
2001	750	488	16.8	15.6
2002	750	463	16.8	14.8
2003	750	440	16.8	14.1
2004	750	418	16.8	13.4
2005	750	397	16.8	12.7
2006	750	377	16.8	12.1
2007	750	358	16.8	11.5

the new system. The savings in roading costs, allowing for the difference in timber cut between the traditional and new systems, has a discounted present value of Lps. 54.1 million.

Hence the combined benefits of additional future timber harvests plus savings on roading costs sum to Lps. 100.5 million (US\$18.96 million), discounted to present value. This implies that Honduras could invest up to this amount in implementing the new timber sales system, or an annual equivalent of Lps. 7.68 million (US\$1.45 million) over the 20-year time horizon. Actual annual expenditures for the new system (mainly salaries, vehicles, and training) are estimated to be under US\$0.5 million. Consequently, the new system provides a substantial payoff for Honduras.

The net benefit is still higher if applying a shadow price that approximates an appraised stumpage value for pine timber. Appraised value of standing timber measures its resource rent, the

best indicator of true economic opportunity. Under FDP, timber appraisal remains to be achieved, and there are no current estimates of appraised stumpage. Several years ago, the Winrock analysis estimated an average stumpage value in the range of Lps. 20-30 per cubic meter (Winrock International 1984c, p. 11). Applying the GDP price deflator for Honduras, this is equivalent to Lps. 37-55 in current prices. The Winrock estimates were made before markets had developed for small-sized diameter logs, and therefore are conservative. If a reasonable yet conservative appraised stumpage price for pine timber is Lps. 55 per cubic meter, the shadow price multiplier is 1.53 (i.e., Lps. 55/36). This raises the discounted present value of the new timber sales system to Lps. 153.77 million, or Lps. 11.75 million annually for 20 years. Thus so long as the economic costs of implementing the new method of timber sales are under Lps. 11.75 million per year, the program has net benefits for the country.

Finally, the construction of fewer km of logging roads under the new system should have positive impacts for reduced soil erosion and downstream sedimentation. The introduction of oxen logging, favored by the new log mix, contributes towards the same end. This benefit, here labeled "RD" (reduced sediment), is unpriced but certainly has value for downstream communities in relation to potable water, clothes washing, and health and sanitation in general.

The financial and economic summary of annual gross benefits is presented in Table D-4, along with estimates at a higher (10%) discount rate. Without good field data and more opportunity to elaborate the conceptual framework, these results are a first approximation. The new system of timber sales generates net benefits for Honduras if the costs of implementation remain below the levels shown here. Based on FDP experience to date, this is achievable.

 Table D-4. Financial and Economic Gross Benefits of COHDEFOR's
 New System of Timber Sales.

	Discount Rate	
	5 Percent	10 Percent
	-----million Lps.-----	
Financial	7.68	7.55
Economic	11.75+RD	11.55+RD

2. Revised Sawnwood Export Policies

COHDEFOR no longer participates in export negotiations or marketing. The remaining inefficiencies in exporting wood products from Honduras are the imposition of list prices by COHDEFOR, and COHDEFOR's collection of an export commission on unworked sawnwood.

The Economic Analysis in the PP did not estimate the impacts of deregulating export prices and/or eliminating COHDEFOR's export commissions. Yet both are essential steps in allowing market signals to determine which products to export, in what quantities, and to which buyers.

Under current policy, exporters find ways to hide their earnings when market export prices exceed COHDEFOR's list prices. Honduran exporters send their importers invoices showing COHDEFOR's list price, but work around COHDEFOR to pocket the difference above that price. Conversely, when true export prices are below COHDEFOR's list prices, Honduran exporters cannot sell their products, and export volumes fail. In both instances, COHDEFOR's control of export prices has a deleterious effect for resource allocation. These impacts are felt not only at the export level, but also indirectly through backward linkages with sawmills, logging contractors, and the chain of other suppliers.

Secondly, COHDEFOR's export commissions suppress exports below levels that would prevail in the absence of this tax. Assuming that the foreign demand for Honduran sawnwood is relatively price elastic in view of available substitutes from elsewhere, the elimination of COHDEFOR's commission will expand Honduran exports at the same time that exporters will reap higher profits. The recent devaluation of the lempira, and the prospect that the lempira might float freely in the future, reinforce the incentive to export. All of this should raise prices across the wood-processing industries, in turn raising prices that can be paid for timber and forestry.

Although export price controls and export taxes are highly crucial issues for Honduran forestry and the industries it supports, there is virtually no quantitative analysis of their economic consequences. Here is a critical void that FDP could help to fill if economic arguments will prove useful in the policy dialogue with COHDEFOR.

3. Improved Financial Management in COHDEFOR

One of the aims of FDP is to help insure that "COHDEFOR's operational costs do not exceed revenues derived from stumpage charges and export commissions" (Logical Framework, Indicator 3.a).

The spread between COHDEFOR's operating income and operating costs narrowed significantly beginning in 1980, and turned negative for 1986 and 1987. Since then, COHDEFOR's income barely exceeds its operating expenses.

The FDP is making two significant contributions to improve COHDEFOR's financial management. The first is development and implementation of a monthly cash flow projection showing income and expenses month by month in order to guide expenditures within an annual budget cycle. The second FDP initiative is analysis of COHDEFOR's accounts receivable, with the objective of writing off uncollectable payments while generating income from creditors who can be made to pay. This second activity has numerous legal, administrative, and political complexities exceeding the scope of the present discussion.

Not yet accomplished in COHDEFOR is medium-term financial and strategic planning to cope with impending changes in COHDEFOR's policy environment, institutional reorganization, and sources of income. If COHDEFOR intends to move increasingly away from export commissions and towards stumpage fees for its principal revenues, this will demand reliable projections of COHDEFOR income under alternative scenarios of timber extraction, export levels, and pricing decisions. Also to be factored in are political variables related to the possibilities of forest privatization, incentives for private forestry, and other policy options having fiscal implications. Here is a very complex but highly essential exercise with links across policy analysis, economic forecasting, and budget projection. Assisting COHDEFOR to move ahead in this area should be made a high priority within FDP.

B. Forest Management at La Union and Salama

In Honduras as elsewhere in Latin America, forest management has been dominated by technical and biological considerations, with lesser emphasis given to economic analysis. Yet there is substantial economic decisionmaking to be done for forest management at La Union and, in the near future, Salama. A major focus of this should be application of microeconomic principles to cost analysis and optimization decisions. The objective is to use FDP's forest management budget as efficiently as possible. Ideally, these efficiency principles later will guide forest management in other regions of Honduras. The economic analyses to be considered include:

- o Alternative timber appraisal methods and costs, comparing increased estimation precision against increased costs of data collection, management, and updating.

- o Cost-effectiveness analyses of fire towers, mobile fire detection squads ("vigilantes ambulantes"), methods of pest control, methods of grazing control, and other forest protection strategies.
- o Economic payoffs from alternative silvicultural systems, thinning regimes, and timber cutting cycles.
- o Cost comparisons of alternative logging technologies-- e.g., oxen, skidders, and cable systems--in different settings of terrain and log size.
- o Methods of cost control in the construction of logging roads and skid trails.
- o Costs and benefits of interventions which contribute to watershed management, wildlife management, ecotourism management, and other non-timber outputs.

Another set of economic questions regards income and employment in the production of forest-based goods and services. The FDP needs to determine the circumstances under which forest management and forest-based enterprises are financially worthwhile for communities and industries. During the first years of FDP, the assumption of an attractive economic return from forest management and forest industries has been accepted as an article of faith. This return still has to be demonstrated with numbers. This will assist FDP's decisionmaking and help advance its public relations. In this category are:

- o Preparation and diffusion of feasibility studies and cash flow analyses of different kinds of forest-based activities. Examples are those presently being prepared by FDP for oxen skidding, resination, and pit sawing. Other financial profiles could be added following a systematic survey of local entrepreneurial interests, capabilities, and markets.
- o Estimates of employment, earnings, and financial return from contracted road maintenance, silvicultural treatments, fire prevention and suppression, forestation, and other contracted services.
- o Diagnostic assessments of employment, income, fuelwood, and other benefits (and costs) because of the establishment of Honduply and other wood-processing industries using timber cut in the management units.
- o Feasibility studies of municipal forest management and private (i.e., individual) forest management under alternative policy scenarios regarding privatization.

A portfolio of these potential analyses needs to be discussed between FDP and COHDEFOR's management to define priorities, discuss analytical methods, and identify individuals to carry out the work. To every extent possible, FDP should strive to have COHDEFOR and ESNACIFOR personnel take increasing responsibility in the design, execution, and interpretation of the economic analyses so that these important skills are internalized within the country.

C. Strengthening the Forest Industry

Elsewhere in this evaluation is an analysis indicating that Honduran wood-processing industries are under considerable economic pressure to improve raw material recovery and add higher value to product lines. Among the many explanations for this are (i) need to handle increasing proportions of small-diameter logs because of COHDEFOR's new timber sales system, (ii) increasing requirements by export markets for kiln-dried wood, (iii) shift in market demand away from roughsawn lumber and towards secondary and tertiary wood products, and (iv) rising costs of petroleum-based energy. Despite remaining problems, technological progress is moving steadily forward among the larger producers. Not surprisingly, the more problematic constraints lie with the small and medium enterprises.

From the perspective of using FDP's resources wisely, several issues require resolution. The first concerns the project's incomplete efforts to date to target enterprises by size, product line, location, ownership factors, and other characteristics. Regarding FDP's technical assistance, the PP did not adequately address the possible tradeoff between distributional fairness versus focusing on a few large companies. USAID/Honduras should determine if such a tradeoff exists and, if so, define FDP's targeted enterprises carefully. The presence of AMADHO (Honduran Association of Wood Producers) as an intermediary complicates this issue, but in no way lessens its relevance.

Secondly, economic analysis should be used to support decisionmaking in ways similar to its needed applications in forest management. Feasibility work will be required to explore the payback period and rate of return on investments in oxen logging, solar wood driers, thin-kerf saws, resaw equipment, wood-fueled energy systems, and other technical innovations. This is readily integrated with engineering analysis, so that technical and financial aspects are considered simultaneously. The needed emphasis should be small and medium operations, since the larger companies are able to conduct these assessments without FDP assistance.

At this point into the project, a key issue in FDP's forest industries component concerns whether to re-establish the project's credit facility. Within Honduran wood-processing industries, formal credit markets are not a main source of investment capital.

Rather, producers depend on buyers to extend finance (for both working capital and investment capital) against the product to be delivered. Also, the project's original research into credit "demand" was perhaps misleading, with declared intentions overstating observed borrowing behavior. In this respect, there is a large gap between "need" in a technical sense, and "demand" in the sense of taking out loan applications.

USAID/Honduras may want to continue its credit line for Honduran forest industries. However, if the credit is not re-established, USAID/Honduras has other options to move small and medium enterprises in the direction of technical efficiency through capital investment. These include USAID financing or co-financing for:

- o Technical assistance, mainly in the form of feasibility analyses and help with loan procedures, so that small and medium operators are better prepared to borrow money from ordinary commercial channels and/or chambers of small industries.
- o Demonstration--at FDP's cost and risk--of "new" (to Honduras) technologies believed to have high potential to upgrade Honduran logging systems and wood-processing facilities.
- o Trade missions by equipment dealers from the USA and elsewhere who sell capital goods of potential importance for Honduran loggers and wood processors--especially those of small and medium scale.

III. LESSONS LEARNED, CONCLUSIONS, AND RECOMMENDATIONS

The FDP corresponds well with the aims and strategies of current Honduran development policies. These policies endorse greater market liberalization, a corresponding reduced role for GOH in production and sale of marketable goods and services, private and decentralized control of productive resources, and intensified protection and management of the country's natural resources. The broad objectives of FDP, as conceived four years ago, continue to be highly appropriate in the present national context.

In several subject areas of direct relevance to FDP, the extent of recent policy change and prospective change is dramatic in relation to previous years of inaction. This refers to methods and price levels for sales of pine timber, possible return of a substantial area of forests to municipal and private ownership, COHDEFOR's ongoing retreat from producing and exporting forest exports, COHDEFOR's re-definition of its functional responsibilities, and COHDEFOR's shifting level and composition of revenues.

Yet many of these policy and technical issues lack economic arguments to defend them. The FDP can help by giving more emphasis to policy and economic content in each of the three project components. The intent is to (i) provide a quantitative basis for FDP's institutional reorientation of COHDEFOR, and (ii) aid FDP's decisionmaking on technical questions of forest management and forest-based industries. From the perspective of these dual but connected purposes, recommended actions for FDP in its second half of operation are:

- o In general, commit more FDP resources than in the past towards helping COHDEFOR with its financial management.
- o In general, build a foundation of financial and economic analyses to advance FDP's initiatives in forest management and strengthening of forest industries.
- o In general, use economic arguments to reinforce the shift of Honduran forestry increasingly towards multiple-use management and community orientatation.

Among specific tasks from the perspective of economic rationalization, the following should receive high priority by USAID/Honduras as it orients FDP for the years ahead:

- o Sectoral analysis.--Production and export indicators in the forest-based sector continue to fall, at least as revealed in formal statistics. Diagnostic work is needed to (i) determine whether statistical indicators give an accurate picture, (ii) assess the relative importance of different explanations for recent trends and a future prognosis, and (iii) determine how this prognosis should steer FDP's priorities in each of institutional reorientation, forest management, and forest industries.
- o Timber price.--Current timber pricing applies a fixed price per cubic meter irrespective of variables like location, timber size and quality, and other determinants of cost and profitability. COHDEFOR took a large step forward when it implemented sales of standing pine timber. The next logical step is refinement of timber pricing. This implies choosing from among alternative appraisal methods in relation to requirements for data, field personnel, and administrative capacity. The adjustment of timber prices to more closely approach real economic value will have far-reaching contributions for industrial efficiency and environmental dimensions of forest management.

- o Export price and tax.--On the immediate horizon is the distinct possibility that COHDEFOR may further liberalize exports of wood products by eliminating its price controls and export commission. FDP could facilitate this transition by helping COHDEFOR analyze the consequences of this policy from the standpoints of (i) effects on COHDEFOR's revenue; (ii) increased export earnings for Honduras and impacts on wood price levels, industry employment, and demand for timber; and (iii) equity considerations if exporters--mainly a few large companies--are favored at the same time that COHDEFOR's revenue shortfall is made up by higher timber prices across the entire wood-consuming sector.
- o COHDEFOR's revenues and expenses.--The need here follows directly from the preceding tasks. The challenge will be to link policy analysis, economic forecasting, and budget projections through a process of medium-term financial and strategic planning.
- o Economic support for management decisions.--As noted, FDP is an appropriate vehicle through which to introduce the greater application of microeconomic principles in cost analysis and optimization decisions--both in forest management and the strengthening of forest industries. Management issues to be addressed were identified earlier (see pp. 16-18).
- o Community benefits.--The project's efforts to address the economic needs of the La Union communities in relation to forestry were late in starting, and evidently not fully integrated with the rest of FDP. Still needed are reliable economic (and social) baselines, financial profiles and actual tests of incomes to be made in small and micro forest-based enterprises, case studies of local economic impacts because of the introduction or expansion of wood-processing facilities, and feasibility studies of municipal and private forest management.

IV. REFERENCES

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ANNEX E

STANDING TIMBER SALE SYSTEM

A sampling methodology was devised to measure the residual stand characteristics of both the new standing timber sale system, referred to as VP and the traditional system in use prior to the project, referred to as T.

The goal was to take 100 sample prism points using a 10 basal area factor prism on one-half plots, tallying count trees on the downhill side of the plot only, on flat ground on the half circle of the plot in the direction of the cruise line. Cruise lines were run in north-south or east-west directions. The starting points were chosen in the field within the sale boundaries at random and the prism sampling points were taken at 50-meter intervals.

The actual number of plots taken were 105; 55 taken in VP areas and 50 taken in T areas.

Six timber sales were sampled and are described briefly:

La Unión Management Unit - Olancho District

1. **Guamilón Sale.** -Type VP- Sold to Yodeco, who processes the timber in their sawmill near Yoro. This sale was sold in April, 1989 and was one of the first to be sold on the new system. The area harvested has adequate regeneration, in spite of evidence of fire. Thirteen trees per hectare in the residual stand is two less than the goal, however, with the amount of seedlings apparent this is not a problem as long as fire is kept out. All useable material has been removed. The access road to this sale was badly eroded and several culverts were washed out. Roads within the sale area were better but needed ditching and water bars.
2. **Vallecito Sale.** -Type VP- Sold to Hondoply in December 1989, who processes the timber in both a sawmill and veneer plant located near La Unión. Plywood is manufactured at a plant in Guaimaca. This sale was harvested with oxen and skidders, and was on more favorable ground than the Guamilón sale. There is adequate regeneration and the residual stand was 23 trees per hectare, roads appeared better but, again, in need of ditching. Logging waste was not a problem.
3. **Los Blancos Sale.** -Type T- Sold to Yodeco in 1988. This area has good regeneration as fire has been kept out. There are 24 trees per hectare in the residual stand. Trees left, however, are not as good as in the VP type sales. For example, in this sale the defect estimate is 28 percent in comparison to 10 percent in the above sales. Sale clean up was comparable to the VP sales. The access road was better, but maintenance needs to be addressed.

Talanga Area - Olancho District

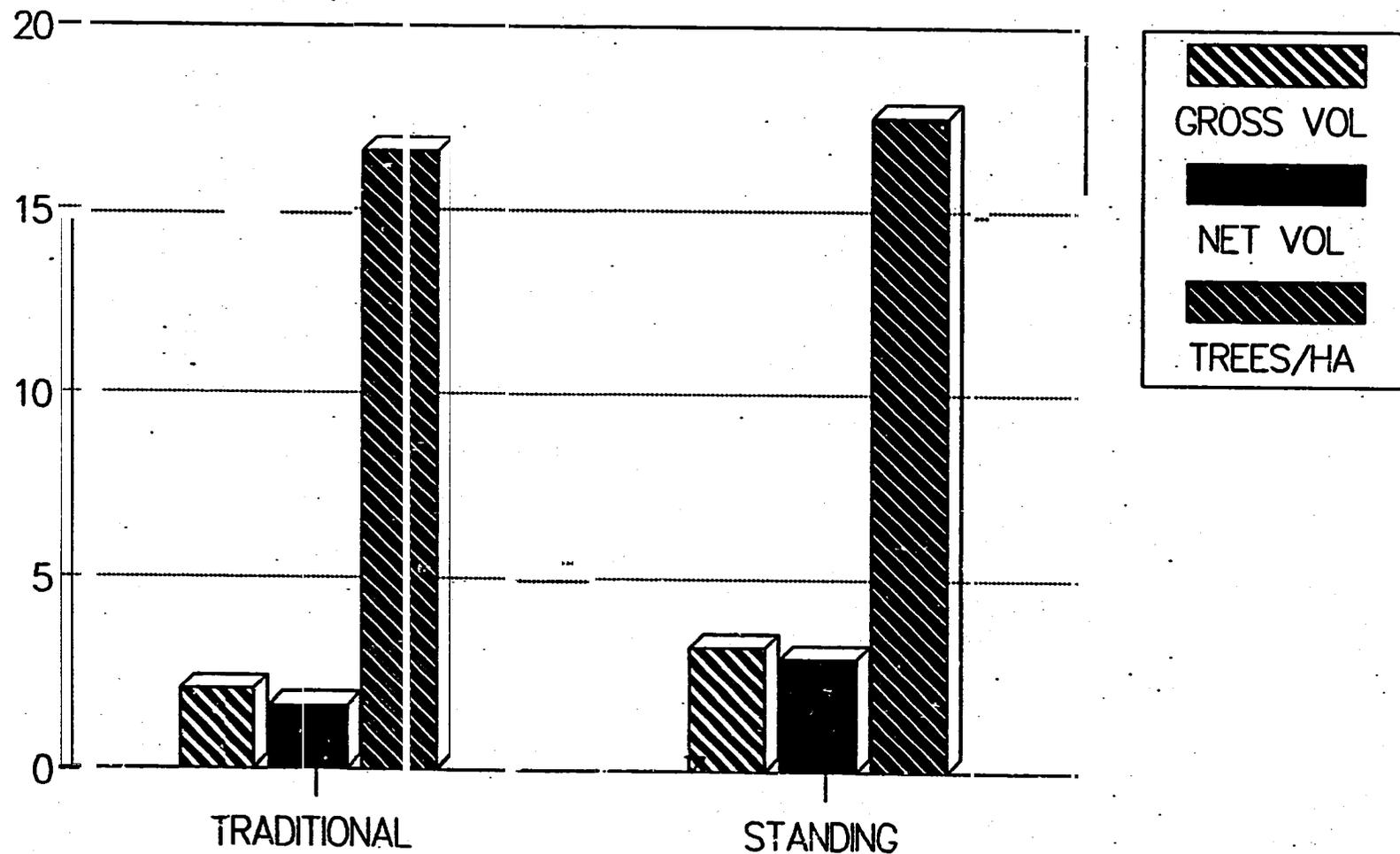
4. **Savana Redonda Sale.** -Type VP- This sale area was originally harvested under the traditional system. This particular sale has removed most of the over story and the residual stand is mostly composed of pole sized trees in the 10-25 centimeter diameter ranges. The access area was barely passable and logging waste was mainly in top logs not skidded. Some high stumps were observed. While in this area, a visit was made to an operating sale that has oxen bunching logs for a tractor that is skidding to the landing.

Central District - Francisco Morazan District

5. **Los Chorritos Sale.** -Type VP- This is a sale to a campesino group that has been resinating the trees and now is harvesting them. Sawlog utilization is poor. However, all the tops are being reduced to firewood so that utilization is almost 100 percent. This is a stand of immature, merchantable timber, large enough to cut yet still growing. Resinating this type of timber is really a poor practice—this stand should not have been harvested. There is hardly any young regeneration although there is a pole sized residual stand of some 119 trees per hectare. This is understocked.
6. **Guarizme-Saracaran Sale.** -Type T- This traditional sale was sold in 1989 to Arcieri sawmill. The residual stand has been resinated with long cut faces generally on two sides of the tree leaving the first log considerably degraded for sawmill use. There is considerable waste left in the area including many high stumps. The area has good regeneration with a residual pole stand of some 314 trees per hectare in the 10-25 centimeter range.

COMPARISON TIMBER SALE - OVERALL

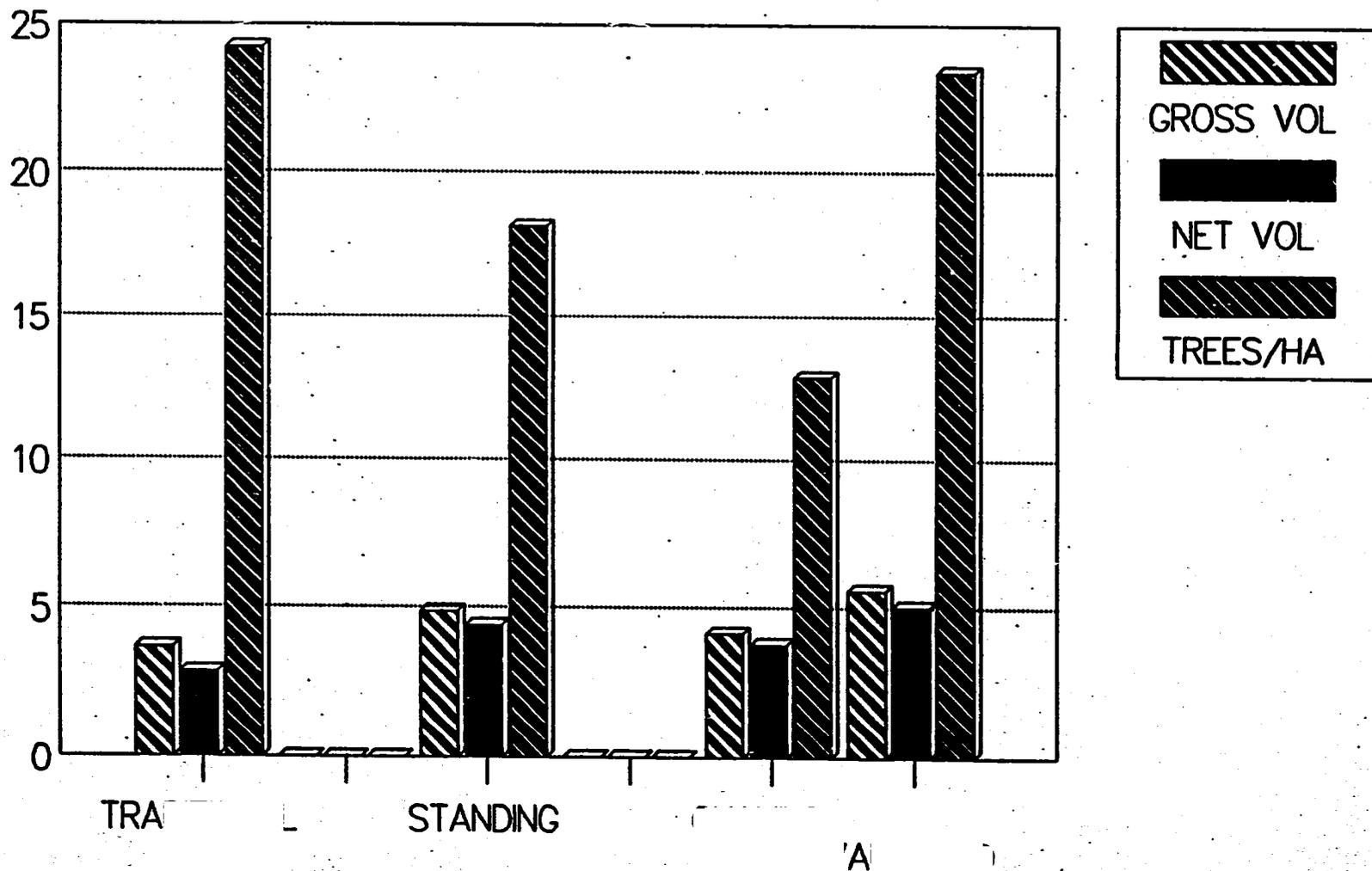
TRADITIONAL VS. STANDING TIMBER



COMPARISON TIMBER SALE - LA UNION

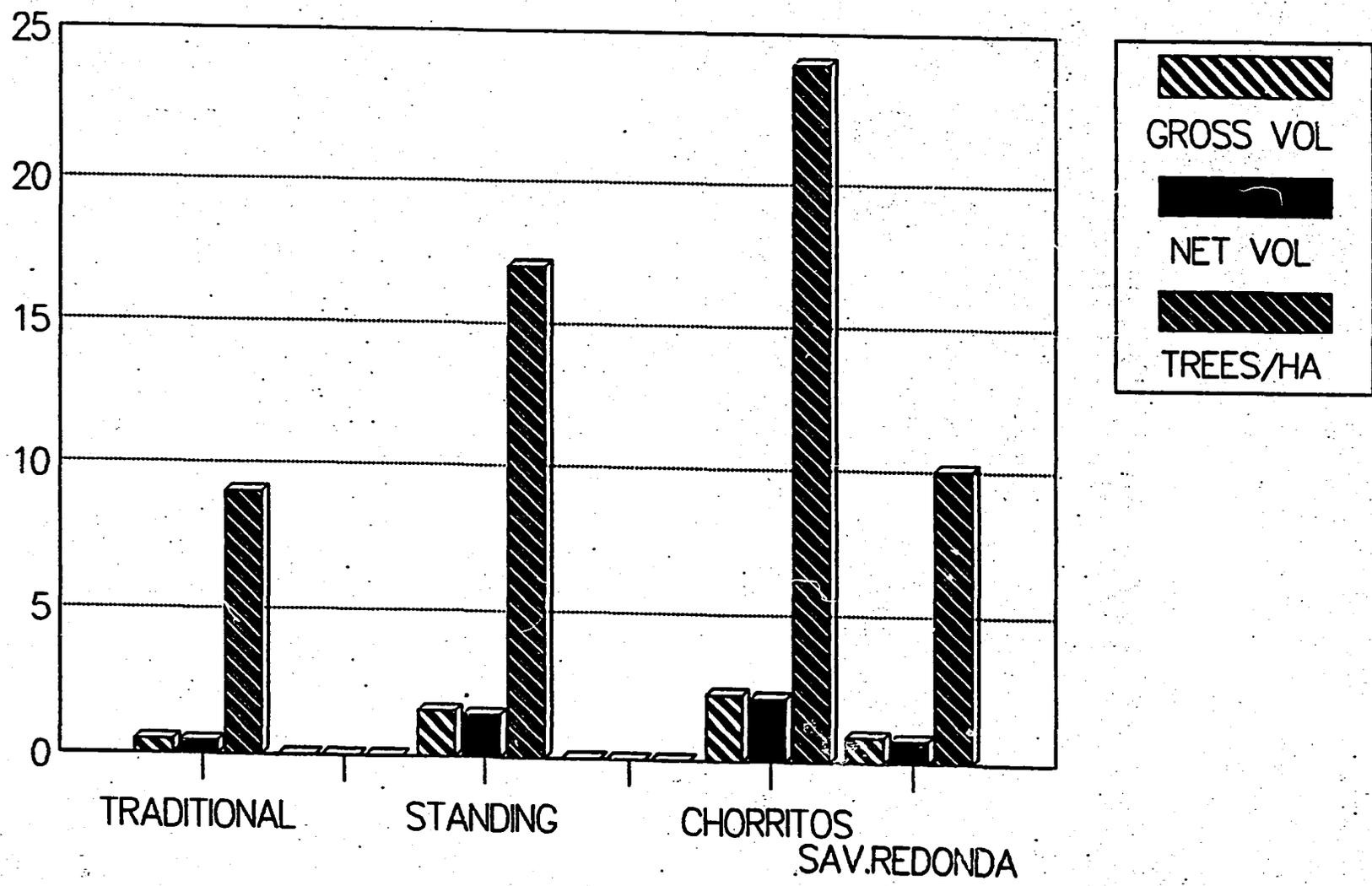
TRADITIONAL VS. STANDING TIMBER

M3/HA - TREES/HA - 30cm+
E-4



COMPARISON TIMBER SALE - OTHER LOCATION

TRADITIONAL VS. STANDING TIMBER



E-5

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ANNEX F

SOCIOLOGIST REPORT

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SOCIOLOGIST REPORT

A. General

1. Project Focus: Cause and Prevention of Wildfires

The Forest Development Project (FDP) contains interventions that are directed toward improving the well-being of the rural inhabitants of the Forest Management Unit (FMU) based in La Unión, Olancho, but the focus of the project seems to be elsewhere, namely in the management of the forest *per se* and the relationship between forest management and the timber industry. In spite of this focus, however, pre-project commentators noted that without parallel activities aimed at the rural population resident in near-the-target forests, the project goals would be difficult, if not impossible, to achieve.

The reason for the involvement of local people in the forest has less to do with what they do with the forest than with what they are not allowed to do, that is, have free use of trees on and near their lands. COHDEFOR "owns" the trees of Honduras, and one must receive permission to cut a tree, even if it was planted on the land next to one's house 20 years ago. Because of this, local people perceive that they have no vested interest in protecting the trees, since they do not belong to them but to the "government" under the guise of COHDEFOR.

The lack of a perceived vested interest in the forest, coupled with the perception that it is the government that owns the forests, has lead rural people to attack the government or COHDEFOR through the forest when they feel resentful toward the government. The resentment can be sparked by any number of different reasons on the surface, examples include: a poor harvest and no government assistance, a change of government favoring a political party other than one's own, a personal slight (real or imagined) by someone in government (usually COHDEFOR), or the perception that other communities or individuals are recipients of government help while one is not.

The attack on the government/forest is simple: set it on fire. The feeling is that the forest, shorn of its value for the rural individual, still represents value for the government which, through COHDEFOR, is continually trying to protect it. The resentful individual, therefore, destroys what he knows the government values, thereby causing harm to the government.

The above sketch is simplistic, but few knowledgeable people in Honduras would deny that it is essentially valid. It is true that there are other causes of forest fires, particularly those set by cattle owners to improve forage for their cattle and those set accidentally by rural farmers who burn the brush off their land before planting, but neither of these causes can explain the majority of fires.

The objectives of the project interventions, which are the focus of this report, are those aimed at the rural residents that will turn their attention away from destructive activities and toward constructive ones that improve their incomes, their diet, and their lifestyles. The project has two interventions aimed at accomplishing its goals: rural extensionism and stimulating micro-enterprises.

Rural Extensionism. This has as its premise that a rural population needs an intervention that looks at the myriad activities of rural people and helps them improve them, including cropping practices for traditional crops (corn, beans, rice), improved care and pasturing for farm animals, soil conservation to protect soils and improve their productiveness, crop diversification to make better use of soils and climate, agroforestry to provide fuelwood and improve diet, and small-scale irrigation to increase productivity throughout the year. In addition, rural activities include those most often associated with women, which the project focuses on, including fuel-efficient stoves, improved floors, fly-proof food, an utensil storage, vegetable gardens, pig pens, and chicken coops, to name a few. Few of these activities are new, but improving them can make a significant difference on the general well-being and lifestyle of rural residents. The techniques of carrying them out are also well-known in theory, which means that project staff needs to concern itself mainly with ensuring adequate personnel, organization, logistical support, and administration.

Microenterprises. While some of the above activities will improve incomes, the subsistence agriculture of the area indicates that they will primarily improve diet and well-being and have a minimal effect on cash incomes. The microenterprise intervention will thus complement the extension activities by focusing on income itself through the encouragement of creating new enterprises and strengthening existing ones. At present, this intervention is considering four separate types of enterprise: carpentry shops, log extraction using oxen, resination, and put sawing.

2. Baseline Studies

Baseline studies provide the only reliable basis of measuring project impact on income. Carefully crafted socioeconomic studies at the beginning of a project should be followed by the same or similar studies at the end of a project (EOP) to determine overall impact on income and other socioeconomic areas, as well as on areas of special interest to the project. These studies produce data that are often useful in substudies during the life of the project for monitoring progress in selected aspects of the project.

The FDP has not carried out a socioeconomic baseline for the La Unión FMU, although a good baseline has been produced for the second area centered on Salamá. Although the project has already had considerable impact on the La Unión area, a baseline carried out at this time would allow measurement of impact between the present time and the EOP. This baseline should include the information in the Leiva study so that data can be compared between the two areas, but it should also provide additional information on income-producing activities or income contribution broken down by gender. Leiva's study

focused on the family as the unit of analysis, but additions to the baseline instrument would allow the measurement of project impact on women.

The baseline instrument should also include questions that focus on the activities that the project carries out through the social promoter extension component, particularly those involving women, such as existence of improved stoves, washstands, screened cupboards, vegetable gardens, tree nurseries, and so on.

B. Rural Extensionism

1. Changes in the Extension Program Since the Project Agreement

Page 8 of the Project Agreement, under "vi. Improved Agriculture and Grazing Practices," notes that while land use in the La Unión FMU is predominantly forestry with relatively low population density, there is increasing agricultural pressure on the forest due to traditional farming practices. After noting that the Natural Resources Management Project (NRMP/522-0168) had helped mitigate these problems in parts of southern Honduras, the project agreement states that NRMP would organize and staff a new field office in collaboration with COHDEFOR's office in La Unión, that additional field technicians and paratechnicians would be assigned to other municipalities in the area, that work plans for this team would be developed in collaboration with the NRMP and COHDEFOR staff, and that the agriculture and range management personnel would be financed by the FDP but receive technical backstopping from NRMP and other branches of the NRMP. Then it lists seven major activities for the subcomponent:

- Range and pasture improvement
- Soil conservation
- Improved cropping practices (primarily basic grains)
- Crop diversification
- Agroforestry
- Women-in-developing activities
- Small-scale irrigation

The arrangement described above was never actually carried out. Instead of NRMP, the field office was staffed initially by personnel from a new project: the Land Use and Productivity Enhancement (LUPE) project (522-0292), which began 14 months later and sought to extend the experience of the NRMP to new areas of Honduras. By doing so, the project was carrying out the spirit, if not the letter, of the project agreement. Accordingly, a LUPE office was set up in the FDP/COHDEFOR offices of La Unión, and the two projects were not officially linked until the end of 1990.

To understand the role of LUPE in the FDP, a short summary of LUPE activities is required. LUPE extension teams consist of four or five professionals, usually an agricultural specialist, a livestock specialist, an agroforestry or soil conservation specialist, and a WID specialist, all with at least three (technical level) to five years (professional level) of university training.

The LUPE strategy is to form and work with men's and women's groups in communities in a particular area, expanding the number of communities contacted as time goes on and as extension activities from the groups formed earlier become more routine. In La Unión, for example, LUPE has a map showing communities the focuses of this year's activities, those planned for 1992, and those targeted for 1993.

The men's groups are comprised of farmers and the women's groups are housewives or unmarried women. Couples frequently participate together, the woman in one group and the man in the other. Typically, the LUPE team works with both men's and women's groups in the same community, but, a community will have just one or the other group organized with the WID specialist working in communities not touched by the agroforestry/livestock specialists, and vice versa.

The LUPE activities carried out with rural residents read like the above list of activities for the FDP: range and pasture improvement, soil conservation, improved cropping practices, crop diversification, agroforestry, and women-in-development. If there is any special focus, apart from the WID activities, it appears to be soil conservation, at least in the La Unión region, including contour plowing, trenches supported by grass, and multiuse trees. Still, the composition of the LUPE team is such that it should be able to tackle problems in virtually every area of agriculture, livestock, and agroforestry.

The existence of separate project goals, methods, administrative systems, and organizational systems made it difficult for the two projects to work smoothly together. In particular, it was hard for the FDP to administer personnel over which it ultimately had no control, and it was hard for the LUPE personnel to determine which of its two sets of superiors had authority over their actions. A study (December 1990) suggested that this team either be incorporated completely into the FDP or that LUPE be separated officially from the FDP. The second option was selected and, as of 1991, the two projects continue working in La Unión, but separately.

As is often the case with divorce, the separation of LUPE from the FDP was accompanied by a certain amount of resentment and recrimination, in spite of being two institutions that under other circumstances would ordinarily like and admire each other, and probably would have little difficulty in collaborating and coordinating efforts in a common cause. It seems probable that LUPE and the FDP will eventually be able to forget the past and cooperate fully. In fact, this cooperation is already taking place, and this investigator was witness to increased contacts and collaborating at the extensionist level. The nature of FDP-LUPE collaboration in the future will be discussed in more detail below.

While LUPE was still involved with the FDP and continuing to "date" in 1991, the FDP hired several (ultimately, six) social promoters as "paratechnicians" in the spirit of the project agreement, who are supervised by an agricultural engineer with extensive extension experience. These social promoters, four men and two women, continue to work within the context of the FDP.

The promoter's qualifications are those common to the paratechnician category. None of the six has any post-secondary schooling, and their secondary school specializations are varied, including primary school teachers, secretaries, and business. Just one has a specialization as social promoter. They received a minimum amount of training from the FDP before beginning work in the field, and their supervisor has tried to get them as much on-the-job training as possible. Their strength, and it is considerable in the area of extension, is their willingness to live and work in rural village communities, which helps them to learn and appreciate the conditions of the rural residents of the area.

However, the promoters are a technically weak team due to their lack of university training or extended training in extensionism, agriculture, agroforestry, livestock, and women-in-development, and the project is thus weaker than it was originally conceived, since the promoters were intended to complement the NRMP/LUPE technical extensionists and to help them in providing outreach to the communities. The outreach is still there, but the technical direction that was to have been provided by university-trained personnel is reduced, at least within the FDP.

2. The Incentives Program

The original system for working with incentives was that they should go to individuals for agricultural, livestock, soil conservation, agroforestry, or WID activities. There were numerous problems with this system. First, people who did not receive incentives accused the PDF of favoritism, both political and personal. Second, people received the checks but did not receive sufficient guidance regarding how the money was to be spent and the need to back up expenditures with bills of sale. Third, there was insufficient supervision regarding actual use of funds for the purpose they were destined for, and in some cases there was no record whether beneficiaries actually spent the money on the expressed purpose. Fourth, the sheer number of applications overwhelmed the FDP administration to some extent, and there were delays in cutting checks.

The system has been improved during 1991. First, incentives now go to groups, not individuals, which avoids many of the problems of the previous year. The groups are usually those formed by the promoters or those already organized and reactivated. The projects to receive incentive funds are always group projects involving five or more people, either an entire group or a subset of a group. An example of an entire group is one in which all are involved, such as in vegetable gardening, while a subset might be those women in a community who still lack an improved woodburning stove.

The investment plan is worked out by the promoters' supervisor, and includes the names of all members of the group, although just one check is cut in the name of a representative of the group. The application is sent to Tegucigalpa where it is handled by the coordinator, and turnaround time is about five days. Two checks are then cut, one for 70 percent and the other for 30 percent of the total. When the 70 percent is spent and the bills of sale for that amount sent in, the second check is sent out.

One of the principal problems of the incentive program is trying to determine what kinds of projects should be eligible for funding. To date, project selection criteria has been limited to the list of seven activities in the project agreement, i.e., agroforestry, basic grains, crops diversification, WID, small-scale irrigation, soil conservation, and improved range and pastures. However, the promoters have identified as important to the community projects in potable water and latrine construction and infrastructure projects with no clear identification with the seven-item list.

In 1991, the PDF approved projects involving vegetable gardens, improved wood stoves, and potable water. While the first two of these might figure in the seven activities, the potable water projects clearly do not. Even though the PDF incentive program staff have been unwilling to step outside the bounds of the project agreement, in this case they have done so. However, they have done so cautiously and only because they are convinced that the potable water projects are a matter of extreme necessity for the communities, especially when the population has been affected by recent outbreaks of cholera.

3. The Forest Protection Funds and their Use

One component of the project that has matured and acquired some importance for the communities of the area has to do with the caretakers (*vigilantes ambulantes*) hired for a period of six months to watch the forest. Originally, the two lumber companies hired one to two individuals to do this, and the PDF hired others in those areas where the lumber companies had no timber sale concession. There were a total of 24 caretakers in 15 communities.

However, the communities complained about this arrangement. They wanted to know why some were hired and others not, and a new arrangement was finally made wherein the caretakers do their work but their salaries go to the communities they work and live in. That is, checks are still cut in their names, but they endorse these and turn them over to the forest protection and extension section of the PDF, which administers the funds for the community. These funds ranged this year from a low of L.1,130 to a high of L.2,700. This is not an ideal arrangement: for the coming fire season, funds should be destined specifically for the communities, and if an individual check must be cut, it should be done in the name of an elected community representative.

At the same time, a committee is formed in the various communities to decide how to use the money, usually helped out by one of the PDF's social promoters (10 communities), although in some cases a local school teacher has taken the lead (two communities) and in others the regular staff of forest protection has worked with the community (three cases). In the future, it is expected that the program will lean more on the promoters to help organize and administer these funds.

Eight of the projects have involved building latrines, five have involved school or school kitchen construction, and two were potable water projects (see chart 1, below). The communities have occasionally been able to acquire a little supplemental funding from the municipality or the lumber industry if the funds are insufficient to complete a project.

These funds, though modest, have had an important impact on the communities, especially in those like Vallecito where the population might have reason to resent both COHDEFOR and the forest industry in general. The construction of the school will facilitate the arrival of a primary school teacher for the next school year, and provide an opportunity for 22 school age children present in the community of seven families.

CHART 1: Forest Protection Agreement by Community and Communal Construction to be carried out.

Community	Amount Received	Paid by	# of guards	Organizer	What Funds used for
Los Blancos	L. 2280.96	FDP	2	Soc. Prom.	Latrines
Comalotillo	2490.48	FDP-YODECO	2	Soc. Prom.	Pot. water
Encuentros	2270.48	FDP-HONDUPLY	2	Soc. Prom.	Latrines
Monte Verde	2700.00	YODECO	2	Teacher	School
El Aguila	2700.00	YODECO	2	Teacher	School
Dictamo	2280.96	FDP	2	Soc. Prom.	Latrines
Ocotal	2280.96	FDP	2	Soc. Prom.	Latrines
Vallecito	2260.00	HONDUPLY	2	Direct	School
Yupite	2280.96	FDP	2	Soc. Prom.	Latrines
Cerro Verde	1283.04	FDP	1	Soc. Prom.	School
Rancho Quemado	1130.00	HONDUPLY	1	Direct	School
Timiz	1130.00	HONDUPLY	1	Soc. Prom.	Latrines
La Pita	1130.00	HONDUPLY	1	Direct	School
Zapotes	1140.48	FDP	1	Soc. Prom.	Latrines
Julian	1350.00	YODECO	1	Soc. Prom.	Latrines
15 coms.	28708.32		15		

Source: Draft Forest Protection Report, La Unión

4. Analysis of FDP Social Promoters Functioning

All of the promoters began work during 1991, and all seem to be working fairly well. A focus group was held with the promoters to address their activities and problems. Chart 2 demonstrates how they rank the problems they have encountered in their work.

Transportation to, from, and between the communities they work in is the number one problem for the social promoters. They are regularly required to spend some time each week in meetings in La Unión at COHDEFOR headquarters, and there are occasionally other meetings in La Unión, support visits to other communities, or other activities which take them out of their home-base communities. There is very little traffic in the region, and whole days can be lost waiting for a ride to points near their communities.

CHART 2: Problems Encountered by Social Promoters

Activity	#1	#2	#3	#4	#5	Tot	Avg	Rank
Transportation	1	2	1	1	2	7	1.4	1
Low Salaries	2	1	2	2	6	13	2.6	2
Incentives delays	3	4	3	3	1	14	2.8	3
Logistical support	4	5	5	4	5	23	4.6	4
Admin. coord.	6	6	4	6	4	26	5.2	5
Lack of training	5	7	6	7	3	28	5.6	6
Lack of per diem	7	3	8	5	8	31	6.2	7

One of the most irritating aspects of extension work for the communities themselves is having a promoter (or other extensionist) schedule activities in a community and then not show up. Community members plan to attend the meeting, leaving for later their own important activities, and then waste an entire morning, for example, waiting for a promoter to arrive. It is often not the fault of the promoter, who is helplessly waiting in La Unión with no way of getting to the community and no way of letting the community know that he or she is not able to arrive.

There are 34 villages (aldeas) with 296 mini-villages (caseríos) in the four municipalities in the area. The aldeas may have several hundred people, and the caseríos may have over a hundred, although they usually have less. At present, the promoters are present in the following 11 communities, as shown in chart 3.

CHART 3: Communities Served by Promoters and their Populations

Aldeas & Population		Caseríos & Population	
El Ocotal	- 226	Cerro Verde	- 45
El Dictamo	- 163	Sabana Grande	- 41
Los Encuentros	- 85	Timis	- 35
Camalotillo	- 100	La Medina	- 283
Lomitas	- 204		
Los Blancos	- 82		
Canada Galana	- 249		

With motorcycles, there is no reason the promoters could not raise the average number of communities they work in from two to four and perhaps more. In addition, the mobility provided by a motorcycle would allow promoters to include communities that are more distant but are crucial to project success, such as communities where logging has recently taken place or where residents might be more likely to set wildfires.

Other problems mentioned by the promoters include three items have to do with project administration in some way: delays in the incentives, logistical support, and administrative coordination. With regard to the incentives, in spite of the assurances by Carolina Barrientos that turnaround time on incentive requests was five days, further delays occur. During the two weeks of field research for this report, for example, incentives were expected on the first day of research and by the last day, they had still not arrived, and radio communication with Tegucigalpa seemed to indicate that they had been lost.

With regard to logistical support and administrative coordination, which can be lumped, there is a feeling in the social promoter extension component that their activities are tolerated but not supported with any enthusiasm, which may be natural in a project that is supposed to focus on forestry. It is interesting that the promoters do not see their lack of training as a particularly serious problem.

5. Women-in-development Activities

The focus group with the promoters (four men and one woman were present, one woman absent) turned up an interesting piece of data. Chart 4 demonstrates that WID activities are considered comparatively easy to accomplish as well as within the promoters' abilities, but the promoters generally do not consider them important for the community. Although chart 4 does not show this, the one woman in the focus group felt that WID activities were both harder to accomplish as well as more important than the men.

CHART 4: Ranking of Activities Specially Mentioned in Project Agreement

Activities	Imp. for Community	SP's own abilities	Ease of doing in community
Range/pasture improvement	4.5 (5t)	6.6 (6)	5.8 (6)
Soil conservation	3.6 (2)	2.6 (1)	3.3 (4)
Improved cropping practices	2.5 (1)	5.0 (5)	3.0 (2t)
Crop diversification	4.3 (4)	4.4 (3t)	3.0 (2t)
Agroforestry	4.5 (5t)	4.4 (3t)	4.8 (5)
WID activities	4.6 (7)	3.6 (2)	2.0 (1)
Small scale irrigation	3.8 (3)	7.0 (7)	7.0 (7)

Chart 4 would seem to indicate that WID activities are separate from the others in the chart, but the truth is that these activities can include elements from nearly every other activity. Women are involved in tree nurseries, meaning agroforestry, involving species such as leucaena and maderado, which contributes both to feeding cattle (=range/pasture improvement) and to soil conservation. They are also involved in vegetable gardening, which is a form of crop diversification. In some communities, such as Lomitas, both men's and women's groups work on the same activities, such as vegetable gardening and composting, although they work as separate groups.

Additional WID activities include fuel-efficient stoves, dish and clothes washing stands, screened-in cupboards for dishes and food, improved floors, chicken coops, and pig pens. Women's groups are somewhat easier to work with than men's in that they are more often at home and easier to contact for meetings than men.

The lack of training and preparation of the promoters has caused them to focus more on the activities of their own sex than they should, i.e., male promoters tend to neglect women's groups and vice versa. This tendency needs to be remedied, although how to remedy it will differ between male and female promoters. It should not be a problem socially if both the female and the male promoters are careful to work only with groups and not individuals.

In spite of the problems encountered, the project has been designed well to include a necessary focus on women-in-development. The project is designed for the formation of women's groups in all communities where there are men's groups so that women are an equal focus of the extension component activities, and this has generally been achieved.

It is worth mentioning that LUPE also concentrates on women's activities, although in this case it is only the WID specialist who works with women's groups and not the agricultural or livestock specialists. Also, the LUPE WID specialist occasionally works in communities where the other specialists are not working and vice versa, so equal coverage of the FDP may be more generalized than LUPE's.

C. Small-Scale Forest Enterprise

1. Background

This component of the FDP is oriented directly toward improving income levels among individual rural residents in the La Unión FMU through the development of viable small businesses, the training of beneficiaries both technically and as small entrepreneurs, and if necessary and feasible, the provision of loans for start-up and working capital.

This component, like the extension component, is directed ultimately at protecting the forest from wildfires set because of resentment toward the government—COHDEFOR, to increase cattle forage, or through lack of concern. The small enterprise component attempts to create concern for the forest and its products among small enterprise owners and, by extension, their friends and neighbors, by creating a dependence on forest products for these enterprises and thus an interest in protecting these forest products from wildfire. Therefore, any small enterprise can be considered under this component if it can relate in some way to the forest.

The small enterprise component has been underway for a much shorter period of time than the rest of the project. A contract was awarded to Gainesville-based Tropical Research and Development (TR&D), a private company, and work began in March 1991, which means that this midterm evaluation is based on just seven months of activity. The evaluation is thus a little premature, but it may have the advantage of providing course correction at an early stage and in this way improve chances for success.

While the list is open to expansion, the TR&D component has begun by looking at four small enterprise options. One is carpentry, a seemingly natural option given the project location in a pine forest area with several sawmills in the vicinity, and especially since there are carpenters in the towns of the project area. A second option is resination, the collection of pine resin for use in the production of turpentine. A third option involves the use of oxen for logging, in conjunction with the logging companies or in areas outside those reserved to these companies. The fourth option involves pit sawing of lumber, which may involve squaring off logs for eventual use by lumber companies or using logs not taken by the companies to produce rough lumber. This evaluation will consider each of these options.

2. Carpentry

The original plan of TR&D was to produce products for export to the United States. The argument was that before inducing small carpenter-entrepreneurs to produce, it was essential that a market exist for that product. Therefore, a U.S.-based company has been hired to explore markets in the United States for simple, pinewood products that might be made by the carpenters in La Unión. To date, this company has identified a type of simple flower box and provided the drawings and plans for the box, although it has not provided information yet on how many boxes might be sold nor for what price.

TR&D is now reconsidering this option and will likely abandon it. This option is patently not viable and should be abandoned immediately. No one should seek out markets under this component until (1) a wood shop facility of some kind exists in La Unión and (2) there are trained carpenters to operate it. The export objective is attractive, as opposed to local marketing, because the returns can be high. If successful, it might transform the local economy and, incidentally, go far toward raising consciousness regarding the protection of the forest from wildfires. But this objective can only work if the following scenario, with steps very different from the above one, is followed.

TR&D must first set up a carpentry training facility in La Unión, one that is similar to those proposed for the carpenters and using the same kinds of machinery. This means that TR&D must import the U.S. machinery, move it to La Unión, and set up the shop, a process that will stand it in good stead if it eventually wishes to do the same with local carpenters. This facility can be used to train first the 19-20 La Unión carpenters already identified. Once the training is completed, it will be possible to experiment with a variety of products, and samples of these products can be used to explore potential markets.

This scenario has a chance of success, but even if it does not succeed, the activity has the advantage of providing good training in carpentry using good stands equipment. All of the trainees will have received some useable training for work in their own, still non-technified carpentry shops. The training shop would remain in La Unión, either at COHDEFOR or at the local school, and could continue to be used as a training facility.

But these gains are small in relation to the outlay, and there are problems with this carpentry option, not the least of which is the fact that the project at present presumes the use of electrical machinery, in spite of the fact that the town of La Unión has no electricity. This means that electricity must be produced using a diesel generator, an extra initial expense and an expensive source of electricity. Second, an export operation would require a secure, inexpensive, and ample source of war materials, and most of the lumber produced in local sawmills already has a purchaser. The San José sawmill, for example, is owned by Luis Velasquez, who also owns a furniture factory, which he himself supplies with wood. Other problems include scarce transport for products and lack of rapid communications, such as telephones.

It might be preferable for TR&D to lower its sights and look to more appropriate technology and resources, in spite of lessened opportunities for a high impact on the

beneficiaries. While it is not the place for this document to provide a detailed list of such options, there are some points that should be taken into account.

First, with regard to technology, serious consideration should be given to projects that carpenters can carry out without electric machinery to avoid the expense of first producing the electricity, then producing articles for sale. By doing so, individual carpenters might be able to accept a loan for a much smaller amount of money and thus avoid an onerous debt that can only be paid back if the export venture is successful.

Second, with regard to resources, the component needs to look into the possibility of focusing on products that can be produced with waste wood from the sawmills, which at present is burned by the sawmills. This might mean focusing on products which can be produced using smaller pieces of lumber, such as toys and small boxes. In fact, the collection, management, and sale of waste wood from the sawmill is a potential small enterprise for the area.

Third, as Valerie Estes' socioeconomic report suggested, the component should concentrate on products that can be produced using the family as an integrated labor unit, including in the process at the outset, perhaps to finish products from pieces produced by the men. Women should be included in the training process, especially the business and accounting training, from the beginning, since Estes reported that it is most often the wife who acts as "treasurer" and manages the money in a household.

By thinking small instead of big, the component will take into account variable labor availability of both men and women during the yearly agricultural cycle. As Estes notes:

The most attractive economic activities will include ones which are characterized by being small-scale, offering daily and annual flexibility of hours invested, locally based, and offering significant control to the individual producer... Beneficiaries who are farmers have had experience primarily with very small-scale production and marketing. Organization of the activities and finances of activity enterprises should reflect this scale.

3. Resination

Resination involves making a small cut in the bark of a pine tree, applying an acid to stimulate the flow of resin, and collecting the resin in a small cup. If done correctly, it does not harm the tree and can be carried out indefinitely or at least until the tree itself is harvested. Resination has been carried out for years in Honduras, which exports pine resin products. The export industry is controlled by a few companies who essentially set the price for resin.

The above-mentioned Velasquez, owner of the San José sawmill, is working with resination in the area around La Unión. His system is to provide all the materials and to simply pay individuals a daily wage of L.10.60, slightly below the basic sawmill wage, to

collect resin. He claims not to make any money (or lose any) on resination, and he continues to do it to keep more people employed in the area.

TR&D plans to provide a small loan to individuals to collect resin on their own and to sell it to middlemen, who collect the resin for the large companies. The cost of materials to begin collecting resin from 1,000 trees, which is the number an individual can manage on his own, is about L.1500 (about \$283). Some of the materials, like the acid, is a recurrent cost, while the bark-scratching tool and the cups are one-time costs.

One constraint to resination is that the project should use only those trees that will be cut in the next three to five years to ensure good quality trees for harvest, since resination can be harmful to timber stands if it is not done correctly. The question is whether COHDEFOR is willing to provide sufficient supervision to make this option viable.

Another constraint in stimulating resination on a large scale is that the individual resinator might consider that the 1,000 trees he is resinating are "his," in spite of the explanations from COHDEFOR that he only has temporary use of them. At some point the logging industry will cut down "his" trees, which of course do not belong to him anyway but to COHDEFOR, which has contracts with the logging industry. The resinator will undoubtedly fight to save "his" trees from logging. And of course, there is no point of saving the trees from wildfires if they cannot later be harvested.

If resination is to be carried out, TR&D should alter its strategy to provide a no-cost demonstration of the profitability of resination. It should purchase one set of materials for use with an individual or group of individuals interested in trying it out. It should carry out a training and demonstration of resination for a six-month period, including both the technical aspect as well as training in the accounting involved, and only then should it solicit candidates for loans.

4. Oxen Logging

Oxen are an integral part of the La Unión area landscape, and there are virtually no men who have not had plenty of experience with them. They are used in preparing the land for planting, cultivation of young crops, and any task that requires them, including pulling out consultants' vehicles when they get stuck in the mud.

They are in use at present in logging, and the industry would like more yokes of oxen and drivers. Oxen are cheaper than mechanized vehicles, they can work in difficult areas inaccessible to mechanized vehicles, and they generally do less damage to the forest, particularly young trees, than logging by other methods. Pulley and cable logging technology should be introduced to improve the efficiency of this operation.

An oxen-logging contractor was interviewed who provided some details of his profession. Oxen logging is paid on a production basis, and a good team of oxen can make as much as L.180 per day, while average earnings might be half that much. A good yoke of oxen costs about L.7,000 at present. While oxen feed on grass near logging sites, they must

also be fed concentrate costing L.5-10 per day. Logging is dangerous, however, and an animal that breaks a leg or horn can no longer be used.

5. Other Possibilities

TR&D has not looked into two possibilities that were specifically mentioned in the project paper: seed collection and road maintenance. Seed collection from pine trees is an activity in which individuals collect seeds from pine cones. These seeds could be used to make tree nurseries, and the seedlings used to reforest in areas with poor natural regeneration or in fire-burned areas. The owner of Yodeco, which has a timber concession in this area, pays people for planting pine trees in neighboring Yoro.

The project paper stipulates that routine road maintenance be contracted to local inhabitants whenever their availability permits. TR&D might try to organize these road maintenance crews, working with COHDEFOR, Honduply, Yodeco, and the San José sawmill.

D. Conclusions

1. Social Promoter Component

The social promoter participation in the forest management component has been positive, although their impact has been limited by lack of transportation and training. In addition, women promoters have been equally effective or even more effective in comparison with men promoters, since women work effectively with men's groups, and men promoters have been less effective in working with women's groups. The promoters' present supervision is excellent, although the present supervisor's workload is heavy. In addition, the present supervisor has excellent training in agriculture and livestock, but he has less experience in women-in-development activities.

2. Community Selection for Social Promoter Extension

The FDP extension component has selected which communities to work with based primarily on the willingness of communities to accept the presence of the promoters and to work with them on their own development. They ignore those communities that demonstrate apathy or negativism when presented with the possibility of working with the extension program. As a result, many of the communities selected are not the ones that should be top priority, i.e., communities where people have more reason to set wildfires. At the same time, while LUPE and DIRCO are present in the area, they do not maintain a special focus on the "problem" communities in the area, from a forest management point of view.

3. The Use of Incentives

The incentive program began poorly by giving incentives to individuals and by not providing sufficient supervision for recipients of the incentives. Although the rules

governing the incentives have not yet been reformed, the program has been restructured to provide incentives to groups rather than individuals and to provide better supervision of them. As a result, the incentive program is now a positive factor in the overall extension program.

4. The Forest Protection Funds

While not planned as part of project extension to area communities, the forest protection funds have proved to be a very positive and productive component in improving COHDEFOR relations with selected communities. It has provided communities with their "own" money, almost as if it came from taxes, to use in bettering community infrastructure, in spite of the relatively small amounts of money involved. In communities where the social promoters are not working, the forest protection fund has functioned to achieve similar results in community satisfaction.

5. Small Enterprise Development

The small enterprise component under the direction of TR&D has not been operative long enough to derive any real conclusions about its ultimate success. The original strategy of finding an export market for a particular product providing was poorly thought out and has apparently been shelved.

6. Socioeconomic Baseline

A socioeconomic baseline, which would permit the later measurement of project impact on income and other factors, was not carried out in La Unión FMU, although a baseline study was carried out recently in Salamá, the area targeted as the second area for project intervention.

E. Recommendations for the Extension Component

- 1. Increase the number of promoters to 10 with at least 50 percent being women**

The number of social promoters should be increased to 10 to provide increased coverage in the FDP area. Three of the four new promoters should be women to achieve a balance of five men and five women. If it is found that women promoters are able to work with men's groups as well as women's groups, but that men promoters have difficulty working with women's groups, then all new promoters should be women, since it is not efficient for women promoters to be required to work with women's groups in the communities of men promoters as well as in their own assigned communities.

- 2. Increase staff supervision and training by hiring a woman social worker**

The present supervisor, an agronomist with knowledge of both agriculture and livestock, provides much of the technical backstopping required of the promoters in the areas

of horticulture, agroforestry, agriculture, and soil conservation, and he is an excellent supervisor as well. He is weaker in community development techniques and WID. Therefore, the project should add one staff member, a woman social worker, who will assist the supervisor in component administration, training in community development dynamics, and support for WID activities. The correct supervisor to promoter ratio should be one supervisor to five promoters.

3. Continue and strengthen inter-institutional coordination with LUPE and DIRCO

The LUPE team impressed observers with their knowledge of community development and with their soil conservation and agroforestry activities. There is also the DIRCO program with three agronomists, which stimulates basic grain production with loans for improved seed, fertilizers, herbicides, and pesticides, and is achieving increases for corn, as farmers raise production from 4,000 to 5,000 lbs/mz. Bean production has been raised from 800 to 1,600 lbs/mz. The FDP social promoters can get additional training and backstopping from the LUPE and DIRCO teams, as well as provide contacts for these agencies in the communities they serve.

4. Select which communities to work with based on the problems of forest management

The FDP should select communities first and foremost according to their importance in forest management and wildfire control. It should select communities such as Vallecito, where residents were forced to stop growing corn in the Muralla protected area, where seven homes have some 90 cattle, and where forest cutting is being concluded, making it a community where regeneration is essential now and where residents have two reasons (resentment and cattle forage) for setting wildfires.

5. Restructure the use of incentives

The incentives program should be restructured, and a new set of guidelines and rules should be developed by the incentives coordinator and the field supervisor. The incentives program should be opened to infrastructure projects such as potable water, latrines, and school construction, but should continue to include other projects such as vegetable gardens and improved stoves. The program should be open to groups only, not individuals.

The groups should have experience working together with the promoter in non-incentive projects for a period of time before becoming eligible for incentives. The promoter should not even mention incentives until the group has demonstrated that it can function well without incentives.

The incentives should be provided to the group, although an individual, the group president or representative, will have the incentive check made out in his or her name. The promoter must accompany the representative in the purchase of the materials required for the

incentive-based project, both to ensure that the money is used for the purpose it was destined as well as to make sure bills of sale are collected for PDF bookkeeping.

Incentive funds should be made available to the LUPE and DIRCO teams as well, if these agencies encounter situations in communities not served currently by the FDP. The criteria for including such communities should include availability of funds and the acceptance on the part of LUPE and DIRCO that FDP must supervise the incentives.

While incentive funds have not been utilized as much during 1991 while searching for an improved mode of handling them, they are nonetheless a valuable tool for the FDP extension program and for the promoters. The incentives should continue to exist, although the amount needed annually might be diverted into the forest protection fund.

6. Social promoters should receive motorcycles

It is highly recommended that the promoters be provided with motorcycles of the 125 cc scrambler type, which will greatly increase the time they will have available to work with communities. It will also allow them to cover a much greater area or number of communities, and it will increase their reliability when they visit the communities. They should be able to cover four communities each, which means that the FDP would be reaching 40 of the 296 communities in the area.

7. Male promoters need training on how to work with women's groups

Training in WID for male promoters should include women's group dynamics, how to avoid conflicts, and how to link men's and women's groups in each community's activities. This training should be provided by the new staff female social worker. The male promoters must also learn the techniques mentioned above (stoves, stands, cupboards, etc.) so that they can provide concrete assistance to women. More importantly, the female social worker needs to raise the consciousness of the male promoters on the importance of WID activities.

8. Restructure the forest protection funds so that the explicit beneficiary is the community, not an individual

The forest protection funds program should be broadened, but care should be taken in determining the amount available per community. A minimum, fixed amount should be set aside for each community, and that amount communicated to the community. The amount should probably be based on community size, for example, L.1,500 for communities with less than 100 people, L.3,000 for communities between 100 and 200, and so on. However, a special bonus should be offered to communities of special interest to the FDP, such as communities where the forest was harvested recently, or where individual families have a large number of cattle per household. If the project decides to rotate the funds and provide funds for a community one year but none the next, the community should be informed of this, and the funds should be made ample enough to complete a necessary infrastructure project.

Communities should also be allowed a certain flexibility with their funds, such as saving the assigned amount one year and putting it together with the next year's funds to complete an expensive project, such as the introduction of piped potable water. Communities should also be required to have a functioning community improvement committee or have men's and women's groups working with a promoter. Finally, a promoter should be assigned to each community receiving protection funds.

F. Recommendations for Small Enterprise Component

1. Abandon focus on carpentry exports until beneficiaries are trained

If it has not already been done, the contract with the U.S.-based company should be canceled by TR&D until it can be shown that export products can be produced.

2. Set up a carpentry training center and resination demonstrations as a first step in the La Unión area

TR&D should set up training and demonstration programs in La Unión, including a training center in woodworking for carpenters and demonstration and training sites for those interested in resination.

3. Make loans for purchase of oxen flexible

Loans made to individuals for the purchase of oxen should take into account the possibility of injury to the animals. If an animal is injured and must be slaughtered, the loan should be renegotiated to allow for purchase of another ox.

4. Hire short-term consultants to analyze product possibilities

TR&D needs to hire one or more short-term consultants to provide ideas for different items that can be made with forest products and for fresh possibilities for other forest-related enterprises.

G. Another Recommendation: Carry out a socioeconomic baseline study in La Unión

A socioeconomic baseline study of the La Unión FMU should be carried out as soon as possible to provide the basis for future evaluation of the impact of the project on income and other socioeconomic factors.

H. Lesson Learned: Separate projects should not be mixed

The experience of this project in including a team of professionals from the LUPE project within the FDP was negative, and it is not difficult to understand why this was so. The LUPE project places technical assistance teams in many communities, and these teams are supervised by LUPE project management under the Ministry of Natural Resources.

The LUPE team was and is supervised by Eduardo Canales, whose office is in Campamento and who also supervises the other LUPE teams in the area, including, for example, Salamá.

However, the La Unión, LUPE team was also supervised and administered by the FDP administration in La Unión. Although the LUPE team's activities in La Unión followed activity descriptions for other LUPE teams, and although these activities were known to the FDP administration, it is easy to understand how the FDP might wish to reorient the LUPE team's activities in some way, especially since the FDP was pilot in nature. Since the LUPE team was supposed to be integrated into the FDP, administration had reason to believe it had control of the LUPE team and its activities.

The LUPE team was eventually separated from the FDP, and it now seems probable that the LUPE and the FDP social promoter teams will be able to work together in their common interests in the La Unión area. The lesson here is that separate projects should collaborate, and this collaboration might be formally developed at administrative levels or it might be informally worked out at the field level, or both, but one project should not be integrated into another.

ANNEX G

ENVIRONMENTAL REPORT

CHEMONICS

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ENVIRONMENTAL REPORT

A. Summary

1. Introduction

This report presents the results of the analysis of environmental impacts and other environmental issues related to the implementation of the Forestry Development Project (USAID/HONDURAS 522-0246). The discussion is based on field observations within the project area (La Unión) as well as in other areas of Honduras and interviews with project personnel and other individuals directly and indirectly involved with forest and environmental activities in the country.

Parts of this report were inserted into the midterm evaluation report. This report discusses environmental issues in more depth and contains pertinent information and specific recommendations. The chart attached at the end of section VII presents schematically the results of the environmental analysis.

2. Major Conclusions

Overall, the project has produced methodological and institutional changes that over a certain period of time will promote the sustainable use of forest resources, the protection of critical ecosystems and the mitigation of negative impacts of forest utilization practices throughout Honduras.

Most important achievements of the project to date are: (1) implementation of a standing timber sale system with clear provisions and safeguards for environmental protection and (2) establishment of two protected areas involving cloud forests of significant biodiversity.

However, much more needs to be done to (a) consolidate the achievements to date and (b) realize the full potential of this project to positively affect environmental quality, preserve biological diversity, and promote sustainable use of the natural resources of the country.

COHDEFOR, the project's executing agency, has received the legal/administrative mandate and thus, assumed full responsibility over the establishment and management of protected areas in Honduras.

Standing timber sales across the country are being prepared in consideration of reducing and mitigating environmental impacts and sustaining forest productivity. Sale administration and supervision, however, lag far behind and *de facto* preclude the full obtainment of environmental objectives.

Some effort is being made to raise consciousness among the population in general and among forest professionals in particular about the environmental implications of all forest related activities. Although some educational material has been produced, a strategy and action plan for its distribution and use in schools and elsewhere is still missing.

The environmental monitoring component of the project has not been developed for its use as feedback mechanism in project activities, especially the standing timber sale program. Consequently, its potential as a tool to improve implementation of project activities is being lost.

Although a number of environmental impact assessment activities have been performed, the project and by extension, COHDEFOR, have not acquired an in-house capability to carry out impact evaluations and environmental analysis.

COHDEFOR has apparently shied away from taking a firm stand regarding grazing practices in forest areas, especially after the timber has been extracted and regeneration needs to be protected. All too often fencing of forest lands occurs to keep cattle in, not out.

Even though incipient, the changes occurring within the forest industry bode well as to the assumption of certain responsibilities vis-à-vis the forest resources of the country not just over the short term, but in terms of preserving their long term productivity.

3. Recommendations

Some of these recommendations may have been stated in the original project paper and mentioned by technical assistants to the project. Listing these recommendations again does not necessarily imply non-compliance, but rather partial or delayed action. These recommendations will be dealt in detail within the text and the annex.

- Establishment of an "environmental unit" to direct monitoring activities, contribute to forest management and extension activities and coordinate actions related to the establishment, protection and management of critical ecosystems within the project area.
- Monitoring of all environmental aspects of project implementation on a periodic basis carried out by outside expertise.
- Putting in place a proper environmental monitoring system within the project area to establish a baseline and measure magnitude and intensity of impacts of forest related activities including logging, grazing, fires and traditional farming practices.
- Baseline studies and environmental assessments should be conducted for the Salamá FMU and area III (when it is chosen).

- **Applied research and demonstration of environmentally sound logging and roading practices should be started as soon as possible to determine most appropriate techniques as well as serve for training purposes.**
- **Implementation of a properly designed educational program involving the public at large, the student population, and the communities directly affected by project activities.**
- **Prioritize and significantly increase logistic support as well as training for timber sale administrators (motorcycles).**
- **Promote and support a pilot cable-logging operation (possibly involving a local group) for timber sale areas presently not exploited or exploited inadequately, to reduce environmental impact and provide a business-employment opportunity to the local community.**
- **Provide long-term technical assistance to COHDEFOR in alternative logging systems, environmental controls, site reclamation, and forest roads design, construction, and maintenance.**
- **Develop an incentive and training program directed at industry and small businesses to involve the local communities directly in forest related activities (e.g., logging crews, road construction and maintenance crews, fuelwood gathering and distribution crews, pit-sawing crews, fire prevention crews, seedling production, and reforestation crews (including seed collection)).**
- **Develop and support community involvement in the protection of aquifers and critical watersheds as well as the management of wildlife resources and fragile natural ecosystems (e.g., training and logistic support for forest guards, game wardens, nature guides, municipal watershed patrols, etc.)**
- **COHDEFOR's social promoters need to address basic needs of the local population by focusing on forest related activities such as fuelwood gathering, alternative livestock management practices by means of cooperation with LUPE extensionists, and intensive farming practices.**
- **Finally, environmental education programs implemented through participating institutions will need to address the community's forest surroundings, the economic implications of forest related activities, involve more directly (field, hands-on) the audience, and focus not just on the intrinsic ecological value of the forest, but also its productive potential (*).**

(*) Children and their teachers, for example, will benefit considerably from on-site observation of logging operations, how trees are cut and regenerated, how logs are turned into lumber and furniture and learn about watershed protection from the cloud forest to the pipe carrying water into the village.

B. Environmental Impact Assessment Update

1. Project Contribution to Environmental Conservation

The FDP's main achievement to date is probably the institutionalization of a standing timber sale system. The implications of the proper preparation and administration of this system are significant in protecting the environment and of sustaining the productivity of forest resources.

- As conceived, the timber sale system consists of field determination of standing timber volume, the selection of trees to be cut based on silvicultural and environmental considerations (i.e., streamside and habitat protection), different provisions to minimize and mitigate the impacts of felling, logging, skidding and loading activities and finally, the laying out of roads and skid trails in order to reduce erosion and siltation (**).

Whenever proper follow-up and supervision of the timber sale occurs, as is the case in La Unión Management Unit, the environmental impacts of forest extraction activities are significantly reduced, soil erosion and stream siltation is minimized, fragile areas are not disturbed, habitat is protected and forest regeneration is facilitated so as to enable the resource base to sustain yields over time.

- The project has trained numerous forestry professionals about the environmental consequences of improper forest exploitation practices. Implementation of environmental safeguards in forest extraction activities are being perceived not only useful for their intrinsic ecological value, but also for their positive contribution to sustainable forest production. Most significantly, foresters trained by the project have moved from the public sector to industry and thus, increased awareness about environmental consequences of forest related activities is becoming part of industry's own concern, for more than just rhetorical reasons.
- Through the project, one cloud forest area of considerable ecological significance (La Muralla Wildland Refuge) has been protected and the proper steps taken to implement a management plan. The protected area is being expanded from 6,093 to over 13,000 hectares in order to include the northern slope of the La Mora mountain range. A second wildland area was also delimited (El Armado Wildland Refuge) and it is hoped that it will receive the proper attention in terms of management and protection in the near future.

(**) Although these actions are indeed part of the package being promoted by CONDEFOR and the impact mitigating provisions are included as contract clauses, their application varies considerably. Administration of the sale and supervision of logging activities is weak for a variety of reasons and thus, the standing timber sale system cannot fully realize its potential to positively affect the environment.

- Finally, both COHDEFOR and industry are becoming increasingly aware of the advantages of proper road construction and maintenance procedures. The reduction of environmental impacts (hydrologic and habitat alterations) from proper road layout and drainage works can be considerable, especially when compared to traditional road building practices.

2. Project Contribution to Sustainable Use of Natural Resources

- As mentioned above, the standing timber sale system is designed partly to guarantee natural regeneration of pine stands being harvested. Although monitoring and evaluation of these procedures has not been fully implemented, field observation by the team appears to confirm that if adequately protected from fire and livestock grazing activities, the pine stands are likely to regenerate to adequate densities, in some cases greater than the original ones.
- Similarly, when sale administration and supervision is carried out properly, disturbed sites such as landings and skid trails can be reclaimed effectively by regeneration. Unfortunately, the regenerative capacity of the forest is strictly dependent upon proper supervision of extraction activities, upon the implementation of certain erosion control measures, upon effective fire control measures, and in some cases, upon active revegetation (grass seeding) and mulching activities.
- The standing timber sale system has also contributed to a greater efficiency in timber extraction, with reduced waste of valuable forest resources. As standing timber is sold to a top diameter of 15 cm, industry tends to leave less timber on the ground and has introduced technologies to take advantage of smaller diameters. In other cases, a secondary market (fuelwood and broomhandles) has been developed based on branches and small diameter timber.

In conclusion, the implementation of the project appears to promote positive steps in terms of reducing forest depletion rates and in maintaining the regenerative capacity of the forest resources of the country.

3. Environmental Assessment Update

In this section of the report the basic assumptions of the Environmental Assessment will be analyzed, validated, and updated. The analysis and discussion is based on field observations rather than objective measurements, because no baseline data has been established (erosion/sedimentation plots, weather stations, wildlife inventories, etc.).

Issue #1: Tropical Forest Protection

Broadleaf forests, specifically the ecologically significant cloud forests at the top of mountain ranges, have received considerable attention and are being effectively protected. La

Muralla and El Armado Wildland Refuges have been established by decree, and in the case of the La Muralla, positive actions are being taken to expand its area and to actively manage it. Similar actions are expected for the El Armado Refuge in the future.

Through the implementation of the standing timber sale system, slopes above 50 percent are being preserved from harvesting. It has to be noted, that it is on these slopes that natural patches of rare pine species occur most frequently (*P. maximinoi*, *P. tecumari*). During timber sale preparation riparian vegetation as well as wildlife habitats (den trees, snags, deer fawning areas) are also being protected from logging and roading impacts.

In areas of mixed broadleaf and pine stands, the timber sale geared at harvesting mature pine trees (*P. oocarpa*) does not directly affect oak species (*Quercus peduncularis*, *Q. oleoides*)(*) and liquidambar, thus maintaining habitat diversity—by default. It is, however, desirable that a more explicit policy regarding species diversity and forest composition be enacted in the future timber sales.

As COHDEFOR has assumed responsibility over all protected areas in the country (Decree 87/87), its experience in the project area with the La Muralla Refuge will prove extremely important to extend similar protective measures across broadleaf forests elsewhere. COHDEFOR has established a Department for Protected Areas which is preparing to set up a national system of wildland areas covering critical and representative ecosystems across the entire nation.

Issue #2: Watershed Management and Community Aquifers

Through the project, four community watersheds (**) have been identified within the La Unión Management Unit and specific management plans involving some community participation are being prepared. These plans constitute an important exercise for COHDEFOR in terms of managing forest and natural areas for other than timber production. It also provides an excellent opportunity for COHDEFOR to interact and cooperate with the communities on issues critical for their own subsistence.

Although a Watershed Management Department within COHDEFOR exists, its presence and work within the La Unión Management Unit is less than evident. It is also obvious that watershed management activities need to be implemented above and beyond the boundaries of the protected area (La Muralla) and involve personnel other than those dedicated to the management and protection of the Wildlife Refuge.

(*) These tree species are used for the production of fence posts and for firewood, often without supervision and adequate care for rational utilization.

(**) Tapequile (25 km²), Camote and Carta (51 km²), La Habana and Habanita (32 km²), Las Milpas (8 km²).

FDP's efforts in watershed management are less than enthusiastic. It is still early to assess the result of this effort, yet it is obvious that COHDEFOR needs to be encouraged to work harder in this direction within the project area and elsewhere.

Issue #3: Forest Road and Trail Development

During field visits it became quite evident, that from an environmental point of view, forest roads and trails in general, remain an area of major concern. There are different aspects to this issue: responsibility, road layout, technical specifications and administration and enforcement:

- Main forest access roads are the responsibility of COHDEFOR. Construction of harvest roads and skid trails are the responsibility of the contractor and so is maintenance. Skidding trails and loading site reclamation after harvest is also the responsibility of the contractor. Road layout is usually the responsibility of COHDEFOR.

The provisions included in the timber sale contract clearly assign responsibilities and establish technical specifications for all aspects of roading, but execution and adherence to the contract clauses varies considerably from site to site, as a function of sale administration and on-site supervision.

- Layout of roads, skid trails, and landings is determined at time of sale preparation. During this activity, drainage and other engineering works designed to minimize and mitigate environmental disturbance are also established. There is considerable variation in the skill level of technicians laying out roads and trails, consequently, the magnitude of environmental impacts generated by their construction and use. Often, due to the unavailability of accurate topographic maps for many sale areas, road layout is done directly on the ground, without proper instrumentation and not enough experience to lay out an efficient road system; minimizing environmental disturbance.
- Technical specifications for roading written into the contract are adequate in terms of reducing and mitigating environmental impacts. However, their usefulness is only as good as on-site supervision and enforcement. There have been few instances where noncompliance with roading specifications has resulted in temporary stoppage of logging activities. Much more common is timid reporting and minimal follow-up of infractions. In some cases, roads are actually realigned by tractor operators as they go along whenever they find topographic and geologic obstacles on their way.
- Finally, as sale administration and on-site supervision is less than obvious in most cases, adherence to technical specifications (location and size of landing, slope and width of trail, etc.) is less than optimal. It must be recognized that compared to traditional roading practices, significant progress has been

achieved. Moreover, three actions would considerably increase better compliance with contract clauses and significantly reduce environmental impacts from forest roading: (1) training of tractor operators, (2) frequent on-site supervision, and (3) availability of topographic maps to lay out the road system before arriving at the site.

Issue #4: Silvicultural Practices

The project has concentrated in preparing for and implementing the standing timber sale system. Although the system has clear implications for the adoption of sound silvicultural practices, their application requires more technical personnel with greater experience and training and increased presence on the ground. Moreover, it is not at all clear that neither COHDEFOR nor FDP specifically mandates technical personnel to achieve silvicultural objectives.

Issue #5: Forest Harvesting Practices

Forest harvesting is probably the area where greater achievements have been obtained by FDP. Implementation of the standing timber sale has forced industry to better utilize forest products. Moreover, requirements regarding stump height and log bucking have reduced waste of valuable timber. Improvements can still be obtained, especially in terms of reducing tree shattering through directional felling, more precise log bucking and trimming, more conservative log butting to eliminate damage, and by using more sophisticated methods of skidding (chokers) and logging systems (simple cable logging). One aspect that carries significant environmental implications and that could be improved easily is slash disposal after harvesting and using it to control erosion on skid trails and landings.

Issue #6: Wildlife Management

Due to recurring forest fires and indiscriminate hunting, the forest appears "dead" other than for trees. Although it is true that the Subtropical Moist Forest Life Zone where *Pinus oocarpa* dominates is wildlife poor, too few birds and fewer mammals occur in most of the sites visited by the team. Tree harvesting although disturbing some sites, creates ideal browsing conditions for white-tailed deer and numerous bird species, which are indeed typical inhabitants of these forests.

Although not necessarily related to timber harvesting—yet a responsibility of COHDEFOR as an institution—it appears that FDP should take the initiative to manage the forest for all aspects of the ecosystem, including wildlife. It might involve initially promoting the idea of game management among the local population, finding ways to give incentives to control fire and protect wildlife, maybe on a pilot basis wherever most feasible. Eventually, active wildlife protection and management could become a justification by itself for the local communities to be more directly involved in protecting the forest.

Issue #7: Biological Diversity

FDP has advanced more than expected in the original PP in terms of setting aside areas of greatest biodiversity such as the cloud forest of La Muralla. Not only has this area been delimited on the ground, but a visitor center has been built to house management personnel, nature trails laid out, and more importantly, the project has taken a "clear stand" in excluding coffee growers and ranchers from the area. This determination (supported by military action) is quite new and though not ideal in terms of developing a cooperative relationship with the local community, it has certainly sent the right message.

In the protection of biological diversity much more needs to be accomplished, especially strengthening COHDEFOR's institutional capacity to protect and manage not just one area, but an entire system of wildland areas nationwide. FDP could thus play a critical role within COHDEFOR in terms of providing an example of protected area management, as a training ground for specialized personnel and by supporting the strengthening of the Protected Area Department within COHDEFOR with technical assistance during the planning and implementation stages of a national system of protected areas.

Issue #8: Subsistence Farming and Grazing Practices

Other than by default, COHDEFOR has not defined a clear and decisive policy to protect managed timber stands (after harvesting) from illegal fencing for cattle grazing. Although an understanding exists in terms of precluding grazing for up to eight years after harvesting, it is evident that enforcement of this policy is weak. As a result, it is possible that management plans based on natural regeneration under undisturbed conditions (no grazing and no fires) will not be realized completely, endangering the sustainability of forest production over the long term.

It is also evident that a good number of forest fires are set by ranchers trying to improve forage in forested areas, as they do not see other benefits to be derived from them. Focusing attention upon their needs would go a long way towards improving the chances of natural regeneration to replenish forest stock within reasonable time. Developing alternative forage supplies and education could be the first steps towards improving not only grazing practices, but also improving relations between COHDEFOR and small and large owners of livestock. Considering that traditional grazing practices are low-cost affairs charged with social status value, attempting to change these systems is definitely not an easy task, but clearly one that needs to be addressed with urgency.

Issue #9: Forest Industry

There are two aspects to this issue: forest activities and sawmill activities. Each has environmental implications of considerable significance. Industry, especially within La Unión FMU has reacted extremely positively to requirements of impact mitigating procedures within the forest. All three major contractors in the Unit have subcontracted part of the logging activities to oxen operators, whose impact in terms of erosion and sedimentation is

significantly less than by mechanized means. From their own assessment it appears that such logging practices make also good business sense.

The major problems are found in the case in which the sawmill (which purchases the timber) subcontracts all harvesting and transportation work to smaller operators. The latter dispose of less working capital, have no long-term interest in investing in proper infrastructure within the forest, and who under pressure to produce tend to "operate as they always did." These logging operators obviously resent erosion control requirements, proper construction, and road maintenance specifications (especially drainage and culverts) and the obligations to properly waterbar skid trails and landings after harvest. In such cases non-compliance with the contractual clauses is greatest. At the same time, some administrators feel that they should be partially exempted from these obligations given their limited means. Finally, these operators are the least likely to have received appropriate training, have limited bargaining power and usually find themselves on the short end of the deal with the sawmill operators.

The FDP needs to address these aspects most urgently, as they appear to endanger the proper application of the standing timber sale system especially, where supervision and sale administration are weak.

Issue #10: Soil Erosion and Sedimentation

This issue relates directly with the environmental impacts of harvesting and roading activities carried out under the project. As mentioned earlier, it is definitively an area of major environmental concern. As on-site supervision of timber sale and enforcement of mitigating procedures are weak, soil erosion, sedimentation of streams and disruptions of habitat and natural drainage patterns are considerable.

On practically all of the sites visited by the team, very little is done to prevent soil erosion. The most commonly observed activities that cause grave erosion problems include: (i) improper layout of roads and skid trails especially in terms of density and slope, (ii) inadequate ditching and drainage along roads and trails, (iii) improper location and size of landings, (iv) skidding of entire trees, (v) filling in of dry ravines, (vi) inadequate stream crossings, (vii) tree felling into or across streams, (viii) absent or inadequate waterbarring of skid trails and landings, (ix) absent or inadequate slash disposal or erosion control work at the end of harvesting activities, and (x) inadequate reclamation of stream crossings, including clearing of debris from ravines and streams.

Issue #11: Mineral Exploitation in the Project Area

Since the preparation of the environmental assessment, a gold mining operation (partly open pit, partly tunnels) has started operation at Los Blancos, north of Mangulile. Environmental impacts of such an operation are obviously quite considerable. COHDEFOR should therefore coordinate with the Ministry of Natural Resources in charge to supervise mining operations, to adequately evaluate environmental impacts and propose an effective impact mitigating plan.

C. Institutional Reorientation of COHDEFOR: Environmental Impacts

The standing timber sale system represents a significant departure from the traditional timber sale contract. The area affected is clearly defined on a map and on the ground, trees to be harvested are marked and fragile areas are specifically excluded. There are clear provisions to reduce environmental impacts of the harvesting, skidding, and roading activities allowing COHDEFOR to control all aspects of the operation. In addition, it provides for the application of appropriate silvicultural practices and for facilitating natural regeneration of the forest stand. In theory at least, it enables sustainable exploitation of the timber resources. In reality, its potentials cannot be realized unless: (i) the sale is properly prepared, (ii) the responsibilities of each participant (contractor, subcontractor, and COHDEFOR) are clearly stated and agreed upon, (iii) everybody involved is properly trained and equipped to execute the activities and (iv) most importantly, the sale is properly administered and supervised on site.

It needs to be said that no matter how well prepared a sale, without proper administration and field supervision, it will still produce significant environmental impacts and will have a negative effect on the sustainability of the management system.

1. Impact on regeneration of forest species

Based on field observations and interviews with COHDEFOR personnel involved in sale preparation and administration, it would appear that the pine forest is extremely resilient, managing to regenerate in spite of considerable adversities such as frequent brush fires, soil exposure and erosion due to skidding and roading, and soil compaction and trampling as a result of cattle grazing. FDP personnel has been evaluating regeneration on timber sale areas which should provide more accurate data and define corrective measures to ensure proper regeneration of the forest stand.

There are, however, two areas of possible improvement. First, natural regeneration could be facilitated by reducing soil erosion on sale areas. Soil conservation measures normally prescribed include waterbarring of skid trails and landings, proper disposal of slash, adequate drainage of roads and cross drainage of ditches, especially on steep slopes. As these measures are rarely applied, fragile soils are washed away and sizeable areas including non-treated landings and skid trails are lost to regeneration. Second, there are areas within stands which for a variety of reasons (i.e., frequent fire, thick shrubs and grasses) show little regeneration even after many seasons. Depending on the circumstance, spot planting coupled with either controlled burns or effective fire control would go a long way in establishing a uniform stand of trees on logged sites.

2. Impact of road and infrastructure works

Spur roads, landings, and skid trails improperly laid out, often too steep or too wide, without adequate ditching and cross drainages represent the single most important cause of soil erosion in the logged site. Landings are typically too large as trees are skidded whole from the forest without prior bucking, and tractors need a greater area to maneuver

along the trail and on the landing. Often tractors are too large and too heavy for skidding on soft ground or steep terrain and operators are not trained nor made aware of impact minimizing techniques. In those cases where skidding is done by oxen, the difference in environmental disturbance and soil erosion is very significant. It must be added, however, that trail systems within timber sales around La Unión, have a lower density and are usually built along contour or in diagonal patterns across the slope. In a few cases, skid trails and landings have been closed off and waterbarred after harvest.

In most cases outside the project area, however, the team observed what had been reported earlier by technical assistants to the project: little, if any soil erosion prevention measures are applied during or after the harvest. As a result, skid trails become ravines, landings are bared of all ground cover and soil, and streams flowing through the site are heavily sedimented if not dammed at each trail crossing. Dry draws are not recognized during trail layout and are often used for landings, increasing washout during rainfall. Finally, as sale supervision is usually weak, contractors move from one sale unit to the next without closing the logged area with soil conservation works, claiming that it hasn't been completed or that it isn't raining yet.

Few sale administrators are totally familiar with soil conservation techniques such as waterbarring, removing of downslope berms along roads and trails, scattering of slash along contour on steep landings, and active revegetation with legumes, grasses, and mulching (possibly using mulch made from corn husks). It must be recognized that these techniques are new and that contractors resist executing soil conservation works because of their cost and because, traditionally, they rarely invested in infrastructure, especially within the forest. Training at all levels, on-site supervision and strict enforcement of contract clauses would go a long way at reducing soil erosion and at protecting the long-term productivity of the forest.

3. Impact on Water, Air, and Wildlife Resources

The gravest single impact of logging operations involves the hydrologic resources of the site. Although stream protection from tree harvesting is better around La Unión, trees are still felled across or into ravines, slash and shattered logs are left in them, landings are built on dry draws, and most importantly, small streams are dirt filled whenever crossed by a road or trail. Culverts (even wooden ones) are rare or not functioning properly because of lack of maintenance or improper slope and location. Cross drainage of ditches is rare or inadequate, creating fast and voluminous flows along trails affecting drainage patterns and producing great amounts of sediment that eventually end up in streams and creeks.

Quality as well as quantity of water is affected. In all cases observed by the team, too little concern was given to protection of streams, even in areas that represent catchment areas for municipal waterworks downstream. Again, ignorance or inadequate training at all levels, especially among contractors, tractor operators, and tree fellers and insufficient supervision and enforcement of mitigating measures constitute the primary causes of serious impact upon the water resource of the logging area with significant effect downstream.

Air quality in the project area is affected in four ways: when forest fires occur, where sawmill waste is burned, when diesel engines aren't properly tuned, and during the dry season, when dirt roads (especially through populated areas), become a nuisance. Although road traffic for other than logging purposes is of greater significance, dust pollution through villages could be reduced by water spraying. The problem of burning sawmill wastes can be handled by (i) reducing wastes, (ii) locating the burners away from the sawmills and populated areas, (iii) improving the burning through aeration, and (iv) promoting a fuelwood market in local communities for the sawmill wastes.

It is evident that neither disturbance nor lack of habitat explain the minimal presence of wild animals within the forest environments of Honduras. Wildlife resources are primarily affected by fire and indiscriminate hunting. The new timber sale program does attempt to exclude from logging fragile habitat, which might be used by wildlife for shelter, food, water, and in the case of deer for fawning. Forest technicians could be trained about wildlife habitat requirements, but fire control, public education, and effective enforcement of hunting regulations (especially with dogs) would considerably enhance wildlife populations.

Local communities could play an important role in reestablishing wildlife populations within the forest environment they inhabit. On a pilot basis and within areas that could be most easily protected from fire, a deer management program should be attempted for the benefit of the local population. Although understandably, a considerable effort would be devoted to education, promotion, and active enforcement of hunting restrictions, the direct and indirect benefits for the timber resources of the region (fire prevention) could be considerable and it might prove to be an important aspect of active community participation in forest management.

D. Resource Conservation and Protected Area Management

Forest areas other than those specifically designated as "wildland refuges" also require a specific policy for the protection of biodiversity and the management of wildlife resources. As a matter of standard policy, the new timber sale program excludes from logging operations areas too steep (over 50 percent slope) to be harvested with conventional methods (i.e., tractor skidding). In some areas, oxen logging has been introduced with considerable success. In other areas, only cable logging operations are feasible and an effort should be made to promote this extraction method within the management unit to avoid resource damage due to the indiscriminate use of heavy tractors on fragile and steep ground.

1. La Muralla Wildland Refuge

Fund disbursement under the FDP project agreement was conditioned to the establishment of two protected areas within the La Unión FMU and boundary marking of these areas.

La Muralla and El Armado Wildland Refuges were established by decree in 1987 and a few months later, permanent boundary marking was initiated.

La Muralla is an area of 6,093 hectares, which includes virgin forest above an altitude of 1,500 meters a.s.l. The area includes primarily lower montane life zones, both moist and wet forests. Biological diversity in this broadleaf forest is very significant and most typically represented by the quetzal, the mountain robin, and numerous endemic and rare bird species. Mammals include the tapir, peccary, mountain lion, ocelot and jaguar as well as the two species of primates, the howler and white-faced monkeys.

Presently, the La Muralla Wildland Refuge has acquired considerable visibility with the construction of a four-room, two-story building to house administrative and technical staff and serve as a visitor center. An access road for the community of El Dictamo built across part of the southwestern corner of the refuge, has been replaced with a new road outside its boundaries built by FDP. Coffee growers who entered the protected area and cut patches of forest to establish coffee plantations have been forcibly removed from within its boundaries. A series of nature trails have also been laid out and built. Some effort has been devoted in promoting the protected area policy to the local population, which traditionally resents outside interference in land use decisions, especially by COHDEFOR. An area administrator has been nominated and a total of three technical staff (two FDP employees and a Peace Corp volunteer) are now dedicated full time to the management of the La Muralla Wildland Refuge. An operations plan has been prepared and has guided activities so far. Plans are being drawn to prepare a full inventory of the area to set the stage for a management plan for the protected area.

Many of the activities foreseen in the operations plan have not been accomplished although the expectations of the PP in regard to this aspect have been met. It must be said that COHDEFOR has taken this issue at heart, whether to make La Muralla a showcase of its intentions and newly acquired responsibilities regarding protected areas or to improve its image as an agency primarily (and solely) interested in forest exploitation. Whatever the motivation, in the remaining time, FDP can play a critical role in (a) establishing institutional credibility to protected area management and (b) functioning as a training ground for protected area managers and foresters alike, in terms of promoting a broader role of environmental conservation in forest management.

It has to be noted, however, that little other than boundary demarcation has occurred at the El Armado Refuge. Though it is understood that its value in terms of biodiversity is not the same as La Muralla, its value as a hydrologic reserve is unquestionable. Effective protection and FDP presence has to be established in the area. As in the case of La Muralla, a management plan needs to be prepared, focusing more specifically on community participation in its protection due to its value in supplying water for the population.

2. Institutional/administrative Aspects

The Decree No.74-91 transfers administrative and legal responsibilities over all protected areas in Honduras from RENARE (Ministry of Natural Resources) to COHDEFOR. Decree No.87-87 establishes 37 new "wildland refuges" including the La Muralla and El Armado protected areas within the La Unión FMU. At the same time, as COHDEFOR has acquired greater responsibility in regard to protection and management of

wildlands, the Asociación Hondureña de Ecología (AHE), the principal environmental group to date, has been debilitated by an internal power struggle that has rendered it totally ineffective. Other environmental NGO's have been formed and some have even established a reputation for responsible management of reserves and protected areas (i.e., FUCSA).

In accordance with the responsibility assumed by COHDEFOR under Decree 87/87, the corporation has established a Department of Protected Areas with two sections: Protected Areas and Wildlife. Presently, the department is poorly staffed and is still awaiting funding for preparing an operating plan for a national system of protected areas. The desire has been voiced about FDP supporting this effort. This support should be conditioned to a counterpart effort by COHDEFOR in terms of proper staffing of the department and a firm budgetary commitment for the future.

3. Environmental Monitoring of Project Activities

In this regard the project has been less than successful and neither established a baseline nor set up a systematic method to measure environmental impacts of project related activities. Moreover, although expected, no outside review of performance from this point of view was performed. Considerable attention was placed on the establishment of protected areas and, after contributing to integrate environmental concerns in logging contracts, not enough effort was made to making sure that the appropriate mitigating measures are actually carried out in the field. Moreover, no demonstration plots of proper soil conserving practices on logging sites have been established for neither monitoring nor training purposes.

One environmental officer was appointed full time to oversee project activities from an environmental point of view. However, the work load was obviously too much for one person. For a variety of reasons, much less than expected for year 3 has been accomplished. The most significant achievement to date is the establishment and demarcation of the two protected areas within the Management Unit and the completion (not with full results) of the environmental education campaign through a contract with AHE.

After three years, FDP and COHDEFOR are still lacking an in-house capacity to carry out proper environmental analysis or the systematic monitoring of its multiple activities involving natural resources and the environment.

The Salamá FMU requires an environmental assessment study presently being contracted. It is hoped that the implementation of the Salamá Management Plan will include the establishment of baseline for systematic environmental monitoring.

4. Training/educational aspects

Although some training/educational activities have been carried out, personnel specifically trained to carry out environmental monitoring activities either field-specific or at the planning and administrative levels still do not exist within FDP or COHDEFOR. One professional within FDP has received all the environmentally-focused training but is not part

of the project nor COHDEFOR anymore.

Most of the accomplishments in environmental education have been performed under the AHE contract. The permanence and effectiveness of the educational materials (posters, manuals, radio programs, videos, etc.) have not been evaluated however. Despite considerable effort and investment no action plan to effectively distribute and utilize the material has been prepared. It is hoped that such a plan can still be prepared and concretely focused on the peasant population of the management units (La Unión and Salamá), rather than the public at large.

FDP should also consider a specific training program for the project staff of the proposed environmental unit. This program should entail (i) environmental assessment methodology, (ii) environmental monitoring systems, (iii) environmental education and training, and (iv) protected area planning and management.

E. Proposed Implementation Plan/Environmental Action Plan

This plan is designed to enable the project to meet its environmental objectives, to ensure proper implementation of mitigating measures, and to continue promoting environmentally sound forest management practices. The basic philosophy behind this action plan is that (i) environmental considerations need to be considered at all levels of forest management, (ii) activities other than timber harvesting activities are legitimate concerns of the project, especially whenever community participation is called for, (iii) environmental education must be preached and practiced by addressing basic human needs especially those of the rural population living within the forest, (iv) environmental monitoring is basic to guide decision making as well as enable training of project personnel involved in executing and supervising forest related activities, and (v) environmental monitoring activities contribute to the development of an efficient and sustainable forest production system.

1. Environmental Unit

FDP experience so far has shown that environmental activities are a job for a team of technicians, basically trained in forestry but with a broader interest base. It is therefore critical that FDP institutionalizes a team of initially two (to increase gradually to three or four) professionals. The goals of this team "environmental unit" are to: (i) direct monitoring activities, (ii) contribute to forest management and extension activities, (iii) coordinate environmental education activities as well the establishment of community-based interest groups, and (iv) coordinate actions related to the establishment, protection and management of critical ecosystems within the project area.

The "environmental unit" should have a coordinator who (i) carries the responsibility for planning and coordinating the team's activities, (ii) supervises the field activities of the unit's staff, (iii) informs on the team's activities as well as gathers and interprets the concerns of other project personnel relative to the environment, and (iv) develops and executes a plan to extend monitoring results, conclusions from impact evaluations, and environmental analysis. The unit's coordinator should be preferably a forester with ample

field experience and a broad perspective. Management and extension capabilities would be most beneficial in carrying out his/her duties effectively.

The staff members of the "environmental unit" should include, but not be limited to an:

- Environmental monitoring and assessment specialist
- Protected area planning and management specialist
- Environmental education specialist with a hands-on, field-oriented, and community-based approach
- Logging/forest engineering specialist with training in impact mitigation techniques in logging and roading

The top three specialists are critical to the unit's effectiveness. It is evident that any one of these activities could be performed by the team's coordinator, in addition to his/her coordinating and managerial functions. The team members would also perform "counterpart" functions to external technical assistance personnel eventually contracted by FDP for specific purposes. Moreover, the staff of the environmental unit will actively participate in the training of project personnel, timber sale teams, logging and skidding contractors, fire control crews, forest/game wardens, and community-based interest groups or forest related small enterprises.

2. Technical assistance/training

To meet staffing and training requirements, an initial input of external technical assistance is required, at least to get the team off the ground. For this purpose the following schedule and investment plan (figure 1) is suggested. This schedule also contains technical assistance directed at other components of the environmental action plan.

FIGURE 1

TECHNICAL ASSISTANCE COMPOSITE, SCHEDULE, AND COST					
Specialization/Qualifications	PROJECT YEAR				TOTAL COST (in US\$)
	IV	V	VI	VII	
* Environm. Monitoring/Assessments	2	1			37,500
* Protected Area Planning/Management	1	1	1	1	50,000
* Environm. Engineering/Forest Roads(*)	2	1			37,500
* Watershed Management (municipal)	1	1			25,000
* Wildlife Management/protection	1				12,500
* Environm. Education/Community Partic.	1		1		25,000
* External Monitoring Envir. Component	1.5	1.5	1.5	1.5	75,000
TOTAL PERSON-MONTH and INVESTMENTS	9.5	5.5	3.5	2.5	262,500

NOTE: Units of technical assistance intervention are person-months; cost of short-term technical assistance reflects maximum expenses, not actual cost.

(*) The logging engineering specialist is expected to be a long-term assignment;

three months specifically dedicated to strengthen the "environmental unit" in terms of training and setting up the trial and demonstration sites.

3. Components of Environmental Action Plan

With the environmental unit in place, the project can organize its environment related activities around a plan of action made up of the following components:

- forest management
- protected area management
- environmental education/forestry extension

The action plan should provide the guidelines for the unit's operations during the remainder of the project's life and be established in coordination and with the participation of the other components of the project. In the following paragraphs, the basic elements of this action plan are presented.

a. Forest Management

The objective of this component is to integrate environmental considerations in forest management practices, from the selection of areas to be harvested to roading and logging activities. This component's purpose is to support the standing timber sale system with its provisions to adequately lay out the sale and the roading system and mitigate environmental impacts. Activities included in this component are: trial and demonstration plots for erosion control, road works, site reclamation, and control of sedimentation. These plots and trials should be designed to constitute the basis of an environmental monitoring system whose purpose is (i) to identify environmental impacts, their source, and magnitude and (ii) demonstrate alternative techniques to improve impact mitigating procedures.

Evidently, part of the effort of the personnel assigned to this component will also be devoted towards the training of project personnel as well as logging contractors, machine operators, and the community at large. The community focus is considered vital not only for extension purposes, but also to induce direct participation in these activities in the form of locally-based small businesses (i.e., construction and maintenance of roads, reclamation/closing of logging sites, reforestation, fuelwood production, small diameter timber processing, etc.).

This component should also contribute in the establishment of practical guidelines (field manuals) regarding selection of areas to be excluded from logging activities, protected from roading and logged with environmentally sensitive technology (oxen, cable systems) and should coordinate activities related to watershed management (municipal water works) and wildlife management programs (pilot projects with community participation).

b. Protected Area Management

This component is justified by the fact that: (1) two ecologically significant protected areas have been established within the project area and thus, need to be properly protected and managed, (2) the protected areas, especially La Muralla Wildland Refuge, could effectively become model management units and training ground in support of the building of COHDEFOR's institutional capacity to plan and manage protected areas across Honduras, and (3) such action by FDP is in line with USAID recent policy statements in relation to the protection of biodiversity in the tropics.

It must be noted that although protected areas could also be managed by qualified interest groups (environmental NGOs), first such capacity is only incipient in Honduras and has so far produced mixed results at best, and second, such managerial arrangements and delegation of authority is most effective if it exists within an institutional framework that sets the rules and makes sure that overall conservation of biodiversity goals are achieved. This role COHDEFOR has assumed through Decree 87/87 and needs to follow through in all its implications including the responsibility to plan and coordinate the protection and management of a national system of protected areas.

The objective of this component is to oversee the planning and management of the La Muralla and El Armado Wildland refuges and assist through technical assistance and other support the planning process for a national system of protected areas to be carried out by the Protected Areas Department of COHDEFOR.

The activities involved in this component of the action plan are: (i) coordination of preparation of resource inventories and management plans for La Muralla and El Armado Wildland Refuges, (ii) support and assist(*) the activities related to the planning of a national system of wildland areas in Honduras through the Department of Protected Areas of COHDEFOR, (iii) provide technical assistance and financial support for the implementation of management plans for La Muralla Wildlife Refuge as a model area for FDP and COHDEFOR in terms of protected area management, (iv) coordinate training activities for project personnel on matters related to biological conservation within the area, in the buffer zone, and beyond its boundaries, (v) coordinate scientific activities in support of the protection and proper management (including definition of boundaries) of the protected areas and (vi) induce participation of the local communities in the protection and proper use of the resources of the protected areas and their buffer zone.

This latter activity should be coordinated with FDP personnel involved in agroforestry extension work (*promotores sociales*). In this regard, the environmental unit as a whole should play a critical role in defining the precise functions and roles to be played by the social promoters, possibly involving them specifically in extension work related directly to forest extraction activities and adequate utilization of the resources of the buffer zones.

(*) Depending on the case and the implications in terms of amending the terms of the agreement between USAID and COHDEFOR, this support should be both technical and financial.

There are definitive opportunities to define precise roles for these extensionists, which would make them quite different from the extensionists from LUPE or DIRCO, yet effectively complement their work within the local communities.

One important role of this component is to coordinate scientific activity within the protected area; specifically, the significance of La Muralla as habitat for many rare and endangered species should be studied (for example, invite RARE Center to study the habitat requirements of the resplendent quetzal) and complete resource inventory activities within the area. Similarly, El Armado Wildlife Refuge should be also studied for its unique cave resources.

c. Environmental Education/Forestry Extension

The objective of this component is to coordinate and supervise the generation, distribution, and effective application of educational materials and programs. This component also assumes the responsibility of organizing and coordinating training activities of project personnel related to environmental protection, education, and agroforestry extension.

Activities carried out under this component include: (i) define the objective, strategies, and specific goals to be achieved by educational materials and programs to be financed by FDP, (ii) establish baseline of environmental awareness at different levels against which to evaluate the impact of the educational materials, (iii) carry out studies geared at identifying community needs and resources for the purpose of tailoring educational and extension programs, (iv) contribute to the definition of the role to be played by project personnel in regard to extension activities, especially within the buffer zones, and (v) contribute to focusing extension activities and educational programs on the interaction of the local community with its forest surroundings.

Special emphasis should be placed upon hands-on programs, school outings, field visits to logging sites and protected areas, participation of the community on the development and implementation of extension programs, especially when involving alternative and traditional forest related activities (grazing and livestock management practices, firewood gathering, collection of seed and production of seedlings for reforestation, fuelwood lots, forage trees and improved fruit trees, etc.).

The personnel in charge of this component should work closely with the project's social promoters and the small business component of FDP to identify common purposes and strategies so as to focus educational and promotional (incentive based) activities and make them more effective.

4. External Supervision of Environmental Component

The "environmental unit" will have required technical assistance to get started (see figure 1 above) and also external supervision and monitoring. On a periodic basis, it is recommended that FDP involve the USAID regional environmental officer as required by the

PP, or alternatively contract with an environmental specialist to provide external monitoring and supervision of the environmental component of the project.

This monitoring activity should be carried out over the remaining life of the project (years 4 through 7) at regular intervals (three times a year) for a duration of approximately two weeks each visit.

The objective of this external monitoring and supervision activity is that of making sure that the objectives related to environmental mitigation, protection, and education are achieved and that the project contributes effectively to sustainable forest management and environmental conservation in Honduras. The guiding principles of this periodic supervision are those exposed in the original PP and reflected in this environmental update and evaluation. The external supervision should specifically evaluate and monitor implementation of the activities to be carried out during the balance of the project life and which should form the body of an environmental action plan along the line presented above and elaborated by FDP personnel (environmental unit) in coordination with project executive and technical staff and the short- and long-term technical assistants to the project.

The external environmental supervisor will specifically:

- Review the environmental action plan and contribute to its feasibility within the staffing and technical constraints of the project.
- Review and contribute to the preparation of an environmental monitoring system for forest related project activities.
- Review and contribute toward the preparation of a plan for trials and demonstrations of environmental impacts of forest harvesting, logging, and roading activities.
- Review and contribute toward the preparation of a training program involving field trials and a feedback mechanism to extend results and improve harvesting/logging/roading methods.
- Review and contribute toward the definition of goals and objectives of an environmental education program with emphasis on local community's needs (forest based economies and identities) and socio-cultural context.
- Promote and facilitate technical support and funding the preparation of resource inventories within the protected areas of La Muralla and El Armado.
- Promote and facilitate technical support and funding for the preparation of the National System of Protected Areas in Honduras.

- Review and contribute toward the preparation of the terms of reference for the institutional strengthening of COHDEFOR in regard to protected area planning and management; also facilitate identification of funding mechanisms.
- Review and contribute toward the preparation of a training program specifically geared at strengthening the capabilities, competence, and effectiveness of the personnel of the environmental unit within the project and COHDEFOR.
- Review and contribute toward the preparation of specific training sessions geared at FDP and COHDEFOR personnel on matters related to: (i) timber sale preparation and administration, (ii) harvesting/logging and roading, (iii) watershed management, (iv) environmental education and community organization/participation, (v) forest-based small enterprise opportunities, (vi) wildlife protection and management, and (vii) buffer zone management.
- Review environmental impact assessment activities (specifically, identify priority areas, and develop an impact assessment action plan).
- Promote and facilitate scientific activities within the protected areas and the buffer zones; contribute to ensure funding of applied research in the areas of biology, environmental engineering, logging technology, small forest based industries, adapted food production systems and food processing technology, etc.
- Coordinate with international environmental groups, local environmental organizations, bilateral and multilateral (UN, IDB) development organizations in regard to funding environmental activities of relevance to the project and COHDEFOR.
- Contribute in the identification of training opportunities for the environmental unit's staff as well as the Department of Protected Areas of COHDEFOR and facilitate funding whenever feasible.
- Prepare a progress report after each visit detailing progress towards achievement of project objectives (environmental action plan), problems encountered, and recommendations for solving difficulties in the implementation of project activities related to the environment.

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ANNEX H

SAWMILL DATA

CHEMONICS

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FIELD SAMPLING METHODOLOGY USED IN DETERMINING THE QUANTITATIVE AND QUALITATIVE DATA OF SAWMILLS

Two existing mills inside La Unión FMU, receiving logs under the new timber sales program were chosen to be compared against past performance baseline data and current data.

Past performance baseline data was obtained through existing statistics provided by COHDEFOR/UAIT technical assistance program.

Field sampling to establish current baseline data of average recovery rate was done on a total of 30 sampled logs per sawmill.

Sawn lumber obtained through the milling process was quantitatively and qualitatively measured and recorded. Industries present grading system was utilized to obtain quality recovery data.

To determine log size and diameter variation being received by the mills, results were based on the total amount of logs processed on a given day/shift.

Log quality was determined using a sampling of 100 logs per mill at the log yard and assessing the incidence of defects, degrade, damage, bucking characteristics, overall length and diameter.

Existing baseline data for mills operating outside La Unión management area was available only for one mill operating in Lepaguare. This mill and another in the Danli area were chosen for obtaining data. The same quantitative and qualitative process was also used as described above.

SAWMILL AND WOOD PROCESSING INDUSTRIES SAMPLES

SAWMILL WOODPROCESSING INDUSTRY	BUCKING AND SELLING PRACTICES	WOODWASTES BURNING FACILITIES	ENERGY GENERATING FACILITY	COULD PROFIT BY INSTALLATION OF STEAM GENERATOR AND UTILIZATION OF WOODWASTES	REMARKS
HONDUPLY Facilities in "La Unión"	Poor	Yes	Yes, stationary diesel generators	Yes	Although very aggressive in their overall wood processing facility recovery of raw material could be dramatically improved. Technical assistance is very much needed
Aserradero "San Jose" in "La Unión"	Poor	Yes	Yes, stationary diesel generators	Yes	Wood industry with the right equipment facilities but rather poor drying know-how. Better utilization of wood wastes should be addressed.
Aserradero "YODECO" in Yoro	Acceptable	Yes	Yes, stationary diesel generators	Yes. Proposed to install a 530 KW/H Boller Turbine	Of all the industries sampled this is one that handles wood processing to its best. Very little aid needed. Presently carrying out a strong investment policy in wood residue application and recovery machinery.
Palillera "TRACOMA" in Talanga	N/A	Yes	Hooked up to national grid system.	No	This industry needs technical help in the overall air drying process of their export oriented broom handle manufacturing. Losses due to bluestain and degraded raw material ranges around 10-15% of average production. Technical assistance to improve drying capacity and quality is very much needed.
HONDUPLY Facilities in "Gaymaca"	Good	Yes	Hooked up to national grid system.	No. Volume of wastes does not justify it.	Company that needs to improve on the recovery of wood wastes and higher quality standards in their manufacturing process.
Aserradero "EL BIJAO" in Lepaguare	Good	No	Yes, stationary diesel generators	Yes	This industry needs to improve on their overall lumber handling process. Present operation needs technical assistance to improve drying capacity.

SAWMILL WOODPROCESSING INDUSTRY	TYPE OF MILL OR OPERATION	AVERAGE RECOVERY M3/BFT	PRODUCTS MANUFACTURED	RECOVERY PRODUCTS FROM WOOD FLITCHES/CANTS	RECYCLING OF WOODWASTES	SECONDARY WOODPROCESSING FACILITIES	DRY KILN FACILITIES	PEOPLE EMPLOYED	
								MEN	WOMEN
HONDUPLY Facilities in "La Union"	Bandmill Circular mill Plywood log Peeler	223.1	Dimension Lumber Timber Cants Plywood Sheets Broom Handle Sticks	Broom Handle Sticks Tomato Sticks Lobster Traps	None, except firewood lots given to workers	No equipment to date. Planning and surfacing equipment proposed	Large 30 MBFT capacity kiln under construction	80	8
Aserradero "San Jose" in "La Union"	Bandmill Heading and Resaw	217	Dimension Lumber Timber Cants Paneling Holdings Pallets	Broom Handle Sticks Tomato Sticks	None, except small firewood lots given to workers	Holding Machine Pallet Machine Planer Ripsaws	Large 30 MBFT capacity dehumidifier type kiln	120	-
Aserradero "YODECO" in Yoro	Bandmill Heading Resaw	232	Dimension Lumber Timber Cants Paneling Flooring Holdings Pallets	Broom Handle Sticks Tomato Sticks Melon Crates Lobster Traps	Firing of boiler for drying operation. Charcoal bricketting facility being installed to utilize 50% of saw dust wastes rest to be used on future steam generator	Holding machine and 4 side planer very efficient wood wastes recovery facility using thin kerf bandsaws and ripsaws	3 large 40 MBFT capacity steam heated dry kiln	280	4
Palillera "TRACOMA" in Talanga	Manufacturing of broom handles in various diameters	--	Broom handles Diameters 1-1/8"-15/16"- 7/8" -13/16" Tomato stakes	Tomato Stakes	None, except firewood lots given to workers	Turning machinery for production of broom handles resaws	Large 30 MBFT capacity kiln under construction	90	-
HONDUPLY Facilities in "Gyamaca"	Plywood Manufacture	70%	Plywood sheets	Peeler cases get resawn into sawn lumber for pallet manufacture	All of it gets fired up into the broiler for steam generation	Expecting to purchase small saw to reprocess peeler cores	Large continuous sheet drier	70	35
Aserradero "EL BIJAO" in Lepaguare	Bandmill Heading and band resaw	231.6	Square cants and resawn lumber	Broom handle sticks Tomato sticks	None, except firewood lots given to workers	Holding machine	None, is very interested to install a drier	55	-

**SAWMILL PRODUCTION LEVELS BETWEEN 1986-1990
BAND SAWMILLS AND CIRCULAR SAWMILLS THAT OPERATE IN HONDURAS IN 1990
(IN MILLIONS OF BOARD FEET)**

Overall Production

Sawmills operating

YEAR	BAND SAWMILLS		CIRCULAR SAWMILLS		TOTAL BFT	BAND SAWMILLS		CIRCULAR SAWMILLS	TOTAL
	BFT	%	BFT	%		BFT	%		
1986	94.4	57.2	70.6	42.8	165	24	85	109	
1987	120.8	63.4	69.7	36.6	190.5	32	69	101	
1988	127.4	71.6	50.5	28.4	177.9	34	56	90	
1989	131.4	78.6	35.8	21.4	167.2	35	57	92	
1990	118	73.9	41.6	26.1	159.6	37	48	85	

Source: COHDEFOR, Anuario Estadístico, Departamento Forestal, Sección Industrias 1990.

SAWMILL PRODUCTION LEVELS IN 1985 AND 1990

PRODUCTION LEVEL MILLION OF BOARD FEET	NUMBER OF SAWMILLS		PERCENT OF SAWMILLS		TOTAL PRODUCTION MILLION OF BOARD FEET		PERCENT OF PRODUCTION	
	1985	1990	1989	1990	1985	1990	1985	1990
Less than 1	59	36	53%	44%	21.4	22.9	12%	14%
1.0 - 1.9	26	24	23%	28%	34.2	34.4	19%	22%
2.0 - 2.9	13	14	12%	16%	30.2	33.3	17%	21%
3.0 - 5.9	8	7	7%	8%	34.5	27.4	19%	16%
6.0 - 11.9	3	3	3%	3%	26.6	30.4	15%	19%
12 and over	2	1	2%	1%	31.7	12.9	18%	8%
TOTAL	111	85	100%	100%	178.6	161.3	100%	100%

To this date approximately 85 sawmills operate in Honduras; this number has been declining since 1976 from a total of 120 mills.

Source: COHDEFOR

PRODUCTIVITY COEFFICIENT OF SAWMILLS WITH PROJECT

	Project Year - Assumed - 3	Project Year - Current - 3
1) <u>Share in Sawnwood</u>		
Circular mills %	30	26.1
Band mills %	70	73.9
2) <u>Share in Log Use</u>		
Circular mills %	34.77	26
Band mills %	65.23	74
3) <u>Recovery Coefficients BT/M3</u>		
Circular mills %	180	236*
Band mills %	224	224

* Figures result from the fact that some small sawmill operations simple cut four sides to the log and sell it as a cant to a larger resawing operation.

Source: COHDEFOR and RD/AID Projections

AVERAGE RECOVERY BFT/M³/PER LOG DIAMETER CLASS WOOD PROCESSING INDUSTRIES OUTSIDE "LA UNION" MANAGEMENT AREA

INDUSTRY	DISTRIBUTION OF LOG DIAMETER CLASS									REMARKS
	6" - 10"		10.1" - 15"		15.1" - 20"		20.1" - 25"		AVERAGE	
	BFT/M ³	%	BFT/M ³	%	BFT/M ³	%	BFT/M ³	%	BFT/M ³	
ASERRADERO "LAS TROJES DE SAN ANTONIO" - DANLI Actual Baseline Under new system										Industry utilizes a circular mill to square cant and resaws the same or 2nd mill into dimension lumber. This operation could benefit in utilizing their sawmill generated wastes
	220.3	52.1	218.6	51.7	219.6	51.9	-	-	219.5	
ASERRADERO "EL BIJAO" - LEPAGUARE - Baseline taken During old system										This operation has high recovery rates since it's main band sawmill brokes down the log into a square cants and sells it that way.
	177.0	41.8	204.1	48.2	254.5	60.1	277.6	65.6	228.3	
- Actual Baseline Under new system	175.1	41.4	213.7	50.5	257.4	60.8	280.2	66.2	231.6	
DIFFERENCE	- 1.9	-0.4	9.6	2.3	2.9	0.7	2.6	0.6	3.3	

- * Baseline taken during old system, source CONDEFOR.
- * Actual Baseline taken in October 1991 under new timber sales system.
- * A cubic meter of solid wood contains 423 board feet.

AVERAGE RECOVERY BFT/M³/PER LOG DIAMETER CLASS. WOOD PROCESSING INDUSTRIES INSIDE "LA UNION" MANAGEMENT AREA

INDUSTRY	DISTRIBUTION OF LOG DIAMETER CLASS									REMARKS	
	6" - 10"		10.1" - 15"		15.1" - 20"		20.1" - 25"		AVERAGE		
	BFT/M ³	% *	BFT/M ³	%	BFT/M ³	%	BFT/M ³	%	BFT/M ³		
ASERRADERO "SAN JOSE" Sawn Lumber	Baseline*	155.2	36.6	166.7	39.3	153.2	36.1	178.7	42.1	163.4	This industry has made strong technical improvements in modifying their sawmill equipment. This reflects in the present recovery ratio of sawn material. However, this industry could improve some more by better resawing and improving in their quality control practices. Technical aid is needed.
	Actual*	224.3	53.0	213.5	50.5	215.4	51.0	217.5	51.3	217.7	
	Difference	69.1	16.4	46.8	11.2	62.2	58.4	38.8	9.2	54.3	
BONDUPLY Sawn Lumber & Plywood	Baseline*	N/A		N/A		N/A		N/A			This industry shows a higher recovery rate due to the manufacture of large dimensional material. Technical aid is needed. Throughout their manufacturing process.
	Actual*	226.2	53.5	204.3	48.3	214.3	51.6	247.5	58.5	223.1	

- * Baseline taken during old system, source CONDEFOR.
- * Actual Baseline taken in October 1991 under new timber sales system.
- * A cubic meter of solid wood contains 423 board feet. Source FAO.

**ANALYSIS OF LOG SIZE AND QUALITY OBTAINED BY WOOD-PROCESSING INDUSTRIES
IN LA UNION MANAGEMENT AREA
DISTRIBUTION ACCORDING TO LOG DIAMETER**

INDUSTRY NAME & PRODUCTS MANUFACTURER	DISTRIBUTION LOG DIAMETER CLASS					Estimated percentage of defective volume from harvested logs	QUALITY REMARKS
	6"-10"	10.1"-15"	15.1"-20"	20.1"-25"			
Aserradero "San Jose" - Cerro Verde*	20%	64%	4%	5%		5-7%	Logs with hollow core, from old age stands, burned sides, cracked from poor felling practices, irregular bucking practices in the forest resulting in over sized lengths, exceeding the established accepted industry standards.
Bonduply La Union * Sawmill and Plywood Facilities	37.6%	39.6%	7.8%	5%		6-8%	Industry complains that raw material harvested in some areas results in hollow core logs and fire damaged individuals. This is due that logs come from old over mature stands. The positive aspect is the removal of defective material allowing for healthy second growth.

* Range diameter distribution varies depending on quality of harvested sites, data shown represents a one day sampling of production, going into mill process.

**ANALYSIS OF LOG SIZE AND PRODUCT QUALITY OBTAINED BY WOOD PROCESSING INDUSTRIES
IN LA UNION MANAGEMENT AREA**

Aserradero "San Jose"								
Diameter Class (inches)	Grade Lumber		Common # 1/#2		Common # 3		TOTAL	
	BFT	%	BFT	%	BFT	%	BFT	%
6 -10	32.7	0.81	417	10.7	84.3	2.14	534.0	13.6
10.1-15	104.0	2.64	1488	37.8	212.0	5.4	1804.0	45.8
15.1-20	79.7	2.0	941	23.7	36.90	9.4	1389.7	35.1
20.1-25	123.7	3.14	70.1	1.8	9.3	0.2	203.7	5.14
Total	340.1	8.59	2916.1	74	674.6	17.1	3931	100

BONDUPLY Diameter Class Inches)	Grade Lumber		Common #1/#2		Common #3		TOTAL	
	BFT	%	BFT	%	BFT	%	BFT	%
6 -10	375.2	0.2	758.0	9.5	95.3	2.0	1228.5	11.7
10.1-15	571.8	2.3	1850.3	35.5	189	8.3	2611.1	46.1
15.1-20	727.4	3.4	1430.7	25.0	314.3	6.4	2472.4	34.8
20.1-25	914.6	4.6	646	2.3	16.4	0.5	1577.0	7.4
Total	2589	10.5	4685	72.3	615	17.2	7889.0	100

A. Conclusions

- Private industry has exerted a strong demand on available forestry professionals in the whole country since the new timber sales program went into effect. The private sector has offered a better salary, resulting in a desertion of qualified and well-trained technicians from the COHDEFOR technical unit.
- The private sector has voiced complaints about the lack of qualified technicians coming from ESNACIFOR. Concern has been expressed that the technical curriculum provided by ESNACIFOR in the areas of wood processing, quality control, wood drying, and equipment maintenance has been very weak and therefore needs to be reinforced with up-to-date technical expertise.
- Private sawmill operators reported in some instances that COHDEFOR's new timber sales program is being hampered by the lack of transportation available to get COHDEFOR technicians out into the field and carry out the sale.
- The medium- and small-scale industry sector has been receiving very little technical support from COHDEFOR's technical unit. This has resulted in the private sector not being able to find a reliable resource that can help them in making the right choice of equipment. Which in turn resulted in the purchase of outmoded and sometimes inefficient wood working machinery. Changing this will be role that AMADHO will be able to fulfill under the new technical assistance program.
- Technical training courses carried out by the technical advisory team and short-term experts have not been enough to cover the basic needs of the Honduran forest industry. Action must to be taken now to cover many areas that are in desperate need.
- This need is reflected in continuous and unnecessary losses resulting from quality control misunderstandings, deficient machinery maintenance programs, poor milling practices, and inefficient wood drying process.
- AMADHO's new work plan entails much activity since their last restructuring process. It is therefore very important to support this association so it can take full advantage of the increased responsibilities it has been assigned. As stated in the present paper agreement, AMADHO was supposed to be complemented by the provision of a forestry advisor for a full period of one year. This has not been done.
- Very little technical information material regarding specific technical subject matters of the forest industry is presently available to the private industry sector in Honduras. Technical documents that explain very basic concepts and how-to procedures manual are presently not available.
- The goals outlined in the project paper to carry out a training series of short-courses through the training program was accomplished: 280 persons were involved in 25 different types of courses covering mostly industry related fields.

- ESNACIFOR was to be the training resource for over half of the in-country technical courses but did not accomplish set target. Since the objectives of this training program have yet to meet with the proposed wood industry objectives outlined in the project paper, it is this team opinion to readdress very systematically the future needs of the Honduran forest products industry with the implementation of a new training program that will be executed through the new, yet to be hired technical assistance team.
- It has been an accepted criteria that quality of log material is excellent and although the industry sector does not like to deal with small diameter logs, the adjusting process is well under way and accepted.
- Sawmill efficiency could be improved from the present standards by implementing a well established work plan and technical assistance program.

B. Baseline Data and Current Data

- Baseline data provided by the COHDEFOR technical assistance unit showed only one industry inside La Unión management area with enough data to make a detailed quantitative comparison.
- The other industry established inside the area "Honduply" did not show previous baseline data available to make any correlations; this industry is only a year old.
- However, a baseline data was nevertheless established for "Honduply" with the intention to document the existing performance. This mill obtained an average of recovered material of 223.1 BFT/m³. This industry utilizes most of the harvested volume for sawing operations and only a small percentage of logs are presently used for plywood manufacture. Aserradero "San Jose" has shown a positive improvement over last year's data in the average recovery obtained. The recovery factor obtained for this mill operation was 217.7 BFT/m³ over the existing baseline date of 163.4 BFT/m³. This is attributable to two main factors: 1) the sawmill owner has gone through the process of installing a very efficient sawmill production line that allows a better utilization of log and 2) the more accurate band mill system with thin kerf bandsaws allows a very precise final product with less waste.
- Mills sampled outside La Unión area were all receiving logs under the new timber sales program. The mill that had previous established baseline was "El Bijao" sawmill in Lepaguare. A very small volume improvement over the existing baseline was measured in their overall production process.
- Another second mill was chosen to establish a baseline in the vicinity of Danli. This operation utilizes a circular sawmill system to square four faces of the log obtaining a cant and then sent trough a resawing process with a bandmill.

C. Amount of Waste in Sawmilling Planning and Drying Operations

Out of the sampled industries, the main source of waste consisted of sawdust, bark material, sawmill cutoffs, and flitches. These made up for 80 percent of the wood wastes that were either disposed by burning (85 percent of the total mills inspected) or utilized for firewood utilization in two main areas: energy generating facilities in the form of steam-hot-water for diverse production processes like: steam-bath cooking of plywood logs and steam production for the kiln drying process of sawn wood (15 percent). Another less important source was the burning of wood wastes for the generation of hot air in the wood drying of sawn wood (5 percent).

The remaining FIVE percent was utilized by the mill workers that made it a practice to carry small bundles of firewood back to their home on an everyday basis or with the help of children pushing wheelbarrels and pushcarts. Small amounts of flitches (10-15 percent) of the total are sold by some mills to lime-producing kilns and for firing of clay roof tiles and bricks.

Planning and surfacing waste accounted for 35 percent of the overall wood waste volume in operations that had the installation to do so. Very little is being done or generated with this type of material at the present time since most mills are too far away to utilize this type of wood wastes for chicken bedding material, a preferred material by the egg and poultry producers.

Facilities like the ones that are established closer to main population centers sell their wood chips to those outfits as well as to horse stalls owners.

Wood wastes from drying operations are on the average small but not non-existent since most of the wood is remanufactured.

D. Part of Training Component (Publications and Information Sources)

The evaluation team found that over the course of the project time an interesting amount of technical manuals had been created or translated into Spanish at the COHDEFOR/UAIT-PDF technical unit. The intent of those publications or manuals was to have the material available for the corresponding training courses, that were carried out during the period of 1989-1991.

Unfortunately, the UAIT/PDF has not published more publications to make them available to interested forest industry participants and has neglected to distribute this valuable information. The evaluation team suggests that a portion of the remainder of the training budget should be allocated exclusively for the costs of printing a new edition of each one of these technical manuals.(*). A total of seven technical manuals and bulletins are presently in existence ranging from subjects like wood drying manuals, translated from the English version, to manuals on complete saw-sharpening, bucking and felling techniques, and lumber classification rules.

* A suggested amount of 300 copies should be made available of each specific manual.

Talks with the UAIT head of staff in the technical assistance unit of COHDEFOR, Ing. Luis Valle, have confirmed that this type of printed material and general information would be made available as soon as possible. These are necessary tools, considering the programmed training courses scheduled for November and December, like the upcoming scheduled saw maintenance and sharpening courses (two courses) and the arrival of a short-term consultant to give a training course for local loggers and COHDEFOR technicians on developing better logging methods and skills.

The training coordinator, who has carried out a remarkable job and overall work plan, should remain in the present position until the end of the project life and should assume the added responsibility of publishing the technical manuals mentioned above.

E. Recommendations Related to the Environment

- Private industries and COHDEFOR should develop a safety program through the whole industry, to ensure that workers exposed to hazardous conditions utilize safety equipment like safety glasses, ear plugs and helmets.
- Regulate the spilling and leaking of toxic wood stain inhibitors (active ingredient pentachlorophenol) into the ground and water ways, by advising industry operators to promote the redesigning of dip tanks containing toxic chemicals. Dip tanks need to be made out metal or in the case of wood tanks lined with waterproof skin to avoid leakage into the ground. Drainage area of already dipped material should consist of a dip recovery area that recovers the excess of toxic materials. Gloves, rubberboots, and safety glasses should be made mandatory and monitored by COHDEFOR technical personnel.
- Smoke pollution resulting from burning wood wastes is a growing problem in the Honduran wood processing industry. This is due to the traditional wood wastes burning practices. COHDEFOR/AMADHO should encourage the wood industry to bury the wood waste, if no other alternative exists, recycle them or prohibit the incineration of wood wastes altogether.
- Forest industries waste disposal has to be properly addressed with a well-defined program by COHDEFOR and AMADHO's representatives to regulate the pollution problem generated by the burning of wood wastes and/or the dumping of sawdust and wood shavings into river beds and resulting pollution of water ways.

ANNEX I

TECHNICAL ASSISTANCE TEAM REQUIREMENTS

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TECHNICAL ASSISTANCE TEAM REQUIREMENTS

A. Technical Assistance Team

1. Team Leader/Forest Management Specialist

Summary of Qualifications:

- B.S. degree in forestry.
- Twenty years of experience in forest management activities.
- Five to ten years as a woodlands manager for a private, commercial operation. Demonstrated ability in managing and leading subordinates successfully.
- Sound knowledge of forest inventory, timber appraisals, harvesting operations, forest management planning, and timber stand improvement practices.
- Ability to work with and interact with government organizations.
- A results-oriented manager who is culturally sensitive and political aware; preferably with international experience.
- Bilingual English/Spanish.
- Willing to work in a developing country environment.
- Willing to train subordinates.

Duties:

- Primary contact between TA team, AID and COHDEFOR.
- Responsible for the success of the TA team, hence with the authority to replace those not performing to agreed standards.
- As team leader, will be the focal point for the team in helping to meet their needs both on and off the job.
- Work as a counterpart to the COHDEFOR project manager to give support; advice, and consent in the execution of the project.

2. Logging Engineer

Summary of Qualifications:

- **B.S. degree in forest engineering or in civil engineering with an additional degree in forestry.**
- **Fifteen years of experience with either private and/or government sources.**
- **Five years of experience as a logging superintendent.**
- **Sound knowledge/understanding of road location, road construction supervision, road network planning, timber harvest layout for both skidder and cable operations, cost analysis, and logging supervision.**
- **International experience or strong desire to work in Latin America.**
- **Working knowledge of Spanish or ability to learn.**

Duties:

- **As a TA team member assist in development of the timber appraisal methodology especially responsible for cost analysis.**
- **Design and implement a model logging operation to include both skidder and cable systems.**
- **Assist in the logging supervision training sessions and in monitoring this activity nationwide.**
- **Supervise road location training sessions and monitor results.**
- **Work with FMU manager in developing road network planning—assist nationwide.**
- **Work with preferably two COHDEFOR counterparts during entire term of assignment so as to effect a technology transfer.**

3. Forest Industries Advisor

Summary of qualifications:

- **B.S. degree in mechanical engineering with background in equipment maintenance or a wood products manufacturing specialist.**

- Fifteen or more years of experience with the forest product industry.
- Demonstrated hands-on ability.
- Sound knowledge/understanding of thin kerf technology and appropriate equipment and of complete lumber manufacturing from log input to shipment of finished lumber.
- Ability to deal with all levels of labor and management.
- Knowledge and ability to conduct economic feasibility studies for small sawmill owners.
- Willingness to work in Latin America.
- Working knowledge of Spanish or ability and willingness to learn.

Duties:

- Working out of AMADHO offices, will interact and cooperate with the COHDEFOR technical assistance unit in providing assistance to industry.
- Help design and implement training sessions in various sawmill improvement related activities.
- Conduct economic feasibility studies and assist sawmill owners in making loan applications to improve possibilities of tapping local credit market.
- With AID and COHDEFOR, set up short courses and locate short-term experts for same.
- Initiate a mill by mill analysis throughout Honduras, make recommendations for improvements and monitor progress.
- Work with AMADHO technical advisor on marketing and promotion workshops to encourage industry to explore more added-value, diversified product lines.

4. Timber Sale Administrator

Summary of Qualifications:

- B.S. degree in forestry.

- Ten years of experience in timber sale programs either private or governmental.
- Sound knowledge/understanding of timber sale appraisals, preparation, and supervision.
- Ability to develop training sessions and teach others.
- Ability to work in the field 90 percent of the time.
- Ability to communicate in Spanish is very important.
- Willingness to work in Latin America.
- Culturally sensitive—most trainees will be technicians.

Duties:

- Work with a COHDEFOR counterpart to achieve technology transfer.
- Design and supervise training sessions.
- Travel country wide and develop sale areas for regional training.
- Initiate a methodical monitoring regimen for various sales country wide. Plan to visit every timber sale at least once during the year and critique the sale administrator along with his immediate superior. Send these reports to the chief of forestry activities in COHDEFOR for action—good or bad.
- Assist with the logging engineer in developing the timber sale appraisal system.
- Implement the system first with the FMUs then country wide.

5. Financial/Administrative Advisor

Summary of Qualifications:

- CPA
- Six to ten years of accounting/auditing experience with a major public accounting firm.
- Five to ten years of business management experience with an industrial/natural resources U.S. corporation operating in Central America/Caribbean

- **Demonstrated ability at management level in both sectors of work experience.**
- **Sound knowledge/understanding of accounting systems, data processing, management information systems, and financial/business reporting.**
- **Ability to work/deal with all levels within the organization as well as with international agencies, banks, audit firms, etc.**
- **Bilingual English/Spanish.**
- **Willing to work in a developing country environment.**
- **Willing to train subordinates.**

Duties

The financial/administrative advisor will be required to work closely with top management of COHDEFOR and assist the organization in the task of restructuring and upgrading its management, personnel, systems, and procedures.

Specifically the financial/administrative advisor will:

- **Design an overall structure for COHDEFOR and a detailed structure for the finance/administration department.**
- **Prepare a manual of positions, job descriptions, and responsibilities for his department and ensure that such manuals are also prepared for the other departments.**
- **Update the Policy & Procedures Manual of COHDEFOR.**
- **Evaluate departmental personnel with the objective of establishing appropriate levels of reporting/responsibility.**
- **Review the basic accounting/recording system and implement changes to make it functional and easier to adapt to a computerized mode of operations.**
- **Upgrade the financial reporting system in accordance with generally accepted accounting principles (GAAP).**
- **Lead and coordinate the preparation of the annual operating plan/budget and bring it into line with the accounting/financial reporting system so as to enable timely tracking of budget versus actual performance.**

- Assist in preparing and monitoring ongoing cash and financial projections for use in planning the corporation's activities.
- Sit in and advise top management on all matters affecting the corporation's financial operations/condition as well as future operating plans.
- Work within finance/administration department and with Internal Audit to strengthen accounting/administrative control procedures.
- Train departmental personnel.
- Deal with the independent auditors and when called upon, with banks, international agencies, etc.

B. Recommendations on Future Long- and Short-term Assistance

1. Technical Assistance

Strong consideration should be given by USAID/Honduras, to help set up a program whereby COHDEFOR/(JAIT)'s technical unit ESNACIFOR instructors, and private industry long- and short-term technical consultants start carrying out a long-term training plan to promote hands-on workshops. Through personal conversations with the private wood business sector, a strong interest and unconditional support was voiced for this type of program that would benefit all the parties involved.

The fields related to the wood processing industry should consider the following ones:

- a. Increase quality control standards in the sharpening of band saw blades and circular saws.
- b. Promote the benefits of correct air drying and kiln-drying procedures.
- c. Preferred and most efficient sawmill practices to increase volume recovery and promote higher standards in controlling quality.
- d. Upgrading of equipment maintenance standards.
- e. Cost returns and pay-back analysis of improved logging and millwork practices and improvements in overall operation. Explain the pay-back benefits of fine tuning the industry.
- f. Through marketing/promotion workshops, encourage the wood working business sector to look into new and more added-value, diversified wood products lines. This type of new awareness should be tied into the development of new model production processes that would involve the purchasing of more efficient and economical unit/cost wood working machinery.

2. Description of Long- and Short-term Technical Assistance Advisors

- a. **Sharpening and maintenance expert of circular and band-mill saws will be local hire and staffed with a well-known and recognized national expert sawdoctor, having a wide knowledge on this specific subject and practical experience with local industry. To be hired on a contract basis full time or part time, for a total of six months/year throughout project life.**
- b. **Wood Drying Expert with specialty in commercial air drying and medium/high temperature commercial kiln-drying experience. Knowledge in set-up/building model of a solar dry-kiln, desirable for demonstration purposes. This type of training with hands-on workshops involving local technicians should be of great value. Time frame of this long-term U.S. hire should be done over a two year period. This expert would be returning during the duration of project for a 3-6 months/year period.**

Revising drying procedure manuals recently translated into Spanish from English version and updating the information on local demands should be the part of the task. Workshops/seminars should be carried out systematically over the whole country where forest products industries are interested to participate.

- c. **Marketing specialist in wood products, hired for intermittent intervals, short-term, maximum time 3 month/year over total duration of project life. To be responsible to work with COHDEFOR-UAIT technical staff and AMADHO technical team and private industry. To find and establish new-channels and potential customers for diversified value-added Honduran pine wood products.**

This type of research and identification of product source should take into consideration the existing different wood manufacturers and sawmill producers from the largest to the smallest. Special emphasis should also be given to secondary wood products from recovery material and help define new possibilities for a more diversified and creative wood products in general. This type of work should be closely interlined with the wood drying specialist and the wood products manufacturing specialist.

- d. **Forest industries advisor with a specialty in mechanical engineering and equipment maintenance or wood products manufacturing specialist with a strong emphasis in thin kerf technology and appropriate equipment to advise existing wood manufacturing industries. Should encourage the improvement and the development of small- and medium-sized sawmill enterprises.**

Planer and molding manufacturing experience necessary. Emphasis in wood wastes recovery training workshops as a way to show and explain the benefits of bandsaw mills utilization and establishing workshops showing thin kerf methods. Develop a series of technical manuals or instruction booklets for operators.

C. Parameters for Short-term Consulting

Phase I Accounting:

- Analyze the present system for capturing, processing, recording, and reporting financial transactions. Quantify volume and frequency of transactions/reports.
- Identify purpose and benefits (if any) of the present system. Determine whether purpose is being achieved.
- If purpose is not being achieved or is unclear, outline objectives that should be achieved and recommend possible ways to achieve desired objectives.
- If feasible, recommend configuration for more appropriate computer application(s).

Phase II MIS:

- Identify perceived information "needs" of all departments.
- Rationalize information needs.
- Discuss and obtain management agreement to rationalized information needs.
- Prepare MIS manual.

Phase III Data Processing:

- Analyze system base (if any) for information used throughout the organization including personnel, payroll, forestry, planning, and any special areas of the regional offices.
- Recommend best configuration for a computer system that will cover financial, technical, and administrative needs.
- Outline hardware and logistics requirements for a possible new data processing system.

ANNEX J

PUBLIC ADMINISTRATION SPECIALIST REPORT

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PUBLIC ADMINISTRATION SPECIALIST REPORT

A. Project Terms of Reference

At the outset it may be said, albeit with respect, that the widely dispersed scope of work alluding to so many disparate activities within COHDEFOR in terms that were not always easy to follow (if at all) made the determination of baseline data problematic, risky, and even superfluous especially if it is remembered that some of the items listed as project improvements were already implemented by COHDEFOR by the time the project was initiated on or about January 1, 1988.

Other factors making the determination of baseline data problematic were:

- the language of the project goals that referred to "managerial efficiency" (giving one to take in all aspects of management) and then apparently limiting the scope of that managerial efficiency specifically to finance/administration (whose improved efficiency alone could not of itself have achieved project objectives)
- the paucity of documentation evidencing: communication of project goals (as laid out in the project paper) to all levels of management in COHDEFOR, emphasis on significance and urgency of goals, creation of a mechanism within COHDEFOR to meet project goals, and appointment of an individual within COHDEFOR to monitor and follow up on the process of managerial improvement.
- the use of terms such as "real revenue projections," "beyond the reach of available funds," "systems affecting disbursements," "agile procedures," and "equitable system." The problem here was both ambiguity and having to work with judgmental considerations.
- absence of a final report from the one financial advisor assigned to the project during its life to date. Such a report outlining areas addressed, proposed solutions, problems encountered and his evaluation of the status at the time he left post would have been a useful tool for the evaluation team.

B. Project Goals and Guidelines as Identified in the Following Documents

1. Project Paper

To overcome the management constraints that impede the corporation from functioning more efficiently, COHDEFOR's Department of Management (read Administration) and Finance will be tasked with carrying out these activities:

- a. **Revamp and upgrade its financial management procedures to achieve self-sufficiency.**
- b. **Analyze historical data on income generated through timber sales to establish a trend line for past revenues.**
- c. **Develop new systems for setting and collecting fees for timber sales and commissions for lumber sales.**
- d. **Make projections on income to be earned in the future (on a yearly basis).**
- e. **Calculate budgets that coincide with real revenue projections.**
- f. **Prioritize expenditures; postpone/eliminate items that go beyond the reach of available funds.**
- g. **Develop systems for affecting disbursements to discrete staff and line officers and tracking expenditures.**
- h. **Finalize the reorganization process initiated in 1986.**
- i. **Provide management specialists to review the new structure and prepare functional responsibilities and reporting relationships for the corporation's units.**
- j. **Formulate the processes that will govern the interchange of both COHDEFOR and the private sector(?)**
- k. **Develop simple, clear, and agile procedures for requesting and obtaining lumber export permits.**
- l. **Design an equitable, efficient system for awarding logging concessions.**
- m. **Update manual governing logistical support activities (procurement of commodities and technical services, control of vehicles and supplies).**
- n. **Develop a management information system.**
- o. **Establish a library to complement operational efficiencies that will be achieved through application of revised procedures. (?)**
- p. **Implement a new timber sales system.**
- q. **Implement new lumber export regulations.**
- r. **Set up a market analysis department**

2. Loan Agreement

Art. B.(a) The project will.... improve COHDEFOR's internal management system.

Art. B (a) (iii) The project will upgrade its (COHDEFOR's) financial management procedures and improve its internal operating procedures.

3. Project Logical Framework

"COHDEFOR (will be) covering its operational costs and functioning efficiently according to modern, appropriate operating procedures."

4. Statement of Work

"Under the institutional reorientation, the most important innovation is the change in the practice of selling timber. The other areas of involvement under this component control (?) lumber exports and managerial efficiency."

5. COHDEFOR'S Statement of Objectives

From the corporation's statement "Policies Strategies Measures and Actions, etc., 1986-1990," a published framework of objectives to be accomplished in that period.

- a. COHDEFOR will sell by December 1987 the subsidiaries in which it owns shares, namely CASISA, LOCOMAPA, CORFINO, SEMSA, and Honduras Plywood.
- b. COHDEFOR will set and collect commissions from export sales of lumber at differential rates (14 percent and 18 percent).
- c. Collect at least L 1.5 million against its past-due accounts receivable as of June 30, 1986 and reduce its past-due receivables balance to a minimum of 20 percent of its total receivables. (Exact meaning of terms is not clear)
- d. Computerize its accounting, inventory, and forestry activities.

C. Project Assumptions

The project's basic assumption concerning the need for better management is valid. However there are some considerations of substance that give both depth and perspective to that assumption and these are dealt with below.

The exact reasons for the emphasis on financial managemen. improvement cannot now be determined with certainty but it would not be unreasonable to assume that they had some

association with COHDEFOR's industrial and commercial activities and the costly results of those activities.

In searching for the cause of that situation, now well into history, "managerial efficiency" (however defined) would have been a good guess. From that point on it was a small step to identify financial/administrative management as the principal cause and therefore the prime target for reform and reorganization, the underlying postulate being: "Had there been adequate financial control procedures, COHDEFOR could not have incurred those losses." But there is a flaw in this postulate for it is not procedures alone that run businesses.

It is agreed without question that extremely significant matters concerning COHDEFOR were to be found in the financial management area. However, financial management is a support function that does not act without executive management approval. It therefore could not be responsible on its own for the consequences of investment or operational decisions.

COHDEFOR lives by government fiat. It depends for the level of its income totally on government regulation. To be self-sufficient (as mentioned in the project documents) it need only develop the ability to live within its means. However, becoming self-sufficient would not, in and of itself, enable COHDEFOR to achieve its mandated objectives.

To conclude, project emphasis could well have specified the whole of COHDEFOR's management including the government, the board of management, the general manager, and all line and support management.

Other detailed assumptions that turned out to be not totally valid for COHDEFOR were that there was lack of:

- a. Procedural know-how
- b. Ability to prepare cash projections
- c. Control over disbursements
- d. Functional responsibilities and reporting relationships
- e. Management information
- f. Personnel administration procedures

D. Departmental Overview

1. COHDEFOR

Organization:

Semi-autonomous body under Ministry of Natural Resources. Set up on January 10, 1974 (Decree # 103) as a corporation. Administered by Board of Management through a general manager and assistant manager. Is executing agency for the forestry policy of the State.

Headcount:

1,344 as of October 15, 1991 broken down as per the payroll department records as follows: Forestry Department 45, Forestry Regions 753, Finance and Administration (including Personnel) 142, ESNACIFOR 140, Projects (of which COHDEFOR/AID 56) 159, Internal Audit 19, Planning 17, *Commercial 19, Renewable Resources (RENARE) 14, General Manager's Department 26, Temporary Employees 10.

Objectives:

Derive maximum benefit (usufruct) from the country's forest resources. Ensure the protection, improvement, conservation, and increase of these resources. Generate funds to finance state programs for social and economic development.

Problems:

- Heavily affected by government-regulated management and administrative procedures as well as political considerations.
- Public image is unfavorable because of its costly ventures in ownership and management of industrial concerns.
- Lacks an effective management structure.

* Department phased-out. Computer records continue to show employees in the departments to which they were originally assigned at the beginning of the year.

Evaluation:

COHDEFOR needs to re-think its role for the future. In doing so it must get to grips with what exactly it has to do (assuming no government constraints) as well as the type of management cadre it will need to achieve this and the level of personnel it is going to require in the process.

Guidelines:

- Externally, work actively in light of the present climate of liberalization, privatization, and public enterprise reform, for change in the government's attitude toward the economics, management, and performance of public enterprises as well as changes in the way it regards the hiring, compensation, progress, and evaluation of public sector employees.
- Internally, work for improving the quality of line management with special emphasis in the area of finance/administration.
- Consider working with only four departments namely, forestry (including the regional offices) planning, finance/administration, and ESNACIFOR.

- Increase frequency of Board of Management meetings to raise the levels of awareness and interest in the affairs of the corporation.

2. Planning

Organization:

The Planning Department's principal functions are: coordination of institutional/national policy in the forestry/agricultural sectors, liaison with foreign technical assistance, national forest industry statistics, evaluation of COHDEFOR's projects and preparation of COHDEFOR's annual operating plan and budget. Reports directly to the general manager.

Headcount:

17 technical and support staff as of October 15, 1991.

Objectives:

Act as nerve-center of the organization, plan and oversee its operations: forestry and revenue generation.

Project Impact:

With the exception of some impact in the area of training, virtually none.

Problems:

- Lack of trained technicians.
- Limited resources to support counter-part requirements.
- Actual regional forest operations do not follow planned/budgeted operations.
- Finds it difficult to get good statistics from the private sector.

Evaluation:

The department's information needs are greater than its ability to gather and process them on a timely basis. Fortunately it is currently working on a solution to the problem. To meet its objectives it should convert itself into a top level repository of information concerning all aspects of the forest industry based on its own efforts/actions so as to anticipate change rather than wait for things to happen.

Guidelines:

- Start focusing on objectives. Draw up plans for best/worst case scenarios.
- Evaluate staffing needs.

3. Forestry

Organization:

Responsible for several independent activities including: inventory of timber stands and sales of standing timber, forestry management guidelines, young forest management, fire protection, export sales inspection, watershed management, resination, training and extension services.

Headcount:

45 technical and support staff as of October 15, 1991.

Objectives:

Mainly overseeing the forest. Setting and monitoring the implementation of norms for better forest management.

Problems:

- Transportation can be undertaken only with the express approval of the finance/administration department.
- Information reception from the regional offices suffers substantial delays.
- Lack of trained technical personnel caused by non-replacement of trained people who have left COHDEFOR to join the private sector.
- Has unfulfilled need for in-house computer capability for reporting monthly activities and inventories.

Evaluation:

The activities of this department have been evaluated by other members of the evaluation team. Their general and specific comments are to be found in their respective reports.

Guidelines:

- Dealt with as mentioned above. However the department should share all information regarding inventories or valuations with the finance administration department on a timely basis.

4. Finance/accounting

Organization:

One of two subdepartments making up the Finance/Administration Department. Includes accounting, treasury, standing timber, and export revenue (control and collection) and physical assets control functions.

Headcount:

32 as of October 15, 1991. All employed in accounting-related duties.

Objectives:

Ensure accounting validity of all reported financial data including periodic financial statements.

Project Impact:

Considerable. Many of the project's specifically stated requirements were met by this subdepartment.

Problems:

- Supervisory staff lacks industry exposure.
- Cannot accelerate financial reporting because hampered by the pace of central data processing.
- Own pace is slow because nearly all transactions are processed manually.
- Receives little or no feedback from management.

Evaluation:

Appears to be functioning well but not over-stretched by management demands for operational and other information.

Guidelines:

- All supervisory and clerical staff should pass through a process of evaluation to determine both corporate needs and staff capabilities.
- Supervisory staff should receive exposure to forestry and wood industry operations.
- Retain the present chief accountant in any new restructuring of the Finance/Administration Department.

5. Administration/Budget

Organization:

One of two subdepartments making up the Finance/Administration Department. Includes budget review (pre-audit) purchasing, warehousing, motor pool, photocopying, janitorial, and miscellaneous functions. Reports to the manager of Finance/Administration.

Headcount:

74 as of October 15, 1991. Of these, 25 are employed in clerical functions and 49 as drivers, maintenance people, cleaners, guards etc.

Objectives:

To ensure that expenses incurred are duly traceable to the budget and comply with all government-mandated documentation and approval procedures.

Project Impact:

No impact in either direction.

Problems:

- Need to replace vehicles. Fleet age is reported to be 14 years old. Frequent breakdowns. Several vehicles out of use.
- Need to renew office equipment—copiers, typewriters, etc.
- Need for better, more powerful radio equipment.

Evaluation:

Appears to be functioning well but not over-stretched by management demands for operational and other information.

Guidelines:

- All supervisory and clerical staff should pass through a process of evaluation to determine both corporate needs and staff capabilities.
- Supervisory staff should receive exposure to forestry and wood industry operations.

6. Data Processing

Organization:

Department provides services to the Planning, Finance/ Administration and Personnel Departments. Reports to the manager-Finance and Administration. COHDEFOR's Central DP Department dates from the mid-1970s.

Headcount:

7 technical and support staff as of October 15, 1991

Objectives:

At one time to provide a comprehensive service to all of COHDEFOR. Present objectives are in transition.

Project Impact:

Fulfilled project goals insofar as they referred to accounting and inventories. (See COHDEFOR Statement of Objectives).

Problems:

- Functions in isolation.
- Did not develop top management support over the term of its existence and is now in limbo.
- Equipment is out-dated.
- Direct input to the system is limited and therefore much departmental time is spent entering transactions.

Evaluation:

From its isolated, side-lined position, this department as presently constituted along with its old equipment cannot be expected to survive long in COHDEFOR. Its services are adequate for accounting and payroll purposes but not for the forestry department whose needs are more specialized and beyond the capabilities of the DP system.

Guidelines:

- Study the purpose and need for producing so many different kinds of reports that go around COHDEFOR. Contribute to lessening the burden on manpower and equipment resources.

- Try to build rapport with top and line management.

7. Personnel

Organization:

Independent administrative unit reporting directly to the general manager. Responsible for salary administration, employment contracts, orientation, hiring procedures, training programs, human resource bank, and employee personal records.

Headcount:

19 as of October 15, 1991.

Objectives:

To administer all aspects of the employer/employee relationship with a view to facilitating good relations in the workplace.

Problems:

- Low salary scales prevent hiring of better quality people.
- Information from data processing often delayed.
- Needs to keep track of the location and movements of personnel on a timely basis.
- Union opposes the merit system.
- Difficult to determine a method for evaluating employee performance and implementing it.

Evaluation:

Perhaps the only department in COHDEFOR that evokes a sense of purpose and of wanting to and getting things done.

Guidelines:

- Continue to work for an employment structure based on operating needs and merit.
- Select training programs that are specific and therefore likely to be of immediate benefit to the recipients in their work.

8. Internal Audit

Organization:

Position reports to the Controller-General of Honduras and within COHDEFOR, directly to the Board of Management.

Headcount:

19 professional and support staff as of October 15, 1991.

Objectives:

- Act as watch dog for the Controller-General's Office especially in the area of disbursements (pre-audit).
- Perform special assignments if and when requested by management.

Project Impact:

Indirect if any, in either direction. Department is not aware of project goals and did not merit mention in the terms of reference.

Problems:

Cannot function effectively for the benefit of COHDEFOR because:

- The chief internal auditor holds his position (by government appointment) for a maximum, non-renewable term of two years. There is therefore not sufficient time (or interest) to get to know the organization or to develop, implement, and evaluate the results of ongoing audit programs.
- Effectiveness of the department is necessarily limited because by law and self-perception it is precluded from working/cooperating with management in reviewing areas within COHDEFOR that are of mutual concern.
- Not having an internal reporting relationship (other than to the Board of Management) the department is necessarily slowed down by bureaucratic considerations.
- Funds and transportation are not readily available for its regular out-of-town, audit activities.
- Auditors lack exposure to the industry.
- Being a "government imposition" on COHDEFOR, the corporation has no incentive to set targets for the internal audit function or to evaluate its performance.

Evaluation

Internal audit, an important element in financial/administrative management, exists within COHDEFOR to take care of a government requirements to ensure that all disbursements are effected in accordance with government-mandated procedures. As such it is not a function that is of general use in the management strengthening process. As presently constituted, the

department neither has the base, the mandate, nor the means to act as a proper internal audit department.

Guidelines

- Try to build rapport with top and line management.
- Demonstrate willingness and ability to help the organization.
- Develop ability to justify and win approval for its operational needs.
- Evaluate staffing needs and utilization.

9. Legal

Organization:

Support department serving principally the General Managers' Office but also others including mostly the finance/administration department. Covers COHDEFOR's operations throughout Honduras.

Headcount:

7 as of October 15, 1991 including 4 professionals.

Objectives:

Orient, advise, and protect the corporation in all legal matters affecting its rights and interests.

Problems:

- Documentation is either difficult or impossible to locate.
- Transportation to and from the courts is not provided.
- Per diem rates for out-of-town work are too low.

Evaluation:

A brief meeting revealed either an over-stressed or greatly frustrated department. It is probably meeting its objectives but at its own pace.

Guidelines:

- Improve departmental logistics.
- Consider a more dynamic department head.

Opinion

The emphasis on procedural rather than decision-making aspects, and the lack of a definite focus in its management segment has resulted in the project not having had significant

impact on the corporation's awareness, commitment, and ability to formulate and meet its overall objectives. All of this calls for a strong element of leadership in the upper management cadre. The project's underlying objective—interpreted as improvement in all management levels—would appear not to have been achieved.

If looked upon as a step-by-step implementation of specific requirements the project has undoubtedly moved in the right direction and achieved much since inception. This fact is amply brought out in the Progress Chart attached and speaks well of both project and COHDEFOR people who in effect ensured their tasks were completed despite the multiple organizational and management changes that were going on around them.

C. Management System

1. Objective

Given the variations in description and emphasis associated with this segment of the project as contained in the several project-related documents accessed, it was considered appropriate in the interests of a functional reporting mode to regard all the disparate elements of those descriptions as part of a single underlying theme, namely improvement of COHDEFOR's overall management and its financial/administrative procedures so as to enable it to meet its government-mandated objectives in an efficient manner. Only in this broad context, it was felt, could the project's objectives be a significant factor in the operational re-orientation of COHDEFOR.

All this notwithstanding it must be noted that nowhere in the project terms is its objective referred to in as many words. Instead there is copious mention of, and emphasis on, the procedures that support the management effort and this, only in the area of accounting/administration.

2. Methodology

The groundwork for the evaluation was carried out at COHDEFOR and included meetings with the finance/administration, planning, forestry, personnel, and legal departments all of which report directly to the general manager and together substantially makeup the corporation's headquarters structure. ESNACIFOR and the regional offices were not included because they are not closely related to the question of COHDEFOR's overall management/administration.

The evaluations were based on personal interviews and available documents as well as corroborative evidence from other individuals and sources such as the corporation's independent auditors.

3. Project Status

As shown in the progress chart at the end of this annex COHDEFOR has developed adequate procedures for income and expense projections, recording and control of revenues and

disbursements as well as a new timber sales system and export sales regulations. All of these are in place and apparently functioning correctly.

Areas in which significant progress was not noted—and this is a by-product of COHDEFOR's management structure and priorities—are: (a) updating of the organization and procedures manual (b) development of a management information system, and (c) financial reporting based on generally accepted accounting principles. There is in fact no one in COHDEFOR with the knowledge, experience, or authority to see that these aspects are duly and properly addressed.

The organization and procedures manual—developed by Arthur Young & Company in the 1970s and parts of which are still in place, was allowed to lapse when COHDEFOR's office of Organization and Methods was eliminated. A management information system (obscured by the question of re-orienting the data processing function) has not yet been seriously contemplated. Financial reporting has not kept pace with the changes that have taken place in the operations of COHDEFOR.

One area, not mentioned in the project paper but partially referred to in COHDEFOR's statement of objectives, is the question of the defunct COHDEFOR subsidiary companies. On these the status appears to be: privatization in the case of CORFINO, PROMAGUA, and SEMSA, liquidation/disposal for CASISA, and continued analysis/study for Honduras Plywood.

Other significant considerations for the project as it stands today are:

- Affecting COHDEFOR as an ongoing concern is the question of its legal status. Although able to function from day-to-day on the basis of its receipts and expenses the corporation is bankrupt in legal terms. This is because if due recognition were given to the numerous matters impacting its financial condition and which are not reflected in its balance sheet, its equity position would result in a substantial negative amount. So far the government has not recognized the gravity of the situation, which has both short- and long-term implications for the Entity.
- In considering a turnaround and restructuring of COHDEFOR, it must be remembered that one is dealing with a regular government organization always subject to political pressures, traditional public administration, and strong union influence. The present status and financial condition of COHDEFOR may be seen as a direct result of these factors as much as a lack of administrative know-how.
- Also affecting COHDEFOR is the situation of its workforce. Coming as it does under the Labor Code instead of the Civil Service Regulations, COHDEFOR cannot have career employees. The resulting job uncertainty coupled with the lack of an adequate pension scheme virtually ensures a low level of motivation throughout the organization.

- The evaluation points to a radical change in the Corporation's management composition, purpose and style. For this to succeed it will require not only willingness but also a firm commitment and active cooperation on the part of the government.

4. Recommendations

Organization

- Build awareness, at all levels, of the need for COHDEFOR to undergo a fundamental change in the way it perceives its role, how it operates, and how it will survive from year to year in a climate in which government financial support is expected to shrink rather than grow. This process should be aided through the preparation and issue of a corporate policy statement and management/staff meetings on a regular basis. The chief promoter of this change should be the general manager.
- Use professional managers (as opposed to political appointees) in the key line management positions.
- Create a new top line management position of chief operating officer (or director of operations) who effectively would run COHDEFOR from day to day and report to the general manager while himself receiving reports from the other line functions. The general manager is the titular chief executive of COHDEFOR but his schedule and interests do not allow for much involvement in the operations of the organization.
- Extend the internal auditors term-of-office to five years and allow the internal audit department to collaborate closely with financial management to ensure a high degree of compliance with corporate policies and procedures.

Operational

- Develop a mechanism to ensure that regional forestry units adhere strictly to their annual operating plans.
- Make all line managers responsible for their department budgets both as to the amounts involved and, as importantly, the manpower levels needed to perform the work.
- Institute a monthly budget versus actual review procedure involving the chief operating officer and all the line managers (planning, forestry, and finance/administration).
- Transfer from Planning to the Finance/Administration Department the responsibility for coordinating, classifying, and maintaining all the elements of

operational and financial information that go into the annual operating plan/budget.

- Perform a no-nonsense, functional study of the corporation's information needs based on management's stated requirements and perceptions. Some information, because of its nature, must be centralized. Other information needs are best served by individual applications. A single mode may not be the answer and may bring more problems than benefits to COHDEFOR. Decide this matter as soon as possible.

Financial

- At COHDEFOR there is a need for an individual who can give a purpose to the financial/administrative function relating it to the corporation's principal activities and who can give a much-lacking financial perspective to the organization's top level deliberations. In addition to this there is the aspect of having to "talk finance" with banks and international lending agencies particularly at this stage with COHDEFOR facing the problem of non-performing assets on its books. To meet this situation, it is recommended that the corporation create the position of chief financial officer in charge of finance/administration—a key line management position.
- Address the question of COHDEFOR's legal solvency arising from the crippling negative effect of its failed subsidiary enterprises, bad debts, and accounting for its external debt. From an accounting standpoint there appears to be no solution to the problem but the law may be able to devise a mechanism for cleaning up the corporation's balance sheet.
- Transfer to the chief accountant all functional responsibility for budget versus actual reports to upper management. This is not an administrative area and its present inclusion under "administration" represents an inappropriate split in the management process.

Government

- Initiate talks in the appropriate government circles to accept the idea of:
 - a. Allowing career managers to occupy the line positions in COHDEFOR.
 - b. Having a chief operating position in the corporation.
 - c. Extending the internal auditor's term-of-office and the scope of his services within COHDEFOR.

5. Lessons Learned

- **The specific purpose/thrust of the project should be clearly identified at the outset and described as such in the objectives. In the case of the management segment of the FDP it is possible that the principal component of that segment—effectiveness of management on a top down scale—was genuinely not perceived as being significant or was dealt with indirectly through emphasis on procedural matters.**
- **The importance of the management effectiveness objective was neither perceived as a necessity nor emphasized or communicated throughout COHDEFOR. For a policy to be implemented it must be known and understood by all levels.**
- **No one of executive rank was given the responsibility of overseeing the progress/status of project objectives and of reporting this to top management. Without someone in charge with authority to act, little can be accomplished.**
- **The sense of responsibility of middle/lower levels should not be underestimated. In the FDP, all procedural project improvements were achieved by these levels and these individuals are still working for overall improvement in administrative procedures.**

FINANCIAL STATEMENTS OF COHDEFOR**BALANCE SHEET****(In Millions of Lempiras)**

	9/30/91	12/31/90
ASSETS		
Cash & short-term deposits	21.2	12.1
Notes & accounts receivable (2)	<u>23.2</u>	<u>11.9</u>
Current Assets	44.4	24.0
Notes & accounts receivable-affiliates (3)	10.7	10.9
Investment in affiliates (3)	62.0	62.0
Property, plant & equipment (net)	10.1	12.1
Deferred project expenses (4)	<u>46.9</u>	<u>38.7</u>
Total Assets	<u>174.1</u>	<u>147.7</u>
LIABILITIES & EQUITY		
Loans, notes & accounts payable (5)	21.9	16.2
Deferred income	<u>11.5</u>	<u>9.8</u>
Current Liabilities	33.4	26.0
Long-term debt (5)	<u>77.0</u>	<u>71.3</u>
Total Liabilities	110.4	97.3
EQUITY		
GOH contribution	3.0	3.0
Grants-international agencies	22.9	16.2
Retained earnings	13.1	12.6
Accounting adjustments (6)	<u>24.7</u>	<u>18.6</u>
Total Equity	<u>63.7</u>	<u>50.4</u>
Total Liabilities & Equity	<u>174.1</u>	<u>147.7</u>

() See notes on the Financial Statements

FINANCIAL STATEMENTS OF COHDEFOR

INCOME STATEMENT
(In Millions of Lempiras)

	9 mths thru 9/30/91	Yr-ended 12/31/90
REVENUES		
Export commissions	8.9	11.1
Stumpage	18.3	14.2
Interest & other income	<u>2.1</u>	<u>4.8</u>
Total Revenues	29.3	30.1
COSTS AND EXPENSES		
Operating expenses-regions	11.6	13.4
Administrative expense	6.4	8.7
Marketing expense	0.3	0.5
Human resource development	2.7	2.8
Financial expense	<u>1.2</u>	<u>1.8</u>
Total Costs & Expenses	22.2	27.2
SURPLUS	7.1	2.9

NOTES ON COHDEFOR'S FINANCIAL STATEMENTS

- (1) Details and amounts shown are based on audited financial statements at 12/31/90 and accounting records as of 9/30/91 with reclassifications and re-wording for convenience of presentation.
- (2) Most of these receivables arise from an accounting technicality and the fact that COHDEFOR is the exporter of record. Reporting is not in accordance with generally accepted accounting principles.
- (3) Notes and accounts receivable affiliates and investments in affiliates refers to CORFINO which is now in process of privatization. Should this materialize these assets will be transferred to the Government.
- (4) Project expenses are deferred until conclusion of the projects and then written-off over a period of 20 years. These projects do not, and are not expected to, produce any income in the future. The practice of deferring project expenditures is not in line with generally accepted accounting principles. Since those projects are not expected to produce revenues COHDEFOR is in effect not recognizing current expenses as and when they occur. As of 9/30/91 deferred project expenses were Lps. 46.9 million.
- (5) Loans amounts denominated in US and Canadian dollars are translated at the rate of Lps 2/US\$1. These loans should be recorded in the books at Lps 5.30/US\$1. The consequent unrecorded liability amounts to approximately Lps 86.6 million.
- (6) Explained as being caused by asset/liability revaluations when the Lempira appreciated against certain other currencies.
- (7) No provision is made for employee severance pay. As stated in the audit report the required provision as of 12/31/90 would have amounted to some Lps 9.0 million.
- (8) Because of uncertainties regarding the carrying values of major assets and the non-recording of the correct amount of major obligations the balance sheet of COHDEFOR presents a substantially misleading picture. This is to say that if due provision were made for these and other items in accordance with generally accepted accounting principles, COHDEFOR's equity would become a significant negative amount.

FORESTRY DEVELOPMENT PROJECT HONDURAS

REORIENTATION OF CONDEFOR

Management Improvement Segment

PROGRESS CHART

PROJECT GOALS	ACTION TAKEN	CURRENT STATUS
A. Per Project Paper		
Revamp and upgrade financial management procedures.....		
1. Prepare income projections and budgets on a realistic basis	Implemented	
2. Prioritize expenditures	Implemented	
3. Develop procedures for:		
a. Setting and collecting fees from timber sales and commissions from export sales	Implemented	
b. Facilitating requests for and obtaining lumber export permits	Implemented	
c. Awarding logging concessions	Implemented	
d. Affecting disbursements to discrete staff and line officers and tracking expenditures (?)	Implemented	
4. Update Manual governing logistical support activities	Implementation in process	Process is on-going
5. Develop a Management Information System	Not implemented	Top management has still to address question of its basic informational needs taken as a whole
6. Hire management specialists to review the new structure and prepare functional responsibilities and reporting relationships	Implemented partially	
7. Finalize the reorganization process initiated in 1986	Implemented	
8. Formulate the processes that will govern the interchange of both CONDEFOR and the Private Sector (?)	Not implemented	CONDEFOR awaiting clarification
9. Establish a Library to complement operational efficiencies that will be achieved through application of revised procedures (?)	Not implemented	CONDEFOR awaiting clarification
10. Implement		
a. New Timber Sales System	Implemented	
b. New Lumber Export Regulations	Implemented	
11. Set up market analysis department	Not implemented	

FORESTRY DEVELOPMENT PROJECT HONDURAS

REORIENTATION OF CONDEFOR

Management Improvement Segment

PROGRESS CHART

PROJECT GOALS	ACTION TAKEN	CURRENT STATUS
B. Per CONDEFOR Statement of Objectives		
1. Sell by December 1987 subsidiaries in which CONDEFOR owns shares namely CASISA, LOCOMAPA, CORFINO, S/EMSA and Honduras Plywood	LOCOMAPA sold	Remaining enterprises are in process of privatization/disposal
2. Establish and collect commissions at 14% and 18% on all export sales of lumber	Implemented	
3. Collect at least L 1.5 million on its past due receivables as of June 30, 1986	Implemented	Considerably more was collected
4. Reduce past due receivables to 20% of total receivables (exact meaning of terms is not clear)	Implemented	Following accounting provisions in the books this subject is no longer relevant
5. Computerize accounting, inventory and forestry activities	Implemented Forestry	Department does not use central DP and services. Its needs are specialized and beyond the capability of DP system
C. Per Logical Framework		
1. Operating costs do not exceed revenues	Implemented	
2. Manuals are used to guide operations	Implemented	
3. Accounting system functioning according to generally accepted professional standards	Financial reporting is not in accordance with generally accepted accounting principles	Matter should be looked into by CONDEFOR with its auditors
4. Objectives are established for each Office and Division	Implemented de facto. No documentary evidence	
5. Objective requirements established and reinforced (?) for all positions in CONDEFOR	Not implemented	Top management has still to address both this and Item 6
6. System of performance evaluation based upon objectives in operation for both institutions (?) and personnel	Not implemented	

ANNEX K

SECONDARY RECOMMENDATIONS

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1. Build a foundation of financial and economic analyses to advance FDP's initiatives in forest management and strengthening of forest industries.
2. FDP needs to provide a capability regarding improved traditional practices in range management.
3. Provide male social promoters with more training so as to increase their effectiveness in working with both genders.
4. Timber sale purchasers should be fully informed that the purchase of standing timber sales is at their risk and that volumes are not guaranteed.
5. Continue to check scale cut volumes where timber is very defective.
6. Check cruise those preparing timber sales. A check cruising team from COHDEFOR's regional or main offices could operate among various sale areas.
7. Industry working within the La Unión FMU must be advised that the 1991 cutting level of harvest—84,000 m³—is unacceptable and will not be maintained.