APPENDIX I

# I T T O

## INTERNATIONAL TROPICAL TIMBER ORGANIZATION

### DRAFT PROJECT DOCUMENT

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|---|---|
| Title | IDENTIFICATION AND NOMENCLATURE OF COMMERCIAL TROPICAL TIMBER SPECIES IN THE ANDEAN SUB-REGION |
| Serial Number | PD 150/91 Rev.1 (I) |
| Original | SPANISH |

| | |
|---|---|
| Prepared by | INSTITUTO NACIONAL DE INVESTIGACION AGRARIA Y AGROINDUSTRIAL (INIAA), LIMA, PERU |
| Submitted by | GOVERNMENT OF PERU |
| Duration | ~~2~~ 3 YEARS |
| Field of Activity | FOREST INDUSTRY |
| Co-operating Governments | |
| Implementing Agency | INSTITUTO NACIONAL DE INVESTIGACION AGRARIA Y AGROINDUSTRIAL (INIAA), PERU, AND GOVERNMENT FORESTRY AGENCIES IN THE ANDEAN SUB-REGION COUNTRIES |
| Estimated Starting Date | |
| Estimated Project Cost | US$ 823,000 |
| Financing Sources and Amount | |
| - ITTO Contribution | ~~US$ 316,000~~ 550,000 |
| - INIAA Contribution | US$ 507,000 (IN KIND) |

Signed

_____ _____

On behalf of ITTO Date

_____ _____

On behalf of Government of Peru Date

# IDENTIFICATION AND NOMENCLATURE OF COMMERCIAL TROPICAL TIMBER SPECIES IN THE ANDEAN SUB-REGION

## 1. LEGAL CONTEXT

This Project is submitted by the Government of Peru in accordance with paragraph 1, Article 23, Chapter VII of the International Tropical Timber Agreement (ITTA).

The Project meets objectives b) and c) of Article 1 of the ITTA. Furthermore, it is related to area a) of paragraph 5 in Article 23 and is consistent with criterium e) of paragraph 6 in the same Article.

Finally, this Project relates to the strategy elements in the field of Forest Industry listed in b), c) and f), page 21, of the ITTO Action Plan [Document ITTC(IX)/6] and to the elements of the Work Programme in the field of Forest Industry described in 1c) and 1g) of Annex 1 of the same document.

## 2. BACKGROUND

This Project originated from Project PD 16/87 Rev.1 (I) "Research and Development for the Standardization of Tropical Timber at the Andean Sub-Regional Level", Phase 1 of which -entitled "Review of the Current Situation of Timber Standardization and Development of Work Plans for Subsequent Phases"- was approved by the International Tropical Timber Council at its Fourth Session, held in Rio de Janeiro in June 1988.

The original project proposal, submitted by Peru in 1987, was considered during the First Session of the ITTO Committee on Forest Industry, which recommended to extend the Project activities to all countries with tropical forests in the Andean Sub-region.

Implementation of Phase 1 of Project PD 16/87 began in March 1990 and was completed in January 1991. Representatives of the five Andean countries with tropical forests -Bolivia, Colombia, Ecuador, Peru and Venezuela- took part in the implementation of activities. During the first 6 months, information was collected on each country's situation regarding commercial timber identification and nomenclature, grouping of species and timber standardization.

The findings and future work plans for each of the aforementioned areas were submitted and discussed at a "Seminar on Tropical Timber Standardization", held in Lima from 23 to 25 October 1990.

Regarding "Identification and Nomenclature", which was a sub-project objective at the Seminar, the participants made the following recommendation:

"To contribute to forest management practices by preparing a Practical Manual on Commercial Tropical Timber Identification and Nomenclature in the Andean Sub-region, addressed to producers and consumers and covering 20 species per country up to a maximum of 100 species for the Sub-region, selected on the basis of production volumes and access to consumer markets."

Other specific aspects were also mentioned at the Seminar to stress the significance of tropical timber identification and nomenclature:

- in order to contribute to forest management and to supplement existing technological information -such as the ITTO Atlas of Latin American Timber Species and other technical publications issued by the Andean Group-, it is necessary to develop practical manuals illustrating identification methods at the dendrological and anatomical levels to be used by producers and consumers in the identification of major commercial tropical timber species of the Andean Sub-region;

- coordinating the establishment of a network of accredited laboratories and forestry research and development centers in all five countries is essential to make the best of their expertise and at the same time contribute to their development by promoting the identification and nomenclature of tropical species and concluding joint agreements to ensure the supply of timber identified with commercial nomenclature for the domestic and international markets.

## 3. JUSTIFICATION

The Amazon Forest in the Andean Sub-region is the largest forest area in the world and the richest in terms of diversity of species. However, forestry publications and various reports on forest inventories, forest harvesting contracts, timber marketing and technology studies, among others, usually show lists of forestry species which are not completely identified (only common names), thus leading to confusion and errors in the rational utilization of wood as a natural resource.

A Forest Management Plan is the appropriate method to assess a forest area, which will allow for the selection of land and forest use systems according to their natural capacity, duly taking into account the conservation of the ecosystems to facilitate the integrated utilization of natural resources aimed at sustained yield and economic and social benefits. One can therefore conclude that one of the main obstacles to the effective implementation of management plans is the lack of knowledge and experience in the identification of several commercial tropical timber species.

The total volume of usable timber includes a great number of species, but only a few are used for commercial purposes. In the long term, this Project will help reduce the effect of selective harvesting of the forest resources as it will not only influence the timber economy but it will also encourage utilization of a greater number of species consistently named and identified.

For the aforementioned reasons, it is necessary to provide the technicians performing forest inventories, assessment and harvesting, with a practical manual on dendrological identification to enable them to identify trees according to their botanical features (bark, exudation, leaves, flowers, fruits, seeds, etc.). Similarly, those responsible for the tropical timber production, studies, processing and marketing will need a practical manual on anatomical identification to identify forest species according to their anatomical features (growth ring, colour, shape, pores, texture, radious, smell, etc.).

These discrepancies can lead to confusion or error, thus affecting the timber market. It is therefore essential to standardize the commercial nomenclature, mainly based on the dendrological and anatomical identification of timber species in the International Code of Botanical Nomenclature, the principles and recommendations of which are subject to change according to the needs and progress of science. These botanical names are registered in international catalogues such as the INDEX KEWENSIS (United Kingdom) and the GRAY HERBARIUM INDEX (USA).

Even though several international publications have tried to establish a consistent nomenclature system for tropical timber species, no agreement has been reached in the five countries of the Andean Sub-region as to the correct botanical name, the recommended commercial name and synonymy of major commercial species.

The same timber species often have different common names throughout the Andean Sub-region. For example, the PHITECELLOBIUM PEDICELLARIS of the Mimosaceae family is called Dormidero in Colombia, Vilco Colorado in Peru and Hueso de Pescado in Venezuela. In some cases the same common name is used in different regions to refer to different species. For example, the SWIETENIA MACROPHYLLA is known as "caoba" in Colombia, Peru and Venezuela, whereas in Ecuador the same name "caoba" is used with reference to the PLATYMISCIUM PINNATUM of the Papilionaceae family. Similarly, the name "sajo" is used in Colombia to refer to the CAMMOSPERMA PANAMENSIS of the Anacardiaceae family, whereas the same name is used in Ecuador with reference to the CESPEDEZIA SPATHULATA of the Ochnaceae family.

Extensive research has been carried out in the Andean Sub-region in the last few years on physical and mechanical properties of species, drying and preservation treatments, workability processes, etc. These research activities have shown promising results for some species which have not yet been botanically identified and are now being marketed under the common name of a well-known commercial timber species of similar colour, texture or appearance, such as "laurel" or "oak" of the Myristicaceae or Lauraceae families. Although to a certain extent this grouping of species could be regarded as a desirable practice in the timber market, there are strong reasons to regard a clear identification of species as essential.

During the implementation of Project PD 16/87 Rev.1 (I), a list of existing and potential commercial tropical timber species was prepared based on the information obtained from industrialists during several visits to timber centers, as well as proposals and recommendations made by the National Officers-in-charge from the Andean Sub-region countries. On the basis of the available information and the significance and desirability of species, 20 different species were selected per country at the Seminar on Tropical Timber Standardization. The list of these selected species will be made official at the beginning of this Project, taking into account their availability, accessibility, marketing potential, market significance, and current identification difficulties (Table No. 1).

## 4. OBJECTIVES

### 4.1 GENERAL OBJECTIVES

- Preparation of practical manuals on dendrological and anatomical identification of commercial tropical timber species in the Andean Sub-region.

- Nomenclature harmonization for major commercial timber species in the Andean Sub-region.

### 4.2 SPECIFIC OBJECTIVES

- Scientific and commercial identification of the timber species of the Andean Sub-region which are now under study.
- Development of an (official) list of the forest species under study, including complete identification and recommended commercial nomenclature, to be submitted to the Andean Standardization System and to the Pan-American Commission on Technical Standards (COPANT).
- Dendrological and anatomical description of commercial tropical timber species under study.
- Preparation of herbarium and xylotheque to be distributed amongst the official research and training institutions in the countries of the Andean Sub-region.
- Provision of laboratory materials and equipment for timber identification in the Andean Sub-region (one for each country).
- Training activities and dissemination of results amongst tropical timber research, production and trade organizations both inside and outside the Andean Sub-region.

## 5. OUTPUTS

5.1 The following manual will be prepared:

- An illustrated practical manual on dendrological and anatomical identification of 100 commercial tropical timber species in the Andean Sub-region.

5.2 The following material will be collected:

- Identification cards or codes of 100 major commercial tropical timber species in the Andean Sub-region.
- Wood samples (xylotheque) of the 100 species under study available for distribution.
- Herbarium samples of the 100 species under study available for distribution.

Laboratory materials and equipment for dendrological and anatomical identification of timber species will be provided to official research and training institutions of the Andean Sub-region countries.

Project activities will include training and promotion of identification and commercial nomenclature of 100 forest species in the Andean Sub-region.

Finally, this Project will help improve the knowledge of all technical staff involved in the identification of forest species.

## 6. ACTIVITIES

### 6.1 INITIAL OFFICE WORK

6.1.1 Definition of forest species in the Andean Sub-region.

6.1.2 Comprehensive review of the selected literature on identification and nomenclature of commercial tropical timber species in the Andean Sub-region, taking into consideration prior studies carried out by COPANT, JUNAC and in particular those sponsored by ITTO.

6.1.3 Consultations with various international scientific institutions or organizations involved in research activities on timber identification and nomenclature and herbarium/xylotheque compilation in order to review and compare different tropical timber samples. Consultations with laboratories in each country regarding the provision of materials and equipment required for the implementation of Project activities.

6.1.4 Preparation of geographic distribution maps for each species or group of species.

6.1.5 Preparation of standard identification cards containing a description of the species in the Andean Sub-region.

6.1.6 First meeting to coordinate Project research activities with the participation of the International Expert, the National Expert and the Identification Specialists of the Andean Sub-region.

## 6.2 FIELD WORK

6.2.1 Sample gathering - A sufficient number of botanical samples of each selected species will be gathered at this stage to carry out the studies on dendrological identification. Similarly, wood samples will be collected of the 100 species selected to carry out the studies on anatomical identification.

a) Location of sample gathering areas
Each country will select appropriate areas to gather samples from the selected 20 species. The selection of areas will be based on the information obtained from updated inventories in each country (exploratory and semi-detailed data are required for random sample collection).

In order to facilitate the task of gathering samples, existing facilities set up by the private industry or other projects will be fully utilized. Contacts have already been established to this effect with Project PD 34/88 Rev.1 in Bolivia and the private companies working in Project PD 37/88 in Peru. Other similar alternatives will be sought in other gathering areas.

b) Tree marking
In each area the trees to be removed will be selected, and these must be representative samples of the species in terms of age, shape and size. These trees will be marked with enamel paint and code-tagged to ensure their identification.

c) Tree sketching and photography
The tree configuration will be sketched or photographed in order to register the shape, size, colour, crown structure, stem and roots of the standing tree, highlighting the specific characteristics of each species.

d) Tree felling and cutting
Marked trees will be felled using appropriate machinery.

e) Log sketching or photography
Cross-sectional pictures of the logs will be taken in order to show various aspects such as bark, sapwood, heartwood and pith; the external cover will also be photographed to show bark type, colour, texture and appearance.

f) Gathering of botanical samples (leaves, flowers, fruits, seeds, bark)
The greatest possible variety of botanical samples will be gathered. An attempt will be made to assemble and codify these samples <u>in situ</u> so as to take immediate colour pictures of them. Proper treatment and re-assembly will later be carried out.

g) Gathering of wood samples
Four logs will be taken from each tree with a minimum diameter of 50 cm. A 12-cm-thick block will then be cut from each log. Proper marking and prophylactic treatment will later be carried out.

To avoid drying defects (cracks and splits), the log ends will be painted with aluminium paint or any other oil paint.

h) Transportation of samples to the laboratory
The botanical samples -once pressed, preserved and codified- will be sent to the dendrology laboratory as soon as possible. The preserved and codified wood samples will be sent to the selected wood anatomy laboratory.

i) Preparation of botanical samples
The objective of this activity is to select and prepare material (leaves, flowers, fruits, seeds, etc.) in the dendrology laboratory, first pre-assemblying the samples and then illustrating them.

j) Preparation of wood specimens
Wood samples or specimens will be prepared showing radial, tangential and cross sections with the dimensions previously recommended.

This stage includes all activities from the arrival of wood blocks at the carpentry workshop to the delivery of samples to each specialist for their anatomical identification and photography.

6.3 OFFICE WORK

6.3.1 Processing of botanical samples at the dendrology laboratory.

6.3.2 Processing of wood samples at the wood anatomy laboratory.

6.3.3 Sketching and photography of herbarium and xylotheque samples.

6.3.4 Dendrological description of species including relevant illustrations.

6.3.5 Anatomical description of species including relevant photographs.

6.3.6 Preparation of dendrological identification codes per group of species for each country.

6.3.7 Preparation of anatomical identification codes for commercial timber species in each country.

6.3.8 Field checking of identification codes.

6.4 FINAL WORK

6.4.1 Preparation of illustrated practical manuals on dendrology and anatomy of 100 commercial timber species in the Andean Sub-region.

6.4.2 Training activities and promotion of identification and nomenclature of the 100 timber species in the Andean Sub-region for tropical timber producers and consumers.

Out of the total 1,000 copies, some will be distributed within the Andean Sub-region (150 copies per country) and the remaining copies will be sent to the ITTO and other related international organizations.

Table 1 shows the time schedule for the aforementioned activities.

## 7. OPERATIONAL METHODOLOGY

The Project implementing agency will be the National Agricultural and Agro-industrial Research Institute (INIAA), Peru, and the Government Forestry Departments in the Andean Sub-region countries will carry out Project activities through the selected research laboratories.

The Project will establish close links and cooperation with private forest industrial organizations in the participating countries, particularly with the National Forestry Chamber in Peru, in order to develop the scheduled activities and to receive administrative support as in the case of Phase I of PD 16/87 Rev. 1.

Figure 2 shows the Project operational flow chart.

## 8. BUDGET

| | Man/ months | Subtotal | TOTAL |
|---|---|---|---|
| **8.1 National Resources** | | | |
| a) Personnel | | | 252,000 |
| 01 INIAA Coordinator | 24 | 12,000 | |
| 10 Forestry Experts (2 per country) | 240 | 120,000 | |
| 10 Assistant Technicians (2 per country) | 240 | 72,000 | |
| 05 Secretaries (1 per country) | 120 | 24,000 | |
| 05 Drivers (1 per country) | 120 | 24,000 | |

| | Man/ months | Subtotal | TOTAL |
|---|---|---|---|
| b) Infrastructure and facilities<br>Office space, laboratory, libraries, vehicles, etc.<br>(US$ 10,000 x 24 months) | | | 240,000 |
| c) Forest cover assessment<br>5000 $m^3$ (r) x US$ 3/$m^3$ | | | 15,000 |
| TOTAL NATIONAL RESOURCES US$ | | | 507,000 |
| **8.2 External Resources** | | | |
| **a) Personnel** | | | 16,000 |
| International Consultant<br>01 Expert in forestry identification | 3 | 24,000 | 96,000 |
| National Consultant<br>01 Expert in wood anatomy/ Project Leader | 24 | 72,000 | |
| **b) Contractual Services** | | | 158,000 |
| - Dendrological identification in five countries | | 73,000 | |
| - Anatomical identification in five countries | | 73,000 | |
| - Herbarium illustrations (20 species per country) | | 6,000 | |
| - Wood samples photography (20 species per country) | | 6,000 | |
| **c) Travel Expenses**<br>(International Consultant, 2 trips; Project Leader, 2 Sub-regional trips & experts' trips to coordinating meeting) | | | 42,000 |
| **d) General operational expenses**<br>Maintenance of equipment and vehicles, fuel, field materials, photographic laboratory, perishable goods and others | | | 65,000 |
| **e) Equipment and materials** | | | 21,000 |
| 5 Sample dryers | | 7,000 | |
| 5 Audio-visual units | | 7,000 | |
| 1 Word processor | | 2,000 | |
| Anatomy cards, documents, reference material, etc. for the countries | | 5,000 | |

| | | |
|---|---|---|
| **f) Training** | | 75,000 |
| Printing and publication (1.000 copies) | 50,000 | |
| Promotion seminar in each country | 25,000 | |
| **g) Communications** (telephone, fax, postal services, courier, etc., inside and outside the Andean Sub-region) | | 36,000 |
| **h) ITTO monitoring and evaluation costs** | | 15,000 |
| **i) Miscellaneous** | | 30,000 |
| **j) Contingencies** | | 12,000 |
| TOTAL EXTERNAL RESOURCES US$ | | 316,000 |

9. USE OF EXTERNAL RESOURCES

| DESCRIPTION | Year 1 | Year 2 | Total |
|---|---|---|---|
| I. Consultancy Services & travel expenses | 76,000 | 62,000 | 138,000 |
| II. Equipment and materials | 19,000 | 2,000 | 21,000 |
| III. Contractual services, operational expenses, etc. | 193,000 | 123,000 | 316,000 |
| IV. Training | | 75,000 | 75,000 |
| TOTAL (US$) | 288,000 | 262,000 | 550,000 |

TABLE 1 - SELECTED SPECIES TO BE STUDIED PROJECT PD 150/91 (F)

| FAMILY | SCIENTIFIC NAME | COMMON NAME | | | | |
|---|---|---|---|---|---|---|
| | | BOLIVIA | COLOMBIA | ECUADOR | PERU | VENEZUELA |
| ANACARDIACEAE | Anacardium excelsum | | | Marañón | | |
| | Spondias mombin | | | | Ubos | |
| | Spondias sp. | Cedrillo | | | | |
| ANNONACEAE | ? | | Cargadero | | | |
| APOCYNACEAE | Aspidosperma macrocarpon | | | | Pumaquiro | |
| | Aspidosperma megalocarpum | | | | | Hielillo |
| | Aspidosperma sp. | Babetillo | | | | |
| | Aspidosperma sp. | Jichituriqui | | | | |
| BIGNONIACEAE | Tabebuia sp. | | Roble | | | Puy |
| BOMBACACEAE | Catostemma commune | | | | | Baramán |
| | Huberodendron sp. | | | | Aguano masha | |
| BORAGINACEAE | Cordia alliodora | | | Laurel | | |
| | Cordia trichotoma | | | | | Pardillo |
| BURSERACEAE | Dacryodes peruviana | | | Copal | | |
| | Protium decandrum | | | | | Tacamajaca |
| | Protium sp. | | Cariaño | | | |
| | Protium sp. | | Anime | | | |
| CAESALPINIACEAE | Copaifera officinalis | | | | | Aceite cabimo |
| | Copaifera sp. | | Canime | | | |
| | Hymenaea sp. | Paquió | | | | |
| | Peltogyne porphyrocardia | | | | | Zapatero |
| | Pterogyne sp. | Tipa colorada | | | | |
| | Schizolobium amazonicum | | | | Pashaco | |
| | Swartzia loptopetala | | | | | Orura |
| | Swartzia sp. | Ajipa | | | | |
| | ? | | Cucharo | | | |
| COMBRETACEAE | Terminalia oblonga | | | Yayón | | |
| CLUSIACEAE | Rheedia acuminata | | | Madroño | | |
| | Symphonia globulifera | | | Machare | | |
| ELAEOCARPACEAE | Sloanea sp. | Cachichira | | | | |
| EUPHORBIACEAE | Cunuria spruceana | | | | Higuerilla | |
| | Hieronyma oblonga | | | Mascarey | | |
| | Piranhea longepedunculata | | | | | Caramacate |
| | Sapium sp. | Leche leche | Mantequillo | | | |
| JUGLANDACEAE | Juglans sp. | Nogal | | | | |
| LAURACEAE | Nectandra membranaceae | | | Aguacatillo | | |
| | Nectandra reticulata | | | Canelo | | |
| | Nectandra sp. | Laurel | Laurel | Jigua | Moena negra | |
| | Nectandra sp. | | | | Moena blanca | |
| | Ocotea sp. | | | | Moena rosada | Laurel |
| | ? | | Canelo | | | |
| LECYTHIDACEAE | Cariniana domesticata | | | | Cachimbo | |
| | Eschweilera tinbuchensis | | | | Machimango | |
| | Lecythis sp. | | Coco cristal | | | |
| | ? | | Olleto | | | |

cont. Table 1

| | | | | | | |
|---|---|---|---|---|---|---|
| MAGNOLIACEAE | Talauma sp. | | Cobre | | | |
| MELIACEAE | Carapa guianensis | | | Tangare | | |
| | Cedrela odorata | | | Cedro | | |
| | Cedrela sp. | Cedro | Cedro | | | |
| | Guarea sp. | | | Colorado | | |
| MIMOSACEAE | Enterolobium ciclocarpum | | | | | Caracaro |
| | Enterolobium sp. | Timboy | | | | |
| | Inga sp. | | | | | Guamo colorado |
| | Inga sp. | | | | | Guamo negro |
| | Pithecellobium pedicellaris | | | | | Hueso de pescad |
| | Pithecellobium saman | | | | | Saman |
| | Pithecellobium sp. | | | | | Masaguare |
| MORACEAE | Brosimum sp. | Chicle | | | | |
| | Brosimum uleanum | | | | Congona | |
| | Clarisia racemosa | Murure | | | | |
| | Ficus sp. | | | Higuerón | | |
| | Pourouma sp. | | | Uva | | |
| | Pseudolmedia sp. | Nui | | | | |
| MYRISTICACEAE | Otoba gordoneifolia | | | Cuángare | | |
| | Virola sp. | Gabún | Soto | Virola | | |
| PAPILIONACEAE | Coumarouna odorata | | | | Shihuahuaco | |
| | Erythrina poeppigiana | | | Bombón | | |
| | Lonchocarpus sp. | | | | | Jebe |
| | Myroxylon sp. | Quina colorada | | | | |
| | Platymiscium sp. | Tarara amarilla | | | | |
| | Platymiscium sp. | Trompillo | | | | |
| | Pterocarpus sp. | | | | Palisangre | |
| | Pterocarpus vernalis | | | | | Drago |
| | ? | | Maqui maqui | | | |
| RUBIACEAE | Calycophyllum spruceanum | | | | Capirona | |
| RUTACEAE | Zanthoxylum sp. | | | | Hualaja | |
| SAPOTACEAE | Chrysophyllum gonocarpum | | | | | Capure |
| | Pouteria anibaefolia | | | | | Chupón |
| | Pouteria sp. | | Caimito | | | |
| STERCULIACEAE | Sterculia sp. | | | Sapote | | |
| ULMACEAE | Celtis schippii | | | Tillo | | |
| VOCHYSIACEAE | Erisma sp. | Cambará | | | | |
| ? | ? | | Caquetá | | | |
| ? | ? | | Granadillo | | | |
| ? | ? | | Naranjo | | | |
| ? | ? | | Parasiempre | | | |
| ? | ? | | | | Capinuri | |
| ? | ? | | | | Chucchumbo | |
| ? | ? | | | | Quillosisa | |
| ? | ? | | | | Toclo | |
| TOTAL SPECIES PER COUNTRY | | 20 | 20 | 20 | 20 | 20 |

TABLE 2 - TIMETABLE OF ACTIVITIES

| ACTIVITY | YEAR 1 | | | | | | | | | | | | YEAR 2 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| INITIAL OFFICE WORK | | | | | | | | | | | | | | | | | | | | | | | | |
| Selection of forest species | *** | | | | | | | | | | | | | | | | | | | | | | | |
| Literature Review | *** | *** | | | | | | | | | | | | | | | | | | | | | | |
| Contacts with related institutions | *** | *** | | | | | | | | | | | | | | | | | | | | | | |
| Preparation of cards and formats | | *** | | | | | | | | | | | | | | | | | | | | | | |
| Initial coordinating meeting | | *** | | | | | | | | | | | | | | | | | | | | | | |
| FIELD WORK | | | | | | | | | | | | | | | | | | | | | | | | |
| Trip to sample gathering areas | | | *** | *** | | | | | | | | | | | | | | | | | | | | |
| Tree marking | | | *** | *** | *** | | | | | | | | | | | | | | | | | | | |
| Sketching and photography | | | ** | *** | *** | | | | | | | | | | | | | | | | | | | |
| Tree felling and cutting | | | ** | *** | *** | | | | | | | | | | | | | | | | | | | |
| Gathering of botanical samples | | | | *** | *** | | | | | | | | | | | | | | | | | | | |
| Gathering of wood samples | | | | *** | *** | | | | | | | | | | | | | | | | | | | |
| Transportation of material | | | | | ** | | | | | | | | | | | | | | | | | | | |
| OFFICE/LABORATORY WORK | | | | | | | | | | | | | | | | | | | | | | | | |
| Preparation of botanical samples | | | | | | *** | | | | | | | | | | | | | | | | | | |
| Preparation of anatomical samples | | | | | | *** | | | | | | | | | | | | | | | | | | |
| Herbarium processing | | | | | | ** | *** | | | | | | | | | | | | | | | | | |
| Xilotheque processing | | | | | | ** | *** | | | | | | | | | | | | | | | | | |
| Botanical description | | | | | | | *** | *** | *** | *** | *** | | | | | | | | | | | | | |
| Anatomical description | | | | | | | *** | *** | *** | *** | *** | | | | | | | | | | | | | |
| Preparation of dendrological identification codes | | | | | | | | | | *** | *** | *** | *** | | | | | | | | | | | |
| Preparation of anatomical identification codes | | | | | | | | | | *** | *** | *** | *** | | | | | | | | | | | |
| Checking of code effectiveness | | | | | | | | | | | | | | *** | *** | *** | | | | | | | | |
| Sketching | | | | | | | | | | *** | *** | *** | *** | | | | | | | | | | | |
| Photography | | | | | | | | | | *** | *** | *** | *** | | | | | | | | | | | |
| 1st Draft Final Report | | | | | | | | | | | | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | | |
| FINAL WORK | | | | | | | | | | | | | | | | | | | | | | | | |
| Final document | | | | | | | | | | | | | | | | | | | | *** | *** | *** | *** | *** |
| Promotion and training activities | | | | | | | | | | | | | | | | | | | | | *** | *** | *** | *** |

Fig. 1 : Project Activities flow chart

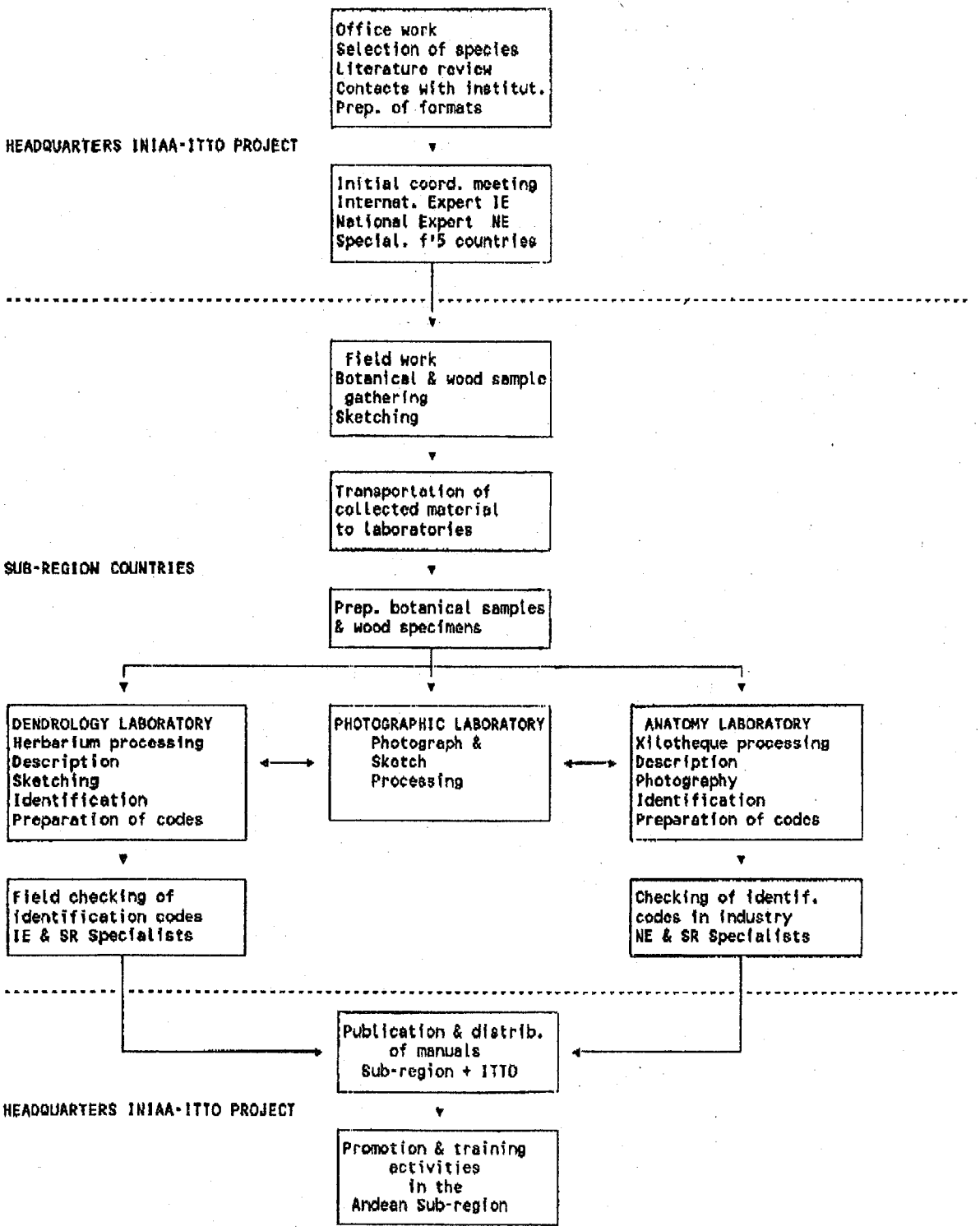

Fig. 2 : PROJECT ORGANIZATION CHART