INTERNATIONAL TROPICAL TIMBER ORGANIZATION

ITTO

PROJECT DOCUMENT

TITLE	IMPLEMENTATION OF A MANAGEMENT PLAN BY THE CHIQUIACA AND OROZAS COMMUNITIES IN TARIJA, BOLIVIA
SERIAL NUMBER	PD 44/99 Rev.2 (F)
COMMITTEE	REFORESTATION AND FOREST MANAGEMENT
SUBMITTED BY	GOVERNMENT OF BOLIVIA
ORIGINAL LANGUAGE	SPANISH

SUMMARY

The Chiquiaca community, in the O'Connor Province, Department of Tarija, Bolivia, has developed a community forest management plan. The development process lasted for two years and as a result, a proposal for forest harvesting was formulated, including species other than the traditionally harvested species in the area (*Cedrela* sp.) and a technological shift from the exclusive use of chainsaws to the use of sawmills. This implies a change in the production strategy of farmers, which has resulted in a high level of uncertainty regarding the implementation of this plan, as related costs and benefits are yet to be determined.

The experience of the Orozas community in the Province of Arce has been incorporated as it relates to the planning of the development of a Community Forest Management Plan as part of the strategy to reduce community pressure on forest resources within the reserve through its legalisation. A timber cycle has already been identified as part of the process of reviewing illegal timber logging in the Tariquia Reserve, and the proposed management plan for this community includes, as in the Chiquiacá community plan, species other than the traditionally harvested species (*Cedrela* sp.) and a technological change.

In view of the above, this project proposal seeks to provide technical and financial support to this community for the legal implementation of the proposed management plan, starting the activities in a micro-watershed area of the community. This support will be provided for a period of three years with the aim of establishing demonstration activities that will facilitate the assessment of costs and benefits related to this new production strategy, which is being disseminated to other areas of the Reserve, and the Orozas Community's experience with community timber harvesting and processing practices will be replicated so as to strengthen the social, economic and technical aspects of the Chiquiacá Management Plan, while ensuring an effective mutually beneficial exchange between these two communities.

The objective of this Project is to strengthen local capacities to manage the forests in both communities for timber production purposes, as the farmers in the area have not yet developed an organization to control the timber production cycle but instead act as intermediaries for timber processing industries in the city, carrying out illegal logging activities. This process will draw on the Orozas Community experience with timber production work. The Management Plan is aimed at ensuring community control over a larger number of stages in the forest production cycle; promoting the utilization of other timber species present in the forest so as to optimise the cost-benefit ratio of forest activities.

EXECUTING AGENCY	TARIJA ENVIRONMENTAL PROTECTION – PROMETA in cooperation with INTERCOOPERATION/PROBONA
DURATION	3 YEARS
APPROXIMATE STARTING DATE	UPON APPROVAL

BUDGET AND PROPOSED SOURCES OF FINANCE	Source	Contribution in US$
	ITTO	**285,589**
	PROMETA	62,850
	CHIQUIACA COMMUNITY	58,000
	OROZAS COMMUNITY	58,000
	PROBONA	41,000
	TOTAL	**505,439**

PART I. CONTEXT

A. RELEVANCE TO ITTO

A1. Compliance with ITTO objectives

This project is consistent with the following objectives established in the ITTA, 1994:

Objective c) "To contribute to the process of sustainable development". The fact that the community itself has developed and will implement the Management Plan indicates the level of awareness on the significance of forest management. Furthermore, the developed management plan includes agroforestry activities and the production of medicinal herbs. The sustainable development process in the Chiquiacá Community will be strengthened with the involvement of the Orozas Community given the experience of this community with traditional harvesting and management systems.

Objective f) "To promote and support research and development with a view to improving forest management and efficiency of wood utilisation as well as increasing the capacity to conserve and enhance other forest values in timber producing tropical forests". The implementation of the Management Plan will not only include timber activities but also activities related to non-timber products. In addition, research will be carried out on land tenure status and access to resources, timber markets and adequate technologies.

Objective j) "To encourage members to support and develop industrial 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". The Management Plan envisages the harvesting of commercial timber species, such as *Cedrela fissilis, Cedrela lilloi, Podocarpues parlatorei, Anadenanthera colubrina, Juglans australis, Mirxylon peruiferum, Tabebuia* sp., *Tipuana tipa, Pterogine nitens* and several lauraceae species of significant commercial value. The development of this Plan has taken into consideration community interests and priorities including establishment of nurseries and training so that they can produce forest and fruit species.

Objective l) "To encourage members to develop national policies aimed at sustainable utilisation and conservation of timber producing forests and their genetic resources and at maintaining the ecological balance in the regions concerned, in the context of tropical timber trade." The Management Plan includes protection and harvesting areas; in addition, seed sources have been identified for the most important species and non-timber production activities will be implemented for the benefit of the community. There are very few past experiences in Bolivia on community forest management, so this initiative will contribute to the formulation of policies, first at the regional level and then at the national level.

A2. Compliance with ITTO criteria

This project is related to all ITTO criteria as follows:

a) It is related to the production and utilisation of industrial tropical timber, as it is aimed at the management of commercial timber species such as *Cedrela balansae, Juglans australis, Mirxylon peruiferum, Tabebuia* sp., *Tipuana tipa, Pterogine nitens* and several lauraceae species of significant commercial value.

b) It will yield benefits to the tropical timber economy as a whole and is relevant to producing as well as consuming members, because it is focused on commercial species providing immediate benefits to the regional market, which is closely related to the national market and hence to the international market.

c) It is related to the maintenance and expansion of the international tropical timber trade, as it deals with international trade species.

d) It offers reasonable prospects for positive economic returns in relation to costs, as the community itself will provide the necessary manpower, thus reducing costs. Furthermore, the harvested timber will be sawn and hauled from the forest by mules as it is traditionally done by the community, and the timber will be directly sold to the market without any intermediaries.

e) It will make maximum use of existing research institutions and, to the greatest extent possible, will avoid duplication of efforts. No research is being carried out on community management of this type of forest; however, project activities will be coordinated with institutions concerned with forest management at the industrial and community levels as well as institutions involved in silvicultural research.

A3. Relationship to ITTO Action Plan and priorities

This project is consistent with the functions of the Committee on Reforestation and Forest Management in its three areas of action (reforestation, forest rehabilitation and forest management). Furthermore, this Committee will benefit from the implementation of a natural forest management plan by the communities as it will be possible to promote the exchange of experiences with other areas and/or strengthen other projects under implementation, while this project will in turn also benefit from this process.

In addition, this project will also cover the Municipality of Entre Rios, which will serve as a focal point for the extension of forest management activities to other communities, thus expanding project coverage and promoting the management of forests in other municipalities.

B. RELEVANCE TO NATIONAL POLICIES

B1. Relationship to sectoral policies

The Community Forest Management Plan is framed within the context of the Technical Standards for the Development of Forest Management Instruments on Private Lands of over 200 ha, approved by the Government through Ministerial Resolution No. 62/97 of 21 March 1997, and the Guidelines on Concessions Granted to Local Social Groups, approved through Ministerial Resolution No. 133/97, which are part of the Forestry Law No. 1700 of 12 July 1996 and its Regulations of 21 December 1996. The Plan is currently in the process of being approved by the Forestry Commission of Tarija. According to this legislation, the protection and sustainable use of forests and lands are an essential element to the State's territorial integrity. Furthermore, this legislation offers access to 20% of public forest production areas to local communities and organisations on the basis of equitable distribution principles. The main guiding principle is that sustainable management and protection of forests and forest lands are of public use and interest for the Nation. In this respect, it is established that in order to ensure community participation, the Municipalities shall provide technical assistance to local social groups for the development and implementation of forest management plans.

The Project is also consistent with the Popular Participation Law No. 1551 of 20 April 1994, which recognises the right of the communities, while facilitating community participation, ensuring equal opportunities for men and women, and involving the indigenous, rural and urban communities in the legal, political and economic development of the country. This law expands the mandate and increases the resources of Municipal Governments.

B2. Institutional and legal framework

The project implementing agency will be PROMETA, an NGO established on 21 January 1990, which has been delegated by the Government the responsibility of co-administering the Tariquia Reserve under an agreement with the Ministry for Sustainable Development and Environment signed in July 1997 in accordance with Secretarial Resolution SNRNMA No. 06/97 of 25 February 1997. This institution has been operating in the area of the Chiquiaca Community since 1994 and has been receiving the support of the Regional Andean Natural Forests Program since 1996, while it has been working in the Orozas Community area since 1998.

PROBONA is under the direct responsibility of Intercooperation, a Swiss NGO with extensive experience in development and natural forest research projects.

The functions of the Prefecture of Tarija, which were established through the Administrative Decentralisation Law No. 1654 of 28 July 1995, include enforcing the National Political Constitution, legislation, decrees and resolutions; formulating and implementing environmental conservation and preservation projects within the framework of the Departmental Development Plan; and granting legal capacity to foundations, associations and civil societies to be recognised throughout the national territory.

PART II. THE PROJECT

1. Origin

The Chiquiacá community has carried out activities that led to the development of the Forest Management Plan motivated by previous events related to natural resources, such as the establishment of a Natural Resources Protection Committee which confronted a timber company operating in their forests. It was the members of the community themselves who asked PROMETA to work together with them. Since 1994, PROBONA has been supporting the formulation of the Management Plan as well as the development of research activities (types of forest-community relationships, traditional practices for access to the forest, biodiversity study, medicinal plants, establishment of fruit production plots and forest clearings in order to promote natural regeneration growth); in addition, it has provided technical assistance in potential areas for replication and has therefore extended its support to the Orozas Community. Thus, this new project incorporates the continuation of the Management Plan implementation activities and its first replication in another area.

2. OBJECTIVES

2.1 Development objective

To facilitate the continued implementation of a community forest management system by members of the Chiquiacá community with the purpose of consolidating their rights of access and commercial utilisation of forest resources in a sustainable manner, as one of the options for improving their living conditions.

2.2 Specific objectives

To implement socially, economically and environmentally sustainable harvesting technologies and systems consistent with national and international legislation.

To offer a variety of timber species from managed forests to the regional and national markets.

3. PROJECT JUSTIFICATION

3.1 Problem to be addressed

Timber logging in the National Flora and Fauna Reserve of Tariquia is one of the activities that exerts the highest pressure on natural resources, particularly Cedro (*Cedrela fissilis*) and Pino de cerro (*Podocarpus parlatorei*). Despite the presence of other timber species, Cedro and Cedrillo (*Cedrela lilloi*) have been subject to commercial logging because of their relatively light weight and right market dimensions.

There are several geographic areas in the National Flora and Fauna Reserve of Tariquia where commercial forest activities exert special pressure. Each of these areas, located in the regions of Chiquiacá, Salinas, Sidras, Tipas and Orozas, have specific characteristics, but they also share some common features as reflected in the flow and destination of harvested products under the control of individuals performing interrelated functions that tend to be repetitive or constant, which we refer to here as the "flow of products" and "production cycle".

Forest resources are currently being utilised in an irrational and disorderly manner, without observing any technical criteria, such as the establishment of minimum cutting diameters and harvesting in locations with steep slopes, thereby leading to a wastage of great quantities of valuable timber species such as cedar. This is due to the fact that some community members carry out illegal logging activities to secure the highest quantity of the resources as quickly as possible. It is therefore most important to regulate the use of these resources through a management plan which will ensure sustainable forest utilisation and will put an end to the irrational exploitation and illegal activities which are currently taking place.

The Chiquiacá community, together with PROMETA (Tarija Environmental Protection) and PROBONA (Andean Natural Forests Program), have developed a Community Forest Management Plan. That document is in the process of being approved by the Tarija Forestry Commission (Superintendencia Forestal) as a legal prerequisite for obtaining forest concessions for commercial utilisation. However, the community and the cooperating institutions do not have the necessary economic resources for the

implementation of the plan, including the acquisition of appropriate technology as well as technical, administrative and other costs, as required by the legislation.

The forest management proposal expressed in the Management Plan for Chiquiacá cannot include the use of chainsaws for legal reasons, or the exclusive logging of cedar because at present the availability of cedar is not sufficient to contribute to the family incomes of the communities in Chiquiacá. These two variables, chainsaw – cedar, form the basis of the traditional forest harvesting technology which has been used to date by the local population and which is also suited to the general economic strategies of the farming families.

In view of this situation, the proposed forest harvesting scheme envisages the extension of activities to other species identified in the inventory and the use of (probably portable) sawmills. That implies a technological change with respect to the previous methods, a change in the economic strategies of the families who would have to spend more time on forest activities, and a foreseeable high initial investment in the acquisition of technology and in infrastructure construction (roads).

The initial perception the community had of the management plan was based on the possibility of legally harvesting the forest based on their traditional technology, using chainsaws, mule transport, and the logging of a single species, *Cedrela sp.* However, the new alternative, based on a different approach, generates uncertainty among farmers in relation to its immediate implementation because they are not familiar with other forest management technologies.

3.2 Characteristics of the region or area where the project will be located

The Chiquiacá community is located in the Department of Tarija, along the north-western border of the Tariquía National Fauna and Flora Reserve. The river, which carries the same name, divides it into two banks: the western sector is part of the Tariquia Reserve and the eastern sector is considered to be a buffer zone.

The geographic coordinates of the area of the community are:

Latitude	21°44'57.55" - 21°59'9.32" South
Longitude	64°00'17" - 64°14'25.71" West

The project area in Chiquiacá covers a total of 27,945 ha.
The project coverage in the Orozas area is 5,000 hectares.
Thus, the total project coverage is 32,945 ha.

Physiography

This area corresponds to the Sub-Andean physiographic unit. In general, its topography is undulating with gentle hills and wide terraced valleys. Geologically it corresponds to the Carboniferous period (sandstone, shale, limonite and conglomerates). The moderate slopes along the river form the Chiquiacá valley. Steeper slopes are found in the highlands, separated by different waterways which flow from the summit or ridges following their natural paths. These streams end up as tributaries of the Chiquiacá River.

The altitude ranges from 840 metres above sea level in the valley to some 2,500 metres above sea level at the highest peaks.

The communities in the area of Orozas are located along the micro-watershed area of the Upper Alisos River, which originates in the peaks of the mountain under the same name (3,345 m.a.s.l.). When the river descends to an altitude of 2,200 meters it is joined by its tributary La Hondura River, expanding the margins of the watershed and resulting in relatively flat areas or successive rich plains separated by mountain ridges which create narrow rocky corridors. The communities of Alisos del Carmen, Central Orozas and Lower Orozas are settled along these plains, which are the areas with the best agricultural production potential.

These communities are located at altitudes ranging from 1,900 to 2,500 m.a.s.l.

Climate and water resources

The climate is semi-humid and temperate-hot with rainy summers and persistent drizzles in autumn. Average rainfall is about 3,000 mm. The drier months are between May and September, and the rains begin in October. The month with the highest rainfall is January, and consequently the highest rainfall season stretches from December to March. The average temperature is 19.5°C while maximum temperatures reach 40 °C. The average relative humidity is 72%.

From a hydrographic viewpoint, enormous water potential exists from the numerous streams with permanent patterns which form the tributaries of the Chiquiacá River and drain the area.

Soils

Most soils are alluvial and variable in texture, moderately deep and well drained along the river.

On the slopes, shallow, loamy to clay-loamy stony soils with frequent rocky exposures prevail. Due to the presence of organic matter their colouring is usually dark brown.

Vegetation

The area is within the Tucumán-Bolivian formation or *yungas* (valleys), forming the Amazon Region which begins in Venezuela and extends to the south until it reaches the Province of Catamarca in Argentina. It features great development in both latitude and altitude and species such as *Cedrela balansae, Juglans australis, Miroxylon peruiferum, Tabebula* sp., *Tipuana tipu, Pterogine nitens,* as well as numerous Lauraceae of economic significance, are found there. The area is located at the foot of the Andes and is favoured by mountain rains. This formation receives many names. Depending on the country or region it runs through, it is known as "High Forest Rim", "Cloud Forest", "Tucumano-Bolivian Forest", Tucuman-Oran Forest", "Yungas Province", etc.

It is a narrow and fragmented strip interrupted by numerous transverse valleys. It constitutes a dense jungle-like forest with wide diameter 30m-high trees, normal to excessive density, several strata of vegetation and numerous epiphytes and lianas, as well as the aforementioned tree species.

These forests are very mixed and heterogeneous. In the upper regions, their appearance changes and they resemble temperate forests with very few species. The natural forest appearance has largely been lost due to human activities.

Population

The Chiquiacá community has a population of 774, including 412 males and 362 females (INE, 1992 Census), distributed across 157 nuclear families (only parents and children) with an average of 5 to 6 members per family.

There is gradual migration of families due to greater integration with urban centres. The temporary migration of young people looking for work is frequent and particularly common among the poorest families. They head for Bolivian urban centres such as Yacuiba and other centres in Argentina.

There are about 1,890 people (383 families) living in the Orozas region. Those who are involved in activities related to commercial timber harvesting, such as "loggers", "transport workers" and carpenters mainly live in six communities of the Orozas Canton.

Thus, about 25% of all families living in the communities settled in the Reserve and in the Orozas region participate in forest activities.

Organisation

Chiquiacá does not have a history of any significant agrarian union movement. Like other communities, it has a communal organisational structure which has worked effectively on various occasions. The structure is made up of different community and political institutions, the most important being the Forest Resources Protection Committee, the recently established Grassroots Territorial Organisation (OTB) (consistent with the Popular Participation Law) and the Mothers Centre. Nevertheless, the complex family

link network within the community sometimes plays a very significant role in decision-making and motivation.

The community has organised itself in a Forestry Association in order to carry out forest harvesting activities on State-owned lands and be recognised as a Local Social Group, as defined by the Forestry Law through S.D. 133/97. Twenty percent of government lands within the Municipality are made available to these Social Groups as Municipal Reserves, and only those organisations that have been recognised by the Municipal Government - such as Local Social Groups (SLGs) - can have access to these lands.

The Orozas community has established a cooperative -the "Aniceto Arce Cooperative"- which has 29 members who are all heads of family. Due to the nature of the carpentry work, all the members of the cooperative are males. There are also a number of carpenters who do not belong to the cooperative and who are in a different economic situation in terms of production, equipment and timber supply possibilities. These carpenters are self-sufficient in terms of their timber supply, as they cut, saw and transport their timber from Tariquía to their workshops in the Orozas region, although very often they also obtain their timber directly from the communities in Tariquía. The areas where they personally log their own timber are not the same areas that are harvested by the cooperative, but rather areas surrounding their grazing lands over which they have certain utilisation rights acquired by either purchase or inheritance. It should be pointed out that within the community structure, carpenters have a decisive role in the community decision making process.

This Cooperative has had experience in the marketing of products, particularly doors and frames, which are sold at a store outside the City of Tarija. However, this marketing process is very precarious and leads to timber product undervaluation.

Unlike the Orozas Cooperative, the "Virgen Los Angeles Forestry Association" is currently seeking legal capacity status. To this end, this Association has developed, on the basis of community agreements reached during the formulation of the Management Plan, a set of Constitutional Statutes and Rules of Procedure, which regulate its members' responsibilities vis-à-vis the Forestry Association's objectives. These documents are an essential requirement in order to receive legal capacity status enabling the Association to market its products (see annexes).

During the first year of implementation, the Project will seek to strengthen both organisations, providing training in areas related to administration of funds, marketing, forestry legislation, and adjustment of rules of procedure to ensure the stability of the "Virgen Los Angeles" Forestry Association and the consolidation of the Orozas Cooperative.

Social and economic activities

The most traditional complementary economic activities are agriculture and stockbreeding. Forest harvesting has become important recently because of the high economic benefits it generates, in contrast with the insecurities and limitations of agriculture and the health barriers in the case of stockbreeding.

Traditionally, the community has managed the forest in sectors and its boundaries have extended from the riverbank to both mountain ranges surrounding the valley (well before the land reform). As a result, the properties have become transverse strips extending from the river to the "water divide". In general, community members are not familiar with the sectors of the forest outside their properties (which is a factor in controlling the resources for agriculture and stockbreeding) but several community members have taken advantage of this fact and have begun logging the forest, which is not legal.

All these activities have an impact on the ecosystems through the use of natural resources: soils in the case of agriculture, pasturelands in the case of stockbreeding and, of course, forest logging which has the greatest impact on the forest. Paradoxically, to date this has been the main activity of the wealthiest minority of the population.

3.3 Intended situation after project completion

After project completion, the Chiquiacá community, through the Virgen Los Angeles Forestry Association, will initiate the commercial harvesting of forest resources through a sustainable community management system, which will be progressively implemented by management units or micro-watersheds to supply the

regional market with several types of timber species, including some of non-traditional use. Furthermore, the Orozas community will have strengthened its current traditional marketing system.

In both cases, the communities' involvement in their respective municipal development plans and in the formulation of other community forest management plans will be ensured.

3.4 Selected beneficiaries

The project will benefit all members of the community living in Chiquiacá. In the past, forest products were harvested by a privileged minority group in the community. With the application of a sustainable harvesting system, all community members will equally share the benefits in accordance with the current national legislation.

The various interest groups have been taken into account in the development of the management plan. The groups' points of view were put forward and consensus was reached in formal and informal fora. As a result of these interactions, an organisation is being established for the management of the environment and its first measure will be to implement and consolidate a sustainable community forest management system.

With regard to the Orozas community, the project will benefit both the carpenters that belong to the cooperative and those who are currently not members due to a lack of financial resources; in both cases the project will seek to legalise their activities.

3.5 Project strategy

3.5.1 Reasons for selection

The first initiative carried out with the participation of the community was a research project supported by PROBONA, whose objectives were to assess, as a basis for planning, the biological characteristics of the forest and the cultural, social and economic attributes of the community as well as the rules and regulations under which such resources can be accessed. The results of that research appear in a publication entitled: "Types of Forest-Community Relationships: A Case Study in Chiquiacá and Motoví". Based on this information, and in order to develop the Community Forest Management Plan, PROMETA conducted its own forest survey which revealed the true existing forest potential. At the same time, with the assistance of PROBONA, a community organisation process divided into management sectors has been facilitated for the purpose of implementing the aforementioned Management Plan based on the participation of the community. As sufficient foundations were laid for the development of concerted action between community members and the institution, it was decided to give priority to the implementation of the project.

The Orozas community has now been incorporated because based on the Chiquiaca's experience with the development of the management plan, the institution has decided to extend its field of action to other sectors that have also been involved in timber harvesting and production within the Tariquia Reserve but in a disorderly manner. This community was firstly approached through a "Socio-economic and institutional diagnosis of forest activities in the Tariquia-Orozas region", carried out with the support of TNC with the aim of assessing the socio-economic context where forest activities were being implemented, as well as the standards and rules governing the utilisation of resources as the basis for planning. This document identified the need to have a forest management plan to ensure the sustainable harvesting of resources as the only viable alternative for the marketing of timber and the legalisation of activities on which a great number of families depend for their livelihood.

The great uncertainty created by a legal alternative brought about through changing technology (from chainsaw to sawmill) and the drastic decrease in the supply of cedar in the area, has led to the strategy of phasing the implementation of the Management Plan, beginning with the pilot implementation of the plan in a micro-watershed that is considered as a management unit for a family group. The project will help implement forest harvesting operations in the management unit and will serve as a demonstration activity which will allow the rest of the community to monitor activities, timetables, resources, costs, benefits and the relative advantages and disadvantages compared to the economic strategies being implemented at present. Three years after project start-up, the other management units or micro-watersheds will have sufficient information on how to implement their operational plans and the type of investments required. This project is designed to directly support the implementation of a demonstration management unit

within the Chiquiacá community territory and to follow its implementation for a period of three years. Subsequently, a community harvesting strategy based on the revised Management Plan resulting from the experience acquired will be implemented.

3.5.2 Lessons drawn from past evaluations

No strict evaluations have been carried out; however, there has been a follow up of the entire implementation process from the study on Types of Forest-Community Relationships and Traditional Practices for Access to the Forest, and also of the development of the Community Forest Management Plan. One of the lessons drawn from these experiences is that more time is needed to recover traditional knowledge and integrate it with the new practices.

The social control the community has over the activities carried out by the institution has been demonstrated through assemblies and/or group meetings in relation to the different actions that have been implemented.

A closer relationship between farmers will strengthen and facilitate the activities to be implemented, while increasing mutual trust and communication between individual farmers and encouraging an exchange of experiences. It is believed that the mutual support between these communities will strengthen the project implementation process.

3.5.3 Technical and scientific aspects

Where there is collective access to forest resources, it is assumed by those who can gain access to them that "they do not belong to anybody". Unless there is efficient protection from the State, the resources are exploited in an irrational manner leading to the chaotic situation where everyone wants to take the highest quantities of resources for their own benefit. That leads to problems among people and endangers the sustainability of resources, particularly when the harvesting of resources is part of a family based economic strategy.

However, organising and safeguarding rights over resources can make the sustainability of collective access resources viable and there are successful examples of coordinated and sustainable management of collective access resources.

A management plan guarantees sustainable utilisation which maintains forest activity as an economic strategy, but within a legal framework and with a social equity component inherent in its communal nature.

Based on forest characteristics and on forest inventory and technical monitoring results, methodologies will be defined to facilitate the proper development of the forestry plan and, consequently, of forest management. These activities will mainly involve reforestation through natural regeneration and/or replanting, with special emphasis on the marking of seed trees to facilitate natural regeneration. Out of every 10 trees marked during the forest census, 2 will be selected as seed trees, thus ensuring that 20% of the annual harvesting area is allocated to natural regeneration through plus trees from various forest species.

Forest enrichment with high commercial value species (cedar and walnut tree) is also envisaged as these two species have traditionally been subject to irrational exploitation. Enrichment practices will be carried out in the annual harvesting areas, and considering the extent of these areas, it is expected that approximately 1000 ha will be reforested in the following cycle.

Other activities such as forest clearings will facilitate the growth of species which cannot reach the canopy level because of too much competition or shade. These will be improved with the development of forest management and specific studies such as the monitoring of permanent plots, phenological studies, etc.

In this respect, in order to integrate the extensive local shifting stockbreeding activities practised by farmers with the proposed forest harvesting scheme, research is already being conducted in other communities on the management of livestock which can gain access to the forest.

In relation to harvesting technology, the use of small portable sawmills is envisaged because they are easy to operate and more affordable, as well as having a lower impact on the forest given their portability.

With regard to agroforestry work, a nursery with a production capacity of 6,250 citrus seedlings and 10,000 tree seedlings has been established. In coordination with the community, it was decided to produce the following species: *Astronium urundeuva, Calycophyllum multiflorum, Amburana cearensis, Phillostillum rhamnoides, Myroxilum peruiferum, Juglans australis, Cedrella lilloi, Enterolobium contortisilicum, Tabebuia ipe* and *Tabebuia lapacho amarillo.* The provision of further technical assistance is envisaged for seedling production improvement and expansion.

In relation to the Orozas community, the conduction of a preliminary forest inventory is envisaged to assess the presence of potential species in the area of the community; however, other silvicultural activities such as reforestation, enrichment and thinning are also expected to take place, so it will be necessary to establish a forest nursery for the provision of seedlings. Reforestation activities will cover 800 hectares that were previously under concession by the Cooperative and have been subject to mass exploitation. In this case, native species such as pino de cerro (*Podocarpus parlatoreil*) and cedro (*Cedrela fissilis*) will be used.

Enrichment of annual forest harvesting areas in the territory of this community is also envisaged.

3.5.4 Economic Aspects

Traditional timber harvesting in Chiquiacá has been based on cedar (Cedrela lilloi, C. balansae), using chainsaws for the production of boards which were transported by mules to loading yards outside the forest.

Three logging modalities have been used: 1) direct logging by community members; 2) stumpage sale by community members and chainsawing contracts; 3) delivery of chainsaws to farmers by agricultural brokers in exchange for timber.

In the case of the chainsawing contracts, the cost of each board of cedar (30x5x250 cm) is bs.10 in the forest; mule transport to the loading yard outside the forest costs bs.7.50, depending on distance; and the forest owner sells the timber to the carrier for bs.25 - 27 per board. In Tarija (the capital city) the boards cost as much as bs.60 - 120, but the people in charge of that part of the commercial chain are no longer the farmers but the carriers and the sawmill owners.

The profits for the farmers come from the production of boards (chainsaws, bs.10 per board), transport (mules, bs.7.5 per board) and the sale of timber boards in the community to agricultural brokers (forest owners, bs.27). Production cost for the owners is bs.17.5, which leaves an after-sale profit margin of bs.9.5 per board. The profits are minimal compared to the profits made by the carriers and the sawmill owners.

In a calculation based on the cedar supply, according to the forest inventory data, by 1995 there were only 17 boards of cedar per family in Chiquiacá. This has probably further decreased in subsequent years.

However, the same forest inventory shows the presence of other timber species in the Chiquiacá forest with considerable production capacity. There are two very valuable species, cedar and *cedrillo*; three valuable species, *lapacho amarillo, lapacho rosado* and *quina colorada*; and nine species of little value: *afata, cebil, lanza blanca, pacará, palo blanco, perilla, pino de cerro, quellu* and *soto.*

The forest management proposal is aimed at incorporating all these species into a forest harvesting and management scheme to be carried out by the community whilst seeking a balance with stockbreeding activities carried out in the forest during a particular time of the year, and taking into consideration that these forests are closely related to the Tariquía Reserve whose objective is the conservation of biodiversity.

The forest area of the Chiquiacá community covers just over 21,000 hectares. Considering that forest harvesting has involved only cedar and *cedrillo*, relatively high current and potential volumes of all the above species can be observed. The community management proposal envisages the division of the forest area within the communal territory into 12 units, corresponding to the 12 micro-watersheds being

managed by family groups on the basis of formal and customary rights. The project will select one of these units to carry out a pilot forest harvesting implementation scheme.

Harvesting practices in the Orozas community are very much the same as in the Chiquiacá community, i.e. they are based on the logging of cedar (*Cedrela lilloi, C. lilloi*) incorporating the use of chainsaws for the sawing of timber and its subsequent transport on mules to timber yards outside the forest.

The cost of a "load" of timber (two boards which are 2 meters long by 28 cm wide with a thickness of 3") at the stump (forest) is Bs. 25-30 (received by the "logger"), the cost of transport from the forest to Upper Orozas is Bs. 35 per "load", while the carpenters pay Bs.95 for each load, leaving a Bs.30 profit for the merchant, who in some cases is the same person in charge of logging, transporting and marketing the timber, although in some other cases only the transport carrier and merchant are the same person and sometimes the merchants are totally independent.

Table 1. Forest logging costs per "load"

Marketing Unit	Logger	Transport carrier	Carpenter
A load – 2 boards (2 m long x 28 cm wide x 3" thick) – approx. 25 board feet	Receives Bs.25-30 per load at the stump	Receives Bs.35 per timber load transported to Orozas	Pays Bs.90-95 for each load received in Orozas

Each merchant can take 5-10 "loads" from Tariquia to Orozas per trip, and depending on manpower availability and the distance to logging areas, he can make one trip approximately every 10 days.

Carpenters process the timber mainly into doors and window frames. For each door, they need two loads of timber, 4 litres of gasoline, one and a half days of work, glue and sanding paper. The doors produced and ready to be marketed are transported to Tarija by truck.

As can be seen from the above, both communities practise the same type of selective logging and use the same technologies. Thus, the sharing of experiences between these two communities will contribute to the social development of the Chiquiaca community, while the Orozas community's experience in timber processing and marketing will ensure the viability of the process.

The project further envisages the strengthening of organisational and technical aspects to ensure farmers' control over the timber marketing cycle up to the stages where profits are higher than the current direct sale system used by the community.

3.5.5 Ecological/environmental aspects

The management plan was developed in accordance with the current legislation which guarantees, through a zoning system, the distinction of areas suitable for utilisation from those where it is not possible to carry out harvesting activities due to steep slopes or soil fragility.

According to forest inventory data, the level of natural regeneration is very low, particularly for cedar (*Cedrela* sp.). Monitoring plots have already been established to determine the reasons for this and preliminary findings indicate that there are two major impact sources: (1) a still unidentified insect species attacks the seedlings at the beginning of the rainy season, and (2) apparently the cattle trample and feed on the regeneration seedlings. In view of this situation, it is proposed to conduct different silvicultural practices dealing mainly with these factors to ensure adequate regeneration of cedar and other species.

The distribution of species in this type of ecosystem (montane forest) is very heterogeneous. Therefore, in the preparation of the Annual Harvesting Plans (AHP), spatial and volume criteria will be used to calculate the harvesting rate and location, as well as the allocation of areas to local families. This planning requires additional data on plant formation characteristics, which will be collected through specific research complementary to this project.

3.5.6 Social aspects

The communal nature of the initiative for the harvesting of forest resources is the result of the viewpoint expressed by the majority of community members and determined through the community's own formal decision-making fora.

The organisational process for the implementation of the Management Plan, which the community is consolidating, will ensure the equitable distribution of forest harvesting benefits among the entire population of Chiquiacá.

The organization established for the implementation of the Management Plan is closely related to -and is indeed a specialised chapter of- OTB (Grassroots Territorial Organization), which is a legally recognised organization.

The proposed structure of the organisation, the zoning of the forest to determine the boundaries of the area each farmer can access, and other internal features, have been determined in fora provided by the facilitating team with the objective of giving different interest groups, previously categorised, the opportunity to participate. The entire process has been facilitated through participatory methodologies.

The implementation of the project in a pilot micro-watershed envisages the strengthening of the organization of families that make up the management unit, taking into consideration aspects such as land tenure, land ownership and the environmental features of the forest.

The social characteristics of the Orozas community are somewhat different, because unlike the Chiquiaca community, the Orozas community has not experienced an awareness process regarding equity in the management of forest resources, which is reflected in the fact that forest activities are exclusively in the hands of men. Thus, the project seeks to involve all sectors of the community based on a strategy aimed at encouraging the participation of women initially in the care of agroforestry nurseries and subsequently in reforestation activities and in the sharing of benefits derived from forest resources.

3.5.7 Managerial aspects

Forest resources are essentially the property of the State, but through the latest reforms local communities have been granted rights over environmental management (including the management of forest resources).

The community has decided to exercise this right, and the development of a management plan is a major pre-requisite. It is estimated that the implementation of the project will take three years because it will take that long for sustainable management to show minimum results. It is also envisaged that the community's management skills will have been developed and strengthened, and this will be reflected in the existence of an operational and adequate organization. The introduction and adaptation of sustainable harvesting technologies also requires time.

Project funds will be managed by PROMETA which has experience in the administration of international cooperation funds.

PROMETA will be in charge of project implementation with technical assistance from PROBONA, while the Municipal Forest Unit, the Tarija Forestry Commission and the Tarija Reserve Administration will be responsible for monitoring the implementation of the Management Plan. A team of four professionals will be in charge of operational support: 1 forest coordinator, 1 field forest coordinator working directly on harvesting operations, 1 agronomist and 1 sociologist.

3.6 Reasons for ITTO support

3.6.1 ITTO aspects

ITTO procedures are based on an expeditious and participatory approach as projects are reviewed by a Panel of Experts from both producer and consumer countries and approved by the ITTO Council with the participation of all members. This allows for the proposal to be strengthened as all kinds of experiences can be integrated into it, particularly in relation to community and participatory development.

Furthermore, ITTO is a multilateral organization specialised in this field and with extensive experience in Latin America. Consequently, the monitoring and assistance of this Organization are needed to achieve the objectives of this project.

3.6.2 Relationship to relevant actions supported by other donors

PROBONA (Andean Natural Forests Program), funded by Swiss Technical Cooperation, has provided support through PROMETA (Tarija Environmental Protection) in the process of developing the different components of the Management Plan: forest management, organization, alternative socio-economic activities and implementation of studies and research.

The support of FTPP/FAO-CERES was secured to conduct a diagnosis. With the financial support of USAID, work on aspects of research and organisational support is being carried out in communities covering the entire Tariquía Reserve, including Chiquiacá.

3.7 Risks

The main obstacle to the implementation of the Forest Management Plan is that the community lacks the appropriate technological means for the application of the current legislation. Traditional harvesting was carried out using chainsaws, which are banned under the new forest legislation of Bolivia. The technological alternatives put forward by the law involve the use of sawmills. However, the communities are not familiar with the new technology and the costs associated with its establishment (opening roads, transporting logs to the sawmills) are unknown and are perceived to be relatively high. This naturally generates uncertainty among farmers who find many gaps in the information provided on legal alternatives for the utilisation of their forests.

4. OUTPUTS

(i) The community has a legally recognised right to the utilisation of forests within its territorial jurisdiction.

(ii) Community organization consolidated for the implementation of the Management Plan in all its phases: harvesting, transport, marketing, distribution of benefits, etc.

(iii) Appropriate harvesting technology is available and community members are trained in its management and implementation.

(iv) The community marketing system adopted provides higher income levels for a lower quantity of marketed products.

(v) Various timber species are supplied to the market.

(vi) Community members are aware of and value the dynamics of the forest as well as its non-timber products.

(vii) The pressure on the Tariquía Reserve has decreased as a result of the local management mechanisms developed.

5. ACTIVITIES AND INPUTS

Output 1:

Activities	Inputs
♦ Conduction of forest inventory in Orozas.	Facilitating technicians Community Commission
♦ Approval of forest concession and Management Plan in favour of the community	Management Plan document
♦ Meetings to negotiate forest license with authorities from the Forestry Commission	Cost of forest license Travel and daily subsistence allowance Office equipment

Output 2:

Activities	Inputs
♦ Selection of pilot micro-watershed	Facilitating technicians Sectoral Committees Community meetings
♦ Strengthening sectoral and communal organization in charge of implementing the Management Plan	Transport costs Daily subsistence allowance Office equipment
♦ Coordinating workshops in the sector to develop the Annual Harvesting Plan (AHP)	Facilitating technicians Sectoral meetings Daily subsistence allowance Office materials equipment

Output 3:

Activities	Inputs
♦ Acquiring capital equipment	Financing Transport Administrative staff
♦ Training in sawmill operation	Facilitating technicians Training equipment Transport and daily subsistence allowance
♦ Forest harvesting activities in the sector and coordination with other sectors for participatory monitoring	Coordination fora Consultancy on forest harvesting Forest tools Road equipment
♦ Reforestation activities in Chiquiacá and Orozas.	Technical personnel Seeds Nursery
♦ Management of permanent plots	Consultancy Forest technicians Equipment Tools Office equipment

Output 4:

Activities	Inputs
♦ Departmental forest market survey.	Research technician Office equipment
♦ Identifying markets	Marketing technician Transport and daily subsistence allowance
♦ Setting up a commission for community marketing contracts	Legally binding contracts Transport and daily subsistence allowance
♦ Implementation of contracts	Products Facilitating technicians
♦ Survey of national markets for selected species	Consultancy Office equipment

Output 5:

Activities	Inputs
♦ Study of technical properties of lesser known species	Contract with specialised institution
♦ Classification of timber species according to use	Forest technician
♦ Study on value added alternatives for forest products	Consultancies

6. WORKSHEETS

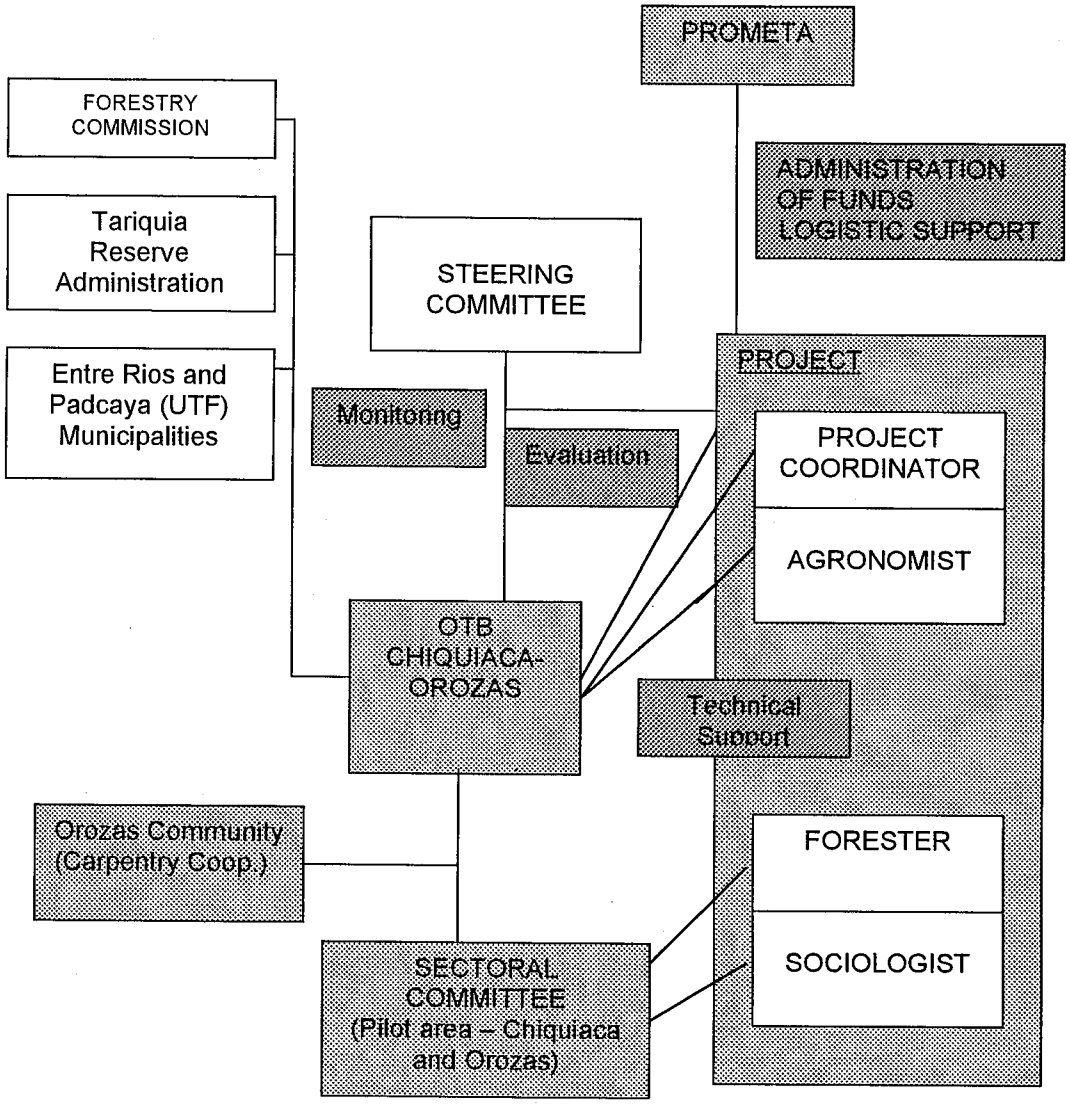
See Annex.

7. WORK PLAN

See Annex.

8. INSTITUTIONAL ARRANGEMENTS FOR EXECUTION AND OPERATION OF THE PROJECT

8.1 Management structure



The community and its members, through their management organization, become the main stakeholders who must gradually establish a self-sufficient forest management administration system.

The community members themselves have devised the communal management structure shown in the above organisational chart for the implementation of the Management Plan.

PROMETA will be the project implementation agency in charge of logistic arrangements, and it has undertaken a commitment to provide its full operational capability to the project.

Intercooperation/PROBONA will be responsible for project follow-up and technical assistance, mainly through its technical team.

8.2 Key staff

The Facilitating Team for the implementation of the proposed project will be made up of two forest technicians (one general coordinator and one providing technical assistance in the field), one agronomist and one sociologist. All these professionals should have a minimum of three years fieldwork experience as part of interdisciplinary teams working with a participatory approach in rural development and in community forest projects with populations living in or near protected areas. They should also have knowledge of interaction with municipalities.

The above personnel will be responsible for the implementation of the project and for achieving the proposed objectives. The Project Coordinator will be in charge of ensuring that the implementation of the Management Plan is consistent with the forestry legislation, the aims of the Tariquía Reserve and the overall strategy for the development of the Chiquiacá community. He/she will also be responsible for developing an Environmental Impact Assessment and for organising an Environmental Statement as required by the Bolivian legislation. The Forest Technician will provide technical support (specifically in relation to harvesting operations in the pilot micro-watershed) and will support the rural families in their forest harvesting and management activities. The sociologist will support the organisational strengthening component so that the sectoral organization can be consolidated in a manner consistent with the socio-economic and environmental characteristics of the unit. The agronomist will continue providing agricultural technical assistance to the unit and to the entire community, particularly in the area of linking the nurseries to forest and fruit production.

PART III MONITORING, REPORTING AND EVALUATION

In this regard, ITTO procedures will be followed and a Steering Committee will be established with representatives from VMMARNDF, OTB, the Entre Ríos Municipality, ITTO, INTERCOOPERATION /PROBONA and PROMETA. However, it should be pointed out that the evaluations should take into consideration criteria such as results obtained in relation to the proposed objectives, changes, objective processes generated as a result of project implementation, and the communities' point of view.

Monitoring, reporting and evaluation activities should be carried out on a regular basis; several visits by the financial donors to the community where the project will be implemented should be planned as part of direct monitoring and report verification. The reports should include information on the implementation of project activities and a relevant financial statement.

An external evaluation is envisaged at the end of the second year of project implementation.

The annual systematisation of the lessons learned is also envisaged so that farmers from both communities may improve their activities.

PART IV. BUDGET

ITTO budget in US$

		Year 1	Year 2	Year 3	Total
10.	**Project Personnel**				
	11. National Experts	28,000	28,000	28,000	
	12. Administrative Personnel	7,000	7,000	7,000	
	13. Consultants				
	14. Other Labour				
	15. Training	5,000			
	16. International Experts	7,000			
	19. Component Total	47,000	35,000	35,000	**117,000**
20.	**Subcontracts**				
	21. Subcontract 1	2,500			
	22. Subcontract 2	2,500			
	23. Subcontract 3	2,500			
	24. Subcontract 4	10,000	5,000		
	29. Component Total	17,500	5,000		**22,500**
30.	**Duty Travel**				
	31. DSA	1,500	1,500	1,500	
	32. Transport Costs	2,400	2,400	2,400	
	39. Component Total	3,900	3,900	3,900	**11,700**
40	**Capital Items**				
	43. Capital Equipment				
	Toyota truck	30,000			
	Agricultural Tractor	25,000			
	Trailer	2,500			
	Portable sawmill	15,000			
	Harvesting tools	5,000			
	Computer	2,000			
	49. Component Total	79,500			**79,500**
50.	**Consumable Items**				
	51. Raw Materials				
	52. Spares	2,500	1,500	500	
	53. Utilities/services	2,500	1,000	500	
	54. Office Supplies	500	500	500	
	59. Component Total	5,500	3,000	1,500	**10,000**
					240,700
70.	**ITTO Admin., Monitoring and Evaluation**				
	71. Monitoring and Evaluation	10,000	10,000	10,000	**30,000**
					270,700
	73. Programme Support Costs (5.5% of the total)	**14,889**			**14,889**
	99. GRAND TOTAL	**178,289**	**56,900**	**50,400**	**285,589**

PROMETA budget in US$

		Year 1	Year 2	Year 3	Total
10.	**Project Personnel**				
	11. National Experts				
	12. Administrative Personnel	7,000	7,000	7,000	
	13. Consultants	2,500			
	14. Other Labour	100			
	15. Training	250	250	250	
	16. International Experts				
	19. Component Total	9,850	7,250	7,250	
20.	**Subcontracts**				
	21. Subcontract x				
	22. Subcontract y				
	29. Component Total				
30.	**Duty Travel**				
	31. Daily Subsistence Allowances	500	500	500	
	32. Transport Costs	2,500	2,500	2,500	
	39. Component Total	3,000	3,000	3,000	
40	**Capital Items**				
	41. Premises	20,000			
	43. Capital Equipment	5,000			
	49. Component Total	25,000			
50.	**Consumable Items**				
	51. Raw Material				
	52. Spares	500	500	500	
	53. Utilities/services	250	250	250	
	54. Office Supplies	250	250	250	
	59. Component Total	1,000	1,000	1,000	
60.	**Miscellaneous**				
	61. Sundry	500	500	500	
	69. Component Total	500	500	500	
	99. GRAND TOTAL	**39,350**	**11,750**	**11,750**	**62,850**

Chiquiacá Community Budget in US$

		Year 1	Year 2	Year 3	Total
10.	**Project Personnel**				
	14. Other Labour	2,500	2,500	2,500	
	15. Training	500	500	500	
	19. Component Total	3,000	3,000	3,000	
30.	**Duty Travel**				
	32. Transport Costs	500	500	500	
	39. Component Total	500	500	500	
40	**Capital Items**				
	41. Premises	20,000			
	42. Land	5,000			
	49. Component Total	25,000			
50.	**Consumable Items**				
	51. Raw Material				
	52. Spares	2,500	2,500	2,500	
	53. Utilities/services	2,500	2,500	2,500	
	59. Component Total	5,000	5,000	5,000	
60.	**Miscellaneous**				
	61. Sundry	2,500	2,500	2,500	
	69. Component Total	2,500	2,500	2,500	
	99. GRAND TOTAL	**36,000**	**11,000**	**11,000**	**58,000**

Orozas Community Budget in US$

		Year 1	Year 2	Year 3	Total
10.	**Project Personnel**				
	14. Other Labour	2,500	2,500	2,500	
	15. Training	500	500	500	
	19. Component Total	3,000	3,000	3,000	
30.	**Duty Travel**				
	32. Transport Costs	500	500	500	
	39. Component Total	500	500	500	
40	**Capital Items**				
	41. Premises	20,000			
	42. Land	5,000			
	49. Component Total	25,000			
50.	**Consumable Items**				
	51. Raw Material				
	52. Spares	2,500	2,500	2,500	
	53. Utilities/services	2,500	2,500	2,500	
	59. Component Total	5,000	5,000	5,000	
60.	**Miscellaneous**				
	61. Sundry	2,500	2,500	2,500	
	69. Component Total	2,500	2,500	2,500	
	99. GRAND TOTAL	**36,000**	**11,000**	**11,000**	**58,000**

PROBONA budget in US$

		Year 1	Year 2*	Year 3*	Total
10.	**Project Personnel**				
	11. National Experts	14,000	14,000		
	12. Administrative Personnel				
	13. Consultants				
	14. Other Labour				
	15. Training				
	16. International Experts				
	19. Component Total	14,000	14,000		
20.	**Subcontracts**				
	21. Subcontract x				
	22. Subcontract y				
	29. Component Total				
30.	**Duty Travel**				
	31. DSA	500	500		
	32. Transport Costs	1,500	1,500		
	39. Component Total	2,000	2,000		
60.	**Miscellaneous**				
	61. Sundry				
	IC follow-up and technical assistance	3,000	3,000	3,000	
	69. Component Total	3,000	3,000	3,000	
	99. GRAND TOTAL	**19,000**	**19,000**	**3,000**	**41,000**

* Subject to the approval of the 5th operational phase.

Overall Budget in US$

		Year 1	Year 2	Year 3	Total
10.	**Project Personnel**				
	11. National Experts	42,000	42,000	28,000	
	12. Administrative Personnel	14,000	14,000	14,000	
	13. Consultants	2,500			
	14. Other Labour	5,100	5,000	5,000	
	15. Training	6,250	1,250	1,250	
	16. International Experts	7,000			
	19. Component Total	76,850	62,250	48,250	
20.	**Subcontracts**				
	21. Subcontract 1	2,500			
	22. Subcontract 2	2,500			
	23. Subcontract 3	2,500			
	24. Subcontract 4	10,000	5,000		
	29. Component Total	17,500	5,000		
30.	**Duty Travel**				
	31. DSA	2,500	2,500	2,000	
	32. Transport Costs	7,400	7,400	5,900	
	39. Component Total	9,900	9,900	7,900	
40	**Capital Items**				
	41. Premises	60,000			
	42. Land	10,000			
	43. Capital Equipment				
	Toyota truck	30,000			
	Tractor	25,000			
	Trailer	2,500			
	Portable sawmill	15,000			
	Harvesting tools	5,000			
	Computer	2,000			
	Radio communications	5,000			
	49. Component Total	154,500			
50.	**Consumable Items**				
	51. Raw Materials				
	52. Spares	8,000	7,000	6,000	
	53. Utilities/services	7,750	6,250	5,750	
	54. Office Supplies	750	750	750	
	59. Component Total	16,500	14,000	12,500	
60.	**Miscellaneous**				
	61. Sundry				
	IC follow-up and technical assistance	3,000	3,000	3,000	
	Other expenses	5,500	5,500	5,500	
	Component Total	8,500	8,500	8,500	
	69.				
70.	**ITTO Admin., Monitoring and Evaluation**				
	71. Monitoring and Evaluation	10,000	10,000	10,000	
	73. Programme Support Costs	14,889			
	*5.5% of total(				
	99. GRAND TOTAL				**505,439**

ANNEXES

LOGICAL FRAMEWORK MATRIX

Project components	Indicators	Means of verification	Important assumptions (/Risks)
Development objective To facilitate the continued implementation of a community forest management system by members of the Chiquiacá community with the purpose of consolidating their rights of access and commercial harvesting of forest resources in a sustainable manner, as one of the options for improving their living conditions.	The communities harvest forest resources in a sustainable manner and in accordance with legal regulations.	Forest concession document approved Minutes of local Committee meetings Photographs Annual Harvesting Plan document	The market is not very stable.
Specific objectives To implement socially, economically and environmentally sustainable harvesting technologies and systems consistent with national and international legislation.	There are at least two sectoral organisations that have incorporated new technologies into their harvesting systems	Records Sectoral organisations consolidated	The new technology is not accepted due to high costs.
To offer a variety of timber species from managed forest to the regional and national markets.	Introduction of at least 3 species into the market	Commercial records of new species in the market	New species do not attract good prices.
Outputs 1. The community has a legally recognised right to the harvesting of forests within its territorial jurisdiction.	The communities market their timber in accordance with legal regulations	Management Plan and Annual Operational Plan approved by Forestry Commission	Approval of standards to supersede existing ones.
2. Community organisation consolidated for the implementation of the Management Plan in all its phases: harvesting, transport, marketing, distribution of benefits, etc.	At least 2 community meetings held per year	Minutes of community meetings Legal capacity status approved Recognition of the Association as a LSG	Conflict of interest within the Association. Delay in the LSG recognition process.
3. Appropriate harvesting technology is available and community members are trained in its management and implementation.	At least 25% of community members can operate portable sawmills	Production records Portable sawmills available	Community members do not adopt the new technology because they are not accustomed to it.

Project components	Indicators	Means of verification	Important assumptions (/Risks)
4. The community marketing system adopted provides higher income levels for a lower quantity of marketed products.	Family income levels have increased by at least 50%	Written community agreements for distribution of benefits	Personal interests within the organizations.
5. Various timber species are supplied to the market.	At least 3 new species marketed	Market survey Studies on mechanical and physical properties of potential timber species	New species do not attract good prices.
6. Community members are aware of and value the dynamics of the forest as well as its non-timber products.	At least 5% of community members abstain from illegal activities	Reforestation activities are implemented. Forest clearing plans.	
7. The pressure on the Tariquía Reserve has decreased as a result of the local management mechanisms developed.	Two forest management plans approved for areas inside and outside the Reserve.	Documents approved by SIF and SERNAP. Reserve management reports	The approval of the management plan within the reserve by SERNAP is delayed.
Activities			
• Approval of forest concession and Management Plan in favour of the community	At least two management plans approved	Document approved by SERNAP and SIF	SERNAP does not adopt current technical forest standards.
• Meetings to negotiate forest license with authorities from the Forestry Commission	At least 4 meetings to negotiate license fees with the Forestry Commission (SIF) and SERNAP	License fees established	SERNAP does not accept the distribution of license fees.
• Selection of pilot micro-watershed	Two watershed areas available for harvesting each year	Sectoral meetings Minutes	
• Strengthening sectoral and communal organisation in charge of implementing the Management Plan	At least 4 training workshops	Workshops Photographs Minutes	Members are not very motivated
• Coordinating workshops in the sector to develop the Annual Harvesting Plan (AHP)	The community takes part in information collection activities and in the design of the AHP	AHP developed on the basis of a participatory approach Field work	Members are not very motivated
• Acquiring capital equipment	At least one portable sawmill available for each community	Photographs Invoices / Receipts Minutes, photographs	
• Training in sawmill operation	25% of community members can operate a portable sawmill	Portable sawmill operated by community members in charge of harvesting activities	
• Forest harvesting activities in the sector and coordination with other sectors for participatory monitoring	Two central forest nurseries available 26 family nurseries available in the area of Chiquiacá	Sectoral agreements Photographs	

Project components	Indicators	Means of verification	Important assumptions (/Risks)
• Reforestation activities	At least 2,000 hectares in harvesting areas (Chiquiacá-Orozas) enriched At least 400 hectares reforested with native species in the area of Orozas	Production of seedlings Forest enrichment applied in harvested areas Reforestation activities carried out in the Orozas area	Nursery production is not sufficient to meet seedling requirements
• Management of permanent plots	Annual forest growth rates are known	Document on forest dynamics analysis	Permanent Sample Plots are not maintained.
• Study of departmental forest market			
• Identifying markets	Knowledge of number and names of most commonly used species	Document on most commonly used species in the market	
• Setting up a commission for community marketing contracts	At least two training workshops on marketing and community funds management	Training workshops Photographs Reports	
• Implementation of contracts	Two contracts signed	Contracts	
• Survey of national markets for selected species	National market survey on a number of species	Document Consultancy	
• Study of technical properties of lesser known species	Study on mechanical properties of lesser-known species	Document on timber properties and potential uses	Timber species do not have the desired properties
• Classification of timbers according to use	Timber species are classified according to their economic value	Document	
• Study on value added alternatives for forest products	Studies carried out on timber processing alternatives	Document/proposal	

WORK PLAN

OUTPUTS /ACTIVITIES	RESPONSIBLE PARTY	SCHEDULE IN MONTHS											
		0-3	6	9	12	15	18	21	24	27	30	33	36
• Approval of forest concession and Management Plan in favour of the community	Coordinator	X											
• Meetings to negotiate forest license with authorities from Forestry Commission	Coordinator, Forester	X	X										
• Selection of pilot micro-watershed	Coordinator, Forester, Sociologist	X	X										
• Strengthening sectoral and communal organisation in charge of implementing the Management Plan	Sociologist, Forester, Agricultural Eng.	X	X	X									
• Strengthening of Orozas community organisation for the preparation of forest inventories	Forester, Coordinator, Sociologist		X	X									
• Conduction of inventories and commercial surveys in Orozas	Coordinator, Forester		X	X									
• Coordinating workshops in the sector to develop the Annual Harvesting Plan (AHP) for the Chiquiacá and Orozas communities	Forester, Coordinator				X	X							
• Acquiring a portable sawmill with all its components	Forester, Coordinator, Sociologist			X	X	X	X	X	X	X	X	X	X
• Training in sawmill operation	Forester				X								
• Forest harvesting activities in the sector and coordination with other sectors for participatory monitoring	Forester					X	X	X	X	X	X	X	X
• Reforestation activities	Coordinator (Consultancy)		X			X	X	X	X	X	X	X	X
• Management of permanent plots	Coordinator (Consultancy)	X		X	X								

OUTPUTS /ACTIVITIES	RESPONSIBLE PARTY	SCHEDULE IN MONTHS											
		0-3	6	9	12	15	18	21	24	27	30	33	36
• Survey of departmental forest market	Coordinator, Forester, Sociologist			X	X								
• Identifying markets	Coordinator			X	X								
• Setting up a commission for community marketing contracts	Coordinator (Consultancy)			X	X	X	X						
• Implementation of contracts	Coordinator (Consultancy)			X	X	X							
• Survey of national markets for selected species	Coordinator (Consultancy)					X							
• Study of technical properties of lesser known species	Coordinator (Consultancy)				X								
• Classification of timber species according to use				X	X	X							
• Study on value added alternatives for forest products					X	X	X	X					

TARIJA ENVIRONMENTAL PROTECTION – PROMETA

TERMS OF REFERENCE

➢ **PROJECT COORDINATOR – Implementation of a Management Plan by the Chiquiacá and Orozas Communities in Tarija, Bolivia**

1) Duties:

The Project Coordinator's duties will include:

- To be responsible for all project activities, project infrastructure and management of project funds.
- To prepare reports and correspondence as required by PROMETA within the project framework.
- To supervise the activities of project technicians.
- To supervise the management of resources according to project needs and PROMETA activities in the area.
- To provide support within his/her capacity to activities implemented by PROMETA in the selected areas as required.
- To provide support within his/her capacity to the activities implemented by PROMETA in general as required by his/her superiors.
- To manage funds, goods and materials allocated under his/her custody in accordance with PROMETA's administrative procedures manual.
- To prepare technical reports to be submitted to PROMETA's Executive Director and financing sources in accordance with agreed conditions and specifications.
- To propose the recruitment of staff to be placed under his/her coordination in accordance with institutional staff rules and budgets.
- To collaborate on an ongoing basis with Management for the acquisition of goods and/or services for the Project.
- To apply disciplinary sanctions as required in matters of his/her competence.
- To be directly responsible for the approval of the community's management plan and forest concession.
- To arrange meetings to negotiate a forest license with Forestry Commission authorities.

2) Administrative hierarchy

The Project Coordinator will report to the following authorities within PROMETA's institutional structure:

- PROMETA's Executive Director
- Director of the National Flora and Fauna Reserve of Tariquia
- All activities in the administrative/financial area should be implemented in consultation with PROMETA's Administrative/Financial Director

3) Institutional Framework

The Project Coordinator shall comply with all administrative and institutional standards established by PROMETA.

➢ **SOCIOLOGIST – Implementation of a Management Plan by the Chiquiacá and Orozas Communities in Tarija, Bolivia**

1) Duties:

- To be responsible for the implementation and results of project activities and other activities required for the achievement of objectives related to his/her job and the project in general.
- To prepare technical reports as required by the Project Coordinator and institutional authorities.
- To coordinate activities with other members of the Project Team.
- To provide support within his/her capacity to the activities implemented by PROMETA and the Protected Area Management as required.
- To assist the Project Coordinator in the acquisition of goods and/or services required for the performance of his/her duties.
- To comply with institutional regulations regarding work timetables, submission of reports and other internal procedures.

2) Administrative hierarchy

The Project Sociologist will report to the following authorities within PROMETA's institutional structure:

- Project Coordinator
- PROMETA's Executive Director
- Director of the National Flora and Fauna Reserve of Tariquia
- Budgetary issues should be dealt with in consultation with PROMETA's Administrative/Financial Director

3) Institutional Framework

The Project Sociologist shall comply with all administrative and institutional standards established by PROMETA.

➢ **FORESTER – Implementation of a Management Plan by the Chiquiacá and Orozas Communities in Tarija, Bolivia**

1) Duties:

- To be responsible for the implementation and results of project activities and other activities required for the achievement of objectives related to his/her job and the project in general.
- To prepare technical reports as required by the Project Coordinator and institutional authorities.
- To coordinate activities with other members of the Project Team.
- To provide support within his/her capacity to the activities implemented by PROMETA and the Protected Area Management as required.
- To be responsible for the identification of potential forest areas.
- To prepare a forest inventory for the Orozas areas and corresponding commercial surveys in Orozas and Chiquiaca.
- To prepare a Management Plan for Orozas.
- To prepare Annual Operational Plans for Chiquiacá and Orozas.
- To coordinate and supervise reforestation and forest enrichment activities.
- To supervise nursery activities.
- To assist the Project Coordinator in the acquisition of goods and/or services required for the performance of his/her duties.
- To comply with institutional regulations regarding work timetables, submission of reports and other internal procedures.

2) Administrative hierarchy

The Project Forester will report to the following authorities within PROMETA's institutional structure:

- Project Coordinator
- PROMETA's Executive Director
- Director of the National Flora and Fauna Reserve of Tariquia
- Budgetary issues should be dealt with in consultation with PROMETA's Administrative/Financial Director

3) Institutional Framework

The Project Forester shall comply with all administrative and institutional standards established by PROMETA.

➢ **FOREST TECHNICIAN – Implementation of a Management Plan by the Chiquiacá and Orozas Communities in Tarija, Bolivia**

1) Duties:

- To be responsible for harvesting activities and other activities required for the achievement of objectives related to his/her job and the project in general.
- To prepare technical reports as required by the Project Coordinator and institutional authorities.
- To coordinate activities with other members of the Project Team.
- To monitor the appropriate harvesting of trees in the field.
- To provide training in the use of portable sawmills.
- To participate in the conduction of inventories and commercial surveys.
- To carry out reforestation and forest enrichment activities.
- To be in charge of nursery activities.
- To provide support within his/her capacity to the activities implemented by PROMETA and the Protected Area Management as required.
- To assist the Project Coordinator in the acquisition of goods and/or services required for the performance of his/her duties.
- To comply with institutional regulations regarding work timetables, submission of reports and other internal procedures.

2) Administrative hierarchy

The Project Forest Technician will report to the following authorities within PROMETA's institutional structure:

- Project Coordinator
- PROMETA's Executive Director
- Director of the National Flora and Fauna Reserve of Tariquia
- Budgetary issues should be dealt with in consultation with PROMETA's Administrative/Financial Director

3) Institutional Framework

The Project Forest Technician shall comply with all administrative and institutional standards established by PROMETA.