

INTERNATIONAL TROPICAL TIMBER ORGANIZATION

ITTO

PROJECT PROPOSAL

TITLE	INDUSTRIAL UTILIZATION OF LESSER-KNOWN FOREST SPECIES IN SUSTAINABLY MANAGED FORESTS
SERIAL NUMBER	PD 47/94 Rev.3 (1)
PERMANENT COMMITTEE	FOREST INDUSTRY
SUBMITTED BY	GOVERNMENT OF HONDURAS
ORIGINAL LANGUAGE	SPANISH

SUMMARY

This project has been designed with a view to economically re-valuing tropical forests in Honduras through sustainable production program based on the implementation of approved and established management plans and the use of low environmental impact technologies. A total of 25 non traditional species will be incorporated into the industry based on trial volumes stipulated in the management plans. The environmental impact of harvesting a greater number of species on the forest will also be assessed. Furthermore, the natural regeneration capacity of these species will be studied and a forest technological program for low-impact harvesting and industrial use will be developed. All aspects of this project include a strong and extensive training component.

EXECUTING AGENCY

HONDURAN FOREST DEVELOPMENT CORPORATION (COHDEFOR)

COOPERATING GOVERNMENTS

DURATION

36 MONTHS

APPROXIMATE STARTING DATE

BUDGET AND PROPOSED SOURCES OF FINANCE

Source	Contribution in US\$	Local Currency Equivalent
ITTO	735,335	
Gov't of Honduras	300,000	
TOTAL	1,035,335	

This proposal is a complete reformulation of the original project. The recommendations made by the ITTO Panel of Experts were taken into consideration for the development of this new project proposal.

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Project proposal to: International Tropical Timber Organization (ITTO)

Submitted by the Government of Honduras

PROJECT ABSTRACT

Title: "Industrial utilization of lesser- known forest species in sustainably managed forests"

Summary This project has been designed with a view to economically re-valuing tropical forests in Honduras through sustainable production programs based on the implementation of approved and established management plans and the use of low environmental impact technologies. A total of 25 non traditional species will be incorporated into the industry based on trial volumes stipulated in the management plans. The environmental impact of harvesting a greater number of species on the forest will also be assessed. Furthermore, the natural regeneration capacity of these species will be studied and a forest technological program for low-impact harvesting and industrial use will be developed. All aspects of this project include a strong and extensive training component.

Field of action: Forest Industry

Implementing agency: Honduran Forest Development Corporation (COHDEFOR)

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<u>Budget:</u>		US\$
a.	ITTO	697,000
b.	Gov't of Honduras COHDEFOR	300,000
c.	Total	<u>997,000</u> 1,035,335

Duration: 36 months

PART I: CONTEXT

A. RELEVANCE TO ITTO

1. Compliance with ITTO objectives

This research and development project has been prepared in accordance with the provisions of the International Tropical Timber Agreement.

In particular, this project is directly related to objectives (b), (c), (d), (e) and (g) of Article 1 of the Agreement stating the following:

- b) To promote the expansion and diversification of international trade in tropical timber and the improvement of structural conditions in the tropical timber market, by taking into account, on the one hand, a long-term increase in consumption and continuity of supplies, and, on the other, prices which are remunerative to producers and equitable for consumers, and the improvement of market access.
- c) To promote and support research and development with a view to improving forest management and wood utilization.
- d) To improve market intelligence with a view to ensuring greater transparency in the international tropical timber market.
- e) To encourage increased and further processing of tropical timber in producing member countries with a view to promoting their industrialization and thereby increasing their export earnings.
- f) To encourage members to support and develop industrial tropical timber reforestation and forest management activities.
- g) To improve marketing and distribution of tropical timber exports of producing members.

2. Compliance with ITTO criteria

This research and development project is consistent with the following criteria:

- a) Demonstrate the economic viability and promote long term investments in sustainable forest management.
- b) They should be related to the production and utilization of industrial tropical timber.
- c) They should yield benefits to the tropical timber economy as a whole and be relevant to producing as well as consuming members.
- d) Assist in creating a scientific basis for sound forest management.
- e) Develop and promote the intellectual, economic and technological basis for integrated forest management systems and optimal use of the tropical forests, taking in consideration multiple benefits that can be derived from them.
- f) They should be related to the maintenance and expansion of the international tropical timber trade.

- g) They should offer reasonable prospects for positive economic returns in relation to costs; and
- h) They shall make maximum use of existing research institutions and, to the greatest extent possible, avoid duplication of efforts.

3. Relationship to ITTO Action Plan and Priorities

This research and development project is directly related to ITTO Action Plan and priorities in the field of Forest Industry:

- a. Delivery of trial volumes of new species and products, and other approaches to facilitate acceptance in selected foreign markets.
- b. Studies, tours and seminars to link potential suppliers and clients.
- c. Studies on the economics of further processing.
- d. Projects in selected strategic locations to promote the integrated development of sustainable forest management and industrial use.
- e. Support for industrial trials, pilot production and marketing of new species.
- f. Specific research and extension on sawing difficult species.
- g. Research and development on tropical timber use in construction, especially on new species and wood products.
- h. Support for training in planning and management of forest industries and in marketing of forest products.

B. RELEVANCE TO NATIONAL POLICIES

1. Relationship to sectoral policies affecting tropical timber

COHDEFOR promotes sustainable forest management by establishing mechanisms for the involvement and organization of rural communities. Furthermore, it encourages higher value added for forest products and promotes the consumption of forest products from managed areas.

COHDEFOR and the Government of Honduras give high priority to the implementation of this project on industrial utilization of new forest species because it will lead to the economic revaluation of currently managed broadleaved forests, while introducing products from managed forests into the international tropical timber trade.

2. Relationship to subsectoral aims and programs

COHDEFOR's Atlántida Forest Regional Office is responsible for the management of broadleaved forests in Honduras. A great pressure is now being exerted to convert broadleaved forests to agricultural uses. The aims of COHDEFOR's regional office are:

- a. That broadleaved forests remain as forests under sustainable forest management and utilization programs linked to the timber industry.

- b. That tropical forests be economically revalued based on the utilization of new forest species, the use of appropriate industrial and forest technologies, and the promotion of timber products in the national and export markets.
- c. That the quality of life of local populations be improved through agroforestry practices and forest management and utilization programs.

3. Institutional and legal framework

The Honduran Forest Development Corporation (COHDEFOR) is the government agency responsible for the sustainable development of forest, the management of forests, and the implementation of forest research and development projects aimed at promoting technologies and increasing forest production and productivity.

By virtue of Decree Law No. 103, COHDEFOR has the power to sign international agreements for the implementation of forest projects in the country with a view to achieving sustainable forest development, promoting the timber industry and developing timber product markets.

COHDEFOR, the rural communities and the timber companies unanimously agree on the need to introduce new forest species for the purpose of economically revaluing tropical forests, which will in turn lead to sustainable forest development.

COHDEFOR has concluded forest harvesting agreements over 30-year periods with 10 cooperative organizations. These agreements give community organizations the right to harvest the annual allowable cut volume stipulated in the approved management plan, but they must also assume responsibility for forest protection and management.

PART II. THE PROJECT

1. ORIGIN

COHDEFOR is implementing the Broadleaved Forest Development Project (Proyecto de Desarrollo del Bosque Latifoliado - PDBL) with the support of the Canadian International Development Agency (CIDA). This is a land-use management, forest management and agroforestry project with the participation of local communities.

The main objective of the PDBL project is to reduce the degradation rate of broadleaved forests by promoting the use of agroforestry and forest management techniques aimed at increasing production, settling the farmers on their farms and improving the quality and standard of living of the rural communities. The PDBL has been acknowledged by the Smart Wood Program of the Rainforest Alliance as a "Good Sustainable Forest Management" project as it has proven to be ecologically viable, socially acceptable and economically feasible.

The project created development models based on Integrated Management Areas (IMA) where forest management, promotion and extension, and agroforestry development activities are implemented.

The main achievements of the PDBL project in the last seven years of implementation include the development of an ecological-economic land-use management plan, the establishment of protection, buffer and production areas, and the implementation of 12 management plans approved by COHDEFOR. Five-year plans have been established for every community forest, on the basis of land-use management, forest inventories

and the participation of the rural population. For each of these community forests there are statistics available on the number of trees per hectare, basal area distribution and net volumes for each of the altitudinal and development strata in the forest, in terms of both commercial and non commercial species. Every management plan is aimed at providing a silvicultural utilization option according to the number of commercial and potentially commercial species.

The main problem for the conservation of broadleaved forests is the low economic value attached to them due to scarce and inefficient utilization, which leads to great social pressures for their conversion to other uses such as agriculture and cattle raising. A total of 80,000 ha of forest are logged and burnt each year, which is an extremely high figure for Honduras.

There is an urgent need to utilize a greater number of species, as proposed in this project, in order to settle the communities in the IMA and their areas of influence. However, it is also necessary to carry out studies on the environmental impact of harvesting a greater number species from the forest, the development of sound low-impact technologies in forest management and harvesting areas, and on the identification of the most suitable end uses for non traditional timbers according to market requirements. Furthermore, a training program in the areas of forest management, ecology, environment, industry and trade, is also considered to be essential.

2. PROJECT OBJECTIVES

2.1 Development Objectives

To economically revalue tropical forests in Honduras through sustainable production programs based on management plans and the use of sound low-impact technologies.

2.2 Specific objectives

- a. To study the ecological and environmental impacts of lesser-known species harvesting on the forest.
- b. To develop sound low-impact technologies for the sustainable management and utilization of tropical forests.
- c. To develop basic and applied research studies so as to determine the most suitable end uses for the lesser-known timber species.
- d. To ensure the transfer of knowledge on forest management, ecology, environment, industry and market opportunities.
- e. To facilitate the introduction of non traditional forest species into the national and international markets, while ensuring their ecological, silvicultural and economic sustainability.

3. PROJECT JUSTIFICATION

3.1 Problem to be addressed

The broadleaved forests of Honduras (Annex 1) cover an area of 2.65 million hectares and are being seriously threatened by enormous social pressures due to a change of utilisation of the forests for agricultural and cattle breeding purposes.

The annual deforestation rate, which is estimated at 80,000 hectares a year, is an extremely high rate for a country with limited tropical forest resources and is mainly caused by shifting agricultural practices and extensive cattle breeding activities. The slash and burn culture must be changed to one of sustainable forest production, through which rural communities will be encouraged to value the forests, in view of their economic returns, and will incorporate forest production to the basis of integrated rural development.

If the current rate of destruction of broadleaved forests were to continue, it would have enormous ecological, social and economic repercussions: loss of soils through erosion, flooding, rural poverty, loss of biodiversity, loss of forest value and loss of permanent employment opportunities.

The rural communities are organized in collective societies, which have been legally recognized by COHDEFOR and require an economically viable model, sustainable at the forest level, which will allow them to improve their living conditions and will create an adequate social and ecological environment for the communities.

Even though the PDBL project is gradually managing to stabilize the rural communities in the buffer areas, it is necessary to introduce a greater number of species and higher volumes of these species into the market as their timber represents an important source of income for the rural population, especially when compared to the low incomes obtained through the sale of basic grain crops (corn and beans).

The current forest utilisation rate is only about 5 m³/hectare, which represents a low, inefficient yield, incapable of generating sufficient financial resources to achieve sustainable forest management.

By incorporating 25 lesser-known forest species into the timber industry and trade, the yield would rise to 30 m³/hectare. This would consolidate timber activities, reduce operational unit costs and allow for the payment of a stumpage fee in order to establish a **FOREST GUARANTEE FUND**. This Fund, which is already an integral part of the IMA forest management, was established on the basis of an agreement between COHDEFOR and the rural communities organized through a usufruct contract (Annex 2). The rural communities, industrialists and timber importers, all contribute to this Fund, and in addition, COHDEFOR contributes 50% of the stumpage value.

According to the results of the forest inventories carried out, there is an average of 140 m³ of timber per hectare and forest management studies indicate that a utilisation rate of 30 m³/hectare is acceptable. However, in order to confirm this, environmental impact assessments will be conducted so as to ensure forest sustainability.

Furthermore, it will be necessary to identify sound low-impact technologies so as to improve current yield, productivity and economic valuation levels in the tropical forests.

3.2 Characteristics of region or area where project will be located

Project Location:

The project will be based in Ceiba, Atlántida, from where it will extend its operating range to the 10 Integrated Management Areas (Annex 3), which are located only a few kilometres away. Industrial timber processing will take place in other timber producing areas in Atlántida, Colón and Olancho, and in the industrial areas of Tela and San Pedro Sula.

The IMAs are dispersed within the broadleaved forest near La Ceiba. In spite of their proximity, these areas have different forest compositions, terrain characteristics and populations.

Area of Influence:

The project area is made up of 110,000 hectares of tropical forest situated in the Departments of Atlántida, Colón and Olancho, in the northern region of the country. In order to promote sustainable forest utilisation, 10 Integrated Management Areas (IMA) were established in the broadleaved forests so as to determine appropriate forestry and agroforestry practices.

However, the project's direct area of influence is much more extensive, as the experience gained can be applied in other parts of the Honduran broadleaved forests.

The topography of the broadleaved forests is rugged and steep, with gradients of over 50%. There are 1,500 farmers living in the IMAs; 500 of them belong to the COATLAHL cooperative and the remainder work as small-scale agroforestry producers.

The forest activities and the environmental impact assessments proposed in this project will be carried out in the IMAs, without disturbing the management plans already in place.

The industrial utilisation trials for the new forest species will be carried out in private timber companies located in La Ceiba, San Pedro Sula and Tegucigalpa, and to this end the project has secured the active participation of 2 producer associations, the COATLAHL cooperative, 2 higher forestry education centres (ESNACIFOR and CURLA) and CUPROFOR (see organizational chart).

3.3 Other relevant aspects of "pre-project situation"

The Broadleaved Forest Development Project (Proyecto de Desarrollo del Bosque Latifoliado - PDBL) is being implemented since 1982 through an agreement between COHDEFOR and the Canadian International Development Agency (CIDA), and its main objective is to reduce deforestation caused by the great social pressure exerted through the conversion of lands for agriculture and cattle raising.

The IMA development strategy is based on the forestry component as the central element and focuses on productive activities that improve the quality of life and the standard of living of the rural communities. In the IMAs, the forest is physically demarcated in the field and is under the care of the community. Forest harvesting in the permanent production areas is carried out using simple manual sawing techniques and mule and/or river transport.

Despite the sound basis established by PDBL to avoid the deforestation caused by shifting agriculture, it is necessary to increase the value attached to the forests in order to ensure their survival based on sustainable development. The lack of a better system for the generation of income from the forest constitutes the main obstacle in achieving an adequate ecological and economic balance between protection and production forests on the basis of land management regimes and the Land Use Plan developed by PDBL.

PDBL has achieved important results over the years. These achievements, which are described below, represent a cornerstone in the sustainable management of forests with the participation of rural communities.

3.3.1 Forest Management Plans

The integrated forest management plans developed by PDBL for the community forests in the IMAs have been approved by COHDEFOR. The Honduran legislation stipulates that forests can only be harvested under management plans.

According to current forest regulations, the IMA management plans cover five-year periods and include the following aspects:

- Location and area of community forest
- Biophysical and hydrological characteristics
- Stratification and land uses (protection area, agricultural area and production forest)
- General forest inventory according to the development status of the forest (regeneration, remaining forest, mature forests) and to the commercial and potentially commercial species. The following parametres are assessed:
 - * Number of trees per hectare
 - * Basal area
 - * Total gross and net volume per hectare
- Silvicultural potential: annual harvestable volume of commercial species with DBH \geq 50 cm.

- Silvicultural criteria:
 - * Basal area
 - * Established regeneration
 - * Volume
 - * Minimum harvesting DBH
- Five-year harvesting and silvicultural plan
 - * Harvesting
 - * Liberation thinning treatments and reforestation in gaps
- Five-year protection plan:
 - * Characterization and diagnosis of community forest
 - * Activities per area/zone
- Analysis of costs and benefits of harvesting, silvicultural and protection activities

3.3.2 Usufruct contracts

The sawmilling groups in the IMAs, organized in collective societies legally recognized by COHDEFOR, are responsible for the management of their community forests and have signed a "usufruct contract for the management of a national forest". This contract covers the same period as the harvesting cycle (30 years) and is renewable every five years according to the management plan established. The contract sets out both COHDEFOR's and the farmers group's responsibilities.

COHDEFOR undertakes to delegate the forest utilization operations to the farmers' group so that they can implement five-year operational management plans. In addition, COHDEFOR is responsible for supervising and providing technical assistance to the group.

The farmers' group, on the other hand, undertakes to provide human resources for any work required in the area under management, such as forest inventories, development of operational plans, silvicultural treatments, nurseries, reforestation, etc. The group must ensure that the harvested products undergo at least the primary industrialization stage for the production of sawnwood, boards, blocks, etc.

COHDEFOR and the farmers' group jointly undertake to establish mechanisms for the control of illegal forest logging and the enforcement of the Forestry Law and its regulations.

In addition, both parties undertake to establish a Forest Guarantee Fund, which is described below.

3.3.3 Forest Guarantee Fund

The Forest Guarantee Fund (FGF) concept derived from the need to obtain funds for sustainable forest management, and it involves farmers legally organized into groups in the implementation of management plans. Annex 4 describes the FGF implementation mechanisms. The establishment of the FGF has become a reality, as it is included in the usufruct contracts. The rural groups have already started making contributions from local timber sales revenues to a special account.

COHDEFOR contributes 50% of the stumpage value to the FGF. Industrialists and forest product importers also contribute to the Fund. The participation of

an ecological/environmental member is being sought to finance the development of management plans.

The activities to be carried out with FGF funds must be approved by COHDEFOR, whose representative must also approve the release of these funds.

Although the FGF has only recently been implemented, it has already captured the attention of the forest sector at the national level. COHDEFOR is reviewing the FGF model in order to improve it and eventually adapt it to other regions of the country.

On the one hand, it is necessary to reduce the unit costs of forest management through efficient operations, and on the other hand, it is important to ensure a more integrated utilization of the forest through the use of lesser-known species and improved yield levels per harvested tree.

3.3.4 Agroforestry activities

The agroforestry component plays an essential role through technology transfer and training for producers. In addition to protection forests with their "intangible" values, the IMAs cover "buffer areas", where agroforestry activities are implemented with assistance from the PDBL project.

In 1991, the PDBL project with support from CURLA and COHDEFOR, established a germ plasm bank to supply genetic resources to the project's management areas, thus improving farmers' production units. This bank has 5000 plants at the CURLA experimental station, including fruit tree varieties, spice plants, and timber and multiple-use trees.

There are currently 250 farmers trained and the demand for technology transfer and genetic material supply by rural communities, projects, institutions and schools, is increasing.

3.3.5 ITTO Project PD 8/92 Rev.2 (F)

The activities of Project PD 8/92 Rev.2 (F): "Study on the growth of native species of commercial interest in Honduras" (PROECEN) began in January 1995 and will last for five years.

The project was developed as a response to the lack of silvicultural knowledge for the establishment of plantations with native broadleaved species.

This project was designed to generate information to promote the establishment of commercial plantations using non traditional broadleaved species. A total of 25 promising species have been selected to determine their reproduction behaviour in the nursery, carry out the necessary plantations and conduct the monitoring and analysis of the trials established in the various regions. The results will be disseminated at the technical, rural and industrial levels.

PROECEN also envisages a seed collection and phenology study aimed at finding a solution to the problem of high quality seed availability from well formed trees in many locations.

It should be stressed that PROECEN has carried out a literature review on the silvicultural and ecological characteristics of species, some of which are included in Table No. 2.

3.3.6 COATLAHL

The Cooperativa Agroforestal Regional Colón, Atlántida, Honduras Limitada (COATLAHL) comprises some 500 farmers organized in various groups within the IMAs. The timber produced by these groups is processed and marketed by COATLAHL.

There is a strong desire to improve production efficiency amongst COATLAHL members. It should be pointed out that this year's plans include the installation of a drying kiln, timber marketing abroad and the utilization of waste in craft work.

3.4 Intended situation after project completion

An environmental impact assessment of the harvesting of non traditional species will be carried out so as to ensure the sustainability of tropical forests.

Techniques aimed at minimizing the environmental impact of an increased use of species on the forest will be identified, tested and disseminated.

Local farmers will strengthen their Forest Guarantee Fund by incorporating new species. Sustainable forest management will be improved as a result of the greater value attached to forests.

Twenty-five non traditional forest species will be introduced into the national and export markets, the rate of forest utilisation will increase to 30 m³/hectare and the industry will be producing higher-value-added products: kiln dried timber, planed timber, floors, mouldings, decorative veneers and furniture, as shown in Table 3.

From the ecological/environmental viewpoint, the current high deforestation rate will be reduced and the goals of forest management, agroforestry and caring of protected areas will be achieved.

The timber industrialists of Honduras will learn to process 25 new timber species for different uses and will increase their knowledge of international tropical timber markets.

In general, progress will be made in all areas related to sustainable forest management, thus improving the quality of life of the rural communities.

3.5 Target beneficiaries:

First of all, the 1500 farmers working in the Integrated Management Areas (IMA) of the PDBL will benefit from the application of appropriate technologies and the development of markets for their forest products. The farmers use simple sawing and transport technologies and these practices will be improved so as to achieve greater efficiency and sustainability in forest resource utilization.

COHDEFOR will improve its knowledge on forest management and low environmental impact technologies, and will apply this knowledge in the areas of forest administration, management and control under its responsibility.

The agencies that have been considered for the implementation of this project are:

a) Farmers' groups

1. **Cooperativa Agroforestal Regional Colón, Atlántida Honduras Limitada - COATLAH:**

It has 500 members, who work in timber logging and sawmilling in the management area of the Broadleaved Forest Development Project (PDBL), that is being implemented by COHDEFOR. It has a re-sawing plant, a sawn timber warehouse, two (2) 10-ton trucks in good working condition, a carpentry workshop, a cabinet-making workshop and a range of manual equipment.

2. **Independent sawmilling groups (collective societies)**

There are several sawmilling groups that do not belong to COATLAHL and market the timber they produce independently.

b) Companies

1. **Aserradero San José:**

Situated in Olancho. It produces sawnwood for the national and export markets. Manpower: 350 employees. They have a forest harvesting agreement with COHDEFOR.

2. **Derimasa:**

Furniture and flooring factory located in Tegucigalpa, that has a modern line of production. It exports to the Unites States and supplies the national market. Manpower: 200 employees.

3. **Caoba de Honduras:**

A furniture, flooring and parts and components factory; situated in San Pedro Sula, it has 5 solar dryers and a complete line for manufacturing furniture. It exports to the United States and supplies the national market. Manpower: 200 workers.

4. **Honduras Veneers:**

A decorative veneer, plywood and sawnwood factory, located in Bonito Oriental. Manpower: 200 workers.

Other companies have also expressed interest in participating in this project and could be included in the work plan if appropriate. In addition, PDBL has established 3 carpentry workshops in the IMAs and they will use lesser-known timber species, although on a smaller scale.

The institutions that will be involved in project coordination are:

The Timber Industrialists Association of Honduras (AMADHO):
It has 74 members and represents industrialists in the timber sawing sector who are very interested in the introduction of new forest species and will participate in the training and trade promotion programs.

The National Association of Timber Processing Industries - ANETRAMA:
It has 42 members and represents manufacturers of furniture, doors and other finished timber products. They will participate in the training and trade promotion programs.

The Regional University Centre for the Atlantic Coast- CURLA
This University educates forest engineers in forest management practices and in the development of the timber industry. They will participate in the industrial technology and training programs.

The National School of Forestry Sciences - ESCINAFOR
It is a higher forestry education institution that has laboratories, a specialised library, a sawmill, a solar drier and a preservation plant. It will participate in the industrial technology and training programs.

The Center for Forest Product Utilization and Promotion - CUPROFOR
This institution is involved in applied research on the properties of Honduran timbers. It will participate in the industrial technology and training programs.

Individual farmers, members of cooperatives, industrial companies, producer associations and higher forestry education centres have all been consulted about the formulation of this project, and their participation in its implementation has also been coordinated.

3.6 Project strategy

3.6.1 Reasons for selection

The main purpose of this research and development project is to determine the allowable forest harvesting capacity in order to achieve forest sustainability with the lowest environmental impact possible.

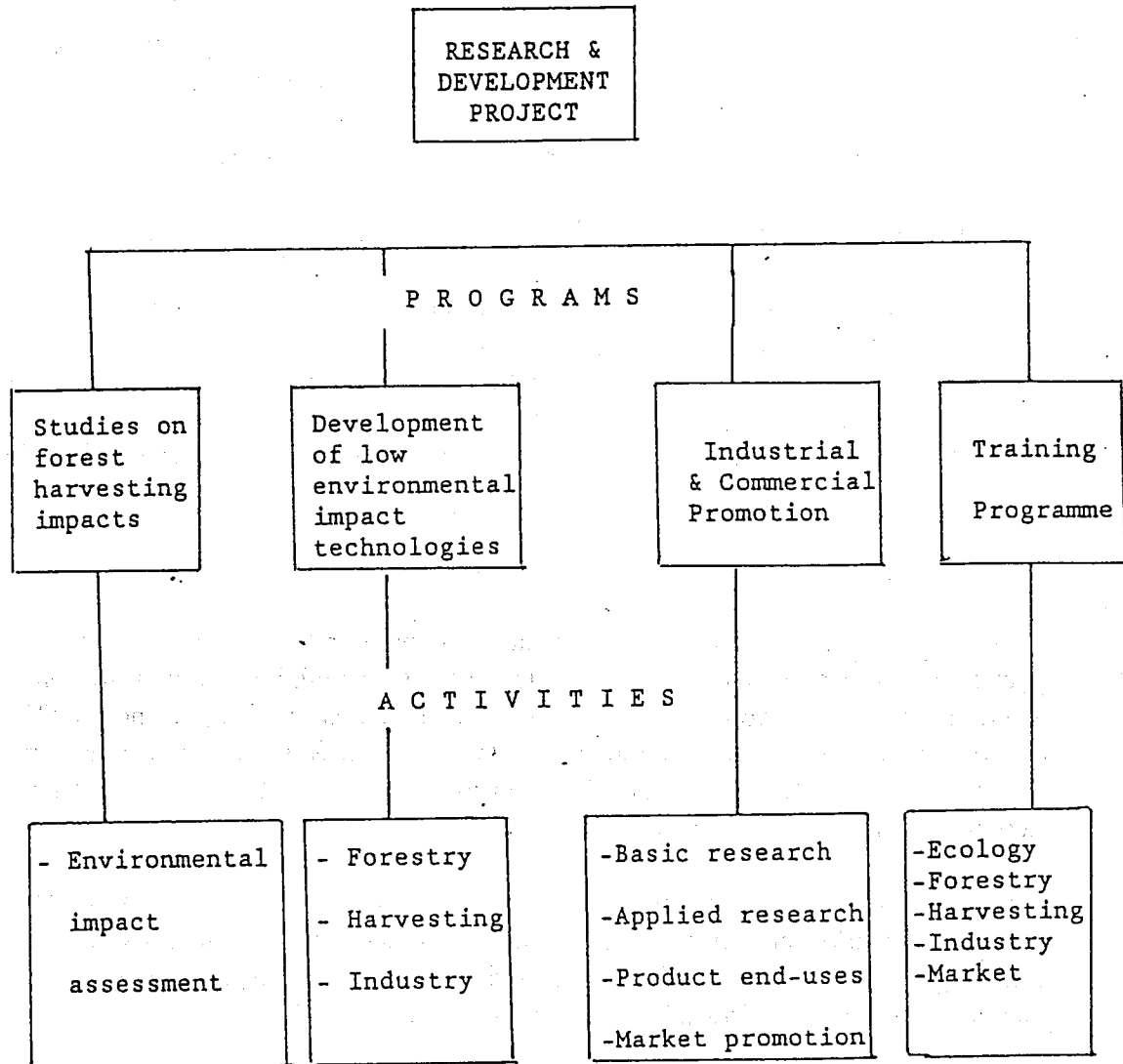
The project seeks to study the forest and ecological impacts of harvesting lesser-known species in tropical forests under management plans.

The project strategy includes an environmental impact assessment in the integrated management areas (IMA), the development and application of forest technologies, and low-impact harvesting.

Furthermore, the project will conduct basic and applied research to determine the end uses of lesser-known species according to market requirements. Human resources will be trained through a training program in the areas of ecology, environmental impact assessment, forestry, harvesting, industry and trade.

The following chart shows the project organizational structure:

PROJECT ORGANIZATIONAL STRUCTURE



The underlying principle of this project is that forest utilization must be based on the knowledge available on the recuperation and/or regeneration capacity of the forest in order for it to continue being productive and to ensure its future sustainability.

3.6.2 Lessons drawn from past evaluation

Some concrete lessons were derived from past evaluations of forest activities carried out in the broadleaved forests of the northern coast of Honduras, i.e.

- Participatory forest management and community training activities should be emphasized.
- It is necessary to economically value the forest so as to stabilize farmers and avoid deforestation of lands for the growing of basic grain crops.
- It is possible to achieve sustainable forest management in the tropics so long as all ecological, economic and social aspects of forests are taken into consideration.
- Current yield and productivity levels must be improved through the use of appropriate technologies.
- The implementation of ecological-economic land management requires the active participation of the local communities settled in the area so as to encourage them to respect protected areas and carry out their productive activities in forestry and agroforestry areas.
- There is a lack of knowledge on industrial processing technologies and market opportunities.

3.6.3 Technical and scientific aspects

There is a great interest amongst the international community in using new forest species so as to economically revalue tropical forests through improved utilization. Several ITTO member countries have expressed an interest in this issue and the ITTO has even organized a seminar on the utilization of new forest species, which gave rise to recommendation 30 of the ITTC(IX), the provisions of which have been taken into account in this reformulated proposal.

It is imperative to assess the capacity of the tropical forest ecosystem to ensure its recuperation and/or regeneration capacity on the basis of scientifically proven technologies so that the utilization of selected non traditional species can be guaranteed and annual allowable cut volumes can be established at a sustainable level.

This research and development project will improve forest management plans based on improved knowledge of forest dynamics and the environmental/ecological impact of the use of new species. Tables 4 and 5 show overall IMA volumes and volumes per species respectively.

The development of low-impact forest technologies and sustainable timber product production is also important. This will lead to a balance between sustainable production, management and conservation.

The research and development project includes 4 programs, to wit:

3.6.3.1 Environmental impact assessment of forest harvesting

A comparative assessment will be carried out in the annual cutting areas based on two different treatments, i.e.

- only traditional species will be harvested from 50% of the annual felling areas;
- traditional and selected non traditional species will be harvested from the remaining 50% of the annual felling areas.

The study will be based on the 10 Integrated Management Areas.

The first harvesting treatment will include 5 species with an estimated average volume of 5 m³/ha (traditional system).

The second treatment will include the harvesting of 25 non traditional species (Table 1) with an estimated average volume of 30 m³/ha. These species will be added to the traditional species to be harvested.

The project will assess the forest and environmental/ecological impact of harvesting 1,050 m³ of roundwood as shown in the table below:

Sample size, harvestable volumes and total volumes
by treatment type

Treatment type	Species harvested	Sample size - No. of ha	Harvestable volume (m ³ /ha)	Total Volume (m ³)
I	Traditional	30	5	150
II	Traditional and non-traditional	30	30	900
	TOTAL			1,050

The environmental impact assessment will be carried out over a period of 3 years, taking into account all the effects of an increased use on flora, fauna, soils, water, forest dynamics, natural regeneration, non-timber forest products, etc.

The initially proposed volume of 2000 m³ has been reduced. This new proposal plans to use only the volumes permitted in the annual allowable cuts up to a maximum of 1050 m³ for all the 25 proposed species.

3.6.3.2 Development of low-impact technologies

Forest harvesting systems and reforestation and/or forest regeneration practices can cause various environmental impacts such as soil compaction, damage to the natural regeneration, changes in the nutrient cycle, loss of soil by erosion, and damage to lower storeys caused by tree felling. Thus, it is necessary to develop appropriate technologies to reduce the environmental impact and improve the capacity of the forest ecosystem to recover, as well as applying sound silvicultural practices such as clearings, reduction of undesirable competition, and enrichment with selected native species.

This project will develop a methodology for forest harvesting and reforestation based on the use of efficient and low environmental impact technologies and practices, which will be transferred to the farmers, forest workers and COHDEFOR personnel.

3.6.3.3 Industrial and commercial promotion

Basic (laboratory) and applied (timber industry) research into the selected non traditional species (Table 1) will be carried out in order to identify the most suitable end uses recommended for each species.

The logging and industrial use of non traditional species will lead to an improved economic valuation of tropical forests, the generation of financial resources for sustainable forest management and the supply of value-added timber products based on the use of appropriate technologies.

The industrial and commercial promotion strategy consists in ensuring that the timber products marketed in the national and international markets come from managed forests under acceptable levels of forest and ecological impacts through the development and application of methodologies and procedures based on the use of low-impact technologies.

Thus, this research and development project will promote the sustainable use of new forest species, ensuring their incorporation into the forest management plans.

3.6.3.4 Industrial and commercial training

Training will be provided through theoretical-practical courses and seminars addressed to farmers, forest workers, manual sawyers groups, technicians and industrialists related to the project area.

This training program is very important because it will help improve the skills of the human resources required for forest management, reduce environmental impacts, apply sound technologies and use new forest species.

Training in forest management

The program will include:

- Ecological-economic land management
- Biological diversity
- Forest Management Plan for the IMAs.
- Dendrological identification of species.
- Forest inventory results.
- Forest harvesting plan
- Annual allowable cut areas and volumes for selected species
- Silvicultural systems: natural regeneration, enrichment, agroforestry, etc.
- Species propagation techniques: nurseries, cuttings, etc.
- Participation of women farmers in forest management plans.

Training in ecology and environment

The program will include:

- The quality of life and the environment
- The significance of biological diversity
- Implications of environmental impacts due to unsound use of natural resources
- Tropical forest ecology
- Local idiosyncrasy, social involvement and the environment
- Environmental policy and legislation of the Government of Honduras
- International treaties and commitments on the environment and sustainable development

Industrial and commercial training

The program will include:

- Low-impact sawing techniques
- Yield and productivity
- Production quality.
- Timber grading.
- Production costs
- Timber drying and preservation.
- Value added processing and re-processing
- Standardization of timber products by end use
- Timber grading standards for international markets.
- Definition of products, timber, measurements, quality, volume and prices according to markets.
- Export procedures: documents, customs, freight, packaging, etc.

3.6.4 Economic aspects

The harvested volume from the forests is currently an average of 5 m³/ha in the form of sawnwood, i.e. a low value added product, and therefore:

$$5 \text{ m}^3/\text{ha} \times \frac{180}{424} \times \text{US\$ } 180/\text{m}^3 = \text{US\$ } 382/\text{ha}.$$

Where:

* 180 bf are used per cubic meter of roundwood.

With the introduction of 25 timber species, forest utilization increases to 30 m³/ha and with the use of value-added technologies the average price increases to US\$250/m³.

Thus:

$$30 \text{ m}^3/\text{ha} \times \frac{180}{424} \times \text{US\$ } 250/\text{m}^3 = \text{US\$ } 3,184/\text{ha}.$$

This represents an 8-fold increase in forest production value per forest hectare.

From the point of view of the farmers:

The economic benefits will go to the farmers, because the improved forest harvesting will lead to a reduction in unit costs of production and to increased employment in the areas of forest management and utilization. It is estimated that the improvement in

forest harvesting will lead to a decrease in current sawnwood production costs of US\$30/m³, which means that lesser-known timbers may be supplied at lower prices.

From the point of view of the industry:

Timber processing currently carried out by the industry is supplied with timber from species such as mahogany, cedar, san juan and redondo. If the supply of these species were to stop, all the installed processing capacity would gradually become under-utilized and the plants would eventually find themselves out of the market.

Through the diversification of production and based on the use of better technologies and improved market knowledge, the timber companies will have a continued supply of non traditional timber species, which will lead to the development of a higher value added timber industry that is competitive in the international markets.

From the nation's viewpoint:

The main benefit for the country will be the increased value given to forests which will subsequently translate into a reduction of the pressure exerted by farmers on forest lands for agricultural purposes, thus leading to the protection of micro-watersheds and other water producing areas, wildlife and general biodiversity.

A second benefit will be an increased level of foreign exchange earnings for the country as a result of increasing timber exports with the introduction of non traditional species.

3.6.5 Ecological/Environmental aspects

a) Biodiversity Considerations

The broadleaved forests of Honduras constitute the largest forest area of Central America. The moist tropical forest life zone is the area that has been selected for the harvesting of the aforementioned timber species.

This life zone category has the highest flora and fauna diversity in the tropics. Very few studies have been undertaken in Honduras to quantify this wealth of biodiversity; the available information relates more to protected areas than to production forests.

The basic information on biodiversity that this project will compile will result in the identification of the conditions and potential of the biological resource. The project could also provide substantive elements for the formulation of a separate project that will complement the forest management activities that may be implemented by the rural communities of the area.

It should be stressed that the minimum cutting diameter of 50 cm established by the IMA management plans protects the remaining forest where there are smaller diameter

trees and natural regeneration. Thus, these management plans are protecting the biodiversity of broadleaved forests.

Furthermore, the biological diversity in the IMAs is protected through protection and buffer areas.

b) Ecological considerations:

It is necessary to assess the true environmental impact of felling, cutting and manual sawing operations. Farmers use between 6 and 8 trees of the "remaining stand" (DBH <50 cm) to build a sawing bench. The frequency of these benches will decrease with the implementation of the management plans which establish that felling can only occur inside the designated areas. The number of benches per unit area should also decrease with the incorporation of new species into the production process.

This proposal envisages the study and application of low-impact technologies, not only to reduce the frequency of sawing benches, but also to make them more efficient (less waste production) in the timber sawing process and, in general, throughout the whole chain of productive forest activities.

Timber is transported by mules, which can carry between 30 and 50 board feet per trip. The Project does not envisage the construction of access roads or the use of heavy machinery for harvesting operations or for the transport of timber.

The Forest Guarantee Fund (FGF) has recently been implemented in the IMAs and is generating a lot of interest at the national and international levels. This Fund contemplates the involvement of an ecological/environmental member to finance the development of management plans. Thus, field activities could be financed directly with funds obtained from the sale of timber. If these ecological/environmental members did get involved, new management plans could be developed for more community forests.

3.6.6 Social aspects

The overall situation of farmers in the IMAs has been improving thanks to the work carried out by the PDBL project. Today, they are grouped in legally established societies and have forest management plans that have been professionally developed and which include harvesting, reforestation, protection and agroforestry components. In addition, they have signed a forest utilization or usufruct contract and have the support of COHDEFOR.

Many of these farmers have already been trained, and they are already applying the techniques learned or are disseminating them, e.g. the incorporation of permanent crops into their agroforestry lands.

On the other hand, the rural economy has a strong timber component, so farmers need to ensure the sustainable utilization of a greater number of species so as to increase their incomes and lower their costs.

For the above reasons, this proposal to assess the impact of using new species on the forests, as well as their introduction into the market, is supported by many farmers who will also benefit by learning the use of low-impact techniques.

It is expected that the 1,500 farmers in the IMAs who are involved in tropical forest production and management activities will benefit during and after the implementation of this project for the reasons detailed below:

- a) Rural income levels will be improved with the incorporation of new species and increased yield and productivity. More manpower will be required in forest operations for the implementation of the activities outlined in the management plans.
- b) Farmers will have a wider range of harvestable species for home use and local markets and more timber will be available for community construction.
- c) Farmers will acquire knowledge on basic timber processing for their joinery and craft workshops, as well as some basic knowledge on species workability, resistance and storage. This knowledge will eventually result in the strengthening of cottage industries and their marketing capacity.
- d) Farmers will actively participate in the training program.

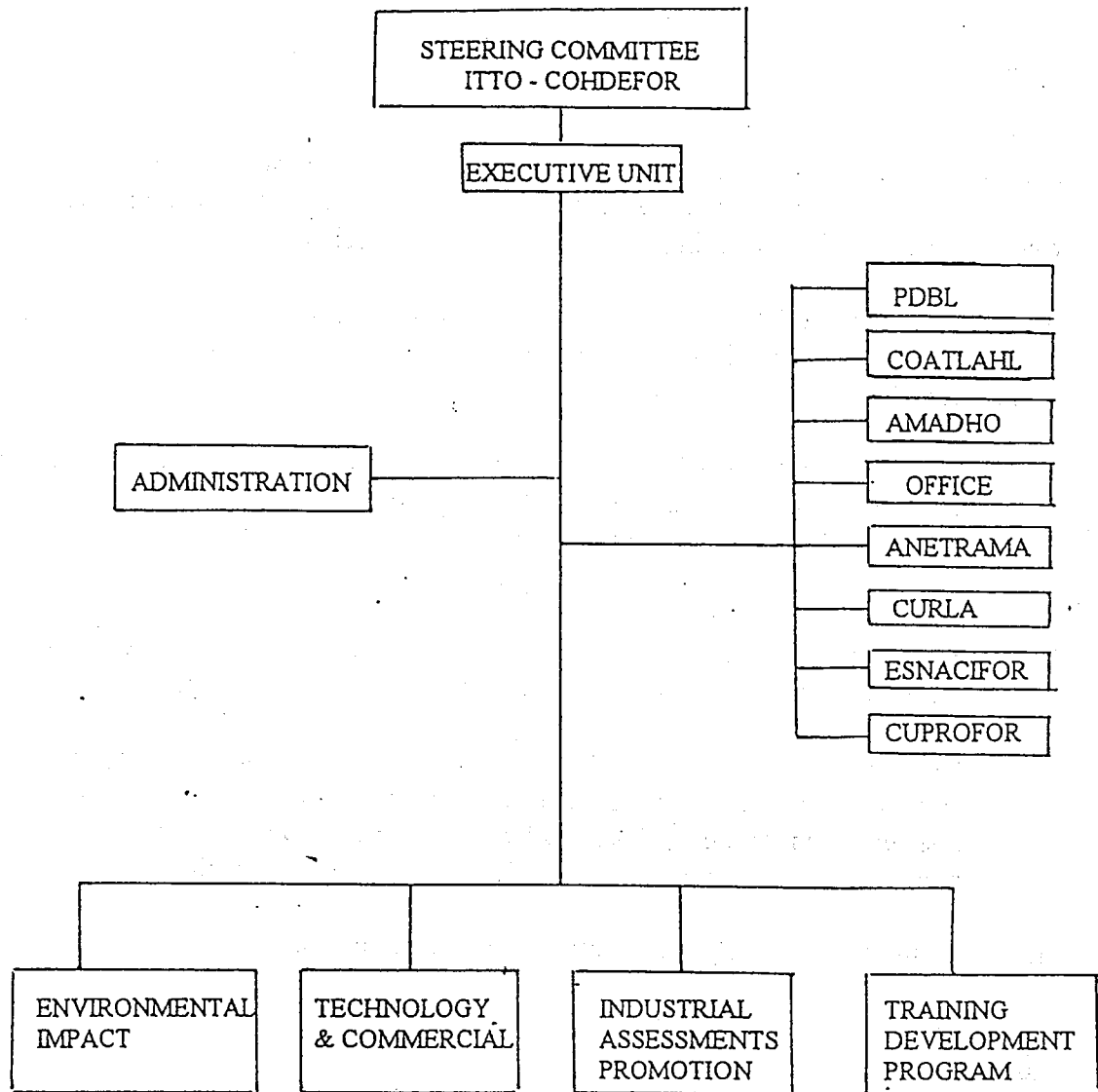
3.6.7 Managerial aspects

The Honduran Forest Development Corporation (COHDEFOR) is the agency responsible for the management of forests in Honduras.

The Broadleaved Forest Development Project (PDBL) is currently being implemented and has managed to attract the participation of farmers, timber industrialists and higher education centers for the implementation of this project.

This proposal is administratively and operationally independent of the PDBL project; however, it will closely coordinate with the PDBL Project and the support institutions considered for the implementation of this project, as shown in the chart below.

INTERNAL ORGANIZATION PROPOSAL



- PDBL: Proyecto de Desarrollo del Bosque Latifoliado (Broadleaved Forest Development Project)
- COATLAHL: Cooperativa Agroforestal Regional Colón, Atlántida Honduras Limitada (Agroforestry Cooperative, Colon Regional Office, Atlántida Honduras Ltd.)
- AMADHO: Asociación de Madereros de Honduras (Honduran Timber Traders' Association)
- ANETRAMA: Asociación Nacional de Empresas Transformadoras de Madera (National Association of Timber Processing Industries)
- CURLA: Centro Universitario Regional del Litoral Atlántico (Regional University Center - Atlantic Coast)
- ESNACIFOR: Escuela Nacional de Ciencias Forestales (National School of Forestry Science)
- CUPROFOR: Centro de Utilización y Promoción de Productos Forestales (Centre for Forest Product Utilization and Promotion)

3.7 Reasons for ITTO support

3.7.1 ITTO aspects

The internationally agreed Year 2000 Objective of the ITTO was supported by the Government of Honduras with a view to achieving the sustainable management of the country's forest resources.

ITTO support is requested to implement this research and development project with a view to fulfilling the primary ITTO objective of helping member countries to implement programs and projects aimed at sustainable tropical timber production in consonance with forest resource and environmental conservation.

ITTO international cooperation will help to establish an adequate forest and industrial technological base at the farmers and timber industrialists levels and will also promote timber products from managed forests in the international and domestic markets.

COHDEFOR and the Government of Honduras believe that with 110,000 ha under sustainable forest management, the ITTO contribution will be of great value to supplement the efforts already made and to ensure the economic revaluation of forests and the development of a competitive and efficient production base in the international market.

ITTO assistance is considered to be appropriate because it is a multi-lateral body and because the project will benefit timber producers and consumers.

3.7.2 Relationship to relevant actions supported by other donors

The Broadleaved Forest Development Project, implemented by COHDEFOR with the support of the Canadian International Development Agency (CIDA), has established 10 integrated management areas (IMAs) to carry out forest management and agroforestry activities based on the organization of 1,500 farmers who are the main participants in the forest development programs. COHDEFOR's proposal to ITTO and the PDBL are two related projects that will be implemented separately.

3.8 Risks

Considering that the Government of Honduras through COHDEFOR has given this project the highest priority in the policy for the forest sector and that an agreement has been reached with the rural communities, industrialists, higher education centers and the PDBL, it is considered that there are no institutional risks that could hinder the successful implementation of this project.

4. **OUTPUTS, ACTIVITIES AND INPUTS**

Sections 4 and 5 of the Project Manual have been integrated for the presentation of project outputs, activities and inputs. The specific objectives of the project are also included in this section.

SPECIFIC OBJECTIVES

- a. **To study the ecological and environmental impacts of lesser-known species harvesting on the forest.**

Output 1

To determine the allowable forest harvesting levels in accordance with the forest ecosystem capacity.

Activities

- a. To study the ecological characteristics of selected forest species.
 - b. To assess the natural regeneration capacity of the species under utilization systems.
 - c. To carry out assessments of the impact of harvesting new forest species on the biodiversity, forest associations, soils and water regimes.
 - d. To define and establish allowable environmental/ecological impact limits.
 - e. To analyse the impact of harvesting new forest species on non-timber forest products.
- b. **To develop sound low-impact technologies for the sustainable management and utilization of tropical forests.**

Output 2

To identify and implement low-impact technologies in the forest management and sustainable utilization areas.

Activities

- a. To identify forest harvesting technologies of low environmental impact.
- b. To implement forest harvesting methodologies and operational systems of low environmental impact.

Output 3

Practical handbook addressed to farmers/rural communities on the application of low-impact harvesting regimes and silvicultural systems.

Activities

- a. To design and prepare a handbook for the implementation of low-impact harvesting operations and silvicultural practices.
- b. To disseminate information on low-impact harvesting systems and silvicultural practices.

Output 4

Knowledge and implementation of low-impact industrial technologies for the use of new forest species.

Activities

- a. To identify appropriate technologies for re-sawing, chemical treatments, drying and timber re-processing, so as to minimize environmental impacts while increasing production quality and efficiency and forest resource yield.
- b. Preparation of a practical handbook on timber workability, drying and recommended uses.
- c. To develop basic and applied research studies so as to determine the most suitable end uses for the lesser-known timber species.

Output 5

Knowledge on timber product types and their technical properties in relation to end-uses.

Activities

- a. To identify timber products with market significance.
- b. To determine the technical specifications of timber products according to market requirements in terms of quality, measurements, tolerance and standardization.

Output 6

To determine recommended end uses for selected forest species.

Activities

- a. To gather information from technological studies on selected timbers.
 - b. To design and implement the necessary basic and applied research on selected species.
 - c. To design and implement industrial processing trials in selected timber companies.
 - d. To evaluate the results of the basic and applied research studies and industrial trials, and to determine recommended end uses.
- d. **To ensure the transfer of knowledge on forest management, ecology, environment, industry and market opportunities.**

Output 7

Five hundred (500) farmers will receive forest and ecological training for the sustainable management and utilization of forest resources.

Activities

- a. To select sawyers groups working in the integrated management areas to participate in training courses.
- b. To design the training program (see Project Strategy).
- c. To conduct ongoing training courses for selected sawyers groups.

Output 8

Three hundred (300) women farmers will be trained in the areas of ecology, reforestation and non-timber forest products.

Activities

- a. To select integrated management areas to give courses for women farmers.
- b. To design a practical training methodology, considering the educational level of the women farmers and their roles in forest activities.

- c. To implement the ecological, environmental and forest training program through theoretical and practical courses to be incorporated into the forest management plans for the integrated management areas, including the management of selected forest species.

Output 9

Two hundred (200) forest workers from the sawyers groups of COATLAHL (Cooperativa Agroforestal Regional Colón, Atlántida Honduras Ltda.) and private timber companies belonging to the National Association of Timber Companies and Workers (ANETRAMA), will be trained in the areas of low-impact technologies and market opportunities.

Activities

- a. To select the personnel from the COATLAHL sawyers groups and ANETRAMA to participate in the training courses.
- b. To design a technological, industrial and market opportunity training program aimed at improving productivity, efficiency, product quality and value added.
- c. To implement the training program on technologies and market opportunities.
- e. **To facilitate the introduction of non traditional forest species into the national and international markets, while ensuring their ecological, forest and economic sustainability.**

Output 10

Twenty-five (25) forest species will be introduced into the national and international markets.

Activities

- a. A commercial promotion program will be designed for both the national and international markets.
- b. To implement the commercial promotion program in the national and international markets.

The overall outputs of the project will be evaluated through an Economic Assessment of Forest Resource Revaluation:

Output 11

Verification of the economic revaluation of tropical forests under management systems.

Activities

- a. Economic assessment of the valuation of forest resources and the sustainability of forest activities.

6. LOGICAL FRAMEWORK WORKSHEETS

PROJECT ELEMENTS	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><u>Development Objective</u> To economically revalue tropical forests in Honduras through sustainable production programs based on management plans and the use of sound low-impact technologies.</p>	<p><u>Actions to achieve the objective:</u> 1. Increased forest production value. 2. Increased income for collective farmers societies harvesting the timber. 3. Increased Forest Guarantee Fund.</p>	<p><u>Source of data:</u> 1. Economic study of forest resource valuing. 2. Sales records of collective societies. 3. Economic report on Forest Guarantee Fund.</p>	<p>1. Effective implementation of management plans approved by COHDEFOR. 2. Willingness of farmers and industrialists to diversify current production and apply low-impact technologies. 3. The FOF can cover sustainable forest management costs.</p>
<p><u>Specific Objectives</u> a. To study the ecological and environmental impacts of lesser-known species harvesting on the forest. b. To develop sound low-impact technologies for the sustainable management and utilization of tropical forests.</p>	<p>1. Environmental impact assessment. 2. Study on natural regeneration/recuperation capacity of the forest. 3. Study on low-impact technologies</p>	<p>1. Environmental impact assessment approved by ITTO/COHDEFOR. 2. Survey on natural forest regeneration/recuperation approved by COHDEFOR.</p>	<p>1. Scientific and technological capacity to conduct the study 2. Use of appropriate work methodologies during the implementation of the study. 3. Scientific and technological capacity to conduct the study 4. Use of appropriate work methodologies during the implementation of the study.</p>
<p>c. To develop basic and applied research studies so as to determine the most suitable end uses for the lesser-known timber species.</p>	<p>1. Technological timber tests carried out in laboratory 2. Production of 1,050 m³ of non-traditional timber.</p>	<p>1. Technical reports issued by wood technology laboratories. 2. Technical project reports 3. Survey of timber companies</p>	<p>1. Basic research implementation agreement with ESNACIFOR and/or CUPROFOR. 2. Agreements with timber companies for industrial processing.</p>
<p>d. To ensure the transfer of knowledge on forest management, ecology, environment, industry and market opportunities.</p>	<p>- 500 farmers trained in the areas of silviculture, ecology and sawmilling -300 women farmers trained in the areas of reforestation, ecology and non-timber products -200 sawmill and timber re-processing workers trained in industrial technologies and market opportunities.</p>	<p>1. Report on training program 2. Surveys of farmers and sawyers groups 3. Surveys of timber companies</p>	<p>1. Willingness of farmers and industrial workers to participate in training program 2. Trainers specialized and duly trained 3. Communication capacity and appropriate training material</p>

PROJECT ELEMENTS	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
c. To facilitate the introduction of non traditional forest species into the national and international markets, while ensuring their ecological, silvicultural and economic sustainability.	1. Introduction of 25 non-traditional timber species into the markets	1. Commercial report on non-traditional timber species 2. Official national trade and timber export statistics	1. There is a market demand that is not being met 2. Competitiveness of non-traditional timber species in terms of prices, quality and timely delivery

7. WORK PLAN

OUTPUTS/ACTIVITIES	RESPONSIBLE PARTY	SCHEDULE (in quarters)															
		1	2	3	4	5	6	7	8	9	10	11	12				
Output 1 To determine the allowable forest harvesting levels in accordance with the forest ecosystem capacity.																	
Activities 1.1 To study the ecological characteristics of selected forest species.	E.U./Consultants																
1.2 To assess the natural regeneration capacity of the species under utilization systems.	Consultants																
1.3 To carry out assessments of the impact of harvesting new forest species on the biodiversity, forest associations, soils and water regimes.	E.U./Consultants																
1.4 To define and establish allowable environmental/ecological impact limits.	Consultants																
1.5 To analyse the impact of harvesting new forest species on non-timber forest products.	Consultants																
Output 2 To identify and implement low-impact technologies in the forest management and sustainable utilization areas.																	
Activities 2.1 To identify forest harvesting technologies of low environmental impact.	E.U./Consultants																
2.2 To implement forest harvesting methodologies and operational systems of low environmental impact.	E.U./Consultants																
Output 3 Practical handbook addressed to farmers/rural communities on the application of low-impact harvesting regimes and silvicultural systems.																	
Activities 3.1 To design and prepare a handbook for the implementation of low-impact harvesting operations and silvicultural practices.	Consultant																

OUTPUTS/ACTIVITIES	RESPONSIBLE PARTY	SCHEDULE (in quarters)													
		1	2	3	4	5	6	7	8	9	10	11	12		
3.2 To disseminate information on low-impact harvesting systems and silvicultural practices.	E.U.														
<u>Output 4</u> Knowledge and implementation of low-impact industrial technologies for the use of new forest species.															
<u>Activities</u> 4.1 To identify appropriate technologies for re-sawing, chemical treatments, drying and timber re-processing, so as to minimize environmental impacts while increasing production quality and efficiency and forest resource yield.	Consultant														
4.2 Preparation of a practical handbook on timber workability, drying and recommended uses.	E.U./Consultant														
<u>Output 5</u> Knowledge on timber product types and their technical properties in relation to end-uses.															
<u>Activities</u> 5.1 To identify timber products with market significance.	E.U./Consultant														
5.2 To determine the technical specifications of timber products according to market requirements in terms of quality, measurements, tolerance and standardization.	Consultant														
<u>Output 6</u> To determine recommended end uses for selected forest species.															
<u>Activities</u> 6.1 To gather information from technological studies on selected timbers.	Consultant														
6.2 To design and implement the necessary basic and applied research on selected species.	Consultant														
6.3 To design and implement industrial processing trials in selected timber companies.	E.U./Consultant														
6.4 To evaluate the results of the basic and applied research studies and industrial trials, and to determine recommended end uses.	E.U./Consultant														

OUTPUTS/ACTIVITIES	RESPONSIBLE PARTY	SCHEDULE (in quarters)													
		1	2	3	4	5	6	7	8	9	10	11	12		
Output 7 Five hundred (500) farmers will receive forest and ecological training for the sustainable management and utilization of forest resources.															
Activities 7.1 To select sawyers groups working in the integrated management areas to participate in training courses.	E.U.														
7.2 To design the training program (see Project Strategy).	E.U.														
7.3 To conduct ongoing training courses for selected sawyers groups.	E.U.														
Output 8 Three hundred (300) women farmers will be trained in the areas of ecology, reforestation and non-timber forest products.															
Activities 8.1 To select integrated management areas to give courses.	E.U.														
8.2 To design a practical training methodology.	E.U./Consultant														
8.3 To implement the training program.	E.U./Consultant														
Output 9 Two hundred (200) forest workers from the sawyers groups of COATLAHL (Cooperativa Agroforestal Regional Colón, Allárida Honduras Ltda.) and private timber companies belonging to the National Association of Timber Companies and Workers (ANETRAMA), will be trained in the areas of low-impact technologies and market opportunities.															
Activities 9.1 To select workers to participate in the training courses.	E.U.														
9.2 To design a training program.	E.U./Consultant														
9.3 To implement the training program.	E.U./Consultant														
Output 10 Twenty-five (25) forest species will be introduced into the national and international markets.															

OUTPUTS/ACTIVITIES	RESPONSIBLE PARTY	SCHEDULE (in quarters)												
		1	2	3	4	5	6	7	8	9	10	11	12	
Activities 10.1 To design a commercial promotion program.	E.U./Consultant													
10.2 To implement the program.	E.U./Consultant													
Output 11 Verification of the economic revaluation of tropical forests under management systems.														
Activities 11 11.1 Economic assessment of the valuation of forest resources.	E.U./Consultant													
PROGRESS REPORTS	E.U.													
FINAL REPORT	E.U.													

* E.U. = Executive Unit

8. INSTITUTIONAL ARRANGEMENTS FOR EXECUTION AND OPERATION

8.1 Management structure

The internal organization proposal is shown in section 3.6.7.

COHDEFOR will be the institution in charge of project implementation in coordination with the relevant Forest Regional Office.

The Executive Unit will be responsible for structuring and ensuring the participation of local communities, producers and higher education centers in the technological research, training and market promotion programs. Furthermore, it will approve the work plan, progress reports and completion report, and will select project consultants and professionals. This Committee will be made up as follows:

- A representative from the Honduran Forest Development Corporation (COHDEFOR), who will chair the Committee;
- A representative from the International Tropical Timber Organization (ITTO); and
- The National Project Director, who will take part in the Committee but without voting rights.

Furthermore, COHDEFOR management will have executive responsibility and the Administrative Office and the Environmental Impact Assessment, Technology Development, Industrial and Market Promotion, and Training Units will be the operational line bodies.

The project will establish close coordination links with the following institutions:

- Proyecto de Desarrollo del Bosque Latifoliado - PDBL.
- Cooperativa Agroforestal Regional Colón, Atlántida Honduras Limitada - COATLAHL.
- Asociación de Madereros de Honduras - AMADHO.
- Asociación Nacional de Empresas Transformadoras de Madera - ANETRAMA.
- Centro Universitario Regional del Litoral Atlántico - CURLA.
- Escuela Nacional de Ciencias Forestales - ESNACIFOR.
- Centro de Utilización y Promoción de Productos Forestales - CUPROFOR.

The coordination established will respond to the need to ensure the active participation of the rural communities, timber industrialists and higher forestry education institutions with a view to achieving the expected project outputs.

8.2 Future operation and maintenance

The results of field studies such as environmental impact assessments and natural regeneration studies will become part of COHDEFOR's and PDBL's knowledge to be applied as appropriate.

Because the applied research activities will be carried out using the producers' installed capacity, no infrastructure will have to be specifically built for this purpose.

8.3 Key staff

The following professionals are required for the implementation of this project:

- **National Director:** Forest Engineer specialized in tropical broadleaved forests. Must have at least 15 years experience in the forestry field.

Main duties

- a. To coordinate the project in relation to both environmental impact assessments and development of low-impact technologies.
 - b. To coordinate the implementation of basic and applied research on non-traditional timber species and their market promotion.
 - c. To coordinate with the other experts and consultants for the implementation of scheduled work and studies.
 - d. To administer the project funds in accordance with the approved project budget.
 - e. To implement a training program for farmers and producers.
 - f. To coordinate with support organizations so as to ensure their cooperation in the implementation of joint activities.
- **An International Forest Industry Expert** specialized in tropical broadleaved timber species.
 - **An International Timber Market Expert.**

The experts will assist the project on a temporary basis in their areas of expertise.

9. PRIOR OBLIGATIONS AND PREREQUISITES

COHDEFOR has estimated the necessary budget allocations to achieve project objectives. The national counterpart contribution will include facilities, office space, laboratories, and 1 used 4x4 vehicle.

In addition, coordination has been established with ANETRAMA producers so as to ensure the supply of roundwood and the availability of industrial facilities to process timber in the various production lines.

Arrangements have been made with the Cooperativa Agroforestal Regional Colón, Atlántida Honduras Limitada - COATLAHL for the supply of raw materials and the industrial processing activities have been coordinated with the Asociación de Madereros de Honduras - AMADHO and the Asociación Nacional de Empresas Transformadoras de Madera - ANETRAMA.

10. POSSIBLE FUTURE ACTIONS

At the end of the project implementation period (36 months), a new project is expected to be required so as to continue the use of low-impact technologies, as well as the natural regeneration study and the promotion of timber species in the international market. After the evaluation of project results to be carried out by ITTO and COHDEFOR, the need to submit a new project will be assessed.

PART III. MONITORING, REPORTING AND EVALUATION

COHDEFOR will submit six-monthly progress reports to ITTO. These reports on project implementation will be prepared in accordance with the model report approved by the International Tropical Timber Organization.

In addition, the Steering Committee's reports will also be submitted and ITTO will carry out a project evaluation and monitoring review every six months.

PART IV: BUDGET

1. NATIONAL CONTRIBUTION

a. Human resources

	Man/months	US\$ /month	Total (US\$)
1 National Director	36	800	28,800
1 Assistant	36	500	18,000
1 Secretary	36	300	10,800
1 Caretaker	36	200	7,200
1 Driver	36	200	7,200
			----- 72,000

b. Physical resources or capital items

- Facilities			40,000
- Laboratories		30,000	
- Office space		20,000	
- 100% roundwood value (1,050 m ³ at US\$ 30/m ³)			31,500
- Usage time - processing machinery (1,050 m ³ of timber (US\$ 60/m ³))			63,000
- 1 used 4x4 vehicle			10,000
			----- 194,500

c. Operational expenses

33,500

Total National Contribution

US\$ 300,000

Note: No generation of income is taken into account because the sales revenue resulting from the project will be used to compensate the timber companies for their manpower, inputs, spare parts, electricity and calorific energy, administrative costs, packaging, transport, etc.

2. INTERNATIONAL CONTRIBUTION

a. Personnel

	Man/months	US\$ /month	Total (US\$)
1. International			
Sustain. Development Expert	12	7,000	84,000
Forest Industry Expert	06	7,000	42,000
Expert in International Trade	8	7,000	56,000
2. Local			
National consultants	20	3,000	60,000

			242,000
b. Sub-contracts			
Environmental impact assessment			50,000
Natural regeneration study			25,000
Study on low-impact technologies			30,000
Basic research on non-traditional timber species			30,000

			135,000
c. Travel and travel expenses			
			60,000
d. General operational costs			
Market promotion			60,000
Miscellaneous		30,000	

			90,000
e. Training			
Silvicultural practices			
Low-impact technologies			
Timber drying, preservation, workability and re-processing			
Product quality control			
Promotion of timber products			
Market opportunities			
Non-timber forest products			60,000

f. Equipment and tools

Including silvicultural equipment and instruments (tree instruments and marking) laboratory equipment for timber drying (stove, scales, hydrometers); precision gauge, cutting, sawing and sharpening tools.

	\$ 20,000
Computers and peripherals	\$ 15,000
Subtotal	\$ 35,000

g. Publications

Technical sheets for each species	\$ 5,000
Handbook on low-impact technologies	\$ 5,000
Handbook on timber workability, drying and recommended uses	\$ 5,000
Final Report	\$ 10,000
Subtotal	\$ 25,000

h. Monitoring and evaluation \$ 30,000

i. Contingencies \$ 20,000

Subtotal \$ 697,000

j. ITTO Administrative Costs (5.5%) \$ 38,335

Grand Total International Contribution \$ 735,335

TOTAL PROJECT COST:

National contribution	\$ 300,000
International contribution	\$ 735,335
TOTAL	\$ 1,035,335

TABLE No. 1

PRELIMINARY LIST OF FOREST SPECIES

Nº	COMMON NAME	SCIENTIFIC NAME	FAMILY
1	San Juan Rojo	Vochysia guianensis	Vochysiaceae
2	Cumbillo	Terminalia Amazonia	Combretaceae
3	Sangre Real	Virola Koschnyi	Myristicaceae
4	Santa María	Calophyllum	Guttiferae
5	Paleta	Dialium Guianense	Caesalpinaceae
6	Coloradito	Gordonia Brandegoei	Theaceae
7	Varillo	Symphonia Globulifera	Clusiaceae
8	Cedrillo	Huetea Cubensis	Staphyleaceae
9	Piojo	Tapirira Guianensis	Anacardiaceae
10	Rosita	Hieronyma Alchomeoides	Euphorbiaceae
11	San Juan Peludo	Vochysia Guatemalensis	Vochysiaceae
12	Huesito	Macrohasseltia Macroterantha	Flacourtiaceae
13	Masica	Brosimum Alicastrum	Moraceae
14	Laurel Negro	Cordia Megalantha	Baraginaceae
15	Pepenance	Byrsonima Crasifolia	Malpigiaceae
16	Marapolán	Guarea Glabra	Meliaceae
17	Barba de Jolote	Pithecellobium Arboreum	Mimosaceae
18	Carbón Blanco	Ilex Stutchii	Meliaceae
19	Matasano	Casimiroa Edulis	Rutaceae
20	San Juan Areno	Ilex Stutchii	Aguifoliaceae
21	Carbón	Guarea Brevianthera	Meliaceae
22	Jigua	Ocotea Sp.	Lauraceae
23	Vaca	Mortoniendron Sp.	Tiliaceae
24	Jobo	Spondias Mombin	Anacardiaceae
25	Cuajada	Dendropanax Arboreus	Araliaceae

DESCRIPTION OF PROPOSED SPECIES TO BE USED IN THE INDUSTRIAL UTILIZATION PROJECT

No.	Common name	Ecological characteristics and occurrence
1	San Juan Rojo	<i>A very abundant species (9.31 m³/ha). Occurs in the Moist Tropical Forest (MTF) of the northern coast in the departments of Atlántida, Colón, Yoro and Olancho. It is found in hill slopes and hill tops - altitudinal range 300-1000 m.a.s.l. Light-requiring (heliophyte) species, but can tolerate shade. Abundant natural regeneration.</i>
2	Cumbillo	<i>The most abundant species together with San Juan Rojo. Occurs in almost the entire MTF range and more frequently in canyons/gorges and cool places. Altitudinal range: 200 - 1000 m.a.s.l. Occurs in association with Maria, Virola, Areno spp.</i>
3	Sangre Real	<i>Relatively abundant species. Occurs in almost the entire MTF range. Frequent in canyons/gorges and along streams. Altitudinal range: 0 - 800 m.a.s.l. Shade-tolerant species.</i>
4	Santa Maria	<i>Grows naturally throughout the MTF range, especially in the departments of Atlántida, Colón and Olancho. Altitudinal range: 0 - 1300 m.a.s.l. Supports degraded or partially waterlogged soils. Shade-tolerant species. Abundant natural regeneration.</i>
5	Paletto	<i>Highly frequent in very moist forests, although it can also be found in almost the entire MTF range. Altitudinal range: over 100 m.a.s.l. Prefers well drained soils. Shade-tolerant species. Very abundant natural regeneration.</i>
6	Coloradito	<i>Mainly occurs in the departments of Atlántida, Colón and Olancho. Normally found in slopes and ridges. Prefers well drained soils. Altitudinal range: 600 - 1500 m.a.s.l. Occurs in association with Huesito and Santa Maria. Abundant natural regeneration.</i>
7	Varillo	<i>Widely distributed throughout the MTF range. Occurs in a variety of conditions from waterlogged soils to steep slopes. Occurs in association with S. Maria, Sangre, Cumbillo. Invasive heliophyte species.</i>
8	Cedrillo	<i>Occurs along the Atlantic Coast of the country and in the department of Olancho. Grows naturally near canyons/gorges and streams. Altitudinal range: 300 - 1200 m.a.s.l. Shade-intolerant species. Occurs in association with S. Maria, Varillo.</i>
9	Piojo	<i>Widely distributed along the Atlantic Coast, normally found in slopes and ridges. Altitudinal range: 50 - 900 m.a.s.l. Prefers well drained soils. Shade-tolerant species. Occurs in association with Sangre, S. Maria, Paletto.</i>
10	Rosita	<i>Occurs throughout the MTF range. Altitudinal range: 0 - 800 m.a.s.l. Prefers well drained loam to clay-loam soils. Occurs in association with San Juan Peludo, Tabebuia, Guayacan, Sangre. Shade-intolerant species. Well-developed plantations in open areas.</i>
11	San Juan Peludo	<i>A pioneer species which occurs in the Atlantic Coast, sometimes in pure stands. Altitudinal range: 0 - 1200 m.a.s.l. Prefers well drained soils, and although it tolerates waterlogged soils, growth under such conditions is not satisfactory. Occurs in association with S. Maria, Varillo, Cumbillo, Sangre. Light-requiring (heliophyte) species. Abundant natural regeneration. Requires elimination of light and nutrient competing vegetation in plantations.</i>
12	Huesito	<i>Occurs mainly in the departments of Colón, Atlántida and Olancho. Altitudinal range: 400 - 1000 m.a.s.l.. Commonly found in ridges. Prefers well drained soils. Occurs in association with S. Maria, Paletto. Shade-intolerant species. Natural regeneration is rare.</i>

No.	Common name	Ecological characteristics and occurrence
13	Masica	<i>Found dispersed in the MTF of the northern coast of the country. Grows naturally between 0 and 400 m.a.s.l. Prefers drained soils.</i>
14	Laurel Negro	<i>Occurs mainly in the departments of Atlántida and Cortés. Grows near canyons/gorges on well drained soils. Altitudinal range: 0 - 1000 m.a.s.l. Occurs in association with Sangre, San Juan Peludo, Inga spp. Light-requiring (heliophyte) species.</i>
15	Pepenance	<i>Occurs mainly in the department of Atlántida. Grows at altitudes over 600 m.a.s.l. Occurs in association with Varillo, Sangre.</i>
16	Marapolán	<i>Occurs throughout the MTF range. Altitudinal range: 200 - 800 m.a.s.l. Mainly found in ravines, "cachones" and streams. Light-requiring (heliophyte) species. Occurs in association with Persea sp., Paletó.</i>
17	Barba de jolote	<i>Occurs mainly in the Atlantic Coast, Olancho and Yoro. Grows along rivers and streams in altitudes ranging from 0 to 700 m.a.s.l. Occurs in association with Sangre, San Juan, Quercus sp. Shade-tolerant species. Low frequency.</i>
18	Carbón blanco	<i>An almost unknown species in terms of distribution and environmental preferences. Heliophyte species.</i>
19	Matasapo	<i>An almost unknown species in terms of distribution and environmental preferences. Light-requiring species.</i>
20	San Juan Areño	<i>Occurs throughout the country. Altitudinal range: 0 - 1000 m.a.s.l. Mainly found in canyons/gorges in association with pine and oak species. Shade-tolerant species; scarce natural regeneration.</i>
21	Carbón	<i>An almost unknown species in terms of distribution and environmental preferences. Heliophyte species.</i>
22	Jigua	<i>Occurs mainly in the departments of Atlántida and Colón at altitudes ranging from 200 to 600 m.a.s.l. Prefers well drained soils. Occurs in association with Marapolán, Sangre and other species of the Lauraceae family. Heliophyte species. Abundant short-lived natural regeneration.</i>
23	Vaca	<i>Very abundant species in MTF at altitudes between 400 and 800 m.a.s.l. Occurs in association with Varillo and Cumbillo.</i>
24	Jobo	<i>Widely distributed, especially in very moist forests. Altitudinal range: 0 - 600 m.a.s.l. Occurs in association with Santa María and Varillo.</i>
25	Cuajada	<i>Occurs mainly along rivers and streams at altitudes ranging from 0 to 300 m.a.s.l. Often found in the departments of Atlántida and Colón. Occurs in association with Ficos and Ingas.</i>

TABLE No. 3: I - CENTRAL USES OF THE FOREST SPECIES TO BE STUDIED

No	SPECIES	PROJECTION LINES							DISSEMINATE PROJECT
		LOWLAND	TEMPERATE	HIGHLAND	PERIPLANO	PAYS AND COMUNITES	DISSEMINATE PROJECT		
1	San Juan Rojo	X	X			X		X	X
2	Cumbillo	X		X					
3	Sangre Real	X	X			X		X	
4	Santa Maria	X	X					X	
5	Paleto	X		X					X
6	Coloradito		X			X			X
7	Varillo	X		X					
8	Cedrillo	X	X			X			X
9	Piojo		X			X		X	
10	Rosita			X		X			X
11	San Juan Peludo					X		X	X
12	Huesito	X		X					X
13	Mastica	X		X					X
14	Laurel Negro	X	X			X			X
15	Peperance	X		X					X
16	Marapolán	X	X			X			X
17	Barba de Jolote	X	X						X
18	Carbón Blanco		X	X				X	
19	Matasano			X					X
20	San Juan Areno		X	X		X		X	X
21	Carbón			X					
22	Jigua	X	X			X			
23	Vaca	X	X					X	
24	Jobo	X	X	X					
25	Cuajada		X			X		X	X

TABLE No. 4

RESULTS OF FOREST INVENTORIES CARRIED OUT IN THE INTEGRATED MANAGEMENT AREAS (IMA)

No.	AMI	BOSQUE COMUNAL	AREA FORESTAL PRODUCTIVA ha.	VOL. TOTAL Sp. Com. Act. m ³	VOLUMEN Sp. Com. Act. m ³ /ha	PRODUCCION 1994 m ³	CORTA ANUAL PERMISIBLE m ³	AREA DE CORTA ANUAL REAL ha.	AREA DE CORTA ANUAL OPERATIVA
1	El Zapote	El Zapote	1,588	109,595	69	71	731	2.5	8.0
2	El Carbón	Laguna/Aguasca	582	25,512	44	67	984	3.0	4.0
3	Texlgust	Texlgust	340	33,120	88	85	771	3.0	6.0
4	Abiclaia	Rfo Frío	293	15,588	53	500	500	5.0	7.0
5	Rfo Cuero	El Recreo San Marquitos	515 1,750	26,583 76,260	52 44	100 274	985 2,542	2.5 5.0	12.0 27.0
6	Rfo Viejo	El Tigre	518	51,785	84	50	1,725	3.0	11.0
7	Toncomfín	Los Encuentros Los Vieques	1,061 954	77,071 83,375	73 87	436 317	2,568 2,779	6.0 5.0	19.0 18.0
8	Palos de Agua	Palos de Agua	874	38,823	40	101	1,287	3.0	15.0
9	Piedras Amarillas	Piedras Amarillas	501	37,670	75	102	1,257	4.0	16.0
10	Las Mangas	El Ceibal	487	34,694	71	222	1,154	6.0	16.0
	TOTALES		9,583	599,786		2,305	17,193	49.0	158.0

Note: The annual allowable cut is considerably higher than 1994 production levels. Furthermore, the difference between the operational and the actual annual cutting area will cover the harvesting of trial volumes for the purposes of this project. A total of 1050 m³ of non-traditional timber is proposed to be harvested over the 3-year period.

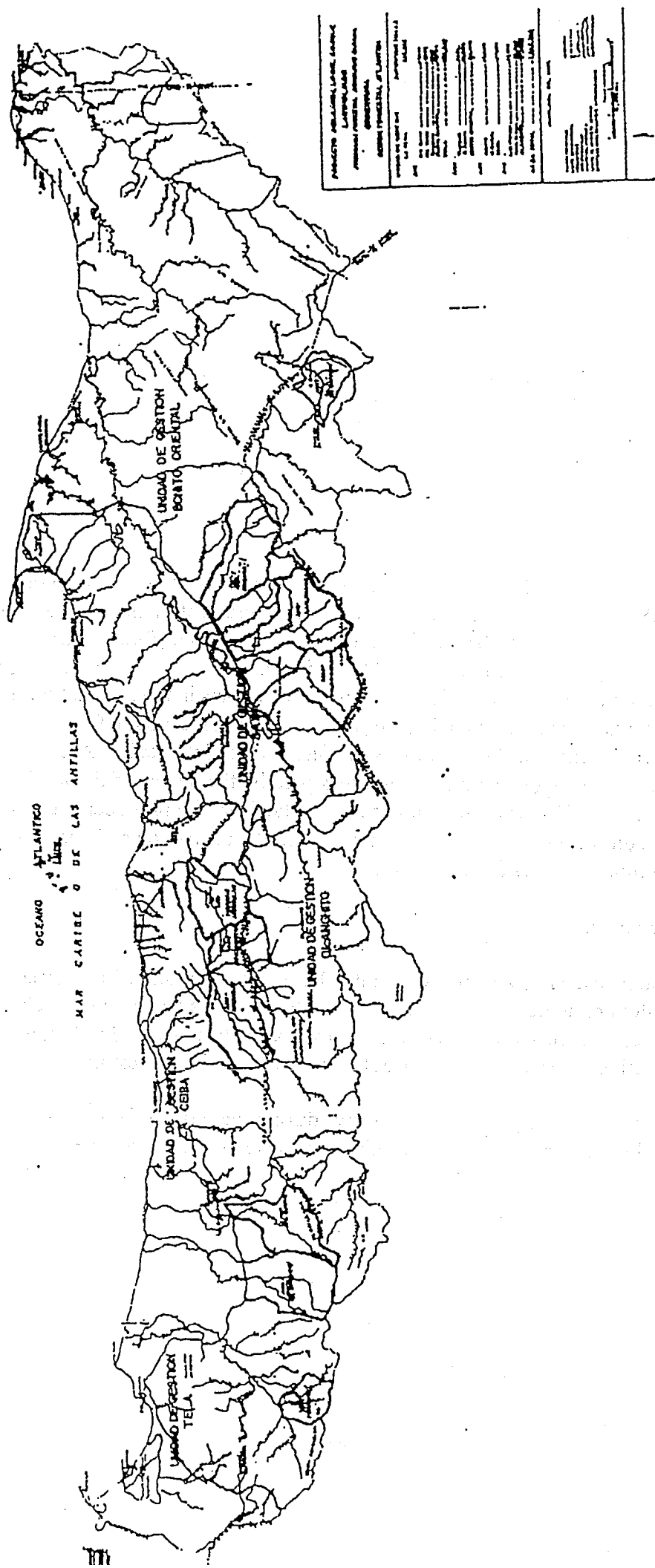
TABLE No. 5

VOLUME (m³/ha) OF SOME COMMERCIAL SPECIES (DBH > 50 cm)
TO BE CONSIDERED FOR THE COMMUNITY FOREST PROPOSAL

No.	ESPECIE	TEXIQUAT	ZAPOTE	SAN JUANITO	EL RECREO	SAN MARCOS	RIO VIEJO	TONCON-TIM	URRACO	PIEDRAS AMARILLA	PALOS DE AGUA	ABISINIA	LAS MARGAS
1	SJ. ROJO	32.54	4.05	0.47	1.55	1.91		15.81	15.81	8.87	3.20	0.43	
2	CUMIBLLO	9.54	0.49	5.21	3.12	2.51	1.81	10.94	10.94	29.96	3.28	4.49	20.06
3	SANGRE REAL	9.87		3.66	11.94					2.28	1.58	13.97	9.54
4	STA. MARIA	0.44	1.05	2.00	6.80	1.10	0.80	0.41	0.41	4.71	0.83	0.43	0.28
5	VARILLO	21.88	0.93		13.73	8.02	1.71	9.39	9.39	1.59	3.02	0.13	
6	CEDRILLO		3.53	1.80	0.30	3.38	25.57	1.28	1.28	4.48	1.10	2.04	0.24
7	PIOJO	3.99	3.41	2.10	5.06	4.95	11.32	5.82	5.82	2.61	0.41	0.74	2.92
8	ROBITA	0.51	8.18	4.88	3.35	2.33	0.30	3.28	3.28	2.51	0.37	5.32	3.84
9	SJ. PELUDO						12.85	0.28	0.28		1.80	0.15	
10	HUESITO		2.71	3.41	0.29	2.21	5.13	9.27	9.27	4.45	1.12	0.83	
11	LAUREL NEGRO		0.97	0.45	8.47								
12	PEPENANCE							12.85	12.85	0.17		2.99	0.98
13	MARAPOLAN	0.14	0.49	0.23	0.88	1.45	0.28	1.04	1.54	1.19	0.24		1.70
14	BARBA DE JOLOTE			0.28							0.59		
15	MATASANO		0.28	0.31								1.34	0.78
16	SJ. AMENO	4.08	1.51	1.33	2.80	0.82	6.20	1.61	1.61	1.29	0.23		0.38
17	CARBON				0.30	0.23		0.41	0.41	2.07	0.11	0.01	
18	AGUA	0.15	0.45	0.21	0.15								
19	CUAJADA	0.18	3.24										

ANNEX 2

**Usufruct contract for the management of a national forest
between COHDEFOR and the collective society PINEDA TORRES & Associates
from the PALOS DE AGUA Community, Municipality of Sava,
Department of Colon**



ANNEX 3: LOCATION OF INTEGRATED MANAGEMENT AREAS (IMA)

*BROADLEAVED FOREST DEVELOPMENT PROJECT (PDBL)
Forest Management Component*

***FOREST GUARANTEE
FUND***

Concept

The Forest Guarantee Fund (FGF) is a mechanism to generate the necessary economic resources to guarantee the implementation of forest management in the national forests allocated to producer groups organized in collective societies, agroforestry groups or any other cooperative organizations recognized by the State. This is a private fund to be used exclusively for the implementation of forest management plans in the national forests under usufruct agreements. The FGF is made up of resources from stumpage fees as established by the National Forest Administration (Administración Forestal del Estado - AFE) in the relevant usufruct agreements; ecological certification fees paid by the buyers of timber from sustainable sources; the forest management fund established by producer organizations; and contributions from ecological members interested in the protection and sustainable management of moist tropical forests.

FGF Administration

The FGF will be managed by a Forest Guarantee Fund Administration Committee (Comité Administrador del Fondo de Garantía Forestal - CAFGF). This Committee will be made up of one regular representative and one alternate representative from each of the FGF contributing members (Collective Society, National Forest Administration and forest product buyers).

The Committee will meet regularly every 30 days during the peak season and every two (2) months during the low season. Special meetings will also be held as required.

Functions of CAFGF

1. Receiving and recording all effective contributions to FGF. Ensuring administrative control of Fund.
2. Outlining the terms of reference for work to be carried out based on the provisions of the Forest Management Plan.
3. Hiring, through public and transparent procedures, the most competent Consultancy Firm or Forest Technician to implement any office and field activities required on an annual basis.
4. Transferring financial resources to the forest technical team hired for the implementation of the Management Plan in accordance with work programs and requirements to be submitted by the work team to CAFGF.
5. Monitoring and evaluating field activities and financial disbursements to ensure the highest possible quality of work and adequate management of resources.
6. Preparing progress reports for the funding institutions so as to keep them informed on the implementation of activities and the use of financial resources and thus ensure their continued cooperation.

The Technical Team or Consultancy Firm will be hired by CAFGF according to the terms of reference established. This team could be hired on a contract basis for the implementation of specific tasks or could be contracted for longer or even indefinite periods depending on the number of activities required in the community forests and the availability of financial resources.

In broad terms, the duties of the consultants or technical team will be:

1. To analyze the terms of reference and revise them according to the provisions of the management plan. This stage of the process must be approved by the CAFGF.
2. To hire the necessary technical and support personnel to implement activities as mandated in the contract.
3. To prepare work plans including financial requirements. These plans must be submitted well in advance to the CAFGF so as to procure the required resources.
4. To submit progress reports on the implementation of activities and financial schedules to CAFGF. The submission of these reports will be a pre-requisite for allocation of new resources.
5. To carry out their (field and office) work according to their terms of reference.
6. To submit a final (technical and financial) report upon completion of activities as mandated in the relevant contract.

7. During the established work period, the technical team will participate in CAFGF meetings to report on their activities and receive feedback to continue with the performance of their duties.

CONSOLIDATION OF FOREST MANAGEMENT

The establishment and operation of the FGF will be the first realistic step taken for the management of the national forests with the direct participation in management activities of the parties involved. It is quite clear that in the management process the demand for resources will be high and that possibly the resources that the FGF plans to secure will not be sufficient considering current revenue raising sources, which include the following:

- | | |
|---|---|
| a) Contributions by Producers | L. 0.02 per board foot marketed |
| b) AFE contribution | 50% of the value of Stumpage Fees
(Approximately L. 0.16/bf). |
| c) Contribution from timber certification | \$ 0.05/bf of exported timber
L. 0.10 - 0.20/bf for timber marketed
nationally. |

It is envisaged that in the short term, under the present FGF structure for the collection of resources, and considering the current inflation rate, it will be necessary to adopt measures to increase revenue in order to cover the costs involved in the implementation of the management plan. In view of this the following actions are proposed:

To progressively increase the amounts collected under a, b, and c.

To increase stumpage fees.

To prioritise the activities to be implemented in the different management plans so that they both ensure sustainability and are able to be financed with FGF resources.

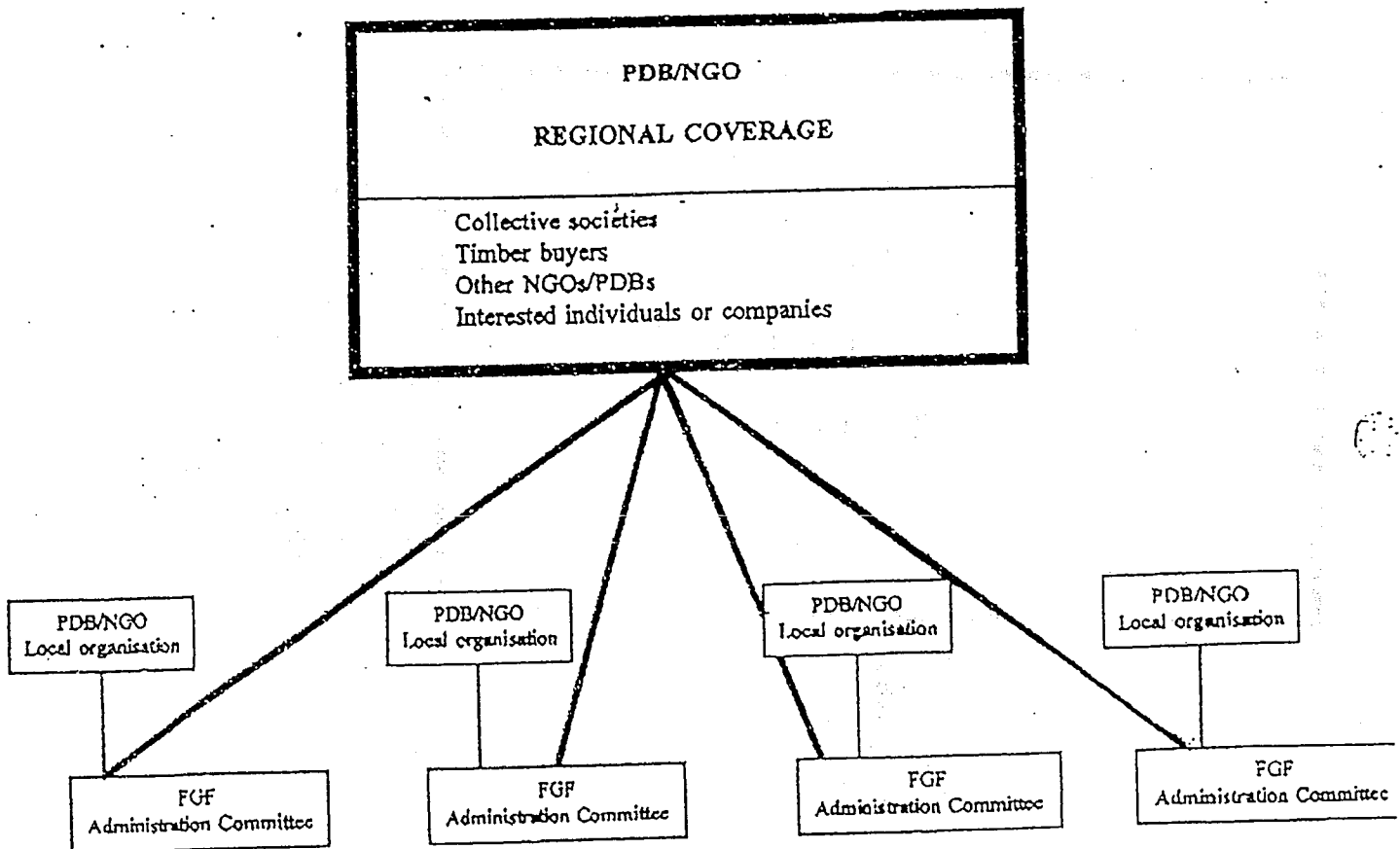
An example of how the FGF would function at a practical level for the company *Sociedad Colectiva Pineda y Ass. of Ami Palos de Agua*, is given in the annexed tables. The results show the income that would be derived by the FGF and the producers under different scenarios in relation to the contributions made and as a function of the volume harvested out of the annual allowable cut. The costs of the different activities are also shown.

Establishment of a Non-Governmental Organisation to Support Management Activities

As well as the proposed actions, a study must be undertaken to identify the most viable options and the most competent persons to establish a Non-Governmental Organisation (NGO) or a Private Development Body (PDB) that will consolidate all the organisations taking part in the management of forests in the north-east of the country and who are sustainably utilising these forests. The main objective of this organisation must be to raise funds from Ecological Members, which will be exclusively used for the management of the community forests managed by the Collective Societies and Agroforestry Groups of the north-east of Honduras who are members of this body. The support of this non-governmental organization will be directly distributed to the various collective societies in order to help cover the costs of the implementation of the Management Plan which cannot be covered with local resources collected by FGF.

The non-governmental organization could cover the departments of Atlántida, Colón, Olancho and Yoro. Its organizational structure could be made up of members from producer groups, timber processors (buyers), other NGOs/PDBs, individuals or companies involved in forest development with community participation that would be proposed by producers.

Such an organization will guarantee an ongoing flow of funds for forest management activities.

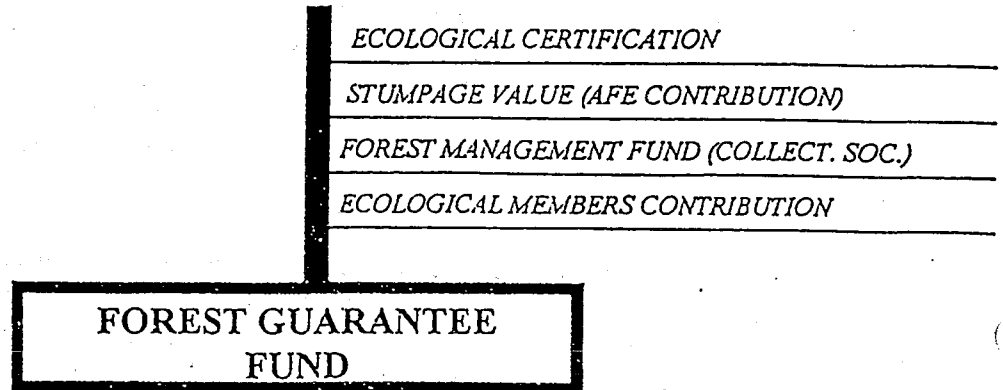


MECHANISM TO ACHIEVE FOREST MANAGEMENT

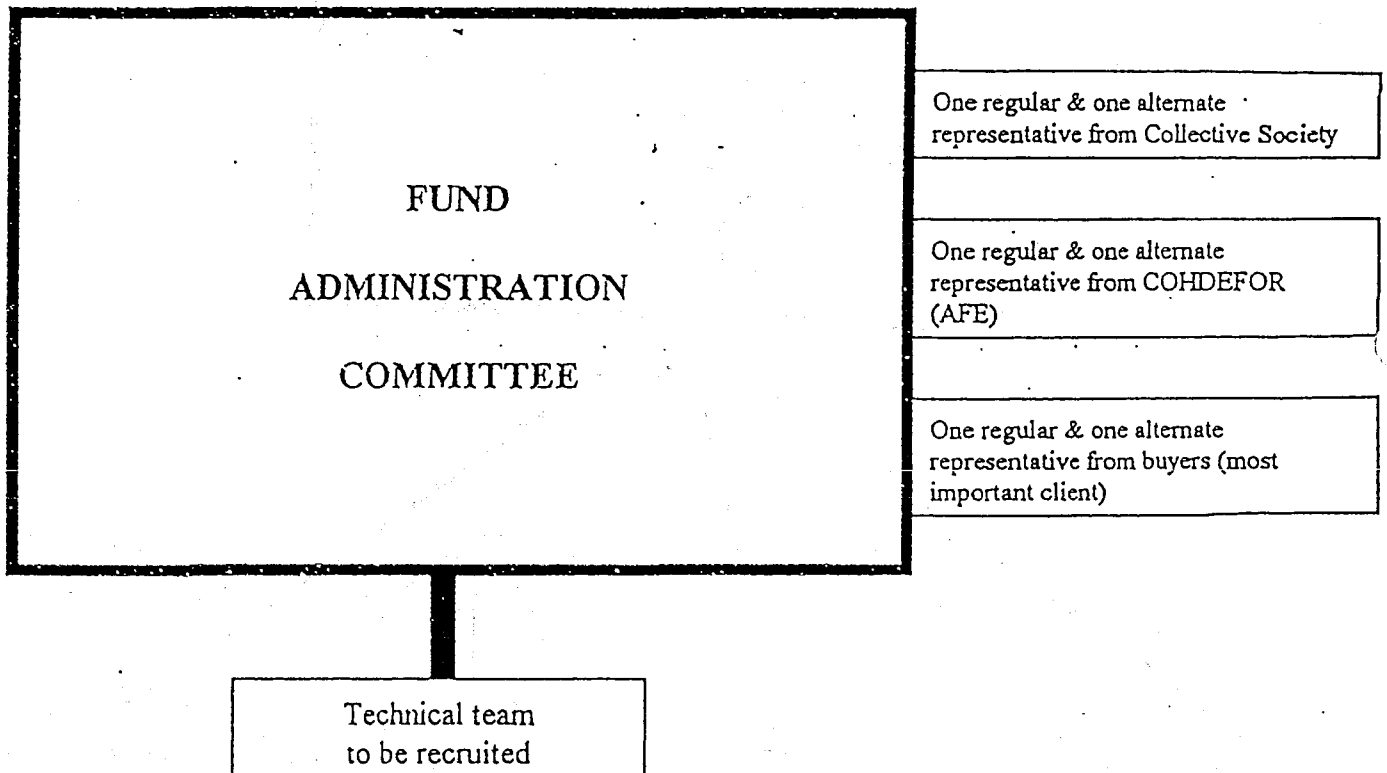
IN COMMUNITY FORESTS

BROADLEAVED FORESTS ALLOCATED TO RURAL COMMUNITIES IN NORTH HONDURAS
FOR THEIR MANAGEMENT

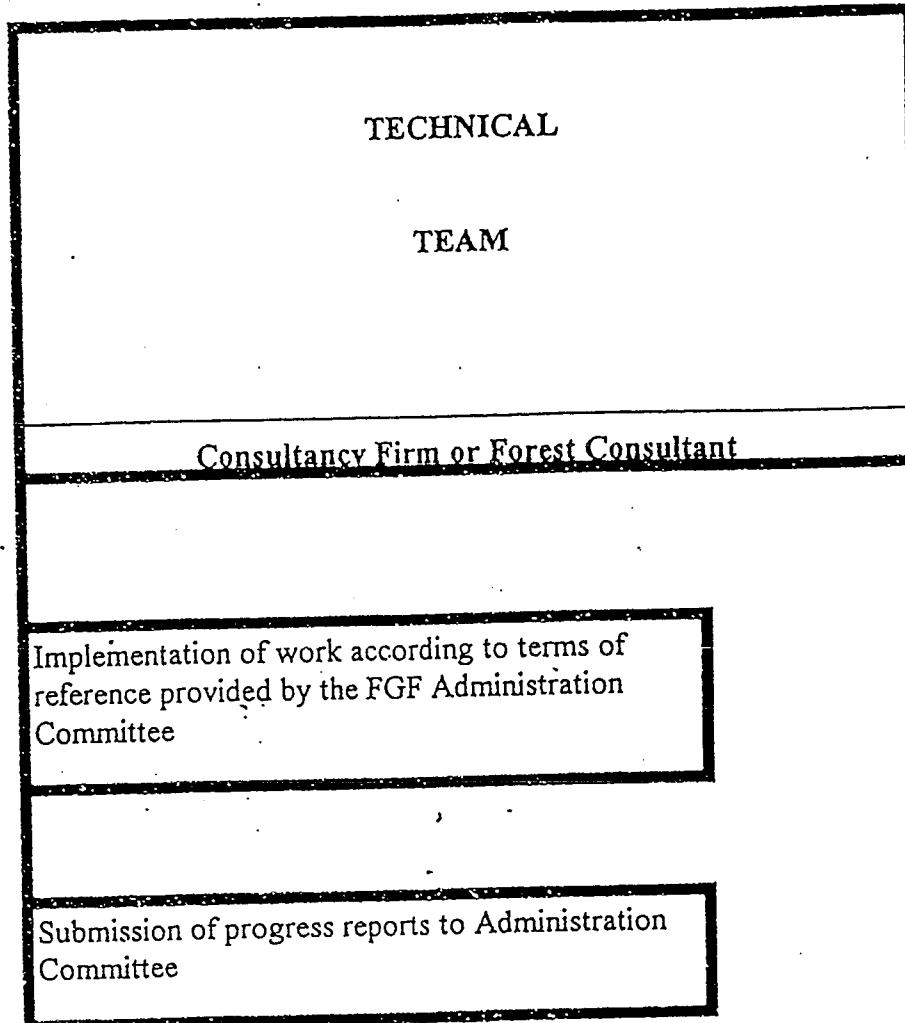
ESTABLISHMENT



ADMINISTRATION OF FUND (FGF)



IMPLEMENTATION OF MANAGEMENT PLAN



Note: The Forest Guarantee Fund Administration Committee will supervise the field activities carried out by the technical team. This will in no way limit any monitoring activities that AFE may require to ensure compliance with technical forest management standards.