INTERNATIONAL TROPICAL TIMBER ORGANIZATION

ITTO

PROJECT PROPOSAL

NAME:	INDUSTRIAL UTILISATION AND MARKETING OF TEN POTENTIAL TIMBER SPECIES FROM SECONDARY AND RESIDUAL PRIMARY FORESTS
SERIAL NUMBER:	PD 512/08 Rev.2 (I)
COMMITTEE:	FOREST INDUSTRY
SUBMITTED BY:	GOVERNMENT OF PERU
ORIGINAL LANGUAGE:	SPANISH

SUMMARY

Even though secondary and residual or remaining primary forests contain potentially commercial timber trees, they are scarcely used or used without reference to sustainability criteria. One of the reasons for this is the lack of technological studies to determine their potential uses, to establish industrial secondary processing processes to generate higher value-added production and to maximise their raw material yield. This proposal is aimed at the study of the technological properties of ten timber species from secondary and remaining primary forests and the validation of results under industrial processing conditions. In order to ensure commercial sustainability, the project will study prototypes and models, and will also determine market niches both at the national and international levels. The results will be transferred to concession holders, primary and secondary processing manufacturers, students from the National University of Ucayali and the Suiza Higher Institute of Technology, and the local scientific community. The data generated by the project will be disseminated through three free-access electronic platforms: the website of the National University of Ucayali, PROAMAZONIA – the Amazon-specific platform of the Ministry of Agriculture, and SIFORESTAL – the platform of the Peruvian Amazon Research Institute.

EXECUTING AGENCY:	ASSOCIATION FOR INTEGRATED RESEARCH AND DEVELOPMENT (AIDER) in cooperation with the NATIONAL UNIVERSITY OF UCAYALI (UNU) and the NATIONAL INSTITUTE FOR NATURAL RESOURCES (INRENA)
COLLABORATING GOVERNMENTS:	---
DURATION:	24 MONTHS
APPROXIMATE STARTING DATE:	UPON APPROVAL

BUDGET AND PROPOSED SOURCES OF FINANCE:

Source	Contribution in US$
ITTO	**398,517**
AIDER/UNU	293,475
TOTAL	**691,992**

TABLE OF CONTENTS

PART I: CONTEXT

1. Origin

Forest resource utilisation in Peru focuses mainly on primary forests in the Amazon Region. Once the forest cover has been reduced, land use changes to subsistence farming and/or cash crops and pastures for cattle-breeding, which is a trend that has been increasing at an alarming rate. The National Institute for Natural Resources - INRENA estimates that a total of six million hectares has been deforested i.e. 85% of the total national territory is under successional forests in various stages of development. In the area of influence between Pucallpa and Aguaytía, the Peruvian Amazon Research Institute –IIAP has classified approximately 39,000 hectares of secondary forests and 164,000 hectares of young secondary vegetation. The area surrounding Pucallpa, capital city of the Region of Ucayali, is also affected by the non-sustainable use of existing forest biotic resources; forest slash-and-burn practices to change land uses cause an increase in the area under secondary forests and the spread of successional plant formation on lands whose original vegetation was destroyed by human interventions. These are a part of a dynamic system of land use that can be transformed into agricultural and forest areas or into degraded areas, or can regenerate but hardly ever be returned to their primary forest condition.

Residual primary forests are primary forests that have never been clear cut and where selective logging of high commercial value species (mahogany, cedar, ishpingo) has taken place, leaving residual species known as 'popular species' (white species) or individuals of high value timber species that had not reached commercial diameter size at the time of the harvest. Secondary forests, on the other hand, are forests that have regrown after the clear-cutting of the original primary forest (mainly due to shifting agriculture or cattle-breeding practices); after a few years of use, the lands were abandoned (as soils have lost their fertility) and the forest has started to regenerate. Since the soils are poor and there is no shade, the new species that grow in these areas are different from the original forest species i.e. these are now fast-growing, sun-seeking (heliophyte) species with low density timber (softwood).

The project Secondary Forest Management in Tropical America, that promotes the inter-institutional agreement signed by CIFOR, CATIE and IDB, is being implemented in Peru by the National Agrarian University of La Molina. In 2000, a forest inventory of secondary forests was prepared in three sectors of Pucallpa to assess the management potential of secondary forests with a view to sustainable production. The study concluded that secondary forests include a prolific natural regeneration of species that can be used for self-consumption or marketing purposes, and that trees over 10 years of age represent the greatest flora wealth. The study suggests that these trees offer the widest range of potential uses and a higher relative value in commercial product terms. Researchers have recommended that timber product marketing be encouraged; to this end, marketing strategies need to be planned in order to increase the number of marketable species. They have also recommended that more useful and relevant information be disseminated in the rural community so as to encourage sustainable management and use of these species.

This study and another work carried out by the IIAP in the alluvial flood plains of Muyuy, Iquitos, have concluded that some farmers are willing to avoid the use of slash-and-burn practices in secondary forest areas provided there are species of commercial value. Others do not operate there because the soil is yet to recover the fertility needed for the clearing costs to be lower than the expected income from the crop. Furthermore, they often use management practices such as eliminating competing vegetation and even add richness to the forest by planting timber seedlings taken from the residual primary forest. The aforementioned studies have also recorded the forest species usually found in secondary forests, and many can be used to produce timber, while others may be a source of food, mainly native fruit of high nutritional value. The results have shown that timber production is the most significant use in terms of the largest number of species and individuals and production potential, and constitutes the main objective of the forests in the study.

Furthermore, residual primary forests have significant numbers of timber trees of potential commercial value. Most timber species from secondary forests and residual primary forests have not been subjected to technical studies or their studies are incomplete. It is not possible to market these timbers because their technical properties, uses and industrial processing status are not known. Furthermore, because most species produce light, unattractive softwoods or hardwoods whose processing is

subject to a number of limitations, finishing models and processes need to be designed in order to highlight their comparative advantages and reduce their limitations.

Project 138/02 Rev.2 (F) "Integrated Evaluation and Strategy for Sustainable Management of Secondary Forests in the Central Forest Region of Peru", implemented under an ITTO-INRENA agreement, in secondary forests and remaining (residual) primary forests belonging to the native communities of San Pascual, Unión Capirilto, Quimiriki, Alto Yurinaki, Santa Martha, Bajo Shiringal, Alto Pitocuna and Belén de Anapiari, has generated relevant information on the production potential of these forests. The project has concluded that 14.18% of the total area is covered by late-secondary forests, comprising 62 species and 560 trees per hectare and 167 trees of abundant species. Inventory data indicate the presence of 19 high commercial value forest species with a volume of 48.51 m^3 as well as potential value species, which can all contribute to the economic sustainability of forest management and hence to the ecological sustainability of the area. The project has also concluded that 13.48% of the total area under study is covered by remaining primary forests, with a volume of 117.95 m^3 from 26 species, 81 species with 480 trees/ha and 200 abundant species. All of this information points to the economic and ecological value of secondary and remaining primary forests. Seven species have been identified and selected by the project on the basis of their ecological significance (50% of Importance Value Index– IVI): *Croton tessmanii, Schyzolobium amazonicum, Ochroma piramidales, Clarisia racemosa, Pouteria reticulata, Caryocar coccineum* and *Calycophyllum spruceanum.*

2. Sectoral Policies

Relationship with sectoral tropical timber policies

According to the Constitution, the State should promote sustainable development in the Amazon Region and set conditions for the use of any concessions. The Forestry Law regulates, controls and monitors the sustainable use and conservation of the country's forest and wildlife resources, aiming for compatibility between their use and the gradual increased valuation of forest environmental services, in consonance with the nation's social, economic and environmental interests, current legislation and international agreements.

Sectoral Planning

Under the project 'Support to the National Forest Development Strategy', implemented by the Ministry of Agriculture under an agreement with FAO, the forest vision is that Peru should maintain and manage its natural forests, increase its forest plantations and ensure the conservation of ecosystems that create wealth and well-being on an equitable and ongoing basis and in harmony with the environment as a result of forest awareness and culture. The development objectives include the reversal of deforestation processes, and forest and biodiversity conservation, integrating ecological restoration in heavily logged-over forest ecosystems. Also, an increase in the forest sector contribution to the national GDP is proposed in accordance with sustainability criteria and reduction of poverty and rural - urban migration.

The forest management programme for the production of timber and non-timber products promotes and provides support to the increased demand for value-added forest products, and certification and quality control of these products, improving their competitiveness with a view to gaining market access. The forestry programme in rural development provides technical, legal and policy guidelines and actions for the environmental and economic rehabilitation of deforested and degraded areas. The research, training and technology transfer programme promotes the development of technology generation and transfer programmes, with a view to increasing the efficiency of forest production and trade.

A SWOT analysis has helped the project confirm that the low level of technical development and training are two of the main weaknesses of the forest sector, while the lack of social investment by the State is one of the major threats. On the other hand, the wealth of renewable forest resources is its main strength.

Institutional Planning

The current forestry law, promulgated in July 2000, provides that sustainable forest management is an obligation and an essential condition for access to long-term forest concessions and for the use of secondary forests. The regulations of the current forestry law provide promotion actions for the use of new timber species, new technologies and value-adding processes. They also provide preferential treatment measures for State acquisitions, which to date have reached a considerable magnitude, such as the National Programme for Housing, with a budget of US$ 580 million over four years, and the Regional Consensus-Building Roundtable Programmes Against Poverty, Urban and Rural 'To Work' programmes as well as decentralisation measures for the public service. Furthermore, the legislation promotes the development of industries that are based on supplies of timber from managed forests and forest certification.

The Special Land Titling Project, an institution of the Ministry of Agriculture, is assigning titles at the national level, for agricultural plots and rural and native communities at no cost or at a minimal cost. Besides the security brought by the legal title to their lands, it is hoped that owners will be conditioned to protect their resources, that they will be concerned with any potential encroachment and indiscriminate burnings, and will be able to generate additional income by using natural resources.

Relationship with sub-sectoral goals and programmes

According to the current legislation, the natural forest administration will soon be transferred to regional governments; forest concessions for primary and secondary forests and sustainable use programmes are a regional responsibility, and there is a need to make haste in order to have usable resources in the short term.

The Ucayali Regional Government's Environmental Portfolio prioritises the development of work plans for forest management, environmental services and research, and complements these with dissemination workshops and publication of manuals. It also offers technical studies of new species, identification of high value-added products on the global market, the adoption of new technologies and markets for bio-business and forest certification. Nothing has been defined yet, basically because the participatory prioritisation for resource allocation has assigned more importance to social investment programmes.

The strategic statement prepared in cooperation with the leadership of the 'PYMES 4 Regiones' (*SMEs 4 Regions*) Project, implemented with GTZ funding, concluded that one of the weaknesses of the forest sector is that there is a lot of information available but it is not organised, data and technologies are not available and intangible values are not capitalised nor is there any focus on the information gaps. Other objectives proposed for the sector include strengthening of the forest business culture towards sustainable and equitable development for the communities involved; promoting the development of competitive forest products needed by domestic and international markets, particularly high value-added products manufactured using clean technology processes; promoting regional investment and development through forest management practices for natural forests, forest plantations, agroforestry, and the restoration of degraded areas.

3. Programmes and operational activities

Peru has received funding from international cooperation sources for various forest management and forest resource processing projects. More particularly, from ITTO and for the Ucayali Region, funding has been received for the industrial technological study of 20 species of residual primary forests, selected on the basis of criteria of occurrence and abundance in production forests. Funding has also been received for the forest management of 105,000 hectares of the Alexander von Humboldt National Forest, an area that in the eighties was the beneficiary of a great deal of financial resources from international development agencies, which targeted exclusively primary forests and were used for research projects and forest management demonstration activities.

The Royal Embassy of the Netherlands has funded the project 'Demonstration Management of Secondary Forests', for the utilisation of the various resources of plots owned by farmers in the Neshuya-Curimaná road area. On average, the plots measure some 50 hectares each, and include residual primary forests and young and adult secondary forests. CIFOR, under an agreement with the

National Agrarian University of La Molina, is also studying the dynamics of secondary forests. Finally, ICRAF, with resources from ITTO and INRENA, has studied the domestication of two secondary forest species.

The following studies are also noteworthy:

- 1970. Technical study of 40 species from the Alexander von Humboldt National Forest, carried out by the National Agrarian University of La Molina under an agreement with the Ministry of Agriculture.
- 1972. Technical study of 140 species from the Alexander von Humboldt National Forest, carried out by the National Agrarian University of La Molina under an agreement with the Ministry of Agriculture
- 1980. Technical study of 20 timber species for construction uses.
- 1985. Basic and technical studies of 35 timber species from Loreto, carried out by the Peruvian Amazon Research Institute under an agreement with the former National Institute for Agrarian and Agro-Industrial Research.
- 1989. Technical studies of timber species suitable for use as sleepers, carried out by the Peruvian Amazon Research Institute under an agreement with the former National Institute for Agrarian and Agro-Industrial Research.
- 1992. Technical study of four secondary forest timber species, carried out by the National University of Ucayali under an agreement with the Peruvian Amazon Research Institute and the Institute for Agrarian Research. This study has not been completed, but the preservation and drying results have been published.
- 1994. Industrial uses of 20 timber species from the Ucayali area, implemented by the National Forestry Chamber under an agreement with the former Forest and Wildlife Directorate and the International Tropical Timber Organization.
- 2006. Integrated Evaluation and Strategy for the Sustainable Management of Secondary Forests in the Central Forest Region of Peru" – Project 138/02 Rev.2 (F) under ITTO-INRENA agreement. Presentation of inventory data on secondary and remaining (residual) primary forests belonging to the native communities of San Pascual, Unión Capirilto, Quimiriki, Alto Yurinaki, Santa Martha, Bajo Shiringal, Alto Pitocuna and Belén de Anapiari.

Even though the dissemination of some of these studies has been limited, they all represent a valuable source of reference for professionals and students in various areas, particularly forest, civil, electrical, industrial and agricultural engineering. However, the information available on the technological properties of timber from secondary and residual (remaining) primary forests is usually limited.

PART II: THE PROJECT

1. Project Objective

1.1 Development objective

To contribute to the sustainable management of natural forests by promoting timber resources from secondary and remaining primary forests and thus reducing the pressure exerted on primary forests and fostering the rehabilitation and enrichment of secondary forests.

1.2 Specific objectives

The project has two specific objectives:

Specific Objective 1
To carry out technological studies to determine the suitability of timber species frequently and abundantly found in secondary forests (SF) and residual primary forests (RPF) of the Peruvian Amazon Region.

Specific Objective 2
To determine the marketing potential and market niches for SF and RPF timber species, according to their technological properties.

There are very few silvicultural management, technical, industrial validation and market studies for most timber species from secondary forests and residual primary forests, and whatever is available is not enough to promote and foster sustainable management - understood as the application of harvesting techniques in combination with silvicultural management techniques to ensure the continuity of resources for future harvests and thus contribute to the social and economic development of the Ucayali region. Only one species of secondary forest is thoroughly utilised: *Guazuma crinita*, which grows in concentrated stands in flood prone areas and produces very light timber, which helps manual logging and mechanical processing. This species is increasingly scarce and no reforestation programmes are available. Research work has defined the appropriate silvicultural management technique but producers are still not aware nor have they received any training to manage these natural forests. However, there is a market niche that can be taken over by other secondary forest timbers with similar technical properties; it is used to produce ½" x 3-4" x 8' boards to line houses and it has been well received, as there is a lot of demand domestically, and there have been some attempts at introducing it on the export market. Another important species is *Croton lechleri* (sangre de grado) which is cut to use the latex, while the timber is not used commercially. Species of residual primary forests such as *Apuleia molaris* (ana caspi), *Clarisia racemosa* (mashonaste), *Pouteria reticulata* (caimitillo) and *Caryocar coccienum* (almendro) are scantily used even though they are dominant and abundant.

2. Justification

2.1 Problem to be addressed

The impact of shifting agriculture, with its traditional slash-and-burn technique, causes considerable biodiversity and environmental service losses in tropical moist forests. The sequence of this production system is based on the expectation that fallow periods should allow its production ability to recover, thus contributing to the sustainability of the system. In practice however, migratory pressure, the need for food, the lack of knowledge on new technologies and other factors, have led to increasingly shorter fallow periods, thus threatening not only its production ability but also the development of timber and non-timber species that would naturally flourish under these conditions to form secondary forests.

Highland sapling forest stands include more than 400 specimens per hectare, which are used locally to produce timber mainly for sawmilling, boards and structural timber. However, few or none are actually used. Many secondary forests only serve to be burnt and transformed into low-producing agricultural operations, thus losing soil and production potential, and they are later left to recover for 25 or more years. In the meantime, new primary forest areas are selectively logged and transformed

into unproductive agricultural operations, and the cycle of resource loss worsens, the situation of producers becomes less tenable, and poverty and social unrest develop.

Forest logging of residual primary forests is reduced to just over ten species, as is clearly shown in INRENA's statistical data. Forest concession holders achieve yields of no more than 8 cubic metres per hectare, and there is an imminent depletion of valuable timber species, while new species have been introduced such as *Calycophyllum spruceanum* (capirona) and *Dipteryx odorata* (shihuahuaco), whose intensive logging is causing genetic erosion.

In the face of this technical emergency for hundreds of forest concession holders and thousands of farmers in the moist tropics, this project's integrated utilisation of secondary forests and residual primary forests is a technical option to manage forest concessions at the farm level, which will generate income through the sale of products. However, current state of knowledge on various resources available is not scientifically or technologically based and therefore cannot be used advantageously and requires institutional research efforts. Neither is there enough information on marketing prototypes or market niches, and producers in general are unaware of the potential of their resources. The failure to implement the project or its postponement would have an alarming impact: secondary forests would keep being destroyed, residual primary forests would continue to be depleted, and the great biomass production and environmental service potential would be lost to unproductive *purmas* (secondary growth forests) whose only ecological value would be as indicators of severely degraded soils.

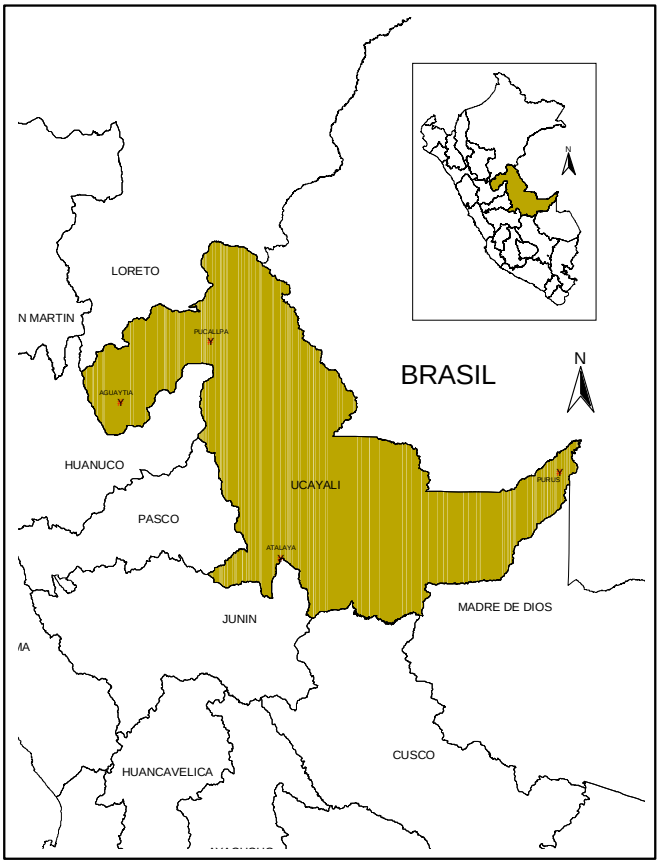
Another problem faced by the local industry is its limited competitiveness. Currently, timber exports are only slightly larger than imports, and 60% of exported timber is sawn and seasoned mahogany, an increasingly scarce species under severe marketing restrictions. In the near future, when mahogany stocks are depleted, timber exports will drop to very low levels, although the national industry is currently making efforts to penetrate the hardwood market. In addition to a lack of competitiveness due to limited timber species diversification, the industry is faced with the problem of a lack of product diversification, as rough sawnwood is the major export product. Selective logging, another problem caused by creaming and degradation of primary forests, increases production costs, fosters lack of competitiveness of certain segments of the domestic and international markets, and reduces the country's possibilities for economic development based on the sustainable use of natural resources. Current production is based on 80 forest species, with two species accounting for 60% of this total and eight species accounting for 85%. Some of these species, such as *Cedrelinga catenaeformis* and *Swietenia odorata* have disappeared from large production areas and the loss of genetic resources is imminent. However, primary and secondary forests have abundant and frequent *Guatteria* spp and *Zanthoxylum aprucei*, and technical studies of these species and the dissemination of their results to users could help incorporate them into the market.

The area selected for the study is the Region of Ucayali (see map) and covers the area of influence of two main cities:

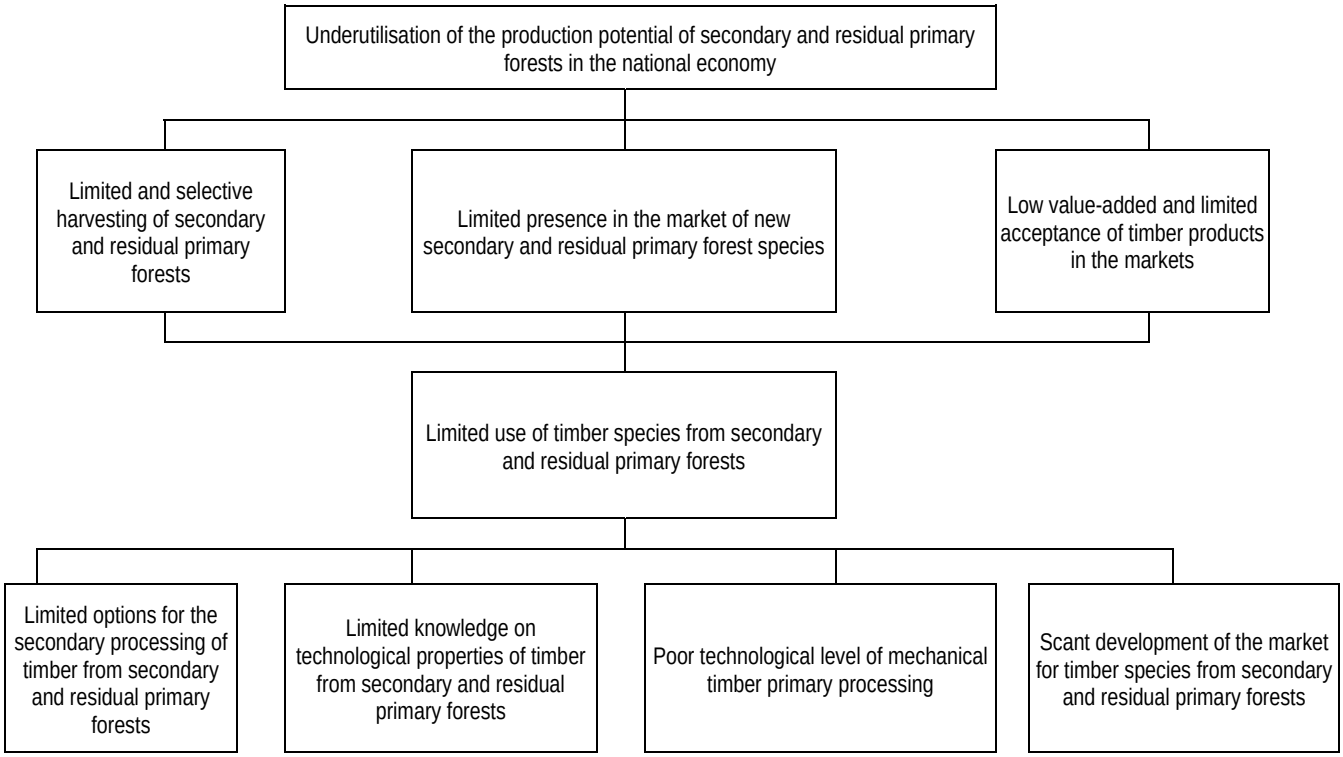
- Pucallpa, capital of the Ucayali Department - this is considered to be the country's major mechanical timber processing centre, with over 100 sawmills - situated 841 km from the capital (Lima), the main market and embarkation point for exports to Asia, Mexico and the United States, the destination countries for most Peruvian exports. This district has the disadvantage that primary production forests have been selectively logged and transport costs limit the production of common timbers; however, there are many secondary forests here, and the project may encourage industrial activity.

- Aguaytía, capital of the Province of Padre Abad, an area of emerging strongly selective timber production, where two species are mainly used. This district has experimented with the production of fruit packaging for both domestic and export markets, and most timbers in the project are possibly suitable for packaging. It is noteworthy that this area's main activity is coca growing, and the introduction of new species, new products and new markets may help replace this activity and generate permanent employment opportunities. Furthermore, this province has great ecotourism potential, and forest and landscape conservation is vitally important for this endeavour that generates income without causing the loss of natural resources.

AREA OF INFLUENCE OF THE PROJECT



PROBLEM TREE



Pre-selected timbers. Hereunder is a list of pre-selected timber species; this list will need to be refined during the implementation of the project:

Common Name	Scientific Name	Family
Auca atadijo	***Croton matourensis* and *C. tessmanii***	**Euphorbiaceae**
Bolaina	*Guazuma crinita*	Sterculiaceae
Marupa	*Simarouba amara*	Simaroubaceae
Pashaco	***Schyzolobium amazonicum***	**Leguminosae**
Huamanzamana	*Jacaranda copaia*	Bignoniaceae
Peine de mono	*Apeiba membranaceae*	Tiliaceae
Sangre de grado	*Croton lechleri*	Euphorbiaceae
Hualaja	*Zanthoxylum sp.*	Rutaceae
Topa	***Ochroma lagopus***	**Bombacaceae**
Ana caspi	*Apuleia molaris*	Fabaceae
Mashonaste	***Clarisia racemosa***	**Moraceae**
Caimitillo	***Caryocar coccineum***	**Caryocaraceae**
Almendro	***Tachigali sp.***	**Fabaceae**
Capirona	***Calycophyllum spruceanum***	**Rubiaceae**

The species have been pre-selected on the basis of the following criteria:

- Abundance and occurrence in secondary forests and residual primary forests, according to information obtained from producers and forest inventories of concession holders;
- Producers of low, medium and high density timber according to previous studies;
- Possible local uses as an *a priori* indication of technical qualification.

2.2 Intended situation after project completion

By the end of the project, technical and scientific information will be available to be applied in industry and to continue the study of other species. There will be data on the physical and mechanical properties of the timbers and on their mechanical processing, drying and preservation conditions as well as on their suitability for use. Furthermore, there will be prototypes of timber products that will be competitive on domestic and export markets. Greater efficiency in the use of timber resources will be promoted through the knowledge of the technical characteristics of the material and greater processing level. Moreover, there will be information on the marketing potential and on market niches on regional, national and export markets, and business plans will be available. Producers will be trained in the production of good quality, competitive timber products, thanks to the dissemination of results and training.

The information generated by the project may be used for these same species that grow in other Peruvian tropical moist forests, after any necessary adjustments. It may also be used in other departments of the country with similar ecological characteristics. Users and the scientific community at the national and international levels may be informed through the electronic platform.

Furthermore, the National University of Ucayali will be equipped to continue with similar work and new species, promoting sustainable forest use and fostering the generation of technical and scientific knowledge, as well as environmentally sound social development. Subsequently, work may be carried out as academic theses leading to professional degrees, thus training and providing further skills to young graduates. Furthermore, knowledge and new technologies may help new professionals set up their own industry or work in production, using third party services and taking advantage of the market information generated by the project.

2.3 Project Strategy

Selection of species
For the study to achieve the required impact, selected timber species must be abundant and frequent in secondary forests and residual primary forests; dominance will probably be low in secondary forests. The shape of the tree stem, the average plant health status, species defects and traditional uses, particularly for timber, will also be taken into consideration. Selection will be done in a

participatory manner with forest producers and concession holders: some important silvicultural aspects are known to them, such as phenological cycles, species associations, interdependence with wildlife, particularly entomological fauna that has an impact on seed dispersion cycles, ecological niches and uses.

Technical suitability for use
Technical studies will be carried out under standardised laboratory conditions, such as the study of the anatomical structure to help understand timber behaviour, and of the physical, chemical and mechanical properties to obtain information on timber characteristics and limitations. In addition, drying, preservation and machining behaviour will also be studied, thus gaining knowledge on the most suitable methods and processes to use for best quality. Results will be validated under actual industry conditions.

Marketing potential and market niches
The market study will necessarily start with the definition of technical suitability of the timber species. Then an updated industry diagnosis for primary and secondary timber processing will be prepared, as the latest diagnosis dates back to 2001. Such diagnoses will provide information on installed capacity, type of machinery, producer organization, finance systems, training needs, domestic and export markets, etc. and will help determine the most suitable strategy for the marketing promotion and positioning of timbers and leading products. This activity will be carried out by a qualified consultant and will be supported by additional information from the National Fund for Export Promotion - PROMPEX PERU, the Sawnwood, Furniture Manufacturers and By-Product Committees of the National Society of Industries, FONDEBOSQUE and the Export Association. A manual, a brochure and a booklet will also be prepared, while two workshops and two conferences will be organised.

Strengthening of producers
The training and dissemination events will foster the strengthening of producers associations in future events, institutional arrangements, access to formal credit and particularly in the establishment of consortiums to deal with domestic and export markets.

Follow-up
The project will be part of the research programme of the National University of Ucayali and will be focused on the second phase, i.e. working on research of management, processing and marketing of non-timber products from secondary forests.

Involvement
The area of influence of the project is subject to land and/or river access, and will be duly identified in the diagnosis.

2.4 Target beneficiaries

a) The project has two kinds of direct beneficiaries:

- Forest concession holders who are managing residual primary forests where there are large volumes of potentially valuable timber species that can be sold on the domestic and export markets.
- Primary and secondary timber processors who may have more and better marketing options for technically and economically competitive timber products from sustainably managed secondary forests.

The two beneficiary groups will be trained in competitiveness issues. Concessionaires will be trained in roundwood and sawnwood preservation and protection techniques. Manufacturers will be trained in mechanical processing, drying, preservation, application of finishes, furniture making, etc. and also in marketing and strengthening production chains, and access to regional, national and export markets.

b) Indirect beneficiaries include:

- The national scientific community and that of the Amazon countries: Ecuador, Bolivia, Brazil, Colombia and Venezuela;
- Agricultural producers and manufacturers of timber products of the Amazon districts that have similar ecosystems, such as Madre de Dios, Loreto, San Martín and part of the Amazonas and Huanuco departments;
- Forest sector professionals, students and information users;
- All beneficiaries of environmental services provided by sustainably managed forests.

The indirect benefits of the project include:

- Drop in the urban unemployment rate;
- Larger share of the forest sector in the GDP;
- National revaluation of the forest sector as a sustainable producer;
- Attitudinal change in the population of the country regarding the benefits provided by forests, and an opening up of a forest culture based on sustainability;
- Drop in social upheavals caused by unemployment and poverty;
- Increased exports and decreased imports;
- Balanced social and economic development.

2.5 Technical and scientific aspects

Laboratory and industrial trials

Technology trials will introduce a sampling variable. In routine trials, samples are taken from five trees representative of the species in a particularly large area, and samples are taken from each tree at two metres from the base, to prevent the influence of the root collar. Both theory and practice have shown that there are major variations along the main and axial axes of the tree; such differences are reflected in the behaviour of timber as a construction material and also for other uses, and optimum timber processing necessarily requires knowledge and quantification of such differences. In these trials, three equidistant samples will be taken from each tree, and test tubes will be prepared from the cambium to the medulla.

To determine the suitability of timber species for various uses, basic technical trials are needed; **therefore, there is a need to supplement the facilities of the National University of Ucayali with basic equipment and accessories for the implementation of studies on wood anatomy and chemical composition of timber, so as to provide additional information on physical and mechanical wood properties, wood behaviour during mechanical processing, and preservation and drying properties of timber. Furthermore, mechanical processing machinery will be acquired so as to determine the behaviour of wood during the mechanical processing stage. The equipment, machinery and accessories to be purchased will constitute capital goods that will be used to carry out follow-up studies and support research work in other universities throughout the country with which favourable inter-institutional agreements have been reached, and thus continue generating useful technical and scientific information for the Ucayali region and the national and international scientific communities as a whole.**

The studies are outlined below:

Anatomical description of vascular and xylem elements according to technical standards of IAWA and physical and mechanical properties according to Peruvian technical standards, ASTM and COPANT. Basic quantitative and qualitative information obtained on the anatomical structure of timber will be used to explain timber behaviour under drying, mechanical processing, surface finish, preservative and coating application, etc. This will also help to link physical and anatomical parameters to mechanical properties.

Basic chemical composition of timber – organic material made up of three main components: cellulose, hemicellulose and lignin, which currently have numerous and important applications in industry. It also contains other components generically called wood extractives, which, although

present in small quantities, constitute determining factors of some wood properties such as behaviour under mechanical processing, abrasiveness, drying behaviour, shrinkage, natural durability, colour, smell, taste, etc.

Physical and mechanical wood properties according to Peruvian and ASTM technical standards, under standardized conditions, in order to obtain information to determine use suitability: The study will take into account a number of variables of the materials in question such as the longitudinal and transverse location of test specimens from the tree so as to establish average, maximum and minimum values for the parameters under review. The study will assess saturated density values and air-drying and kiln-drying parameters, which are necessary for the *a priori* identification of potential uses and for the calculation of transport costs. The study will also identify shrinkage indexes, which are useful for calculating manufacturing costs and behavioural trends of the wood in use. In addition, the study will determine wood resistance to mechanical stress, static bending, compression perpendicular and parallel to grain, tensile strength, cleavage strength, shear strength, nail withdrawal resistance and hardness, according to the grain orientation and defects which define the use suitability.

Laboratory tests will be conducted by consultants specialising in broadleaved species anatomy and in physical and mechanical properties and natural durability, who will be mainly researchers and thesis students of the National University of Ucayali – UNU. Thesis students will thus be able to obtain their professional qualifications and become an important group of project beneficiaries. Reports will be prepared according to IICA specifications.

Studies of natural and artificial drying will be done according to COPANT standards, taking into consideration aspects such as thickness and direction of cut, duration of drying period and moisture content adapted to different uses and types of finishes. Artificial drying will be tested in industrial kilns using programs adapted to the density and anatomic structure of the wood, including thickness of fibre walls and diameter of pores. The technological studies on natural durability will be conducted according to AWPA standards, to determine possible uses in accordance with the potential risks posed by biological agents, particularly xylophagous fungus, and to immediately carry out preventive conservation studies for roundwood and sawnwood in transit (the vulnerability of tropical timber to xylophagous fungus and insects, especially immediately after felling or mechanical processing, is widely recognised) so as to identify appropriate products and treatments to reduce the waste of raw materials. Environmentally approved conservation products will be used, together with integrated control methods, in accordance with the recommendations of the National Agricultural Health Service. Studies on workability will be conducted according to ASTM standards, taking into account cut direction and moisture conditions, as well as the technical characteristics of the equipment. These studies will involve the participation of concession holders and other forest producers, who will contribute and participate with personnel, machinery and equipment.

Preparation of industrial models and prototypes

On the basis of the results of the technical and suitability studies, consultants will be recruited to prepare industrial models and prototypes. It is assumed that most species to be studied have medium density timber that can be used for processed products and linings. The models will be trialled under actual industry conditions so as to refine them until commercial prototypes can be proposed.

Study of business plans and market niches

This study will be conducted by external consultants with the support of the information available in national institutions as indicated in the section on Strategy.

2.6 Economic aspects

Currently, secondary forests have no economic value; they are only used after the forest cover has been depleted, to produce one or two cash crops, reaping no more than 120 US$/hectare. On the other hand, at least 25 m^3/hectare can be logged with a gross value of 400 US$/$m^3$ to be distributed along the production chain of farmers or timber owners, manufacturers and retail distributors/wholesalers.

Furthermore, conservation of the capacity to generate secondary forest environmental services has an economic value ranging between 50 and 130 US$/hectare, depending on the age of the forest and its ability to capture carbon. Direct and indirect jobs are created, some of which are permanent, such as those working in primary and secondary processing, and others casual such as forest management, logging and transport; with estimates of an average value of 30 wages/hectare/year at 132 US$/hectare/year.

The Ucayali region alone has 2 million hectares of secondary forests, which are mostly non-productive because of the forest cover loss and the change in land use. This ecosystem is able to recover and self-generate the original forest if it is allowed to remain fallow for five to ten years. Such an area is able to produce the species proposed in this project and to generate gross income levels of US$4 billion, which can be distributed along the production chain, from the forest farm to the end-consumer.

2.7 Environmental aspects

Colonisation of the Peruvian rainforest region by national and foreign migrants has been a technically unplanned, chaotic process, with populist objectives. The results are clear in the severe disturbance undergone by forest ecosystems, particularly those situated in the area of influence of major and minor river and land transport pathways. In the Ucayali River basin that covers most of the region of the same name, meander plain and terrace forests have been replaced by carrizo cane, a species that colonises degraded soils, by low '*purmas*' or second growth forests consisting of herbaceous species reflecting the low fertility of the soil, secondary forests and isolated stand remains of logged-over primary forests.

Strategic development planning in the department of Ucayali must be based on a survey of current forest resources, with timber resources being the most important from an ecological, economic and social perspective, as they have the capacity to generate sustainable direct and indirect employment as long as the current harvesting rate of 8 m^3/ha is improved to at least 25 to 50 m^3/ha, thus reducing unit costs, integrating the industry to the forest, ensuring supply and, even more importantly, reducing the area of annual coupes so as to reduce the deforestation area and the loss of biodiversity and genetic resources. Furthermore, the capacity of forests, including logged-over forests, to generate environmental services will be maintained, including carbon sequestration, reduction of water and wind erosion, and the loss of natural spaces of recreational, cultural, scenic and tourism value. The main cause of degradation of tropical forests is shifting agriculture, which leads to the loss of the natural fertility of tropical soils when the tree cover is eliminated in forest lands. After 2 or 3 crops, farmers migrate to new lands, thus perpetuating the process of rural poverty and natural resource destruction.

The project hopes to reverse this situation, at least to prevent mature '*purmas*' from being slashed, burnt and turned into agricultural areas whose productivity is exhausted before the second year, after which they are left to recover naturally. Obviously, project intervention will have some environmental impact, for example after logging, soils will be vulnerable to erosion by water, and some wildlife species will lose their shelter. However, environmental consequences are limited and may be mitigated by simple techniques, for example erosion by water may be reduced by the establishment of agroforestry plantations where the agricultural component grows much faster than the forest component and provides the necessary protection cover, in addition to funding the management of the forest. The loss of nesting sites may be at least partially offset by preserving some trees to provide wildlife with shelter and food.

Studies undertaken in Costa Rica on the dynamics and composition of secondary forest resources identified a total of 23 to 38 commercial species in different sites with basal area and volume dominance over non-commercial species. Diameter increments for the different sites ranged from 2.4 to 5.5 mm for individuals with 5cm diameters and from 3.1 to 9.2 mm for individuals with 10cm diameters. Increments improved in individuals with good stem shapes, denser leafy crowns and/or better access to light.

Bolaina (*Guazuma crinita*), a fast-growing pioneer species, is a leading secondary forest species in the Peruvian Amazon region. This species has been introduced with great success into the national market and is used to produce value-added products that have been

standardized for end-uses such as tongue and groove panels for wall linings, packaging, carpentry/joinery, furniture and timber houses. It constitutes the best example of a leading, fast-growing secondary forest species, capable of producing a large volume of quality, standardized products, with low harvesting, transport and industrial processing costs, as it does not require major industrial investments. It is a fast-growing species, with annual plantation growth rates of 3.5 m in height and 4.4 cm in width, reaching harvestable dimensions by years 8 and 9. Naturally, this species also achieves good growth rates in secondary forests, but it requires plentiful light. The same also applies to Auca atadijo (*Croton matourensis* and *C. tessmanii*), pashaco, (*Schyzolobium amazonicum*), huamanzamana (*Jacaranda copaia*), sangre de grado (*C. lechleri*), hualaja (*Zanthoxylum aprucei*) and topa (*Ochroma pyramidale*) species.

The Secondary Forest Management Project (National Forestry Chamber) was aimed at increasing the efficiency of '*purmas'* (secondary forests) so as to accelerate the recovery of soil productivity; increase the productivity and commercial value of '*purmas'* in order to generate income; manage the regeneration process so as to achieve commercial harvests in short to medium term cycles; apply forest management techniques to ensure the establishment, development and harvesting of even-age regeneration of commercial species (under a monocyclic system); achieve the enrichment of forests (as a strategy for plantation conversion); increase the availability of useful *'purma'* products for both self-consumption and sale; diversify and increase the value of supply; maintain or increase the diversity of species; increase the density of the most useful species; control competition; ensure the enrichment of forests with high value or socially useful species, etc. This technical assistance will ensure that the silvicultural treatments applied by farmers will accelerate the growth of commercially valuable species. The preliminary results observed in plots that were treated 12 months ago confirm that both height and diameter growth rates are approximately double, and even triple, the growth rates under natural conditions and that the survival rate of commercial trees is substantially higher than in other plots where '*purmas'* are naturally regenerating without human intervention. These indicators ratify the fact that forest management activities are not an expense as such, but rather an investment, as in very few years the farmers will benefit from higher incomes through the harvesting of products and services provided by forests.

The results of studies related to the management of secondary tropical forests indicate that these forests can be established through two systems: establishment of forests through natural regeneration with seeds obtained from trees found in areas surrounding the harvested forest, or from trees (seed trees) that were left standing in the harvested forest. In both cases, and when natural regeneration has been poor and/or deficient, management activities such as the establishment of additional artificial plantations (in addition to natural regeneration) of small trees or enrichment trees can considerably help to ensure a good mass of trees that will in the future represent the final harvest. Examples of the first case mentioned above have been described by Finegan (1992). The "Trinidad Protection Canopy System" modified for the management of secondary forests has been used in Costa Rica, but it only produced good results in areas where there was sufficient regeneration of desirable species. Similarly, Martinez (1979) applied natural regeneration management techniques in Sur de Florencia, Turrialba, Costa Rica, for the same purpose.

Secondary forests are extremely productive, with timber growth rates that are comparable to those of plantations established with fast-growing species (for example, Wadsworth, 1993). Furthermore, it has also been stated that secondary forests in the moist tropics can produce about 5 m^3 of timber per year.

The Ucayali region has a large number of young secondary forests that often comprise more or less even-age structures. The management of these forests makes good economic and ecological sense, it reconciles timber production with ecological functions and, despite the fact that they do not produce quality timber in comparison to primary forests, they still represent an additional source of income for forest users. The fragmentation of these forests and the proximity of agricultural lands are the causes of incursions by seed disperser and/or pollinator species, which changes the proportional presence of various tree species. Forest users, therefore, seek to find a management system (in contrast to primary forests) that will result in a forest of a more simple composition and structure, as is the secondary forest,

because in the long term this will result in a sustainable system. This even-age structure favours a monocyclic management system (clear felling in the harvesting area) for these forests, while residual primary forests maintain an uneven-age structure, under a polycyclic management system (several harvests over given periods of time, maintaining the original forest physiognomy) through thinning operations.

The aim of the polycyclic system is to increase the number of commercial species in the forest, without eliminating non-desirable species and mainly felling trees earmarked for future harvests. The system is based on establishing a felling cycle (FC), usually of 20 years, and applying the Minimum Cutting Diameter (MCD) established by INRENA. With regard to growth and mortality rates, CATIE (Sitoe, 1992) and Liebermann *et al*. indicated that a growth rate of 0.5 cm/year is a reasonable estimate and that mortality rates can be set at 1.5% per year for all diameter classes ≥ 10 cm DBH (Swaine *et al.*, 1987). The regeneration rate is a parameter that cannot yet be estimated; however, it is assumed that the experiences of the past will also be repeated in the near future.

Appropriate harvesting operations and silvicultural treatments, together with the processing industry, create the ideal conditions for a more integrated management system for secondary forests and residual primary forests, resulting in greater economic development for the people that depend on these forests.

2.8 Social aspects

Seventy-four (74) percent of the population of approximately 400,000 in the Ucayali Region lives in the capital city while the remainder is scattered over provinces, districts and hamlets. The urban population's main employment sources include mechanical timber processing, and it is estimated that forest use currently generates 7,000 direct jobs. At least 30,000 people are directly dependent on agriculture: they produce food and some natural resources, sometimes medicinal plants and small numbers of logs. Urban unemployment rates sit at 24% while in rural areas figures reach 48%.

As population density increases and there is a shortage of available lands in relation to manpower availability, farmers seek to increase the returns obtained from the land by shortening fallow periods and investing more in manpower and capital per land unit. Furthermore, the agricultural frontier expands as the population increases, land use practices show that areas closest to market centres have shorter fallow periods, and there are higher investments in manpower and capital per land unit, increased product processing and higher levels of law enforcement.

Improvements to transport systems and clear signs of market growth indicators lead to the same changes and further expand the agricultural frontier by making production viable in more distant areas. These time and space processes interact with biophysical and policy changes and result in various scenarios in which secondary forests are established and re-converted.

When the pioneer front is opened up for the first time in the forest, as a rule, it is in distant areas with a very low population density, poor transport facilities (which reduces the profitability of economic activities) and minimum social infrastructure. In view of this, settlers and migrants in these areas generally have relatively low levels of physical and human capital. There is an abundance of primary forests and, quite often, the most valuable species have been harvested by timber loggers leaving behind a residual primary forest with forest species of low or no current market value. Furthermore, land tenure in these areas is mainly insecure and manpower and capital are in scarce supply. The main objective of migrants to these areas is survival and quite often they are transitory migrants who seek to sell out and move to a new area, so it is very unlikely that they would be interested in long-term investments.

The land is progressively deforested, starting as a rule in the areas closest to access roads; however, there are still important areas of residual primary forest left. Slash and burn agriculture is the predominant practice, with a variety of fallow periods and crop sequences applied. There are increasing numbers of secondary forest areas as a result of attempts to recover agricultural productivity and farmers do not have sufficient manpower and capital to

cultivate larger areas. As a result, secondary forests are part of a mosaic of different land uses including residual primary forests.

The emerging markets stage follows the opening up of the pioneer front. This occurs when there are improvements made to transport systems, infrastructure, land tenure security and law enforcement, thus facilitating and creating market opportunities. These conditions attract a second wave of settlers who have access to relatively higher levels of physical and human capital and who can undertake activities that provide higher returns on capital and manpower than those in the early pioneer stage. Pioneer settlers who did not accumulate sufficient capital to achieve these levels of returns are forced to sell their lands and move onto another pioneer front or to urban areas. During this stage there are still important areas of residual primary forests in the various farm holdings.

An analysis of the management of tree resources in the properties of small farmers in the Pucallpa (Ucayali) region showed that they are following a strategy of varied fallow periods in the area. Tree management is generally an extensively practiced activity and timber production is considered as a future option that is normally carried out based on the natural regeneration occurring on lands used for farming activities with long fallow rotation periods, as the timber-producing trees mature over time. However, the marketing of trees is rare due to the limited availability of good commercial value timber species in the farms and the timber is only sold occasionally to satisfy special needs, due to the low prices that can be obtained. Quite often, farmers do not receive payment in cash but rather in kind. Farmers mainly value the forest as a source of construction materials and non-timber products.

According to a survey implemented by the Collaborative Research Project on Secondary Forest Management in Tropical America (PBS)/MADEBOSQUES Project – CNF CIFOR/CATIE/EMBRAPA/UNALM, with the participation of producers in the Ucayali region, the priorities expressed for carrying out harvesting activities were as follows: to harvest timber species of commercial value; to harvest timber for home use, leaves for roofing and medicinal plants; to add value to their lands; to preserve seed trees; to obtain higher levels of income; to improve the living standards of their families; to ensure the conservation of nature, soils and streams; to ensure soil rehabilitation; to protect their lands from erosion; and all initiatives aimed at ensuring ecosystem sustainability.

The management options for secondary forests and residual primary forests in the properties of farmers take into account the following socio-economic aspects: profitability projections; the need for capital, manpower, knowledge and skills; time factors, such as the biological cycle of products in relation to other tasks and rotation periods; social organization trends; the degree and complexity of processing required; and finally, competition or complementarity to other components of the production system. Furthermore, in relation to biophysical aspects, the following factors should be considered: the number of useful (timber and non-timber) species present in the forest, their abundance and productivity; the number of species that can be incorporated into the system, their size, the distribution of stands throughout the farm and throughout the general landscape; the effect of site conditions on harvesting and logging options; the complexity of silvicultural and extraction techniques; the complexity of proposed management including the need for protection; initial assessment of prospects for the ecological sustainability of production activities; and the policy-legal framework.

The high migration rate from the region of Ucayali to the Capital is basically due to the low productivity of farms in that region; currently the national, regional and local governments are making efforts to support initiatives from farmers who are already implementing production projects. The support provided is basically aimed at increasing the areas under production and/or providing assistance along the production chain, mainly through training on post-harvesting techniques, organization of producers, access to stable and permanent markets and even exports. These initiatives, however, do not benefit small farmers who, because of their limited resources, do not have the capacity to establish industrial crops or to access support programs. This results in mass migrations from rural to urban areas and, as the migrants do not have the skills that will give them access to urban based jobs, they end up living in extreme poverty, bundled together in shacks built with residual materials and exposed to all types of diseases and health hazards, in addition to the high levels of malnutrition that

are particularly prevalent among women and children. The development of profitable, income-generating activities such as the sustainable management of secondary forests and residual primary forests can help reduce this process of rural migration.

Unemployment rates may be reduced thanks to this project. Sustainable use of new timber species generates work in logging, transport, processing and marketing activities and also indirectly generates demand for goods and services. Currently some producers use natural forests of *Guazuma crinita* sustainably but most clear the forest and change land use. Through participatory forest management it will be possible to reverse this situation for the benefit of society as a whole.

The basic principle that must be followed to achieve the sustainability of tropical forests is that the wealth generated by the forest must return to the forest itself. In order to integrate the economy and forest ecology through joint mechanisms, the production capacity of forests, industry and markets must be strengthened. Forest and industrial technologies, yield and productivity increases, value added production and export earnings and benefits generate work for rural and urban populations in activities related to production, transport and sustainable forest management. These activities also generate indirect employment in the transport services sector and the production of consumer goods. Furthermore, they also generate tax revenue earnings which can be used for regional investment in basic social infrastructure, health and education services, social security benefits, etc.

2.9 Risks

- Political instability and a risk of resurgence of social upheaval in the area;
- Unavailability of financial resources at the time they are required by the work plan;
- Beneficiaries of the project are not interested or are not confident in the results of the project;
- Market niches for the proposed prototypes do not come to fruition easily.

To reduce the magnitude of the impact of identified risks, the following measures are proposed:

The project will select timber logging areas close to the city of Pucallpa which are representative of the natural range areas of the species being considered by the project, thus reducing the possibilities of a lack of access to forests. These will include, for example, the areas close to the Neshuya-Curimana and the Campo Verde-Nueva Requena roads, where important projects are being implemented by the Regional Government for the establishment of bio-fuel and cooking-oil producing species. These areas are promoting the establishment of human settlements with the help of international cooperation and there is very little risk of political instability or the resurgence of social upheaval.

Furthermore, the project will establish multi-sectoral coordination links with relevant Peruvian government agencies, public institutions, producers' organizations, civil society associations and private companies, so as to jointly confront any possible risk of a resurgence of terrorism and other social upheavals.

Financial resources will be managed through a special account, which will be under the responsibility of the project's senior technical adviser, who will need to prioritise expenses according to the approved work plan. The beneficiaries will be selected through producers' organizations with which the project will sign relevant agreements.

The study of commercial prototypes and market niches will be done through a specialised consultancy. As far as possible, guidance will be provided for public acquisitions, such as the National Program for School Furniture (folders, chairs, desks, shelving, etc.) and the 'Mi Vivienda' [*My House*] Program (doors and windows, formwork, furnishings, linings, etc.), as well as high-demand processed products in the national and export markets, particularly for bolaian (*Guazuma crinita*), which is considered to be a leading timber species that is already penetrating these markets.

Furthermore, manufacturers will receive technical assistance so that they can successfully bid for public tenders and State contracts, and production chains will be strengthened. Inter-institutional partnerships are essential to create the appropriate conditions for integration and participation in the roles and commitments required to generate positive impacts in sustainable forest and industrial development. The project will provide technical assistance and training to industrial enterprises so as

to contribute to the development and strengthening of production activities at the management, supervision and machine operators levels.

The potential risks of impacts from logging in secondary forests and residual primary forests, including the corresponding mitigation measures, are outlined below:

- **Forest logging and harvesting operations in unmanaged forests and in unauthorized areas:**

  Training and awareness campaigns will be launched so that forest users will be trained and informed about the fact that forests should be harvested in accordance with forest logging/harvesting plans, duly approved by the competent authority.

  The project will maintain coordination links with authorities from government institutions and representatives of private organizations so as to ensure the appropriate use of these forests.

  If required, the project will propose regional legislative initiatives to ensure a better regulation of logging/harvesting operations in secondary forests and residual primary forests.

  The project will support the strengthening of rural producer organizations and implement joint actions aimed at avoiding forest degradation.

- **Felling of trees below the authorized diameter (less than the Minimum Cutting Diameter – MCD):**

  In coordination with the competent authorities and the leaders of producer organizations, the project will disseminate information about minimum cutting diameters established for each species in accordance with the relevant management plans and/or legal regulations.

3. Outputs

3.1 Specific objective 1: To carry out technological studies to determine the suitability of 10 timber species frequently and abundantly found in secondary forests of the Peruvian Amazon Region.

- **Output 1.1: New timber species technologically characterised**

  Objectively verifiable indicators for this output include:
  - 15 timber species technologically characterised for identification of uses
  - 240 technical laboratory trials according to technical standards and test protocols
  - One database available to users

- **Output 1.2: Proposal of suitable conditions for primary processing**

  Objectively verifiable indicators for this output include:
  - 195 plant-based trials of technological processes **carried out with the participation of producers**
  - One database **available to users**
  - One publication containing technical sheets **available to users and for mass dissemination**

3.2 Specific Objective 2: To determine the marketing potential and market niches for SF and RPF timber species, according to their technological properties.

- **Output 2.1: Diversification of products and study of value added prototypes**

  Objectively verifiable indicators for this output include:
  - 6 secondary processing lines tested including identification of potentials and limitations
  - 12 prototypes of manufactured products developed according to national and international market trends
  - One database for mass dissemination through printed and electronic media

- **Output 2.2: Business plans for timber products made from new SF and RPF species**

  Objectively verifiable indicators for this output include:
  - 4 negotiation rounds implemented
  - 6 workshops implemented
  - 6 business proposals, each with a corresponding business plan developed and negotiated using a participatory approach on the basis of market requirements

- **Output 2.3: Development of a dissemination, training and technical assistance programme for forest enterprise management**

  Objectively verifiable indicators for this output include:
  - One mechanical processing guide for timber producers with information available to producers
  - 4 courses-workshops on secondary processing with 50 producers trained
  - One publication on project experience systematization for mass dissemination
  - One regional roundtable for the dissemination of results addressed to project beneficiaries and the public at large
  - 6 enterprise organizations have received technical assistance during the implementation of their business plans

4. Activities

4.1 Output 1.1: New timber species technically described and validated for industrial application

ACTIVITIES	INPUTS
Activity 1.1.1 Selection of trees and collection of samples	1 M/M statistics expert 1 M/M wood technology expert 1 M/M technical assistant 1 M/M forest technician 4 M/M labourer 6 Loading - transport of logs 20,000 pt 4 tickets – Air travel 12 Days – DSA 20,000 bf - Timber 1 Overall - Fuel and lubricants 1 Overall - Office supplies 1 Overall - Local transport
Activity 1.1.2 Study of primary processing, anatomical structure, physical, mechanical and chemical properties of timbers	1 M/M primary processing expert 1 M/M wood anatomy expert 1 M/M physical and mechanical wood properties expert 1 M/M chemical wood properties expert 2 M/M operator - data input 2 M/M technical assistant 2 M/M forest technician 4 tickets – Air travel 12 Days - DSA 1 Overall - Sawmilling service Sundry – Laboratory instruments
Activity 1.1.3 Study of timber natural durability, drying behaviour, preservation, primary and chemical processing	1 M/M natural durability expert 1 M/M preservation expert 1 M/M drying expert 1 M/M primary processing expert 1 M/M chemical processing expert 2 M/M technical assistant 2 M/M operator - data input 3 M/M forest technician 6 M/M labourer Artificial timber drying service Sundry – Laboratory instruments
Activity 1.1.4 Information processing, development of database and identification of potential uses	2 M/M wood technology expert 2 M/M IT expert 2 M/M technical assistant 2 M/M operator - data input 1 Overall - Fuel and lubricants 1 Overall - Office supplies 1 Overall - Local transport
Activity 1.1.5 Identification of suitable technologies for timbers	1 M/M wood technology expert 1 M/M technical assistant 2 M/M operator - data input 2 M/M forest technician 1 Overall - Fuel and lubricants 1 Overall - Office supplies

4.2 Output 1.2: Proposal of suitable conditions for primary processing

ACTIVITIES	INPUTS
Activity 1.2.1 Preparation of technical manual, forest production guide and booklet	1 technical editing sub-contract 1 graphic editing and printing sub-contract 1 Overall - Office supplies 1 Overall - Fuel and lubricants 1 Overall - Local transport
Activity 1.2.2 Organization of seminars-workshops for forest producers	10 M/D facilitator 300 rations - snacks 2 auditorium services 6 tickets – Air travel 18 Days - DSA 1 Overall - Fuel and lubricants 2 Overall - Office supplies 1 Overall - Radio/TV broadcasting 2 Services - Logistics
Activity 1.2.3 Organization of dissemination conferences	5 M/D facilitator 6 M/M presenters 0.5 M/M technical assistant 4 tickets – Air travel 12 Days - DSA 240 rations - snacks 2 auditorium services 1 Overall - Fuel and lubricants 1 Overall - Office supplies 1 Overall - Radio/TV broadcasting 1 Overall - Local transport

4.3 Output 2.1: Diversification of products and study of value-added prototypes

ACTIVITIES	INPUTS
Activity 2.1.1 Industry diagnosis for primary and secondary processing and production chain	2 M/M mechanical processing expert 2 M/M secondary processing expert 1 M/M sample statistics expert 4 M/M forest technician 32 M/M trainee university students 3 tickets – Air travel 12 Days - DSA 1 Overall - Fuel and lubricants 1 Overall - Office supplies 1 Overall - Local transport
Activity 2.1.2 Study of prototypes according to technological characterisation, aesthetic qualities and forest industry diagnosis	2 M/M furniture design expert 2 M/M technical assistant 1 Overall - Timber and inputs 1 Overall - Fuel and lubricants 1 Overall - Office supplies 1 Overall – Finishing/joining products

4.4 Output 2.2: Business plans for timber products made from new SF and RPF species

ACTIVITIES	INPUTS
Activity 2.2.1 Identification of potential niches on domestic and international markets	2 M/M marketing expert 2 M/M technical assistant 2 tickets – Air travel 8 Days - DSA 1 Overall - Fuel and lubricants 1 Overall - Office supplies
Activity 2.2.2 Development of business plans	2 M/M marketing expert 2 M/M technical assistant 2 tickets – Air travel 8 Days - DSA 1 Overall - Fuel and lubricants 1 Overall - Office supplies 1 Overall - Local transport

4.5 Output 2.3: Development of a dissemination, training and technical assistance programme for forest enterprise management

ACTIVITIES	INPUTS
Activity 2.3.1 Preparation of technical sheets and booklet	1 M/M wood technology expert 1 M/M technical assistant 1 technical editing sub-contract 1 graphic editing and printing sub-contract 1 Overall - Office supplies 1 Overall - Fuel and lubricants 1 Overall - Local transport
Activity 2.3.2 Organization of conferences for the dissemination of results	10 M/D facilitator 12 M/M presenters 1 M/M technical assistant 4 tickets – Air travel 16 Days - DSA 320 Rations - snacks 4 auditorium services 1 Overall - Fuel and lubricants 1 Overall - Office supplies 1 Overall - Radio/TV broadcasting 4 Services - Logistics
Activity 2.3.3 Organization of seminars-workshops for dissemination to producers	20 M/D facilitator 600 Rations - snacks 4 auditorium services 4 tickets – Air travel 12 Days - DSA 1 Overall - Fuel and lubricants 1 Overall - Office supplies 1 Overall - Radio/TV broadcasting 4 Services - Logistics

5. Logical framework worksheets

Project Elements	Indicators	Means of Verification	Assumptions
Development objective.- To contribute to sustainable harvesting and use of timber species from secondary forests and residual primary forests, integrating them into the national economy and improving the quality of life of the Amazon communities	• 10 ecologically important timber species from SF and RPF are marketed on the domestic market and 4 of these are required for export • 3 enterprise organizations of agricultural producers are organised • 3 mechanical processing companies use the technologies developed by the project	• Statistical production and export data from INRENA and PRODUCE • Records of the Chamber of Commerce and Industry • Forest authorisations issued by INRENA • Statistical data from SUNAT • Project Reports	• Forest company and producer reception of and confidence in the outcomes of the project • Market trends hold for forest timber products • National and regional policies are still favourable to forest development
Specific Objective 1 To carry out technological studies to determine the suitability of 10 timber species frequently and abundantly found in secondary forests of the Peruvian Amazon Region	• 1 technological characterisation study on 10 major timber species of SF and RPF • 10 technical documents for primary and secondary processing	• Technical report • Technical industrial plant manual • Guide for industrial production • Brochures /booklets	• Mechanical timber processing companies are willing to be involved in studies and to adopt project results
Specific Objective 2 To determine the marketing potential and market niches for SF and RPF timber species, according to their technological properties	• 1 study of domestic and international commercial potential and market niches for 10 timber species promoted by the project	• Technical report	• Opening of the market to demand lesser known timber species from SF and RPF
Outputs for objective 1			
Output 1.1 New timber species technologically characterised	• 15 timber species characterised • 240 technological lab trials • One database	• Technical reports • Electronic records	• Availability of equipment and human resources
Output 1.2 Proposal of suitable conditions for primary processing	• 195 plant-based trials of technological processes • One database • One publication containing technical sheets	• Technical reports • Electronic records • Published document	• Availability of equipment and human resources

Project Elements	Indicators	Means of Verification	Assumptions
Outputs for objective 2			
Output 2.1 Diversification of products and study of value added prototypes	• 6 secondary processing lines have been tested • 12 prototypes of manufactured products have been developed • One database	• Technical reports • Sets of plans • Prototype models	• Availability of highly qualified professionals
Output 2.2 Business plans for timber products made from new SF and RPF species	• 4 negotiation rounds conducted • 6 workshops implemented • 6 business proposals	• Reports of events • Photographic images • Business documents	• Companies willing to introduce SF and RPF species among their products
Output 2.3 Development of a dissemination, training and technical assistance programme for forest enterprise management	• One technical processing guide • 4 workshops /courses: secondary processing • One systematisation publication • One roundtable: dissemination of results • 6 enterprise organizations receiving technical assistance	• Published documents • Reports of events • Photographic images • Attendance records • Technical assistance reports	• Producers and industrialists motivated to participate in actions promoted by the project

6. Work Plan

OUTPUT/ACTIVITIES	RESPONSIBLE PARTY	SCHEDULE (in months)																							
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Output 1.1: New timber species technologically characterised																									
1.1.1 Selection of trees and collection…	For. Ind. Exp.																								
1.1.2 Processing study…	For. Ind. Exp.																								
1.1.3 Natural durability study…	For. Ind. Exp.																								
1.1.4 Information processing…	For. Ind. Exp.																								
1.1.5 Identification of technologies…	For. Ind. Exp.																								
Output 1.2: Proposal of suitable conditions for primary processing																									
1.2.1 Preparation of technical manual…	Director																								
1.2.2 Organization of two seminars…	Director																								
1.2.3 Organization of conferences…	Director																								
Output 2.1: Diversification of products and study of value added prototypes																									
2.1.1 Diagnosis of industry…	For. Ind. Exp.																								
2.1.2 Study of prototypes…	For. Ind. Exp.																								
Output 2.2: Business plans for timber products made from new SF and RPF species																									
2.2.1 Identification of market niches…	Economist																								
2.2.2 Preparation of business plans…	Economist																								
Output 2.3: Development of a dissemination, training and technical assistance programme for forest enterprise management																									
2.3.1 Preparation of tech. data…	Director																								
2.3.2 Organization of conferences…	Director																								
2.3.3 Organization of seminars-workshops…	Director																								

7. Budget

7.1 Project budget by component

The total value of the project is **US$ 691,992** which will be covered by national counterpart contributions of **US$ 293,475** and a non-refundable ITTO contribution of **US$ 398,517**. The tables below show the overall consolidated yearly budget by component and the overall consolidated budget by source in US dollars.

CONSOLIDATED YEARLY PROJECT BUDGET

Budget Components US$			TOTAL	YEAR 1	YEAR 2
10.	Project personnel				
	11.	National Experts			
		11.1 Project Director	72,000	36,000	36,000
		11.2 National Coordinator	36,000	18,000	18,000
		11.3 Area Officers in charge	60,000	30,000	30,000
		11.4 Regional Coordinator	24,000	12,000	12,000
	12.	National consultants			
		12.2 Forest industry expert	40,000	32,333	7,667
		12.3 Statistics expert	4,000	3,667	333
		12.4 Economist	8,000		8,000
		12.5 IT expert	2,000	2,000	
		12.6 Facilitator/Presenter	5,040		5,040
		12.7 Project Evaluation expert	5,000	5,000	
	13.	Other labour			
		13.1 Technical assistant	13,200	6,267	6,933
		13.2 Operator - data input	3,200	3,067	133
		13.3 Training experts			
		13.4 Forest technician	8,400	7,700	700
		13.5 Labourer	3,000	3,000	
		13.6 Trainee university students	5,120	4,267	853
	19.	Component Total	**288,960**	**163,300**	**125,660**
20.	Sub-contracts				
	22.	Sub-contract - technical editing	2,500		2,500
	23.	Sub-contract - graphic editing and printing	6,000		6,000
	29.	Component Total	**8,500**		**8,500**
30.	Duty Travel				
	31.	DSA	4,640	1,600	3,040
	33.	Transport costs	13,750	6,412	7,338
	39.	Component Total	**18,390**	**8,012**	**10,378**
40.	Capital Items				
	44.	Capital equipment	142,739	142,739	
	49.	Component Total	**142,739**	**142,739**	
50.	Consumable Items				
	51	Raw materials	1,000	1,000	
	52.	Spares	2,400	1,200	1,200
	53.	Fuel and utilities	16,550	8,250	8,300
	54.	Office supplies	1,840	737	1,103
	55.	Laboratory materials	23,780	23,780	
	59.	Component Total	**45,570**	**34,967**	**10,603**
60.	Miscellaneous				
	61.	Sundry	35,730	19,340	16,390
	62.	Auditing	4,000	2,000	2,000
	69.	Component Total	**39,730**	**21,340**	**18,390**
70.	Executing Agency Management Costs				
	79.	Component Total	**81,583**	**55,554**	**26,030**
	SUB-TOTAL		**625,472**	**425,911**	**199,561**
80.	ITTO administration, monitoring and evaluation				
	81.	Monitoring and review costs	25,000		
	82.	Evaluation costs	12,000		
	83.	Programme support costs	29,520		
	89.	Component Total	**66,520**		
100.	GRAND TOTAL		**691,992**		

OVERALL PROJECT BUDGET BY ACTIVITY

OUTPUT/ACTIVITIES/Non-activity based expenses	BUDGET COMPONENTS							
	10. Project personnel	20. Sub-Contracts	30. Duty Travel	40. Capital Items	50. Consumable Items	60. Miscella-neous	Quarter /Year	TOTAL
Output 1.1 New timber species are technically described and validated for industrial application								
Activity 1.1.1 Selection of trees and collection...	5,900 (i) 800 (e)		2,040 (i)		200 (i) 1,000 (e)	100 (e)	Q1-Y1	8,140 (i) 1,900 (e)
Activity 1.1.2 Study of primary processing, anatomical structure, physical-mechanical properties…	10,200 (i) 1,600 (e)		1,320 (i)	29,914 (i) 62,879 (e)	17,681 (i)	1,200 (i) 6,000 (e)	Q1+Q2+ Q3-Y1	60,315 (i) 70,479 (e)
Activity 1.1.3 Study of natural durability, drying behaviour, preservation, processing…	11,800 (i) 4,500 (e)		660 (i)	7,063 (i) 12,883 (e)	6,889 (i) 100 (e)	640 (i) 1,400 (e)	Q3+Q4-Y1	27,052 (i) 18,883 (e)
Activity 1.1.4 Information processing, preparation of database and identification of potential uses	8,400 (i)				280 (i)	100 (i)	Y1	8,780 (i)
Activity 1.1.5 Identification of suitable technologies for 10 timber species	4,200 (i) 800 (e)				200 (i) 100 (e)		Q3+Q4-Y1, Q1-Y2	4,400 900 (e)
Sub-total 2.1	40,500 (i) 7,700 (e)		4,020 (i)	36,977 (i) 75,762 (e)	25,250 (i) 1,200 (e)	1,940 (i) 7,500 (e)		108,687 (i) 92,162 (e)
Output 1.2: Proposal of suitable conditions for primary processing disseminated to the production sector								
Activity 1.2.1 Preparation of a technical manual, a forest production guide…		7,000 (i)			220 (i)	50 (i)	Q1-Y1	7,270 (i)
Activity 1.2.2 Organization of two seminars-workshops for producers…	800 (e)		1,980 (i)		400 (i)	700 (i) 320 (e)	Q1+Q2-Y2	3,080 (i) 1,120 (e)
Activity 1.2.3 Organization of two dissemination conferences	1,280 (e)		1,320 (i)		110 (i)	680 (i) 120 (e)	Q2-Y2	2,110 (i) 1,400 (e)
Sub-total 2.2	2,080 (e)	7,000 (i)	3,300 (i)		730 (i)	1,430 (i) 440 (e)		12,460 (i) 2,520 (e)
Output 2.1: Diversification of products and study of value added prototypes								
Activity 2.1.1 Diagnosis of the primary and secondary processing industry and production chain…	17,920 (e)		1,910 (i)		200 (i)		Q3+Q4-Y1, Q1-Y2	2,110 (i) 17,920 (e)
Activity 2.1.2 Study of prototypes according to technical characterisation, aesthetic qualities …	5,600 (i)				250 (i)	700 (i)	Q1+Q2-Y2	6,550 (i)
Sub-total 3.1	5,600 (i) 17,920 (e)		1,910 (i)		450 (i)	700 (i)		8,660 (i) 17,920 (e)

OUTPUT/ACTIVITIES/Non-activity based expenses	BUDGET COMPONENTS							
	10. Project personnel	20. Sub-Contracts	30. Duty Travel	40. Capital Items	50. Consumable Items	60. Miscella-neous	Quarter /Year	TOTAL
Output 2.2: Business plans for timber products made from new SF and RPF species								
Activity 2.2.1 Identification of potential niches on domestic and international markets…	4,000 (i) 1,600 (e)		740 (i)		100 (i)	100 (i)	Q2-Y2	4,940 (i) 1,600 (e)
Activity 2.2.2 Development of business plans	5,600 (i)		740 (i)		80 (i)	300 (i)	Q2+Q3-Y2	6,720 (i)
Sub-total 3.2	9,600 (i) 1,600 (e)		1,480 (i)		180 (i)	400 (i)		11,660 (i) 1,600 (e)
Output 2.3: Development of a dissemination, training and technical advisory programme for forest business management								
Activity 2.3.1 Preparation of a technical card and booklet	2,400 (i) 400 (e)	1,500 (i)	80 (i)		200 (i)		Q3-A2	4,180 (i) 400 (e)
Activity 2.3.2 Organization of four conferences for the dissemination of results	1,280 (i) 1,280 (e)		1,480 (i)		110 (i) 50 (e)	1,160 (i) 320 (e)	Q3-Y2	4,030 (i) 1,650 (e)
Activity 2.3.3 Organization of four seminars-workshops for dissemination to producers…	1,600 (e)		1,320 (i)		400 (i) 200 (e)	1,600 (i) 440 (e)	Q4-Y2	3,320 (i) 2,240 (e)
Sub-total 3.3	3,680 (i) 3,280 (e)	1,500 (i)	2,880 (i)		710 (i) 250 (e)	2,760 (i) 760 (e)		11,530 (i) 4,290 (e)
NON-ACTIVITY BASED EXPENSES								
M/M - PROJECT DIRECTOR	72,000 (i)							72,000 (i)
M/M - Coordinator AIDER	36,000 (e)							36,000 (e)
M/M Local Coordinator	60,000 (i)							60,000 (i)
M/M Regional Coordinator	24,000 (e)							24,000 (e)
Months - Utilities					7,200 (i) 7,200 (e)			7,200 (i) 7,200 (e)
Auditing						4,000 (e)		4,000 (e)
Consultant in project evaluation	5,000 (i)							5,000 (i)
Dual cab. 4-wheel drive truck				30,000 (i)				30,000 (i)
Overall - Fuel – lubricants			3,200 (i) 1,600 (e)					3,200 (i) 1,600 (e)

OUTPUT/ACTIVITIES/Non-activity based expenses	BUDGET COMPONENTS							
	10. Project personnel	20. Sub-Contracts	30. Duty Travel	40. Capital Items	50. Consumable Items	60. Miscella-neous	Quarter /Year	TOTAL
Months Office space (3)						19,800 (e)		19,800 (e)
Overall - Computer spares and supplies					1,600 (i) 800 (e)			1,600 (i) 800 (e)
Sub-total	137,000 (i) 60,000 (e)		3,200 (i) 1,600 (e)	30,000 (i)	8,800 (i) 8,000 (e)	23,800 (e)		179,000 (i) 93,400 (e)
Sub- Total (I) Sub-total (E)	196,380 (i) 92,580 (e)	8,500 (i) 0	16,790 (i) 1,600 (e)	66,977 (i) 75,762 (e)	36,120 (i) 9,450 (e)	7,230 (i) 32,500 (e)		331,997 (i) 211,892 (e)
TOTAL	288,960	8,500	18,390	142,739	45,570	39,730		543,889

(I) - ITTO Contribution (E) – Contribution of national organisations

7.2 Project budget by year and by source

ITTO

Annual disbursements Budget Component	TOTAL	YEAR 1	YEAR 2
10. Project personnel	**196,380**	110,800	85,580
20. Sub-contracts	**8,500**		8,500
30. Duty Travel	**16,790**	7,212	9,578
40. Capital Items	**66,977**	66,977	
50. Consumable Items	**36,120**	29,783	6,337
60. Miscellaneous	**7,230**	1,940	5,290
Sub Total 1	**331,997**	**216,712**	**115,285**
80. ITTO admin., monitoring and evaluation			
81 Monitoring and review costs	**25,000**		
82 Evaluation costs	**12,000**		
Sub Total 2	**368,997**		
83 Programme support costs (8% of Subtotal 2)	**29,520**		
90. Refund of pre project costs			
ITTO TOTAL	**398,517**		

AIDER – UNU

Annual disbursements Budget Component	TOTAL	YEAR 1	YEAR 2
10. Project personnel	**92,580**	52,500	40,080
20. Sub-contracts	**0**	0	0
30. Duty Travel	**1,600**	800	800
40. Capital Items	**75,762**	75,762	0
50. Consumable Items	**9,450**	5,183	4,267
60. Miscellaneous	**32,500**	19,400	13,100
70. Executing Agency Management Costs (15% of overall project budget by activity)	**81,583**	55,554	26,030
EXECUTING AGENCY/HOST GOV'T TOTAL	**293,475**	209,199	84,276

CONSOLIDATED YEARLY PROJECT BUDGET – ITTO

Budget components			TOTAL	YEAR 1	YEAR 2
10.	Project personnel				
	11.	National Experts			
		11.1 Project Director	72,000	36,000	36,000
		11.2 National Coordinator			
		11.3 Area Officers in charge	60,000	30,000	30,000
		11.4 Regional Coordinator			
	12.	National consultants			
		12.1 Forest Management Expert			
		12.2 Forest industry expert	32,000	25,667	6,333
		12.3 Statistics expert	2,000	2,000	
		12.4 Economist	8,000		8,000
		12.5 IT expert	2,000	2,000	
		12.6 Facilitator/Presenter	880		880
		12.7 Project Evaluation expert	5,000	5,000	
	13.	Other labour			
		13.1 Technical Assistant	6,000	1,933	4,067
		13.2 Operator - data input	2,000	1,933	67
		13.3 Training experts			
		13.4 Forest technician	3,500	3,267	233
		13.5 Labourer	3,000	3,000	0
		13.6 Trainee university students			
	19.	Component Total	**196,380**	**110,800**	**85,580**
20.	Sub-contracts				
	21.	Sub-contract - Forest inventories			
	22.	Sub-contract - technical editing	2,500		2,500
	23.	sub-contract - graphic editing and printing	6,000		6,000
	29.	Component Total	**8,500**		**8,500**
30.	Duty Travel				
	31.	DSA	4,640	1,600	3,040
	33.	Transport costs	12,150	5,612	6,538
	39.	Component Total	**16,790**	**7,212**	**9,578**
40.	Capital Items				
	44.	Capital equipment	66,977	66,977	
	49.	Component Total	**66,977**	**66,977**	
50.	Consumable Items				
	51	Raw material			
	52.	Spares	1,600	800	800
	53.	Fuel and utilities	9,250	4,550	4,700
	54.	Office supplies	1,490	653	837
	55.	Laboratory materials	23,780	23,780	0
	59.	Component Total	**36,120**	**29,783**	**6,337**
60.	Miscellaneous				
	61.	Sundry	7,230	1,940	5,290
	62.	Auditing			
	69.	Component Total	**7,230**	**1,940**	**5,290**
70.	Executing Agency Management Costs				
	79.	Component Total			
	SUB-TOTAL		**331,997**	**216,712**	**115,285**
80.	ITTO administration, monitoring and evaluation				
	81.	Monitoring and review costs	25,000		
	82.	Evaluation costs	12,000		
	83.	Programme support costs	29,520		
	89.	Component Total	**66,520**		
100.	**TOTAL**		**398,517**		

YEARLY CONSOLIDATED PROJECT BUDGET – AIDER/UNU

Budget components			TOTAL	YEAR 1	YEAR 2
10.	Project personnel				
	11.	National Experts			
		11.1 Project Director			
		11.2 National Coordinator	36,000	18,000	18,000
		11.3 Area Officers in charge			
		11.4 Regional Coordinator	24,000	12,000	12,000
	12.	National consultants			
		12.1 Forest Management Expert			
		12.2 Forest industry expert	8,000	6,667	1,333
		12.3 Statistics expert	2,000	1,667	333
		12.4 Economist			
		12.5 IT expert			
		12.6 Facilitator/Presenter	4,160		4,160
		12.7 Project Evaluation expert			
	13.	Other labour			
		13.1 Technical Assistant	7,200	4,333	2,867
		13.2 Operator - data input	1,200	1,133	67
		13.3 Training experts			
		13.4 Forest technician	4,900	4,433	467
		13.5 Labourer			
		13.6 Trainee university students	5,120	4,267	853
	19.	Component Total	**92,580**	**52,500**	**40,080**
20.	Sub-contracts				
	21.	Sub-contract - Forest inventories			
	22.	Sub-contract - technical editing			
	23.	sub-contract - graphic editing and printing			
	29.	Component Total			
30.	Duty Travel				
	31.	DSA			
	33.	Transport costs	1,600	800	800
	39.	Component Total	**1,600**	**800**	**800**
40.	Capital Items				
	44.	Capital equipment	75,762	75,762	
	49.	Component Total	**75,762**	**75,762**	
50.	Consumable Items				
	51	Raw material	1,000	1,000	
	52.	Spares	800	400	400
	53.	Fuel and utilities	7,300	3,700	3,600
	54.	Office supplies	350	83	267
	55.	Laboratory materials			
	59.	Component Total	**9,450**	**5,183**	**4,267**
60.	Miscellaneous				
	61.	Sundry	28,500	17,400	11,100
	62.	Auditing	4,000	2,000	2,000
	69.	Component Total	**32,500**	**19,400**	**13,100**
70.	Executing Agency Management Costs				
	79.	Component Total	**81,583**	**55,554**	**26,030**
	SUB-TOTAL		**293,475**	**209,199**	**84,276**
80.	ITTO administration, monitoring and evaluation				
	81.	Monitoring and review costs			
	82.	Evaluation costs			
	83.	Programme support costs			
	89.	Component Total			
100.	**TOTAL**		**293,475**		

PART III: OPERATIONAL ARRANGEMENTS

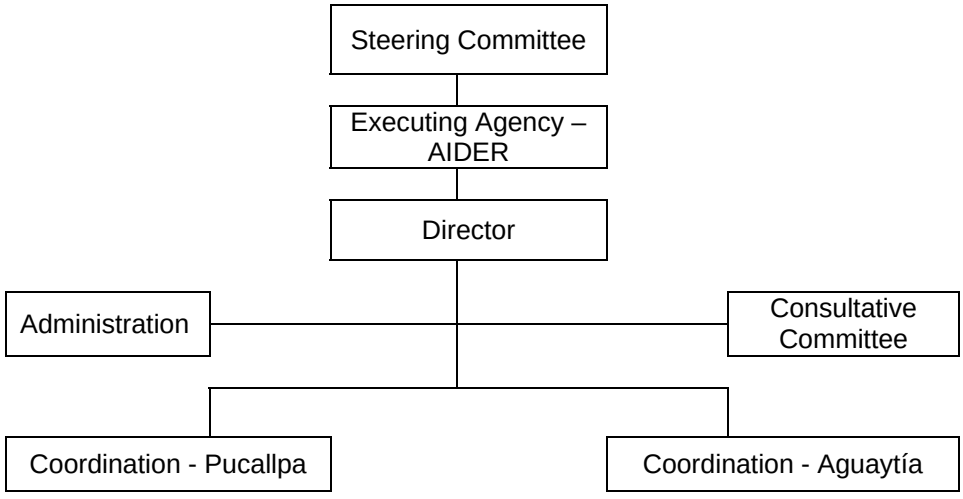
1. Management structure

The top hierarchy of the project will be the Steering Committee, consisting of a representative from each of the following institutions: Association for Integrated Research and Development – AIDER as the chair of the Committee, the International Tropical Timber Organisation (ITTO), the National Institute for Natural Resources (INRENA) and the National University of Ucayali – UNU; the Project Director will only have a secretarial role.

The project will be implemented in the Ucayali region, with administrative offices in Pucallpa and Aguaytía; the former will be the main headquarters and will be located in the AIDER premises in that city.

A Consultative Council in Pucallpa will have a supporting role; to this end, besides the institutions already making up the Steering Committee, an invitation will be issued to organizations from the Region, that are related with forest development issues, both from the private and the public sectors, such as the Wood Technology Innovation Centre (Centro de Innovación Tecnológica de la Madera) – CITEMadera Pucallpa, the Forest Managers Association of the Neshiya-Curimaná Road (Asociación de Manejadores de Bosques de la Carretera Neshiya-Curimaná – AMABOSQUES), the National Institute for Agrarian Research (Instituto Nacional de Investigación Agraria – INIA), the Peruvian Amazon Research Institute (Instituto de Investigaciones de la Amazonia Peruana – IIAP), the National Forestry Chamber (Cámara Nacional Forestal – CNF), the National Intercultural University of Amazonia (Universidad Nacional Intercultural de Amazonia – UNIA), the Forest Producers Association of Ucayali (Asociación de Productores Forestales de Ucayali – APROFU), the Forest Concessionaires Association of Ucayali (Asociación de Concesionarios Forestales de Ucayali – ACOFU), FONDEBOSQUE, the Regional Directorate of Agriculture, the Regional Director of the Ministry for Production – PRODUCE, PRONATURALEZA, the Society of Engineers of Peru (Colegio de Ingenieros del Perú – CIP), and other representative bodies.

The Executing Agency in charge of managing the project will be AIDER, which will implement the activities in cooperation with UNU and INRENA. The project's organisational structure is shown in the following flowchart:



2. Monitoring, Reporting and Evaluation

This project proposal envisages monitoring, reporting and evaluation activities both in relation to the commitments with the financing organisation, ITTO, and with the Executing Agency, AIDER.

a) Steering Committee visits for monitoring and review

Representatives of ITTO will make mid-term monitoring and review visits and a final visit at the end of the project. The dates of these visits will be jointly agreed.

b) Reports

ITTO will receive six-monthly progress reports; two technical reports, one at the end of the first year of the project and one at the end of the project. Each report will include the monitoring of indicators. Reports will be submitted during the month following the end of the respective period. Each will include information on the Work Plan, the indicators of specific objectives and outputs achieved, as well as the respective economic-financial reports including expenses incurred. The first six-monthly report will include baseline indicators. The reports will follow the format stipulated by ITTO in the ITTO Manual for Project Formulation.

Most information needed to check compliance with the indicators will be collected by the project team. Six-monthly technical meetings will be held by the technical team of the project to gather the information needed for the reports, and to systematise experiences and lessons learnt.

c) Evaluation

The project may be subject to any type of evaluation deemed appropriate by ITTO. The date of the evaluation will be jointly agreed between ITTO and the project management, and the terms of reference will be jointly developed by project personnel and the Evaluation Mission.

In view of the nature of the project, i.e. contributing to sustainable use and utilisation of secondary and residual primary forests in order to integrate them into the national economy, the project shall contract the services of expert consultants in participatory assessment for the respective mid-term and final evaluations of the project.

3. Future Operation and Maintenance

Project outcomes will be transferred to the beneficiaries through seminars-workshops, conferences, manuals, production guides and brochures. They will also be presented in two existing electronic platforms - SIFORESTAL of the Peruvian Amazon Research Institute, connected to the institutional web, and two additional ones: BIODAMAZ and SITURISMO; the other platform is the PROAMAZONIA project of the Ministry of Agriculture and the website of the National University of Ucayali. Thus, project outcomes will be disseminated both nationally and internationally. Furthermore, the professional staff that will implement the project will be available to users for additional consultations and enquiries, either in person or via Internet, etc. The equipment purchased with project funding will be the responsibility of the National University of Ucayali and AIDER with a view to similar ongoing work.

PART IV: TROPICAL TIMBER FRAMEWORK

1. Compliance with ITTA, 1 Objectives 1994

The project is consistent with the following ITTA Objectives:

c). To contribute to sustainable management of tropical forests, by directing the pressure of demand for timber resources towards secondary forests, thus facilitating the restoration of logged-over primary forests, and their enrichment through reforestation, as provided in the current legislation, as well as maintaining the sustainability of original high-value species. The project will also help increase the number of species currently used and diversify the sustainable use of natural forests.

d). To enhance the national capacity to implement sustainable production of timber products and their exports, using managed secondary forest resources and managing selected, highly productive species.

e). To promote the expansion and diversification of international trade in tropical timber from sustainable sources. The project will achieve this through the forest management component that validates successful silvicultural methods and producer training. On some environmentally sensitive markets, products manufactured with timber from managed forests have an advantage; another advantage is the increase of demand resulting from the preference for biological origin products that do not contain carcinogenic agents.

f). To promote and support forest research with a view to improving forest management and efficiency of wood utilization as well as increasing the capacity to conserve and enhance other forest values such as environmental services whose effects are spread worldwide.

g). To develop mechanisms to generate new knowledge applicable to new resources and to increase forest productivity through sustainable management and diversification of commercial prototypes.

h). To improve market intelligence with a view to ensuring greater transparency on the international timber market, including the gathering, compilation, and dissemination of trade related data, through the proposed mechanisms such as identification of reliable information on market niches and potential markets, and an electronic platform system for national and international information.

i). To promote increased and further processing of tropical timber from sustainable sources in producing member countries with a view to promoting their industrialization and thereby increasing their employment opportunities and non-traditional export earnings, which can be achieved by defining suitability for various uses, prototypes and market niches for new timber species.

j). To encourage members to support and develop tropical timber reforestation and forest management activities as well as rehabilitation of degraded forest land, with due regard for the interests of local communities dependent on forest resources. Fast developing species have been selected, which will generate income in the medium term, are easily managed and may be planted in unprotected areas such as early-stage secondary forests. In addition, these species are able to develop even in degraded and acidic soils. A change in the local communities' attitude is also expected, once they realise that native resources can provide them with additional income, help recover the natural fertility of Amazon soils, and have the ability to generate environmental services.

2. Compliance with Action Plan ITTO

The project is related to the Permanent Committee on Forest Industry. It is framed in the context of the priorities for research, extension and human resource development. The proposed activities include:

- Support laboratory research on new species and products;
- Support industrial trials and pilot production;
- Support extension, training and dissemination programmes through short technical courses targeting secondary processing industries.

ANNEXES

ANNEX A – Profile of the executing agency

ASSOCIATION FOR INTEGRATED RESEARCH AND DEVELOPMENT - AIDER

Address: Av. Jorge Basadre 180 Dpto. 6, San Isidro, Lima 27, Peru
Telephone: (511) 4215835
Fax: (511) 6287088
Email: lima@aider.com.pe
Website: www.aider.com.pe

The Association for Integrated Research and Development (Asociación para la Investigación y el Desarrollo Integral – AIDER) is a non-profit non-governmental organization whose mission is to help improve the quality of life of the lower income sectors of the population, through technical and production proposals with a view to achieving biodiversity conservation. Its major activities include:

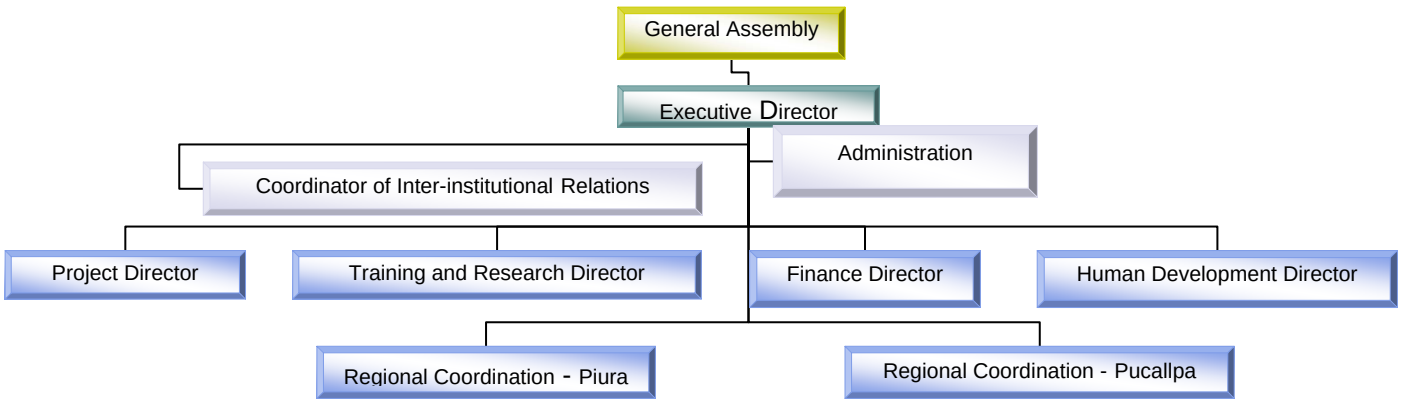
- Formulation, implementation and assessment of integrated participatory development and investment projects.
- Development of technical and operational capacity as well as organisational management capacity, consulting services and technical assistance.
- Preparation and leadership of forest management plans.
- Moderation of evaluation processes toward Forest Certification, according to Forest Stewardship Council (FSC) principles and criteria.
- Training and technical assistance for eco-business implementation.
- Inclusion of gender equality and multiculturalism in development projects.
- Training in Environmental Education within development projects.
- Design and implementation of Planning, Monitoring and Evaluation Systems.
- Training of community extension workers in forest activity and environmental services.
- Training workshops for leaders and managerial staff.
- Formulation and implementation of Community Development Plans.
- Social and business organization tailored for the cultural characteristics of the members.
- Design of technical training systems, plans and modules.
- Development of forest business work plans

The Management of AIDER is headquartered in Lima, capital of Peru, and also has a Regional Coordination Office in the city of Pucallpa, capital of the Ucayali region, where this proposal will be implemented.

Legal representatives:

- Chairperson: Mario Palomares de Los Santos
- Executive Director: Jaime Nalvarte Armas

Organisational Flowchart:



The main projects implemented by AIDER in recent years include:

Project Name	Duration	Amount funded (US$)	Source of finance
Pre-project: Promotion and Forest Development by Native Communities of Peru	To begin in 2008	56,538	ITTO
Partial administration in the National Reserve of Tambopata and the Bahuaja Sonene National Park	2008-2015	7,800,000	Project GPAN SFM BAM SAC
Afforestation and reforestation project in the provinces of Oyón and Huaura (Lima)	2008-2010	1,000,000	Mining company Los Quenuales
Sustainable forest management in three certified native communities	2008-2009	72,000	Fondo Flamenco para el Bosque Tropical
Description of genetic variability and oil content of *piñón* seeds	2008-2010	75,000	INCAGRO
Regional integration for the MAS and Control of Desertification in Ecuador and Peru	2007-2011	2,800,000	European Union
Promotion and Forest Development by Native Communities of Peru	2008	56,538	INTERNATIONAL TROPICAL TIMBER ORGANIZATION (ITTO)
Reforestation in restored degraded areas of the Peruvian Amazon Region	2006-2007	30,000	FORMA Project
Reforestation of dry forests, sustainable production and carbon sequestration	2006-2007	30,000	FORMA Project
Integrated use of certified apiculture in C. Portillo and P. Abad	2006-2008	160,733	Fund of the Americas Regional Government of Ucayali
Consolidation of voluntary forest certification under the Forest Stewardship Scheme	2006	100,000	WWF
Consolidation of FSC certification in forests managed by micro-enterprises	2006	18,000	FIAC - COPEME
Technical improvement for *shipiba* pottery production	2005-2007	124,000	Regional Government of Ucayali
Development of Fish Farming and Apiculture in Aguaytía and Curimaná	2005-2007	83,798	Aguaytía Energy
Reforestation, sustainable production and carbon sequestration in Piura	2005-2007	100,000	Fund of the Americas
Conservation of Amazon medicinal plants as an element of forest management in indigenous communities	2005-2006	49,465	Global Environmental Facility of the World Bank (GEF)
Forest management by small farmers	2005-2008	182,000	European Union
'Jemabaon Nii' Managing community forests for poverty alleviation	2003-2005	1,664,764	Royal Embassy of the Netherlands
Reforestation model in degraded areas with a view to certification for future sale	2004- 2006	403,970	FONDAM, regional government of Ucayali, BAM S.A.C.

Information on the collaborating institution: National University of Ucayali – UNU

UNU is headquartered in the city of Pucallpa. The university campus covers 154 hectares. It has an experimental area for forest research that covers 2,500 hectares located in the Alexander von Humboldt National Forest, where there are primary and secondary forests and conversion areas. Furthermore, it has laboratories for the study of timber anatomy, physical and mechanical wood properties, a universal press and accessories, processing software, a wood chemistry laboratory, and a forest product laboratory for chemical processing. It also has a joinery with a bandsaw, thicknesser, planer, router, lathe, etc. There is also a plot to test natural wood durability; a covered area for natural drying tests; and a room for wood briquette testing. The institution has 24 staff researchers, and 8 of these are wood technology specialists.

ANNEX B – Curricula vitae of the key staff

The terms of reference for the project key staff are given below. The required staff to be covered by ITTO's contribution will be recruited after a competitive selection and evaluation process conducted by a committee specifically set up for that purpose. The National Coordinator and Regional Coordinator will be staff members of AIDER who will be assigned to the project.

TERMS OF REFERENCE FOR THE PROJECT DIRECTOR

A. Qualifications

- Accredited forest engineer.
- Preferably advanced academic degree.
- 10 years minimum experience in formulation and implementation of forest industry development projects, technical timber research, and forest management, leadership skills and good verbal and written communication skills.
- Experience with international technical cooperation projects

B. Duties

- Leading project implementation at the technical and administrative levels
- Leading project activities in close coordination with UNU
- Representing the project at local and national events
- Promoting and organising inter-institutional meetings
- Managing the project, fulfilling the timely preparation and delivery of reports, operational plans and other project documents in accordance with the ITTO Manual for Project Formulation

TERMS OF REFERENCE FOR THE LOCAL COORDINATOR - AGUAYTIA

One forest professional will be recruited and will be assigned to the Aguaytía area. He/she will have the following qualifications and responsibilities:

A. Qualifications

- Accredited forest engineer.
- 5 years minimum experience in the implementation of rural development projects with forest product management and processing; and good verbal and written communication skills.
- Experience with international technical cooperation projects

B. Duties

- Coordination with the Director on methodologies and implementation of activities planned for the project in their respective areas
- Implementation of project actions in their areas
- Supporting project consultants in the implementation of their activities in their areas
- Representing the project in their areas.
- Promoting and organising events and working meetings in their areas

CURRICULUM VITAE OF THE NATIONAL COORDINATOR – AIDER PERSONNEL

Proposed officer: Ing. Jaime Guillermo Nalvarte Armas

General information:

Date of birth: 22 May 1959
Nationality: Peruvian
National ID: 07336918
Membership to professional associations: Peruvian Society of Engineers – CIP #27209

Higher education:

- Higher education degree: National Agrarian University of La Molina. 1979-1983, Forest Engineer.
- Master's Degree in Forestry and Management of Natural Resources. 2004-2005, Postgraduate School of the National Agrarian University of La Molina.

Work experience:

Current position: Executive Director of the Association for Integrated Research and Development (AIDER).

1997-2000: Technical Adviser to the Commission for the Promotion of Private Concessions, Special Committee for the Permanent Forest Estate Biabo-Cordillera Azul National Forest.

1994-1999: Chairman of the Forest Engineering Chapter, Departmental Council of Lima, Peruvian Society of Forest Engineers.

1988-1991: Forest Monitoring and Control Director, General Forest and Wildlife Directorate, Ministry of Agriculture. Director, Training Department of the General Forest and Wildlife Directorate. Guest Professor, National Agrarian University of La Molina, Faculty of Forestry, Forest Policy, Legislation and Administration Programme.

1987: Director, National Reforestation Project (PSA), National Forest and Wildlife Institute (INFOR), Ministry of Agriculture.

1984-1986: National Coordinator of the Agreement between the National Forest and Wildlife Institute and the Special Project of the Agricultural Sectoral Programme, Ministry of Agriculture.

Main consultancy work:

June 2007: Identification of the potential for carbon sequestration projects in the areas of influence of the South Inter-Oceanic Road. Prepared for Odebrecht.

November 2006: Preparation of study on forest legislation for the Chinchipe Forest Binational Programme, implemented by Soluciones Prácticas – ITDG and financed by the European Union.

June 2006: External Auditor for the MADERACRE & Maderyja company for the purposes of voluntary forest certification under national FSC standards. Hired by Smartwood.

November 2001-July 2002: Technical Auditor for 3 forest projects implemented by the National Institute for Natural Resources – INRENA and financed by the International Tropical Timber Organization – ITTO.

CURRICULUM VITAE OF THE REGIONAL COORDINATOR – AIDER PERSONNEL

Proposed officer: Ing. Pio Santiago Puertas

HIGHER EDUCATION:

- UNDERGRADUATE STUDIES: National Agrarian University of La Molina – Forest Engineer.
- POSTGRADUATE STUDIES:
  - Master´s Degree in Environmental Science, Postgraduate School of the National Agrarian University of La Molina.
  - Specialisation course in Agricultural Business Management.

WORK EXPERIENCE:

- Association for Integrated Research and Development – AIDER:
  - October 2006 – to date: Group Director – Forest Stewardship, AIDER.
  - October 2005 – to date: Regional Coordinator of Ucayali.
  - August 2004 – September 2005: Forestry officer-in-charge for JEMABAON NII Project "Managing forests to alleviate poverty".
  - December 2003 – December 2004: Project Coordinator – "Low impact logging in five forest concessions in the Tamaya River area, Ucayali".
  - August 2000 – August 2004: Officer in charge of the formulation of forest projects.
- Congress of the Republic of Peru. October 1999 – July 2000. Technical Adviser for the drafting of the Forest and Wildlife Law – Act No. 27308.
- Furniture company "Condesa". January 1997 – May 1999. Administrator.
- Company COMYS SAC. March 1995 – December 1996. Officer in charge of forest plantations in the Community of San Pedro de Casta.
- Empresa Industrial Maderera Perú SRL. June 1992 – January 1993. Administrator.
- National Timber Confederation. January 1992 – May 1992. Technical Adviser.

MAIN CONSULTANCY WORK:

- Pre-scoping study on the native communities of Anapate and Tres Unidos de Matereni, Junín Region, for the company Negociación Maderera Travi S.R.L. – NEMATSA S.R. Ltda. June 2007.
- Training on "Legal standards and guidelines on forest management in Peru" within the framework of ITTO/CNF Project PD 23/00 "PROMOTION AND TRANSFER OF KNOWLEDGE ON SUSTAINABLE FOREST MANAGEMENT MODELS TO TIMBER PRODUCERS". Tingo María, Puerto Maldonado and Iberia. June – August 2005.
- Training on "Sustainable harvesting of forest products in managed dry forests", in CC Ignacio Távara, Piura, for the Fund of the Americas – USAID. September 2002.
- Consultancy for the National Forestry Chamber – CNF under agreement with INRENA for the implementation of project on Promotion of Sustainable Forest Management and Support to the Establishment of Small Forest Product Enterprises. May 2002.
- Consultancy for the Timber Logging and Reforestation Association of Ucayali – AEMRU under agreement with GCP/PER035/NET Project "Support to the National Forest Development Strategy" – FAO, in the implementation of activities established in the Plan for the Development of Forest Enterprises Comprising Small and Medium Timber Loggers in the Department of Ucayali". March – April 2002.

TERMS OF REFERENCE FOR FOREST INDUSTRY CONSULTANTS

a) Timber preservation and drying expert

A. Qualifications

- Registered forest engineer
- Preferably with an advanced academic degree
- A minimum of 10 years experience in the forest industry field, including research on timber durability, drying and preservation
- Spoken and written language skills

B. Duties

- Participate in timber preservation and drying studies
- Coordinate project activities in his/her area of expertise in close collaboration with UNU faculty
- Represent the project at local and national events
- Participate in meetings organised by the Project
- Submit and support a report on the study on timber durability, drying and preservation

b) Wood technology expert

A. Qualifications

- Registered forest engineer
- Preferably with an advanced academic degree
- A minimum of 10 years experience in the wood technology area
- Spoken and written language skills

B. Duties

- Participate in wood technology and anatomy studies
- Coordinate project activities in his/her area of expertise in close collaboration with UNU faculty
- Represent the project at local and national events
- Participate in meetings organised by the Project
- Participate in activities related to information processing, development of database and identification of potential uses for target timber species
- Participate in the identification of appropriate wood technologies
- Submit and support a report on the study on appropriate wood technologies
- Participate in the development of technical sheets

c) Mechanical timber processing expert

A. Qualifications

- Registered forest engineer
- Preferably with an advanced academic degree
- A minimum of 10 years experience in the area of mechanical timber processing
- Spoken and written language skills

B. Duties

- Participate in mechanical timber processing studies
- Participate in the primary and secondary processing industry and production chain diagnostic studies

- Coordinate project activities in his/her area of expertise in close collaboration with UNU faculty
- Represent the project at local and national events
- Participate in meetings organised by the Project
- Submit and support a report on the study on mechanical timber processing

d) Chemical timber processing expert

A. Qualifications

- Registered forest engineer
- Preferably with an advanced academic degree
- A minimum of 10 years experience in the area of chemical timber processing
- Spoken and written language skills

B. Duties

- Participate in chemical timber processing studies
- Coordinate project activities in his/her area of expertise in close collaboration with UNU faculty
- Represent the project at local and national events
- Participate in meetings organised by the Project
- Submit and support a report on the study on chemical timber processing

e) Furniture design expert

A. Qualifications

- Professional specialised in furniture design
- A minimum of 10 years experience in furniture design
- Spoken and written language skills

B. Duties

- Participate in studies on timber furniture prototypes
- Coordinate project activities in his/her area of expertise in close collaboration with UNU faculty
- Represent the project at local and national events
- Participate in meetings organised by the Project
- Submit and support a report on furniture prototypes designed during the study

TERMS OF REFERENCE FOR THE STATISTICAL CONSULTANT

A. Qualifications

- Engineer specialised in statistics or related discipline
- Preferably with an advanced academic degree
- A minimum of 05 years experience in the area of applied statistics for the agricultural sector
- Spoken and written language skills

B. Duties

- Propose pilot research designs as required by the project
- Participate in meetings organised by the Project

TERMS OF REFERENCE FOR THE ECONOMICS CONSULTANT

A. Qualifications

- Forest engineer specialised in economics or university degree in economics
- Preferably with an advanced academic degree
- A minimum of 05 years experience in agricultural economics
- Spoken and written language skills

B. Duties

- Participate in the identification of potential market niches for timber products at the national and international levels
- Participate in the development of business plans as required by the project
- Participate in meetings organised by the Project

TERMS OF REFERENCE FOR THE IT TECHNICIAN

A. Qualifications

- IT engineer or technician
- A minimum of 05 years experience in the field
- Spoken and written language skills

B. Duties

- Participate in the activities related to information processing, development of database and identification of potential uses for target timber species
- Participate in meetings organised by the Project

TERMS OF REFERENCE FOR THE FACILITATORS

A. Qualifications

- Professional with experience in the facilitation of events
- Knowledge of the subject matter
- Knowledge of the social and cultural context of communities involved in forest activities
- Ability to manage and use communication and training techniques
- A minimum of 05 years experience in workshop coordination and facilitation

B. Duties

- Propose programs/agendas for project events
- Organise and facilitate project events

TERMS OF REFERENCE FOR THE PROJECT EVALUATION CONSULTANT

A. Qualifications

- University degree in social or communication sciences or related discipline or forest engineer with experience in participatory evaluations
- Professional experience in the coordination and facilitation of events
- Knowledge of the social and cultural context of communities involved in forest activities
- Ability to manage and use communication and training techniques
- A minimum of 05 years experience in the area of participatory evaluation

B. Duties

- Facilitate the participatory evaluation of the project, assessing the standard and quality of outputs and results obtained in accordance with the indicators established by the project
- Submit recommendations for better project impact and management

SUBCONTRACT REQUIREMENTS

Subcontract 1

Technical editing for the preparation of a technical manual, a forest production guide and a brochure/booklet

Requirements

- Individual or company
- Expertise in the forestry field
- Experience in technical document editing
- Good drafting and spelling skills

Subcontract 2

Technical editing for the development of technical sheets and brochure/booklet

Requirements

- Individual or company
- Expertise in the forestry field
- Experience in technical document editing
- Good drafting and spelling skills

ANNEX C – Input requirements, costs and implementation time by activity (US$)

Outputs/Activities	Inputs		Unit Cost	Quarter /Year	Budget Item	Total quantity
	Description and Units	N.				
1.1.1 Selection of trees and collection of samples	(1) M/M statistics expert	1	2,000	Q3-Y1	12.3	2,000
	(2) M/M wood technology expert	1	2,000	Q3-Y1	12.2	2,000
	(3) M/M technical assistant	1	800	Q3-Y1	13.1	800
	(4) M/M forest technician	1	700	Q3-Y1	13.4	700
	(5) M/M labourer	4	300	Q3-Y1	13.5	1,200
	(6) Loading – Timber transport (r) 20,000 bft	6	120	Q3-Y1	33	720
	(7) tickets – Air travel	4	210	Q3-Y1	33	840
	(8) Days – DSA	12	40	Q3-Y1	31	480
	(9) Bft - Timber	20,000	0.05	Q3-Y1	51	1,000
	(10) Overall - Fuel and lubricants	1	100	Q3-Y1	53	100
	(11) Overall - Office supplies	1	100	Q3-Y1	54	100
	(12) Overall - Local transport	1	100	Q3-Y1	61	100
1.1.2 Study of primary processing, anatomical structure, physical, mechanical and chemical properties of 10 timber species	(1) M/M primary processing expert	1	2,000	Q3+Q4-Y1	12.2	2,000
	(2) M/M timber anatomy expert	1	2,000	Q3+Q4-Y1	12.2	2,000
	(3) M/M physical and mechanical properties expert	1	2,000	Q3+Q4-Y1	12.2	2,000
	(4) M/M chemical properties expert	1	2,000	Q3+Q4-Y1	12.2	2,000
	(5) M/M operator - data input	2	400	Q3+Q4-Y1	13.2	800
	(6) M/M technical assistant	2	800	Q3+Q4-Y1	13.1	1,600
	(7) M/M forest technician	2	700	Q3+Q4-Y1	13.4	1,400
	(8) tickets – Air travel	4	210	Q3+Q4-Y1	33	840
	(9) Days – DSA	12	40	Q3+Q4-Y1	31	480
	(10) Overall - sawmilling service	1	2,000	Q3+Q4-Y1	61	2,000
	(11) Microscope	6	1,675	Q3+Q4-Y1	44	10,050
	(12) Stereo microscope	2	199	Q3+Q4-Y1	44	398
	(13) Scale projection microscope	1	2,250	Q3+Q4-Y1	44	2,250
	(14) Microscope video system	1	1,221	Q3+Q4-Y1	44	1,221
	(15) Ocular micrometer	1	120	Q3+Q4-Y1	44	120
	(16) Microtome	1	17,889	Q3+Q4-Y1	44	17,889
	(17) Binocular microscope	6	3,030	Q3+Q4-Y1	44	18,180
	(18) Magnifying glass with lamp	6	24	Q3+Q4-Y1	44	144
	(19) Magnifying glass 10 x	24	14	Q3+Q4-Y1	44	336
	(20) Digital millimetre gauge	6	44	Q3+Q4-Y1	44	264
	(21) Digital thermometer 260°C.	1	18	Q3+Q4-Y1	44	18
	(22) Blade sharpener	1	12,800	Q3+Q4-Y1	44	12,800
	(23) Label/Stencil marker	1	125	Q3+Q4-Y1	44	125
	(24) Electrical heater with adj. thermostat 0.33 m3	4	1,531	Q3+Q4-Y1	44	6,124
	(25) Bain-marie	2	979	Q3+Q4-Y1	44	1,958
	(26) Two-element electrical cooking stove 1000 W	1	125	Q3+Q4-Y1	44	125
	(27) Digital camera with control software	1	3,833	Q3+Q4-Y1	44	3,833
	(28) Direct reading analytical scales 0.01 g precision	1	1,323	Q3+Q4-Y1	44	1,323
	(29) Overall - Universal printing service	1	4,000	Q3+Q4-Y1	61	4,000
	(30) Extinguishers Class A and B	6	79	Q3+Q4-Y1	44	474
	(31) Conditioning chamber	1	1,250	Q3+Q4-Y1	44	1,250
	(32) Air conditioning equipment	1	2,000	Q3+Q4-Y1	44	2,000
	(33) Digital gauge	6	49	Q3+Q4-Y1	44	294
	(34) Electric muffle furnace 900°C	1	345	Q3+Q4-Y1	44	345
	(35) Fractional distillation equipment	1	1,212	Q3+Q4-Y1	44	1,212
	(36) Chronometer	4	89	Q3+Q4-Y1	44	356
	(37) Calorimetric pump	1	1,259	Q3+Q4-Y1	44	1,259
	(38) Pyrometer	2	133	Q3+Q4-Y1	44	266
	(39) Hg thermometer 250 °C	2	55	Q3+Q4-Y1	44	110

Outputs/Activities	Inputs		Unit Cost	Quarter /Year	Budget Item	Total quantity
	Description and Units	N.				
	(40) Magnetic stirrer	2	33	Q3+Q4-Y1	44	66
	(41) 7 speed blender	1	665	Q3+Q4-Y1	44	665
	(42) Conductometer	1	299	Q3+Q4-Y1	44	299
	(43) Thermo-hydrometer	1	376	Q3+Q4-Y1	44	376
	(44) Incubator 18 x 18 x 24	1	4,806	Q3+Q4-Y1	44	4,806
	(45) Hot plate with 2 speed stirrer	1	812	Q3+Q4-Y1	44	812
	(46) Fume extraction hood 10'	1	1,045	Q3+Q4-Y1	44	1,045
	(47) Overall - reagents	1	2,500	Q3+Q4-Y1	55	2,500
	(48) Overall - organic and inorganic acids	1	600	Q3+Q4-Y1	55	600
	(49) Overall - solvents	1	400	Q3+Q4-Y1	55	400
	(50) Overall - indicators	1	400	Q3+Q4-Y1	55	400
	(51) Overall - precision vessels 100, 250, 500 and 1000 ml	1	2,214	Q3+Q4-Y1	55	2,214
	(52) Overall - Erlenmeyer 500 and 1000 ml	1	1,692	Q3+Q4-Y1	55	1,692
	(53) Overall - Kitasato flask 1 l	1	120	Q3+Q4-Y1	55	120
	(54) Overall - porcelain dish	1	100	Q3+Q4-Y1	55	100
	(55) Overall - porcelain crucible	1	80	Q3+Q4-Y1	55	80
	(56) Polyvinyl squirt bottle 200 ml.	6	26	Q3+Q4-Y1	55	156
	(57) Glass burette 50 ml	6	166	Q3+Q4-Y1	55	996
	(58) Triple burette holder	6	28	Q3+Q4-Y1	55	168
	(59) Bunsen burner	6	37	Q3+Q4-Y1	55	222
	(60) Desiccation capsules x 35 ml	24	134	Q3+Q4-Y1	55	3,216
	(61) Overall - measured pipettes 40 and 250 ml	1	224	Q3+Q4-Y1	55	224
	(62) Overall - Erlenmeyer flask 1 and 2 l	1	991	Q3+Q4-Y1	55	991
	(63) Overall - flat bottom flask 1 l	1	365	Q3+Q4-Y1	55	365
	(64) Overall - funnel - various diameters	1	280	Q3+Q4-Y1	55	280
	(65) Porcelain mortar	6	6	Q3+Q4-Y1	55	36
	(66) Universal support	6	15	Q3+Q4-Y1	55	90
	(67) Spatulas	6	3	Q3+Q4-Y1	55	18
	(68) Decanting flask	1	132	Q3+Q4-Y1	55	132
	(69) Petri dishes	2	62	Q3+Q4-Y1	55	124
	(70) Slide	5	6	Q3+Q4-Y1	55	30
	(71) Slide cover	5	4	Q3+Q4-Y1	55	20
	(72) Polyvinyl containers 500 ml	6	58	Q3+Q4-Y1	55	348
	(73) Dropper 50 ml	12	8	Q3+Q4-Y1	55	96
	(74) Pyrex condenser	1	479	Q3+Q4-Y1	55	479
	(75) Reflux condenser	1	167	Q3+Q4-Y1	55	167
	(76) Desiccating cabinet	1	293	Q3+Q4-Y1	55	293
	(77) Overall - Pyrex test tubes 50 and 100 ml	1	584	Q3+Q4-Y1	55	584
	(78) Overall - Fuel and lubricants	1	300	Q3+Q4-Y1	53	300
	(79) Overall - Office supplies	1	240	Q3+Q4-Y1	54	240
	(80) Overall - Local transport	1	1,200	Q3+Q4-Y1	61	1,200
1.1.3 Study of timber natural durability, drying behaviour, preservation, secondary and chemical processing	(1) M/M natural durability expert	1	2,000	Q3+Q4-Y1	12.2	2,000
	(2) M/M preservation expert	1	2,000	Q3+Q4-Y1	12.2	2,000
	(3) M/M drying expert	1	2,000	Q3+Q4-Y1	12.2	2,000
	(4) M/M secondary processing expert	1	2,000	Q3+Q4-Y1	12.2	2,000
	(5) M/M chemical processing expert	1	2,000	Q3+Q4-Y1	12.2	2,000
	(6) M/M technical assistant	2	800	Q3+Q4-Y1	13.1	1,600
	(7) M/M operator - data input	2	400	Q3+Q4-Y1	13.2	800
	(8) M/M forest technician	3	700	Q3+Q4-Y1	13.4	2.100
	(9) M/M labourer	6	300	Q3+Q4-Y1	13.5	1,800
	(10) Artificial timber drying service (pt)	1,600	0.15	Q3+Q4-Y1	61	240
	(11) tickets – Air travel	2	210	Q3+Q4-Y1	33	420
	(12) Days - DSA	6	40	Q3+Q4-Y1	31	240

Outputs/Activities	Inputs		Unit Cost	Quarter /Year	Budget Item	Total quantity
	Description and Units	N.				
	(13) Pressure sterilising autoclave 1 atm 100°C	1	1,970	Q3+Q4-Y1	44	1,970
	(14) Inoculation chamber	1	1,250	Q3+Q4-Y1	44	1,250
	(15) Incubation chamber	1	2,293	Q3+Q4-Y1	44	2,293
	(16) Timber preservation autoclave	1	2,000	Q3+Q4-Y1	44	2,000
	(17) Moisture gauge	2	760	Q3+Q4-Y1	44	1,520
	(18) Overall - sawmilling service	1	1,000	Q3+Q4-Y1	44	1,000
	(19) Circular saw	3	1,350	Q3+Q4-Y1	44	4,050
	(20) Overall - planing service	1	1,000	Q3+Q4-Y1	61	1,000
	(21) Planer	1	1,290	Q3+Q4-Y1	44	1,290
	(22) Lathe	1	889	Q3+Q4-Y1	44	889
	(23) Router	1	989	Q3+Q4-Y1	44	989
	(24) Drill	2	238	Q3+Q4-Y1	44	476
	(25) Digestor	1	1,819	Q3+Q4-Y1	44	1,819
	(26) Overall - furnace carb. service	1	400	Q3+Q4-Y1	61	400
	(27) Overall - semi-industr. dest. service	1	400	Q3+Q4-Y1	44	400
	(28) Overall - hand tools	1	300	Q3+Q4-Y1	55	300
	(29) Disks	6	28	Q3+Q4-Y1	55	168
	(30) Bands	6	61	Q3+Q4-Y1	55	366
	(31) Various blades	18	19	Q3+Q4-Y1	55	342
	(32) Overall - Tech. grade solvents and reagents	7	23	Q3+Q4-Y1	55	161
	(33) Overall - qp grade solvents and reagents	1	2,800	Q3+Q4-Y1	55	2,800
	(34) Overall - Glass containers	200	1	Q3+Q4-Y1	55	150
	(35) Kg agar-malt-peptone culture medium	3	720	Q3+Q4-Y1	55	2,160
	(36) Histology needle	6	32	Q3+Q4-Y1	55	192
	(37) Overall - Fuel and lubricants	1	200	Q3+Q4-Y1	53	200
	(38) Overall - Office supplies	1	150	Q3+Q4-Y1	54	150
	(39) Overall - Local transport	1	400	Q3+Q4-Y1	61	400
1.1.4 Information processing, preparation of database and identification of potential uses	(1) M/M wood technology expert	2	2,000	Q4-Y1, Q1-Y2	12.2	4,000
	(2) M/M IT expert	2	1,000	Q4-Y1, Q1-Y2	12.5	2,000
	(3) M/M technical assistant	2	800	Q4-Y1, Q1-Y2	13.1	1,600
	(4) M/M operator - data input	2	400	Q4-Y1, Q1-Y2	13.2	800
	(5) Overall - Fuel and lubricants	1	200	Q4-Y1, Q1-Y2	53	200
	(6) Overall - Office supplies	1	80	Q4-Y1, Q1-Y2	54	80
	(7) Overall - Local transport	1	100	Q4-Y1, Q1-Y2	61	100
1.1.5 Identification of suitable technologies for ten timber species	(1) M/M wood technology expert	1	2,000	Q1+Q2-Y2	12.2	2,000
	(2) M/M technical assistant	1	800	Q1+Q2-Y2	13.1	800
	(3) M/M operator - data input	2	400	Q1+Q2-Y2	13.2	800
	(4) M/M forest technician	2	700	Q1+Q2-Y2	13.4	1,400
	(5) Overall - Fuel and lubricants	1	200	Q1+Q2-Y2	53	200
	(6) Overall - Office supplies	1	100	Q1+Q2-Y2	54	100
1.2.1 Preparation of a technical manual, a forest production guide and a booklet	(1) technical editing sub-contract	1	2,000	Q3-Y2	22	2,000
	(2) Sub-contract - graphic editing and printing	1	5,000	Q3-Y2	23	5,000
	(3) Overall - Office supplies	1	120	Q3-Y2	54	120
	(4) Overall - Fuel and lubricants	1	100	Q3-Y2	53	100
	(5) Overall - Local transport	1	50	Q3-Y2	61	50

Outputs/Activities	Inputs		Unit Cost	Quarter /Year	Budget Item	Total quantity
	Description and Units	N.				
1.2.2 Organization of two seminars-workshops for forest producers	(1) M/D facilitator	10	80	Q3-Y2	12.6	800
	(2) Rations - snacks	300	2	Q3-Y2	61	600
	(3) auditorium services	2	60	Q3-Y2	61	120
	(4) tickets – Air travel	6	210	Q3-Y2	33	1.260
	(5) Days - DSA	18	40	Q3-Y2	31	720
	(6) Overall - Fuel and lubricants	1	200	Q3-Y2	53	200
	(7) Overall - Office supplies	2	100	Q3-Y2	54	200
	(8) Overall - Radio/TV broadcasting	1	100	Q3-Y2	61	100
	(9) Services - Logistics	2	100	Q3-Y2	61	200
1.2.3 Organization of two dissemination conferences	(1) M/D facilitator	5	80	Q3-Y2	12.6	400
	(2) M/M presenters	6	80	Q3-Y2	12.6	480
	(3) M/M technical assistant	1	800	Q3-Y2	13.1	400
	(4) tickets – Air travel	4	210	Q3-Y2	33	840
	(5) Days - DSA	12	40	Q3-Y2	31	480
	(6) Rations - snacks	240	2	Q3-Y2	61	480
	(7) auditorium services	2	60	Q3-Y2	61	120
	(8) Overall - Fuel and lubricants	1	60	Q3-Y2	53	60
	(9) Overall - Office supplies	1	50	Q3-Y2	54	50
	(10) Overall - Radio/TV broadcasting	1	100	Q3-Y2	61	100
	(11) Overall - Local transport	1	100	Q3-Y2	61	100
2.1.1 Industry diagnosis for primary and secondary processing and production chain	(1) M/M mechanical processing expert	2	2,000	Q1 + Q2-Y2	12.2	4,000
	(2) M/M secondary processing expert	2	2,000	Q1 + Q2-Y2	12.2	4,000
	(3) M/M sample statistics expert	1	2,000	Q1 + Q2-Y2	12.3	2,000
	(4) M/M forest technician	4	700	Q1 + Q2-Y2	13.4	2,800
	(5) M/M trainee university students	32	160	Q1 + Q2-Y2	13.6	5,120
	(6) tickets – Air travel	3	210	Q1 + Q2-Y2	33	630
	(7) Days - DSA	12	40	Q1 + Q2-Y2	31	480
	(8) Overall - Fuel and lubricants	1	100	Q1 + Q2-Y2	53	100
	(9) Overall - Office supplies	1	100	Q1 + Q2-Y2	54	100
	(10) Overall - Local transport	1	800	Q1 + Q2-Y2	33	800
2.1.2 Study of prototypes according to technical description, aesthetic characteristics	(1) M/M furniture design expert	2	2,000	Q3-Y2	12.2	4,000
	(2) M/M technical assistant	2	800	Q3-Y2	13.1	1,600
	(3) Overall - Timber and inputs	1	300	Q3-Y2	61	300
	(4) Overall - Fuel and lubricants	1	150	Q3-Y2	53	150
	(5) Overall - Office supplies	1	100	Q3-Y2	54	100
	(6) Overall – finishing/joining products	1	400	Q3-Y2	61	400
2.2.1 Identification of potential niches on domestic and international markets	(1) M/M marketing expert	2	2,000	Q4-Y2	12.4	4,000
	(2) M/M technical assistant	2	800	Q4-Y2	13.1	1,600
	(3) tickets – Air travel	2	210	Q4-Y2	33	420
	(4) Days - DSA	8	40	Q4-Y2	31	320
	(5) Overall - Fuel and lubricants	1	100	Q4-Y2	53	100
	(6) Overall - Office supplies	1	100	Q4-Y2	61	100
2.2.2 Development of business plans	(1) M/M marketing expert	2	2,000	Q4-Y2	12.4	4,000
	(2) M/M technical assistant	2	800	Q4-Y2	13.1	1,600
	(3) tickets – Air travel	2	210	Q4-Y2	33	420
	(4) Days - DSA	8	40	Q4-Y2	31	320
	(5) Overall - Fuel and lubricants	1	80	Q4-Y2	53	80
	(6) Overall - Office supplies	1	100	Q4-Y2	61	100
	(7) Overall - Local transport	1	200	Q4-Y2	61	200

Outputs/Activities	Inputs		Unit Cost	Quarter /Year	Budget Item	Total quantity
	Description and Units	N.				
2.3.1 Preparation of a technical card and booklet	(1) M/M wood technology expert	1	2,000	Q1-Y3	12.2	2,000
	(2) M/M technical assistant	1	800	Q1-Y3	13.1	800
	(3) technical editing sub-contract	1	500	Q1-Y3	22	500
	(4) Sub-contract - graphic editing and printing	1	1,000	Q1-Y3	23	1,000
	(5) Overall - Office supplies	1	100	Q1-Y3	54	100
	(6) Overall - Fuel and lubricants	1	100	Q1-Y3	53	100
	(7) Overall - Local transport	1	80	Q1-Y3	33	80
2.3.2 Organization of four conferences for the dissemination of results	(1) M/D facilitator	10	80	Q3-Y2	12.6	800
	(2) M/M presenters	12	80	Q3-Y2	12.6	960
	(3) M/M technical assistant	1	800	Q3-Y2	13.1	800
	(4) tickets – Air travel	4	210	Q3-Y2	33	840
	(5) Days - DSA	16	40	Q3-Y2	31	640
	(6) Rations - snacks	320	2	Q3-Y2	61	640
	(7) auditorium services	4	60	Q3-Y2	61	240
	(8) Overall - Fuel and lubricants	1	60	Q3-Y2	53	60
	(9) Overall - Office supplies	1	100	Q3-Y2	54	100
	(10) Overall - Radio/TV broadcasting	1	200	Q3-Y2	61	200
	(11) Services - Logistics	4	100	Q3-Y2	61	400
2.3.3 Organization of four seminars-workshops for dissemination to producers	(1) M/D facilitator	20	80	Q2-Y3	12.6	1,600
	(2) Rations - snacks	600	2	Q2-Y3	61	1,200
	(3) auditorium services	4	60	Q2-Y3	61	240
	(4) tickets – Air travel	4	210	Q2-Y3	33	840
	(5) Days - DSA	12	40	Q2-Y3	31	480
	(6) Overall - Fuel and lubricants	1	200	Q2-Y3	53	200
	(7) Overall - Office supplies	1	400	Q2-Y3	54	400
	(8) Overall - Radio/TV broadcasting	1	200	Q2-Y3	61	200
	(9) Services - Logistics	4	100	Q2-Y3	61	400

ANNEX D – Required equipment budgeted with ITTO funds

Activity	Qty.	Inputs, Unit & Description	ITTO
1.1.2 Study of primary processing, anatomical structure, physical, mechanical and chemical properties of 10 timber species	1	Scale projection microscope	2,250
	1	Microscope video system	1,221
	1	Ocular micrometer	120
	6	Magnifying glass w' lamp	144
	24	Magnifying glass 10 x	336
	6	Digital millimetre gauge	264
	1	Digital thermometer 260°C.	18
	1	Label/Stencil Marker	125
	4	Electric heater with adjustable thermostat 0.33 m3	6,124
	1	Two-element electrical cooking stove 1000 W	125
	1	Digital camera with control software	3,833
	1	Direct reading analytical scales - 0,01 precision	1,323
	6	Extinguishers Class A & B	474
	1	Conditioning chamber	1,250
	1	Air conditioning equipment	2,000
	6	Digital gauge	294
	1	Fractional distillation equipment	1,212
	4	Chronometer	356
	2	Pyrometer	266
	2	Hg Thermometer 250 °C	110
	2	Magnetic stirrer	66
	1	7 speed blender	665
	1	Conductometer	299
	1	Thermo-hydrometer	376
	1	Incubator 18 x 18 x 24	4,806
	1	Hotplate with 2-speed stirrer	812
	1	Extractor hood 10'	1,045
1.1.3 Study of timber natural durability, drying behaviour, preservation, secondary and chemical processing	1	Inoculation chamber	1,250
	1	Incubation chamber	2,293
	1	Timber preservation autoclave	2,000
	2	Moisture gauge	1,520
TOTAL NON-ACTIVITY BASED EXPENSES	1	Dual-cabin 4x4 truck	30,000
OVERALL TOTAL			66,977

ANNEX E – Letters of commitment from collaborating institutions

NATIONAL UNIVERSITY OF UCAYALI
FACULTY OF FORESTRY SCIENCES
OFFICE OF THE DEAN

"YEAR OF NATIONAL UNITY AGAINST THE EXTERNAL CRISIS"

Pucallpa, 5 March 2009

LETTER N^{O} 011-2009-UNU/VRACAD/FCFyA/D

Dear Sir/Madam

ASSOCIATION FOR INTEGRATED RESEARCH AND DEVELOPMENT (ASOCIACION PARA LA INVESTIGACION Y DESARROLLO INTEGRAL – AIDER)

City of:

Att. Ing. Jaime Navavarte Armas
President

Dear Sir,

I would hereby like to extend to you my warmest greetings and at the same time inform you that the National University of Ucayali has duly participated in the formulation of Research Project ***PD 512/08 (I) INDUSTRIAL UTILISATION AND MARKETING OF TEN POTENTIAL TIMBER SPECIES FROM SECONDARY AND RESIDUAL PRIMARY FORESTS***, that has been submitted to the International Tropical Timber Organization (ITTO) for consideration and that we have accepted to participate in the project as a collaborating institution. To this end, we would point out that the University has machinery, equipment and laboratory facilities available, as well as research teachers, thesis students and practicioners who would be available for the implementation of experimental work as required.

Please accept, Sir, the assurances of my highest consideration.

Yours truly,

(Seal of the University)

(Illegible signature)

Ing. MSc. Oscar Barreto Vásquez
Dean
University of Ucayali

Association of Forest Managers of the Neshuya Curimana Road
AMABOSQUE
Caserio Nuevo San Alejandro, Distrito de Curimana
Tel: 061 – 811458

"Year of National Unity against the External Crisis"

Pucallpa, 6 March 2009

Ing. Jaime Navavarte Armas
Executive Director of AIDER

Dear Sir,

I would hereby like to extend to you cordial greetings and inform you that the Association of Forest Managers of the Neshuya - Curimana Road, AMABOSQUE, has accepted to participate in the project **"Industrial utilisation and marketing of ten potential timber species from secondary and residual primary forests"** as a collaborating institution in order to ensure the achievement of project objectives.

Please accept, Sir, the assurances of my highest consideration.

Yours sincerely,

AMABOSQUES

(ILLEGIBLE SIGNATURE)

Victor Castro Lander
President

ANNEX F – Table of modifications made in response to the Expert Panel recommendations

PD 512/08 (I) Industrial Utilisation and Marketing of Ten Potential Timber Species From Secondary and Residual Primary Forests (Peru)	
Assessment by the Thirty-Sixth Panel A) Overall Assessment The Panel considered the modifications contained in the revised proposal in response to the comments and recommendations made by the Thirty-six Expert Panel. The Panel noted that the revised proposal addressed most of the comments and recommendations, including a more focused proposal in the context of forest industries, improvement on the project strategy, risk mitigation, definition of secondary and primary degraded forest.	**Description of modifications**
B) Specific Recommendations The proposal should be revised taking into account the overall assessment **and** the following:	
1. Justify that sustainability of logging activities in the Secondary Forest (SF) and Residual Primary Forest (RPF) will be guaranteed when increasing logging volumes, giving due consideration to the natural regeneration rate and scientific evidence to the proposed increase in the harvesting levels;	Item 2.7 (Environmental aspects) now includes paragraphs justifying the sustainability of activities.
2. Further elaborate the socioeconomics of the SF and PRS;	The socio-economic aspects have been further elaborated in Item 2.8 (Social aspects).
3. Include letters of commitment of the collaborative institutions, updating as appropriate the latest changes in the governmental agencies;	Annex E (newly added to the proposal) contains letters of commitment from collaborating institutions – the National University of Ucayali and the Forest Managers Association of Neshuya Curimaná Road – AMABOSQUE.
4. Provide details of the capital equipment budgeted with ITTO funds;	A paragraph has been added to Item 2.5 (Technical and scientific aspects) explaining the need for equipment and Annex D has also been added to the proposal showing a table of the equipment required for each project activity, including corresponding costs to be covered with ITTO funds.
5. Amend as appropriate the discrepancy in the duration of the project between content of the proposal and the cover page;	The duration in the project document cover has been amended.
6. Further elaborate about the risk of impacts from logging in SF and PRF and measures to mitigate the impacts; and	Item 2.9 (Risks) now includes paragraphs on potential risks of the proposed harvesting activities with appropriate mitigation measures.
7. Provide an annex which shows the recommendations of the 37th Expert Panel and the respective modifications in a tabular form. Highlight modifications **(bold and underline)** in the text.	This annex shows the recommendations and respective modifications, which have been highlighted in bold and underlined.