

INTERNATIONAL TROPICAL TIMBER ORGANIZATION

ITTO

PROJECT PROPOSAL

TITLE	NATIONAL FOREST INVENTORY AND FOREST RESOURCES MONITORING PROGRAM IN BOLIVIA (INFOBOL-2001)
SERIAL NUMBER	PD 17/99 Rev.3 (F)
COMMITTEE	REFORESTATION AND FOREST MANAGEMENT
SUBMITTED BY	GOVERNMENT OF BOLIVIA
ORIGINAL LANGUAGE	SPANISH

SUMMARY

On 14 October 1996, the ITTO Mission submitted its report on "**Promotion of Sustainable Forest Development in Bolivia**" for the consideration of the XXI Session. This report identified as one of the most urgent priorities the need for a national forest inventory and the establishment of a forest resources monitoring program in Bolivia.

This project is aimed at gathering both static and dynamic quantitative and qualitative information on Bolivian forests by updating the forestry map and implementing a national forest inventory and a forest dynamics monitoring program. The information obtained will be integrated using a forest geographic information system (FGIS), which will facilitate the decision making process regarding the designation of permanent production forests and other needs as the administration deems appropriate. Project results will be used as the basis for the formulation of a Forest Development Plan for Bolivia.

This project will lay the foundations for the establishment of a Forest Information and Evaluation Centre (CEIF), which will be the institution responsible for following up monitoring and evaluation activities after project completion.

EXECUTING AGENCY VICE-MINISTRY OF AGRICULTURE AND FISHERIES (VAGP) OF THE MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (MAGDR)

COOPERATING GOVERNMENTS --

DURATION 24 MONTHS

APPROXIMATE STARTING DATE UPON APPROVAL

BUDGET AND PROPOSED SOURCES OF FINANCE	Source	Contribution in US\$
	ITTO	374,567
	Gov't of Bolivia	151,724
	TOTAL	526,291

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PART I: CONTEXT

1. ORIGIN

The Government of Bolivia requested support from the International Tropical Timber Organisation (ITTO) for the establishment of an adequate and long-lasting policy aimed at the sustainable development of the country's forest resources.

The Council accepted Bolivia's request at its XVII Session and appointed an independent Mission to evaluate the composition and extent of the country's forest resources, to make recommendations for their sustainable utilisation, to develop a plan for the national forest industries, to formulate policies in order to mitigate the social pressures over the land and its forest resources, to assess the manpower needs of the forest sector, to pay special attention to the needs of the indigenous peoples, to design efficient institutional structures and mechanisms to promote sustainable development, and to draft a relevant legal instrument for supporting efforts aimed at sustainable development. In short, the Mission was given the task of examining the forest resources of Bolivia and formulating a comprehensive development plan.

The ITTO Mission submitted its report on 14 October 1996 for the consideration of the XXI Session. This report, which was entitled "Promotion of Sustainable Forest Development in Bolivia", identified as one of the most urgent priorities the need for a national forest inventory and the compilation and maintenance of reliable statistics on forest areas and the quality of forests.

The Mission concluded that "an urgent task for the former MDSMA should be to determine which areas should be dedicated to timber production and to solve the problems involving jurisdictional conflicts and establish as soon as possible a permanent forest estate". It recommended that "a forest reconnaissance inventory should be carried out as soon as possible in order to identify, in general terms, potential forest areas for establishing a permanent production forest and to determine which of those are priority areas for official classification". It also recommended that the "reconnaissance inventory should be followed by a final forest inventory, encompassing the areas identified as having the highest production potential for both timber and non-timber resources. In addition, the Mission recommended that "reliable statistics should be regularly compiled and updated about the areas of the different types of forests. Once the inventory is completed, information on the quality of forests should be included".

The Government of Bolivia adopted the Mission's recommendation and prepared a pre-project proposal - Pre-Project PPD 3/97 (F): "Technical Assistance to Develop a Forest Inventory and Monitoring Program for the Sustainable Management of Bolivia's Forest Resources". The proposal was submitted for financing to the ITTO Permanent Committee on Reforestation and Forest Management. In order to promote the recommendations of the ITTO Mission's report, the pre-project was approved and financed during the XXII Session.

This project being proposed herein is also based on Article 20 of Forestry Law No.1700 and Article 61 of its Regulations which require the classification of lands in accordance with their major use capacity and the assessment of their forest resource potential for the purposes of submitting a plan to the Forest Commission which includes the areas to be officially put up for tender and the areas which are to be reserved for local social groups. The minimum fees for the respective licences also need to be established.

Another factor which has also contributed to the development of this project was the establishment of the Forest Information System of Bolivia - **SIFOR/BOL PD 1/97 Rev.1 (M)** (a project also financed by ITTO) because this system needs to be fed with primary information. That is precisely the information this project will obtain and therefore it will make a very important contribution to SIFOR/BOL.

2. SECTORAL POLICIES

The national policies are embodied in the country's legal and regulatory system and, in that context, the project "**National Forest Inventory and Forest Resource Monitoring Program in Bolivia**" (**INFOBOL-2000**) is consistent with the Political Constitution of the State (approved on 2 February 1967 and amended on 12 August 1994) which, in its Article 170, establishes that the State shall regulate the regime of utilisation of renewable natural resources taking precautions to ensure their conservation and growth. A prerequisite for complying with that mandate is the knowledge of the extent of those resources. In this case, the project will enable the assessment of the size of forest resources in Bolivia and their potential for development.

The project is directly related to the new FORESTRY LAW (Law No. 1700 of 12 July 1996) with its respective rules and regulations, which have the objective of regulating the sustainable utilisation and protection of forests and forest lands for the benefit of present and future generations and harmonising the country's social, economic and environmental goals. In its Article 2, the Law establishes the promotion of forestry and agroforestry research as one of the sustainable forest development objectives, as well as the dissemination of research results for the benefit of the forest resource production, conservation and protection processes.

Other laws which should be taken into consideration because of their relationship with the sector are:

Environmental Law (Act No. 1333 of 27-04-1992)

The Environmental Law covers renewable and non-renewable natural resources, issues related to health and the environment, environmental education, science and technology, promotion and incentives for activities related to the environment and other aspects. It thereby provides the first general legal framework in relation to the environment and its protection.

National Service for Land Reform Law (Act No. 1715 of 18-10-1996)

The National Service for Land Reform Law, called INRA Law, has the objective of establishing the organisational structure and the powers of the National Service for Land Reform, defining a land distribution regime, guaranteeing ownership rights over land, regulating the clearing of agrarian titles and the creation or reform of competent executive and judicial levels of jurisdiction on agrarian matters.

In general terms, the law is concerned with two key points: on the one hand it is aimed at refining ownership rights over land and, on the other hand, at formulating a regulatory framework for the sustainable utilisation of land.

In relation to "sustainable use of land", the INRA Law is based on the concept of the agrarian economic-social function which the law interprets as "the sustainable use of land in the development of mixed farming, forestry and other productive activities, as well as activities related to diversity protection and conservation, research and ecotourism, in accordance with its major land use capacity, for the benefit of society, the collective interest and the interest of the owner".

Wildlife, National Parks, Hunting and Fishing Law (Act No. 12301 of 14-03-1975)

This law, which is still in force, regulates the protection and trade of wild flora and fauna and defines different categories of protected areas, national parks, biological reserves, refuges and wildlife sanctuaries

There have been many problems in the effective execution of this law and it is expected that it will be superseded by the Biodiversity Conservation Law, the approval of which by the Legislature is still pending.

Popular Participation Law (Act No. 1551 of 20-04-1994)

The Popular Participation Law (LPP) is basically geared to utilising and strengthening the potential involvement of the population. The Law grants various rights to the Grassroots Territorial Organisations (OTBs) related to municipal management and the promotion of actions involving environmental management and preservation, ecological balance and sustainable development. The law also confirms the spheres of competence of Municipal Governments established in the Constitutional Law of Municipalities (LOM), in which the preservation of the environment, pollution control and ecological balance maintenance are highlighted. In this way, the municipal framework becomes an essential setting for activities related to environmental preservation and sustainable utilisation of renewable natural resources.

Administrative Decentralisation Law (Act No. 1654 of 28 July 1995)

This law establishes the organisational structure of the Executive at the departmental level within the administrative decentralisation regime and gives departmental governments management autonomy and prerogatives through the prefectures. Under these new regulations, departmental offices dealing with sustainable development, economic development, human development and popular participation have been established and are responsible for their respective sectors in coordination with the national agencies.

Thus, all these laws are related to Natural Resources and, furthermore, involve the entire structure of the State in their management. However, the laws will only be properly implemented and executed when the appropriate information becomes available.

It is important to point out that the Bolivian State, represented by its various levels of government, has been concerned with the appropriate utilisation of forest resources since the fifties, and for this reason it has regulated forest activities by passing its first Forestry Law which in 1953 established the National Forest Service. This law lost its effectiveness because some of its articles were repealed, creating problems for the

management of forest resources. As a result, the General Forestry Law of the Nation was enacted in 1974. This Law defined the objectives for the management of permanent production forests, forest plantations, forest research, forest industry, etc.

Similarly, as part of the policy of the Bolivian Government on adequate management of forest resources, important legislative and regulatory measures were taken in the last decade, the most important being as follows:

- On 9 December 1988, by Ministerial Resolution No. 380/88, the Department of Renewable Natural Resources and the Environment was established under the authority of the former Ministry for Rural and Agricultural Affairs.
- Through Supreme Decree No. 22407 of 11 January 1990, the five-year "Historic Ecological Pause" was established, during which time the issuing of new forest concessions was banned.
- Through a Supreme Decree of December 1990, the National Fund for the Environment (FONAMA) was established with the purpose of obtaining and managing funds geared to supporting projects aimed at the conservation and sustainable use of the country's renewable natural resources.
- Through Supreme Decree No. 22710 of 18 January 1990, the General Secretariat for the Environment, attached to the Presidency of the Republic, was established as an agency involved in decision-making and in the supervision of matters concerning the use, management and conservation of renewable natural resources and the protection of the environment. This Secretariat replaced the one operating in the former Ministry of Rural and Agricultural Affairs.
- Through Law No. 1493 for the Organisation of the Executive, of 17 September 1993, the Ministry for Sustainable Development and the Environment was established, to which the Department of Renewable Natural Resources and the Environment was attached.
- Law No. 1788 for the Organisation of the Executive and its Regulations, of 16 September 1997, established the Vice-Ministry for the Integrated Harvesting of Natural Resources incorporating the Forest and Silviculture Directorate.
- Through Supplementary Supreme Decree No. 25055 of 23 May 1998, the Vice-Ministry for the Environment, Natural Resources and Forest Development was established within the Ministry of Sustainable Development and Planning, as well as a Forest Development Directorate. These measures define the conservation functions of the above Ministry and the production functions of the Ministry for Agriculture and Rural Development.

3. PROGRAMMES AND OPERATIONAL ACTIVITIES

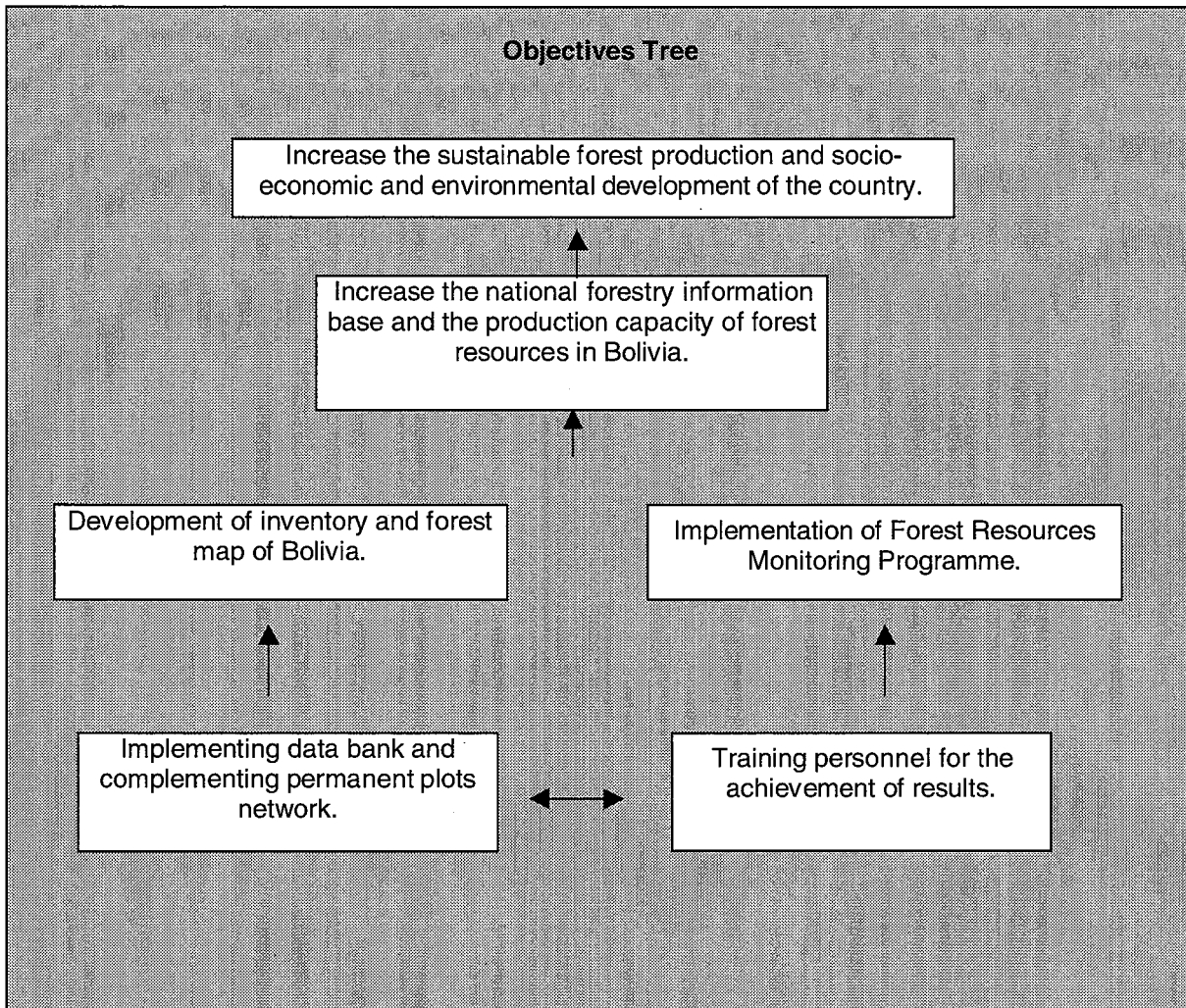
There are a number of forest projects that are currently being implemented with funding from government and non government sources.

Two projects are being implemented in the country with funding from ITTO and the Government of Bolivia. These are ITTO Project PD 1/97 (M) - SIFOR/BOL "National Forest Statistics Information System", which is the technical basis for the submission of this project proposal, and ITTO Project PD 10/98 (F) "Participatory Forest Management by the Indigenous Communities of the Chimanes Region, Beni, Bolivia", which is pending a final project audit. Another project being implemented with ITTO funding in Bolivia is PD 24/97 Rev.1 (F): "Project for Sustainable Forest Management in Pando, Bolivia". In addition, an ITTO-funded project is about to be implemented in Cochabamba with a view to establishing a forest engineering degree course in this city.

One of the major projects being implemented in the forestry field in Bolivia is the BOLFOR Project ("Sustainable Forest Management Project"), financed by USAID and PL480 under agreement with the Ministry for Sustainable Development and Environment (MDSMA) and the National Environmental Fund (Fondo Nacional del Medio Ambiente - FONAMA). The overall objective of the BOLFOR Project is to curb the degradation of natural resources, including water, soil and forest resources, in the Bolivian lowlands, while protecting the biodiversity of these areas. The Project design team specifically took into consideration the experiences of several natural forest management projects, including the Chimanes Project (Bolivia). The successful results of these efforts were incorporated into the BOLFOR Project design, which in addition to a sustainable forest production component, includes a specific component for the protection of biodiversity.

PART II: THE PROJECT

1. PROJECT OBJECTIVES



1.1 Development objective

Increase the sustainable forest production and socio-economic and environmental development of the country.

1.2 Specific objective 1

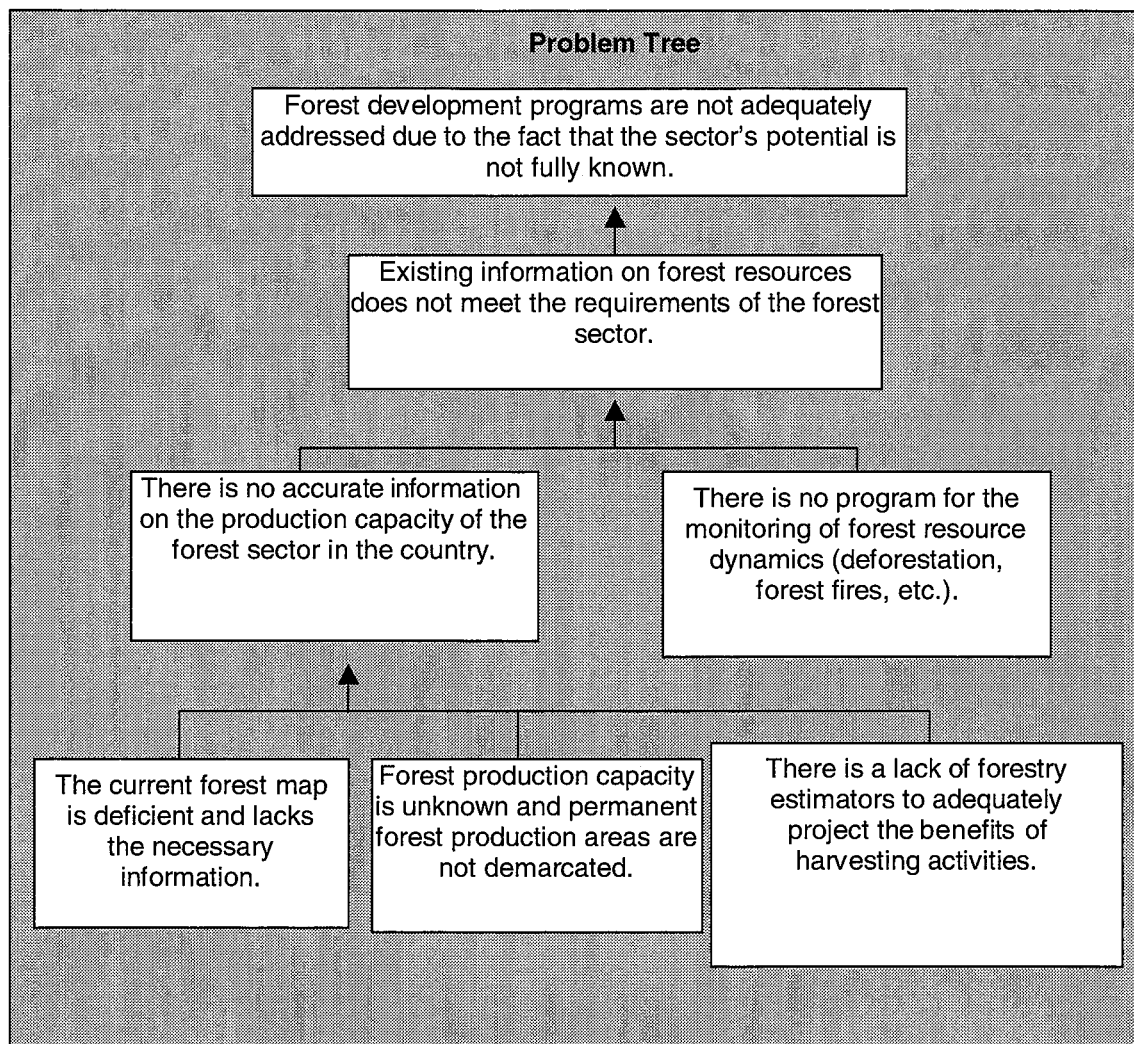
Synthesize qualitative and quantitative information on Bolivian forest resources by carrying out a national forest inventory and implementing a forest resources monitoring program.

2. PROJECT JUSTIFICATION

2.1 Problem to be addressed

An essential requirement for the rational planning of Bolivia's forest development is qualitative and quantitative knowledge of its forest resources, their potential and the possibilities for future development. This knowledge must include the different types of forests, their total areas, location, species, volumes, etc. so as to be able to know the capacity of the country's forests to meet the needs of the population through the various products and services which may be derived from them. These include: integrated management of soil and water resources, biodiversity, production of timber and non-timber forest products for domestic consumption and for export, and the planned conversion of land for sustainable agriculture. At the same time, the need for lands for other social purposes, such as generating employment or recreational activities,

carbon sequestration and meeting the obligations of the country with respect to international treaties should also be taken into consideration.

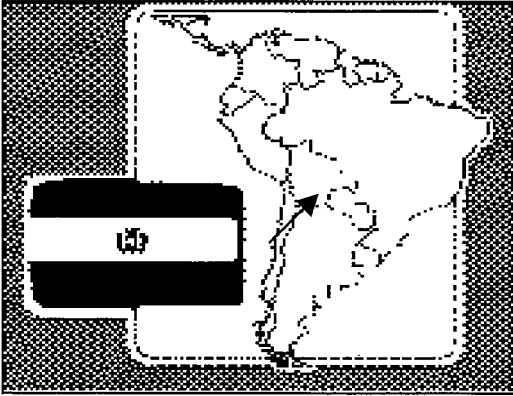


The ITTO Mission, in its report "Promotion of Sustainable Forest Development in Bolivia", pointed out that Bolivia does not have sufficient information to provide a solid foundation for planning national forest development. There is only limited data on the growth and yield of some species.

The problem has already been considered by the Forest Development Action Plan 1990-1995, sponsored by FAO, which in its recommendations points out the need to carry out an inventory of the forest resources of Bolivia. In 1993, the World Bank also indicated that the main problem for starting a development program for the forest sub-sector was the lack of information. Therefore, it recommended as a first priority that an inventory and monitoring program for forest resources be carried out.

The new Forestry Law No. 1700 regulates the sustainable utilisation and protection of forests and forest lands in order to promote the establishment of sustainable and efficient forest activities and to obtain sustainable and improved yields of forest resources, while ensuring the conservation of ecosystems, biodiversity and the environment, protecting and rehabilitating watersheds, facilitating the access of the entire population to forest resources and their benefits, and promoting forestry and agroforestry research.

In order to comply with all the provisions of the Law it is necessary to have a large volume of information which would serve as the basis for planning the actions necessary to meet the goals stipulated by the Law. At present, Bolivia has very limited information at a national level and that makes it difficult and even hinders the discharge of the Government's obligations with respect to planning and supervising the management and rehabilitation of watersheds, and promoting and supporting forest research.



The Project will be implemented in the city of La Paz, Bolivia, because from this location it will be possible to coordinate activities with the participating institutions at a lower cost and more efficiently. Furthermore, dissemination activities will have a longer reach from this city as it is the seat of government.

Finally, one of the most important actions in this Project will be the training of a work team and the legal establishment of a Forest Information and Evaluation Centre (Centro de Evaluación e Información Forestal - CEIF). Should this project be financed, there would be two forest information generating projects in Bolivia, i.e. the present project and SIFORBOL, the continuity of which is vital to ensure the harmonious development of the forest sector in the country. Thus, it is proposed that once completed, these two projects should be integrated to form the CEIF.

2.2 Intended situation after project completion

Upon project completion, the country will have:

- Information on deforestation and reforestation at the national level.
- An updated forestry map.
- Necessary forest information to develop a national forest development plan.
- A network of permanent plots to facilitate the modelling of forest dynamics and to generate information on the growth and production capacity of forests so as to optimise the implementation of activities related to sustainable forest management and adequate planning of forest operations.
- Monitoring and control capacity for activities related to forest stand substitution, vegetation removal, illegal logging activities, forest fires and prescribed burning.
- An organised institution with trained personnel with experience to conduct evaluations of Bolivia's forest resources.
- A trained work team and a legally established Forest Information and Evaluation Centre (CEIF)¹.
- A national geographic information system which will be an important tool for political, technical and social decision-making.
- Volume tables and functions for improved calculation of potential and harvested forest volumes with a view to improved efficiency in wood utilisation and logging activities.

2.3 Project strategy

The project strategy stems from the need to establish an official registry and evaluation of forest resources in Bolivia in a static and dynamic manner, through a statistically acceptable sampling system based on a forestry map drafted using physiognomic, physiographic and other criteria on the basis of recent satellite images so as to obtain useful results for the sustainable production of timber and non-timber products, the demarcation of protection areas and identification of areas of special interest for conservation, etc. for each type of forest as a tool in the planning of sustainable forest development in Bolivia.

An alternative approach which was considered involved working with the current forestry map of Bolivia (1995), compiling all the information from the inventories carried out by different institutions, drawing up a map incorporating all the maps of the inventories already carried out to determine the area already evaluated, and designing a sampling system only for the area not yet evaluated. This approach was ruled out because the information from the inventories already carried out was not uniform, was inadequate, and was not reliable for the identification of species, among other factors.

¹ In accordance with the ITTO Expert Panel's recommendations, the Government of Bolivia, through its Ministry of Agriculture and Rural Development, undertakes to legally establish the CEIF, thus guaranteeing the continuity of project outputs after project completion.

The approach chosen, which is described in the first part of this section, is considered the most adequate because:

- Satellite images which adequately show the physiognomy of the vegetation are ideal for implementing forest stratification at a national level. They also facilitate the assessment of the changes suffered by vegetation mainly as a result of human actions, ie. deforestation processes. Therefore, from a new set of images, it is possible to quickly update the forestry map of Bolivia.
- The sampling design at a national level will provide information collected on the basis of uniform criteria which can be incorporated and compared.
- Permanent plots will in time provide information to determine the natural dynamics of forests.
- The geographic information system will facilitate the incorporation of different types of forest data and relevant variables (abundance, soils, topography, etc.), which will serve as the basis for political, technical and social decision-making.

2.4 Selected beneficiaries

The main beneficiaries of the project will be:

The Bolivian Government, through the Ministry for Agriculture and Rural Development, the Ministry for Sustainable Development and Planning, and the Ministry for Foreign Trade and Investment, since they will have access to reliable information at the national level which will allow them to better fulfil their responsibilities in the forest sector.

The Forestry Commission (Superintendencia Forestal - SF), which will also have access to reliable information at the national level for the purpose of improving its monitoring and technical assistance work.

Private investors, who will have reliable information and will be able to make their investments with better guarantees because permanent production forest estates will be defined.

Native communities which will have reliable information on their forests, enabling them to trade their products under better conditions.

International funding agencies, because they will be in a better position to gauge the necessary investments for development in the forest sector.

NGOs involved in the forest sector and the environment will be able to better develop and support their projects.

Educational institutions will have more information on forest resources.

For the preparation of this project, the country's forest sector situation has been reviewed, analysed and discussed, particularly in relation to forest inventories and control. Meetings have been held with various individuals and institutions, including authorities, beneficiaries and institutions involved in the area. Among the most important were: the National Forestry Chamber, the Forestry Commission, BOLFOR, international funding agencies, bilateral cooperation agencies, NGOs, the Chimanes Project, SIFOR/BOL, PAF-BOL, and others. In all cases, the objectives and the main results of the project were discussed. Everyone agreed on the need to implement the project and made suggestions which were incorporated into the proposal.

2.5 Technical and scientific aspects

The method adopted for the implementation of the project is as follows:

- Updating the forestry map of Bolivia. The various types of forests in Bolivia will be differentiated through the use of recent satellite images and on the basis of physiognomic, physiographic and other criteria related to operational forest capacity. Deforested areas will also be identified to determine the rate of the agricultural frontier expansion in the country. The proposed methodology to be developed is included in the annexes.
- Designing a national sampling system. Based on the updated forestry map a national sampling system will be designed, preferably on the basis of systematic or a combination of systematic and random

sampling. The possible alternatives are detailed in the annexes. Once the project has been implemented, an updated has been produced and a general land and sea reconnaissance survey of the country has been carried out, ie. once all the data become available, a decision must be made about the best alternative.

- Designing the size and shape of the sampling unit. This is very important and will depend on the characteristics of the forests to be evaluated. The use of 10 x 250 m rectangular plots is recommended as they are adequate for populations with medium variability such as those found in the forests of Bolivia.
- Selecting the parameters to be evaluated. The parameters to be measured or evaluated must be carefully selected to achieve the expected results. The parameters recommended for measurement and evaluation are included in the annexes.
- Carrying out fieldwork for capturing data on the forests of Bolivia. This activity must be conducted with utmost care so as to ensure that the information is captured correctly and in the stipulated locations. There should be coordination with the relevant institutions, particularly with the departmental forest directorates and with local associations and communities.
- Quality control when capturing information. It is very important to plan a control inventory which will ensure the quality of the data captured in the field and will also ensure that the provisions for minimising the environmental impact of the project's fieldwork are observed.
- Data processing. For this activity, the type of format expected for the outputs must be very clear. A design proposal for formats is included in the annexes.
- Designing a permanent evaluation plot network. Planning involving the location of permanent plots, their implementation and the parameters to be measured and evaluated will be based on the inventory results. A design proposal for permanent plots is included in the annexes.
- Designing a geographic information system. All the information obtained from the project is to be stored in a geographic information system which will be easy to consult and will assist in decision-making.

The execution of all these activities should be coordinated with institutions which have similar experiences, particularly SIFOR/BOL, Chimanés Project, PROMABOSQUE, PROBONA, BOLFOR, PAF-BOL, etc.

This methodology was adopted for the following reasons:

The forests to be evaluated cover large areas and as a result remote sensing technologies, in this case satellite images, are very useful for classifying forests since only a small number of images are required to cover large areas in order to obtain good stratification results.

Homogeneous national information is required and may be compared and used to plan the forest development of Bolivia. For this reason, it is necessary to design a national sampling system.

Quality information is needed and requires the planning of a control inventory to ensure that the correct information is captured.

In order to determine the production potential of the forests it is necessary to know their dynamics and growth under natural conditions, for which a network of permanent plots is required to provide long-term information.

In order to make political, technical, social and other types of decisions, it is necessary to have the information incorporated and to be able to combine it quickly in different ways in order to study various possibilities. This is achieved by having the information loaded in a geographic information system.

By the end of the project, the Ministry of Agriculture and Rural Development will establish a Forest Information and Evaluation Centre as the basis for a permanent national network for the monitoring and evaluation of Bolivia's forest resources so as to guarantee the continuity of activities after project completion.

To this end, the Ministry undertakes to set up a work team.

This institution shall secure the funds required for its maintenance from forest fees and taxes collected from forest processing industries.

Furthermore, this institution should be provided with the necessary technical and administrative staff and equipment to face the future challenge of sustaining project activities.

2.6 Economic aspects

The project does not seek immediate individual economic results, but the benefits will be wider and far-reaching because of the role that forestry plays and because of its socio-economic and environmental connotations. Moreover, the aim is to obtain information at the national level in order to identify permanent production forest estates in which sustainable forest management systems can be developed with the purpose of preserving forest resources and ensuring that production does not degrade the environment but rather becomes a permanent source of economic benefits improving the quality of life.

The availability of reliable information at the national level will facilitate the planning of forest development in the country and will provide economic returns which currently cannot be calculated. But the potential of the sources can be estimated, for example: once the permanent production estates are defined they can be tendered out, resulting in revenues for the Treasury from forest fees and investments in forest utilisation, which also entails the purchase of machinery, the employment of qualified and non-qualified personnel and other related investments, thereby creating significant economic activity.

The availability of reliable national forest information will facilitate the preparation of development projects which can be funded by international funding agencies as well as by bilateral cooperation organisations and NGOs. In short, with the availability of reliable information there is much potential for greater investment for sustainable management purposes in the sector, which will bring about a high socio-economic benefit.

Historically, global timber consumption has been increasing proportionally to population growth and increased purchasing power. FAO studies indicate that, at today's prices, global demand for timber will increase by more than 40%, exceeding 5 billion m³/year by the year 2010. At the same time, as the demand for timber in the world is increasing, its supply is gradually becoming more restricted due to the fact that the demand cannot be accompanied by an equivalent expansion of traditional sources.

The massive exploitation of natural forests and the environmental pressures from conservationist sectors are substantially reducing the supply options.

One of the main events which took place in relation to the tropical timber trade during the period 1995-1996 was the successful conclusion of the Uruguay Round of trade negotiations and the establishment of the World Trade Organisation (WTO). Over the next few years, as provided for in the Uruguay Round agreements, the tariffs for timber products will be lowered in most of the major markets.

Although Bolivia's share in the global trade of forest products is about 1%, its share is increasing in a sustained manner, a trend which should continue in light of the forest resources available as well as the investments which have been taking place particularly in the area of higher value added products.

In 1999 forest product exports reached US\$108.92 million, accounting for approximately 10% of total exports in the country. The most exported products were:

PRODUCT	VALUE (in US\$ million)	%
Unshelled Brazil Nut	30.89	28.36
Sawnwood	22.22	20.40
Doors	15.12	13.88
Furniture parts and components	10.90	10.00
Other	29.79	27.35
TOTAL	108.92	100

However, there has been a significant growth in other products such as chairs, parquet flooring, furniture and others.

In view of the above there is no doubt that global demand will grow but there will also be increasing international pressure to trade only in products coming from managed forests. That is why it is so important

to set sound foundations so that Bolivia can progress towards the goal of having all its forest export products originating from managed forests, which would place the country at an advantage in the world market and would represent great economic benefits. In order to advance towards that goal it is necessary to establish, as previously stated, sound foundations which will serve as a starting point. These sound foundations have two parts: one is the establishment of a legal basis (national policy), which in the case of Bolivia, thanks to a major effort, has already been established. The other part is the technical basis which is lacking because it has a long development process. For the technical basis to be developed adequately a large amount of reliable information is required. The path to obtaining that information begins with a knowledge of the general characteristics of the forest resources of Bolivia for which it is necessary to carry out a national forest inventory. On the basis of that information the national forest inventory of Bolivia must be planned and from a technical point of view, that involves among other things the following:

- Demarcation of permanent production forest estates
- Review of the needs and sizes of protected areas
- Permanent growth plot network
- Research area network
- Geographic information system design
- Monitoring system design

Bolivia wishes to begin this technical forest development process in order to progress towards the sustainable utilisation of its forest resources and to obtain the economic benefits it entails. For that reason, it seeks the support of ITTO in carrying out a national forest inventory.

It is worth remembering what the ITTO Mission said in 1996: "the Mission believes that Bolivia will gain more than enough benefits in the medium and long terms as a direct result of the path the country is currently following. The Mission urges bilateral and multilateral agencies, particularly ITTO, to support the efforts of the Bolivian people in conserving their ecosystems and managing their forests in a sustainable manner".

2.7 Environmental aspects

The project seeks to obtain information about the forests of Bolivia so as to be able to plan for the sustainable utilisation of forest resources. Therefore, this project will contribute to promoting the establishment of sustainable and efficient forest activities, while ensuring the conservation of ecosystems, biodiversity and the environment.

Because the national forest evaluation will provide an accurate knowledge of the situation of forests and watersheds, the information generated by the project will be useful in developing projects aimed at reducing the environmental deterioration the watersheds and tropical forests in the region may currently be suffering.

In short, the project will contribute to protecting and improving the ecological and environmental conditions in the country.

In accordance with ITTO guidelines on the assessment of possible environmental impacts of projects, this project will provide the following benefits:

- Maintain the stability and fertility of the soil.
- Provide knowledge of timber stocks and other products for the purposes of improving supply.
- Enable the storage of genetic material.
- Provide better knowledge of the characteristics of forest resources, thereby improving possible tourism opportunities.
- Assess deforestation rates so as to plan actions aimed at mitigating effects.

On the other hand, the project does not present any potential risk of a significantly negative impact.

It should be pointed out that during the field stage, the project will include activities which will have minimal effect, such as:

- The opening of inventory strips, for which the low forest vegetation will be cleared to a width of approximately 1 metre. The opening of these strips will not have a significant effect on the environment because the vegetation grows very quickly afterwards. However, to ensure that this action does not have a major effect the teams will be trained so that the strips opened are no wider than one metre and there will be a monitoring team during the inventory which will supervise this and other actions.

- The establishment of camps in the forest for overnight stays and as logistical bases can also cause some damage particularly in the form of pollution which may be caused by plastic containers and other residues left by humans. But due to the short time which will be spent in each camp, the effect will be minimal. However, in order to mitigate even further this effect, the teams will be instructed to cut only the area essential for establishing the camps, and all non-biodegradable residues will be collected and returned to the city to be disposed of in the locations designated for that purpose. The monitoring team will also supervise this action.
- Another danger is that the inventory teams may carry or may contract diseases. To avoid this, team members will undergo medical examinations and will be vaccinated against a wide range of diseases, and a well-equipped medical kit will be available if the need arises.

2.8 Social aspects

The project has a bearing on the entire social structure of the country. However, there will be no significant interaction with different social groups during its execution. Any interaction will be for a short period of time. In such cases it will be necessary to explain the type of work which is being implemented and its objectives and benefits. At the same time, as far as possible, community members will be encouraged to participate in the inventory teams either as guides, forest assistants or labourers.

The social impact of the project will be felt after its completion when all the information for preparing the forest development plan of the country is available. The results will have to be disseminated to promote investment and the sustainable use of Bolivia's forest resources so as to produce the expected social impact.

2.9 Risks

In general terms the project does not have any significant risks which could hinder its execution and success.

The existing risks are the possibilities of delays in the execution of actions due to extreme climatic factors and existing deficiencies in the overland communication routes. These risks will have to be neutralised through appropriate planning.

Risks related to the inadequate implementation of the project are minimal, because even though this depends on a public agency, the need to have the required information will ensure the ongoing auditing and monitoring of the project by various forest institutions in the country.

3. OUTPUTS

Specific objective: Synthesize qualitative and quantitative information on Bolivian forest resources by carrying out a national forest inventory and implementing a forest resource monitoring program.

Outputs:

1. Data bank and comprehensive network of permanent plots.
2. Forest inventory and forest map of Bolivia.
3. Monitoring programme and legally established CEIF.
4. Personnel trained.

4. ACTIVITIES

Output 1: Data bank and comprehensive network of permanent plots.

Activity 1.1 Signing of agreements with main institutions involved.

Activity 1.2 Identifying and defining levels of information required.

Activity 1.3 Designing, developing and feeding data bank and designing permanent plots network.

Output 2: Forest inventory and forest map of Bolivia.

Activity 2.1 Collection and integration of existing information.

Activity 2.2 Acquisition of cartographic equipment and materials and forestry measurement equipment.

Activity 2.3 Spatial analysis and mapping.

Activity 2.4 Collection (sampling) and synthesis of forestry information.

Activity 2.5 Processing and integration of data and identification of estimators.

Activity 2.6 Dissemination of results and development of proposals.

Output 3: Monitoring Programme and legally established CEIF.

Activity 3.1 Modelling of forest dynamics.

Activity 3.2 Monitoring of land use changes, forest fires and other forest activities.

Activity 3.3 Design and legal establishment of the Forest Information and Evaluation Centre (CEIF).

Output 4: Personnel trained.

Activity 4.1 Preparing training workshops and courses for project work team.

Activity 4.2 Documenting methodologies, preparing manuals and dissemination documents.

Activity 4.3 Training courses for the staff that will permanently man the CEIF after project completion.

5. LOGICAL FRAMEWORK WORKSHEETS

PROJECT ELEMENTS	INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<u>Development objective</u> Increase the sustainable forest production and socio-economic and environmental development of the country.	Sustainable forest production is increased and socio-economic and environmental conditions in the country are improved. The production capacity of the forest sector is known.	Reports from SIFOR/BOL, the Forestry Commission and the Bolivian Forestry Chamber.	The policies aimed at integrating the sector into the national economy are maintained.
<u>Specific objective</u> Synthesize qualitative and quantitative information on Bolivian forest resources by carrying out a national forest inventory and implementing a forest resource monitoring program	Availability of reliable information on forest capacities at the national level.	Reports on national and regional data collection auditing and processing networks.	Relevant information transferred from institutions related to the sector.
<u>Output 1</u> Data bank and comprehensive network of permanent plots.	Operational procedures established and validated.	Report on methodology and distribution of permanent plots and data bank.	No relevant assumption.
<u>Output 2</u> Forest inventory and forest map of Bolivia	Information used for the formulation of forest development plans and policies and for the preparation of reports.	Digital forestry map printed with alphanumeric information.	No relevant assumption.
<u>Output 4</u> Monitoring programme and legally established CEIF.	Provision of updated information on forest dynamics. Legally established framework for the structuring of the CEIF.	Monitoring visit. CEIF implementation programme.	There is technical capacity to provide information on forest dynamics. A work team has been set up for the implementation of the CEIF.
<u>Output 5</u> Personnel trained	Implementation of workshops and participation in training courses.	List of participants and technical transfer documents.	No relevant assumption.

6. WORK PLAN

OUTPUTS/ACTIVITIES	YEAR 1												YEAR 2												APPROXIMATE COMPLETION DATE			
	MONTHS												MONTHS															
	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March				
1. Data bank and design of permanent plots network																												
1.1 Signing of agreements with main institutions involved																											30/06/2001	
1.2 Identifying and defining levels of information required																												30/08/2001
1.3 Designing, developing and feeding data bank and designing permanent plots network																												30/01/2002
2. Forest Inventory and forest map of Bolivia																												
2.1 Collection and integration of existing information																												30/08/2001
2.2 Acquisition of cartographic equipment and materials and forestry measurement equipment																												30/11/2001
2.3 Spatial analysis and mapping																												30/04/2002
2.4 Collection (sampling) and synthesis of forestry information																												30/06/2002
2.5 Processing and integration of data and identification of estimators																												30/11/2002
2.6 Dissemination of results and development of proposals																												30/02/2003
3. Monitoring programme and legally established CEIF																												
3.1 Modelling of forest dynamics																												30/02/2003
3.2 Monitoring of land use changes, forest fires and other forest activities																												30/02/2003
3.3 Design and legal establishment of the Forest Information and Evaluation Centre																												30/02/2003
4. Personnel trained																												
4.1 Preparing training workshops for work team																												30/05/2002
4.2 Documenting methodologies, preparing manuals and dissemination documents																												30/02/2003
4.3 Training courses for the staff that will permanently man the CEIF after project completion.																												30/01/2003

7. INPUTS REQUIRED BY OUTPUT AND ACTIVITY, INCLUDING ESTIMATED COSTS							
OUTPUTS/ACTIVITIES	Inputs	No.	Unit Cost	Quarter /Year	Budget Component	Total amount	Total /Output (US\$)
1. Data bank and design of permanent plots network							
1.1 Signing of agreements with main institutions involved	DSA	10	50.00	Q1-Y1	31	500.00	
	National travel	5	200.00	Q1-Y1	33	1,000.00	
	Communications	20	10.00	Q1-Y1	53	200.00	
	National Coordinator	3	2,000.00	Q1-Y1	11	6,000.00	
1.2 Identifying and defining levels of information required	Technical Coordinator	3	1,700.00	Q1-Y1	12	5,100.00	
	National Travel	1	200.00	Q1-Y1	33	200.00	
	DSA	2	40.00	Q1-Y1	31	80.00	
1.3 Designing, developing and feeding data bank and designing permanent plots network	Communications	50	10.00	Q1-Y1	53	500.00	
	Database consultant	3	1,500.00	Q2-Y1	12	4,500.00	
	International consultant	2	4,000.00	Q2-Y1	10	8,000.00	
	International Travel	2	900.00	Q2-Y1	33	1,800.00	
	National Coordinator	1	2,000.00	Q2-Y1	11	2,000.00	
	Technical Coordinator	3	1,700.00	Q2-Y1	12	5,100.00	
	National travel	5	200.00	Q2-Y1	33	1,000.00	
	DSA	10	40.00	Q2-Y1	31	400.00	
	Communications	50	30.00	Q2-Y1	53	1,500.00	
	SUBTOTAL						
2. Forest inventory and forest map of Bolivia							
2.1 Collection and integration of existing information	Technical coordinator	1	1,700.00	Q1 -Y1	12	1,700.00	
	National coordinator	2	2,000.00	Q1-Y1	11	4,000.00	
	Database consultant	2	1,500.00	Q1-Y1	13	3,000.00	
	National travel	5	200.00	Q1-Y1	33	1,000.00	
	DSA	10	40.00	Q1-Y1	31	400.00	
2.3 Acquisition of cartographic equipment and materials and forestry measurement equipment	Technical coordinator	1	1,700.00	Q2-Y1	12	1,700.00	
	National coordinator	1	2,000.00	Q2-Y1	11	2,000.00	
	GIS Consultant	4	1,500.00	Q2-Y1	13	6,000.00	
	Forestry measurement equipment & materials	10	1,000.00	Q2-Y1	44	10,000.00	
	Software	1	15,000.00	Q2-Y1	44	15,000.00	
	Materials	20	1,500.00	Q2-Y1	44	30,000.00	
	Communications	50	10.00	Q2-Y1	53	500.00	
2.4 Spatial analysis and mapping	Consumable materials	150	10.00	Q2-Y1	61	1,500.00	
	National coordinator	4	2,000.00	Q2-Y1	12	8,000.00	
	Technical coordinator	2	1,700.00	Q2-Y1	12	3,400.00	
	GIS consultant	8	1,500.00	Q2-Y1	13	12,000.00	
	Materials	10	200.00	Q2-Y1	44	2,000.00	
2.5 Collection (sampling) and synthesis of forestry information	National coordinator	6	2,000.00	Q3-Y1	12	12,000.00	
	Technical coordinator	4	1,700.00	Q3-Y1	12	6,800.00	
	Forest inventory consultant	6	1,500.00	Q3-Y1	13	9,000.00	
	Technicians	24	800.00	Q3-Y1	13	19,200.00	
	Other labour	36	350.00	Q3-Y1	13	12,600.00	
	National travel	28	200.00	Q3-Y1	33	5,600.00	
	DSA	150	20.00	Q3-Y1	31	3,000.00	
	Transport costs	120	50.00	Q3-Y1	53	6,000.00	
2.6 Processing and integration of data and identification of estimators	Technical coordinator	2	1,700.00	Q4-Y1	12	3,400.00	
	Forest inventory consultant	2	1,500.00	Q4-Y1	13	3,000.00	
	Database consultant	5	1,500.00	Q4-Y1	13	7,500.00	
2.7 Dissemination of results and development of proposals	National coordinator	3	2,000.00	Q3-Y2	12	6,000.00	
	Technical coordinator	3	1,700.00	Q3-Y2	12	5,100.00	
	Forest inventory consultant	3	1,500.00	Q3-Y2	13	4,500.00	
	Database consultant	3	1,500.00	Q3-Y2	13	4,500.00	
	GIS consultant	1	1,500.00	Q3-Y2	13	1,500.00	
	Dissemination material	10	250.00	Q3-Y2	61	2,500.00	
SUBTOTAL							214,400.00

7. INPUTS REQUIRED BY OUTPUT AND ACTIVITY, INCLUDING ESTIMATED COSTS							
OUTPUTS/ACTIVITIES	Inputs	No.	Unit Cost	Quarter /Year	Budget Component	Total amount	Total /Output (US\$)
3. Monitoring Program and legally established CEIF							
3.1 Modelling of forest dynamics	National coordinator	2	2,000.00	Q2-Y2	12	4,000.00	
	Technical coordinator	3	1,700.00	Q2-Y2	12	5,100.00	
	International consultant	2	4,000.00	Q2-Y2	12	8,000.00	
	International travel	2	900.00	Q2-Y2	33	1,800.00	
	Forest inventory consultant	2	1,500.00	Q2-Y2	13	3,000.00	
	Technicians	28	800.00	Q2-Y2	13	22,400.00	
	Materials	1	1,700.00	Q2-Y2	12	1,700.00	
3.2 Monitoring of land use changes, forest fires and other forest activities	Technical coordinator	1	1,700.00	Q2-Y2	12	1,700.00	
	Forest inventory consultant	1	1,500.00	Q2-Y2	13	1,500.00	
	GIS consultant	1	1,500.00	Q2-Y2	13	1,500.00	
3.3 Design and legal establishment of the CEIF	National Coordinator	2	2,000.00	Q1-A2	12	4,000.00	
	National travel	4	200.00	Q1-A3	33	800.00	
	DSA	16	40.00	Q1-A4	31	640.00	
	Communications	10	200.00	Q1-A5	53	2,000.00	
SUBTOTAL						58,140.00	
4. Personnel trained							
4.1 Preparing training workshops for work team	Technical coordinator	1	1,700.00	Q1-Y1	12	1,700.00	
	Forest inventory consultant	5	1,500.00	Q1-Y1	12	7,500.00	
	GIS consultant	5	1,500.00	Q1-Y1	11	7,500.00	
	Database consultant	6	1,500.00	Q1-Y1	12	9,000.00	
	National travel	6	200.00	Q1-Y1	33	1,200.00	
	DSA	12	40.00	Q1-Y1	31	480.00	
	Forest inventory training course	1	2,500.00	Q1-Y1	53	2,500.00	
4.2 Documenting methodologies, preparing manuals and dissemination documents	Forest inventory consultant	5	1,500.00	Q1-Y1	13	7,500.00	
	GIS consultant	5	1,500.00	Q1-Y1	13	7,500.00	
	Database consultant	5	1,500.00	Q1-Y1	13	7,500.00	
	Technicians	20	800.00	Q1-Y1	13	16,000.00	
4.3 Training courses for the staff that will permanently man the CEIF after project completion	Training courses on forest information management	1	7,000.00	Q3-A1	53	7,000.00	
	National travel	12	200.00	Q3-A1	33	2,400.00	
	DSA	24	40.00	Q3-A1	31	960.00	
	Materials	9	800.00	Q3-A2	12	7,200.00	
SUBTOTAL						85,940.00	
TOTAL						396,360.00	

7.1 OVERALL PROJECT BUDGET BY ACTIVITY

OUTPUTS/ACTIVITIES	10. Project Personnel	20. Sub-contracts	30. Duty Travel	40. Capital Items	50. Consumable Items	60. Miscellaneous	Quarter /Year	GRAND TOTAL
1. Data bank and design of permanent plots network								
1.1 Signing of agreements with main institutions involved	6,000.00		1,500.00			200.00		
1.2 Identifying and defining levels of information required	5,100.00		280.00			500.00		
1.3 Designing, developing and feeding data bank and designing permanent plots network	19,600.00		3,200.00			1,500.00		
SUBTOTAL	30700 (E)		4980 (E)			2200 (E)		37,880.00
2. Forest inventory and forest map of Bolivia								
2.1 Collection and integration of existing information	8,700.00		1,400.00					
2.2 Acquisition of cartographic equipment and materials and forestry measurement equipment	9,700.00			55,000.00		2,000.00		
2.3 Spatial analysis and mapping	23,400.00			2,000.00				
2.4 Collection (sampling) and synthesis of forestry information	59,600.00		14,600.00					
2.5 Processing and integration of data and identification of estimators	13,900.00							
2.6 Dissemination of results and development of proposals	21,600.00					2,500.00		
SUBTOTAL	136900 (E)		16000 (E)	57000 (E + I)		4500 (E)		214,400.00
3. Monitoring programme and legally established CEIF								
3.1 Modelling of forest dynamics	42,500.00		1,800.00			1,700.00		
3.2 Monitoring of land use changes, forest fires and other forest activities	4,700.00							
3.3 Design and legal establishment of the CEIF	4,000.00		1,440.00			2,000.00		
SUBTOTAL	51200 (E)		3240 (E)			3700 (E)		58,140.00

7.1 OVERALL PROJECT BUDGET BY ACTIVITY								
OUTPUTS/ACTIVITIES	10. Project Personnel	20. Sub-contracts	30. Duty Travel	40. Capital Items	50. Consumable Items	60. Miscellaneous	Quarter /Year	GRAND TOTAL
4. Personnel trained								
4.1 Preparing training workshops for work team	25,700.00		1,680.00			2,500.00		
4.2 Documenting methodologies	38,500.00							
4.3 Training courses for the staff that will permanently man the CEIF after project completion			3,360.00			14,200.00		
SUBTOTAL	64200 (E)		5040 (E)			16700 (I)		85,940.00
NON-ACTIVITY BASED EXPENSES								
(1) Fuel and utilities					25000 (E + I)	5000 (E)	Q1-Y1	
(2) Office supplies						3000 (E)	Y1-Y2	
(3) Auditing								
SUBTOTAL								33,000.00
SUBTOTAL - ITTO	252,300.00		21,040.00	42,000.00	10,000.00	16,700.00		342,040.00
SUBTOTAL - GOV'T OF BOLIVIA	30,700.00		8,220.00	15,000.00	15,000.00	18,400.00		87,320.00
TOTAL								429,360.00
(I) ITTO Contribution								
(E) Contribution of the Executing Agency /Host Government								

7.2 YEARLY PROJECT BUDGET BY SOURCE - ITTO

	Annual Disbursements	Total	1999	2000
Budget Components				
10. Project Personnel		252,300.00	126,150.00	126,150.00
20. Subcontracts				
30. Duty Travel		21,040.00	10,520.00	10,520.00
40. Capital Items		42,000.00	42,000.00	
50. Consumable Items		10,000.00	10,000.00	
60. Miscellaneous		16,700.00	16,700.00	
Subtotal 1		342,040.00	205,370.00	136,670.00
80. ITTO Administration, Monitoring and Evaluation				
81. Monitoring and review costs		13,000.00		
82. Evaluation Costs				
Subtotal 2		355,040.00		
83. Programme Support Costs (5.5% of subtotal 2)		19,527.20		
90. Refund of pre-project costs				
TOTAL - ITTO		374,567.20		

7.3 YEARLY PROJECT BUDGET BY SOURCE - IMPLEMENTING AGENCY/GOVERNMENT

	Annual Disbursements	Total	1999	2000
Budget Components				
10. Project Personnel		30,700.00		
20. Subcontracts				
30. Duty Travel		8,220.00		
40. Capital Items		15,000.00		
50. Consumable Items		15,000.00		
60. Miscellaneous		18,400.00		
70. Implementing Agency Management Costs (15% of overall project budget by activity)		64,404.00	45,082.80	19,321.20
TOTAL - IMPLEMENTING AGENCY/HOST GOVERNMENT		151,724.00	45,082.80	19,321.20

7.4 CONSOLIDATED YEARLY PROJECT BUDGET

7.4 CONSOLIDATED YEARLY PROJECT BUDGET				
Budget Components				
		TOTAL	ANO 1	ANO 2
10	Project Personnel			
	11. National experts	88,800.00	44,400.00	44,400.00
	12. National consultants	108,000.00	54,000.00	54,000.00
	13. Other labour	70,200.00	49,140.00	21,060.00
	14. Fellowships and Training	2,500.00	1,250.00	1,250.00
	15. International experts			
	16. International consultants	16,000.00	8,000.00	8,000.00
	19. Component Total	285,500.00	156,790.00	128,710.00
20	Subcontracts			
	21. Subcontract (with A)			
	22. Subcontract (with B)			
	29. Component Total			
30	Duty Travel			
	31. DSA	6,460.00	4,860.00	
	32. International Travel	3,600.00	1,800.00	1,800.00
	33. Transport costs	13,200.00	16,000.00	
	39. Component Total	23,260.00	22,660.00	1,800.00
40	Capital Items			
	41. Premises			
	42. Land			
	43. Vehicles			
	44. Capital Equipment	57,000.00	57,000.00	
	49. Component Total	57,000.00	57,000.00	
50	Consumable Items			
	51. Raw materials			
	52. Spares			
	53. Fuel and Utilities			
	54. Office supplies			
	59. Component Total			
60	Miscellaneous			
	61. Sundry	23,600.00	11,800.00	11,800.00
	62. Auditing			
	63. Contingencies			
	69. Component Total	30,600.00	11,800.00	11,800.00
70	Executing Agency Management Cost	97,404.00	48,702.00	48,702.00
	79. Component Total	97,404.00		
	SUBTOTAL			
80	ITTO Monitoring, Evaluation and Administration			
	81. Monitoring and Review Costs	13,000.00		
	82. Evaluation Costs			
	83. Programme Support Costs	19,527.20		
	89. Component Total	32,527.20		
90	Refund of Pre-Project Costs			
100	GRAND TOTAL	526,291.20		

PART III: OPERATIONAL ARRANGEMENTS

1. MANAGEMENT STRUCTURE

The Ministry for Agriculture and Rural Development, through the Vice-Ministry for Agriculture and Fisheries, will be responsible to ITTO for the implementation of the technical and administrative aspects of the project.

Project activities will be divided into three major areas, i.e. Data Bank, Mapping (GIS) and Forest Inventory.

1. The activities organised within the Data Bank area will involve collecting, validating, storing, updating and complementing forestry information through the establishment of new permanent plots. A data bank will be designed and implemented so as to ensure that all information generated by the Project can be reproduced after project completion.
2. The Project will include a Geographic Information System (GIS) Module for the preparation of the forestry map and the spatial analysis to be carried out for the implementation of the forest inventory. This component will also include a remote sensing module to facilitate the classification of satellite images.
3. The activities related to the implementation of the forest inventory will constitute the final and most elaborate project output. Estimators will be identified on the basis of the information collected from the network of existing permanent plots and new plots to be established by the project, as well as cartographic information and classification obtained through the GIS module.

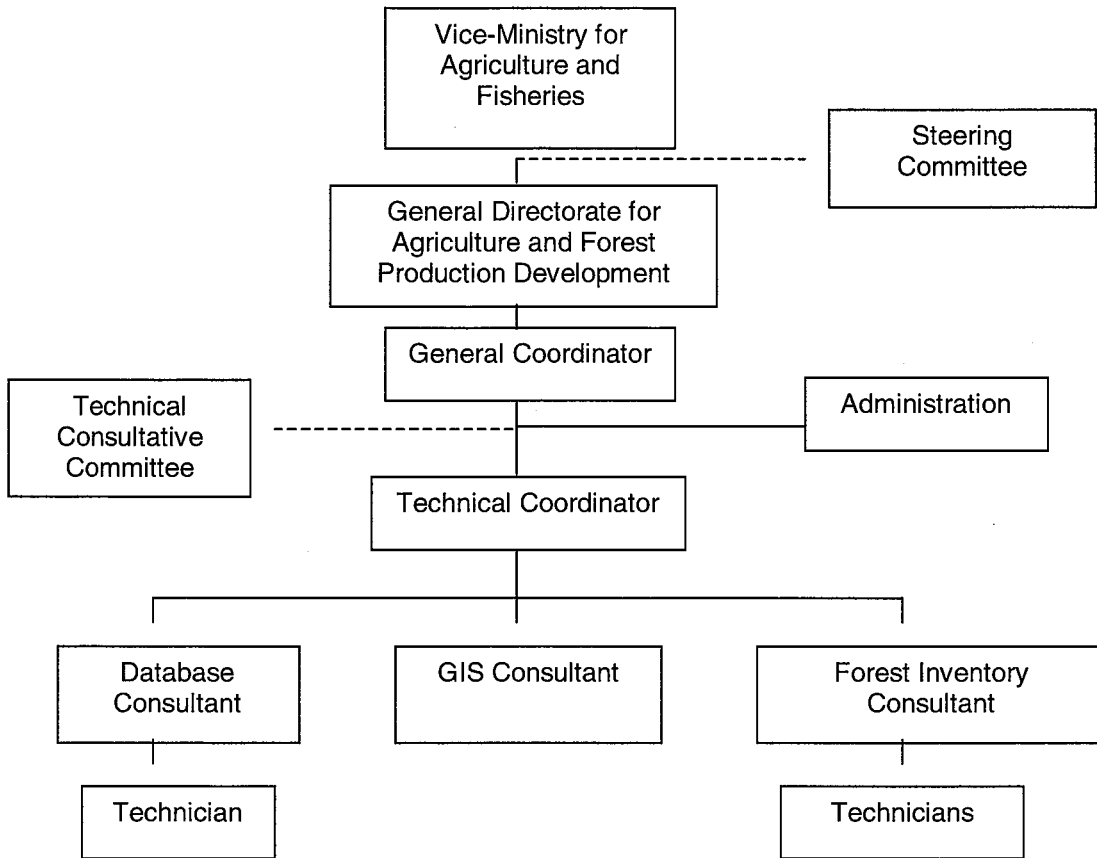
In order to ensure the smooth exchange of information between these areas and a better integration of their activities, a technical coordinator will be appointed with the capacity of integrating the various specific objectives of each area into one final objective.

The project will need to establish contacts with other projects and institutions to exchange information and coordinate actions in order to avoid duplication of efforts. It will also need to disseminate its activities and achievements, both to the relevant authorities and to the general community. These actions should be carried out by a general coordinator, who will perform a dual coordination role both within the project with the assistance of the technical coordinator and outside the project with the support of other institutions with which agreements should be signed in due course.

At the highest level of this management structure there will be a Steering Committee that will be in charge of monitoring that the actions of the project are kept within its essential parameters leading to the achievement of the outputs and objectives for which the project was established. Furthermore, this Committee will advise and indicate necessary corrective measures in case the project gets side-tracked from its essential parameters.

The project organisational structure will be as follows:

PROJECT ORGANISATIONAL CHART



2. MONITORING, REPORTING AND EVALUATION

2.1 Arrangements for reporting

2.2 Progress Reports

As provided for in the work plan of the project, the first progress report can be submitted 12 months after its commencement because by that time there would be tangible and objectively verifiable results such as the data bank and the design of the permanent plots network.

After the 24th month, upon project completion, the following results will have been achieved: reconnaissance inventory implemented at the national level, permanent production forest estates demarcated, permanent growth plots established.

2.3 Project completion report

The project completion report will be submitted meeting the deadline established by ITTO (within three months of project completion). This report will mainly include project achievements, outputs and objectives attained, as well as all other aspects related to the implementation of the project, i.e. methodology, organisation, expenditures, conclusions and recommendations.

2.4 ITTO monitoring and review

In accordance with the work plan of the project, it is advisable that monitoring and review activities be carried out every 12 months, after the submission of progress reports, because objectively verifiable results will be obtained during this period of time. The dates should be set by mutual agreement. However, a tentative schedule is submitted under item 4.

2.5 Evaluation

It is recommended that the project be evaluated upon project completion, i.e. at the end of the 24th month.

2.6 Monitoring and reporting schedule

This preliminary schedule of monitoring and reports shows possible dates for visits to the implementing agency:

Description	Date
- First progress report	1 st day of Month 13
- First monitoring mission	1 st week of Month 14
- First mid-term evaluation	1 st week of Month 23
- Final report	2 months after project completion
- Final evaluation	3 months after project completion

3. FUTURE OPERATION AND MAINTENANCE

The Vice-Ministry for Agriculture and Fisheries of the Ministry of Agriculture and Sustainable Development will undertake to ensure future maintenance and responsibility in terms of both personnel and equipment and materials acquired by the Project. It will also undertake to continue project operations. After project completion, the Government of Bolivia will assume responsibility for including the national staff in its budget, thus covering their salaries and operational expenses as required for the functioning of the Project's work team.

In addition, it will be necessary to train the key staff in the management and updating of information so as to ensure the sustainability of project achievements:

PART IV: THE TROPICAL TIMBER FRAMEWORK

1. COMPLIANCE WITH ITTA 1994 OBJECTIVES

Through this Project, the country will be able to provide an effective framework for consultation, international cooperation and policy development among all ITTA members with regard to all relevant aspects of the world timber economy.

The database to be generated at the national level will contain information on informal activities so as to provide a forum for consultation to promote non-discriminatory timber trade practices.

The system, as a planning tool for decision-making, will undoubtedly play a significant role within the policy framework for sustainable development.

The monitoring programme will make it possible to trace the origin of harvested resources and will therefore serve as a monitoring and planning tool for the sustainable management of our forests.

The project will lead to an increase in the country's production capacity and the promotion of further processing of products by ensuring the availability of highly reliable information on actual and potential supply of timber resources, as well as new markets.

The exchange of information on the international timber market will be encouraged.

The project will promote and support research and development, which will improve forest management and wood utilisation. Furthermore, the project will provide information on forest resources at the national level, which will facilitate the planning of sustainable forest development in Bolivia and the programming of silvicultural research to improve forest management. The information on timber stocks will facilitate the planning of more efficient timber utilisation.

The project will encourage tropical timber reforestation and forest management activities. It will identify different types of silvicultural treatments and their impacts, which will in turn benefit reforestation and forest management.

The project will also encourage the development of national policies aimed at sustainable utilisation and conservation of tropical forests and their genetic resources and at maintaining the ecological balance in the regions concerned. Project results will help characterise national forests and improve national forest development policies, which will lead to the sustainable utilisation and conservation of tropical forests. The improved knowledge on the flora composition of forests will facilitate the planning of actions aimed at better conservation of their genetic resources.

2. COMPLIANCE WITH ITTO ACTION PLAN

The development of this project complies with the basic principle that "Member countries will propose projects or other operational activities to implement the actions under the Action Plan", as it is an initiative that will facilitate the assessment of the current status of resources in Bolivia in order to implement appropriate policies and actions.

The Project also complies with the basic principle that "ITTO's actions and resources should be focused on areas of highest priority", as the ITTO Mission that prepared the report on "Promotion of sustainable forest development in Bolivia" considered that the conduction of a national inventory of the forest resources of Bolivia was a high priority.

The duplication of tasks and activities should be avoided at the preparation and appraisal stages of the project cycle. Consultations should be conducted with other organisations to avoid duplication of efforts and to maximise the benefits. In the preparation of this project, and in order to make maximum use of their experiences and avoid duplication of efforts, special care has been taken to consult with other organisations and projects such as ZONISIG, PROMABOSQUE, BOLFOR, SIFOR/BOL, PLUS SANTACRUZ, CHIMANES PROJECT, PROBONA, FORESTRY COMMISSION (SUPERINTENDENCIA FORESTAL), PAF-BOL, etc.

ITTO activities will basically support national strategies or efforts but will be fully consistent with the collective policies of the Organisation and with the criteria established for projects. As pointed out by the ITTO Mission, Bolivia has made a great effort to bring its legislation into line with the Agreement of the Organisation (ITTO), through the enactment of the new Forestry Law No. 1700 of 16 July 1996 and other laws related to the field. Furthermore, it established the Ministry of Agriculture and Rural Development and the first Ministry for Sustainable Development and the Environment in the world. It has also acceded to various international treaties and agreements aimed at the conservation of ecosystems and the promotion of their sustainability. The Mission determined that for a more efficient implementation of the new regulations, it was necessary to carry out a number of actions, among which the thorough evaluation of Bolivia's forest resources was considered an urgent priority.

Projects and programs should be given focus and priority in areas where ITTO can make more effective contributions, thus producing meaningful results in carefully selected areas of activity. The national forest inventory, which is the subject of this project, is an area where the Organisation has extensive experience because many of its Members have implemented or are implementing this type of inventory. Furthermore, in the ITTO Guidelines for the Sustainable Management of Natural Tropical Forests, guidelines are set out for carrying out national forest inventories and permanent forest zoning.

The Committee on Reforestation and Forest Management gives priority to :

1. Comparative evaluation of silvicultural treatments in permanent sample plots.
2. Study on the effect of different timber harvesting intensities on forest sustainability.

The principles and actions contained in the guidelines for sustainable management cover the following areas:

- National forest inventory.
- Permanent production forest estate.
- Monitoring and research (including silvicultural yield monitoring and environmental impact studies).

This project covers all of the above activities.

ANNEX A - PROFILE OF THE EXECUTING AGENCY

Expertise of the Executing Agency

The Vice-Ministry of Agriculture and Fisheries, the project executing agency, is attached to the Ministry of Agriculture and Rural Development, which is the government body in charge of promoting agricultural, forest and rural development in the country.

ANNEX B - CURRICULA VITA OF THE KEY STAFF

The Project key staff will include:

- A national officer-in-charge or General Coordinator with experience in project and personnel management.
- A forest professional or Technical Coordinator, with expertise in forest inventories, systems development, Geographic Information Systems (GIS) and personnel management.
- A professional with expertise in forest inventories.
- A professional with expertise in data bases and systems.
- A professional with expertise in Geographic Information Systems and Digital Processing of Satellite Images.

The terms of reference for these professionals are given below.

GENERAL COORDINATOR

Under the supervision of the Vice-Ministry for Agriculture and Fisheries, the Project Coordinator will be responsible for the planning, organisation and implementation of project activities.

The Coordinator will establish coordination links between the Forestry Commission, the Bolivian Forestry Chamber and other national institutions in order to ensure the effective complementarity of the outputs obtained.

To this end, the Project Coordinator's duties will include:

- Development of detailed work plan, annual operational plans and budgets in accordance with project targets.
- Monitoring, supervision and coordination of project activities.
- Participating in the selection of project staff.
- Assessing and specifying the work requirements for project staff.
- Ensuring the timely and adequate implementation of project activities.
- Coordinating and revising the preparation of documents and publications on the results obtained by the project.
- Preparing and submitting reports to the Vice-Ministry of Agriculture and Fisheries on a monthly basis and to the International Tropical Timber Organization on a quarterly basis.

Duration: 24 months

Location: Offices allocated by the General Directorate for Forest Development in the city of La Paz

TECHNICAL COORDINATOR

Under the supervision of the General Coordinator, the Project Technical Coordinator will be responsible for coordinating the technical activities of all other project professionals. In particular, the Technical Coordinator's duties will include:

- Coordinate all technical activities of the project, both in the area of databases and in the field of Geographic Information Systems (GIS) and forest inventories.
- Develop methodologies for data processing and identification of forestry data estimators and required volume functions.
- Prepare the project technical reports.

Duration: 24 months

Location: La Paz

DATABASE CONSULTANT

Under the supervision of the General Coordinator and in coordination with the other project professionals, the Database Consultant will perform the following duties:

- Design and implement the project's database. In addition, the Database Consultant will be responsible for storing and updating the information obtained from the permanent plots network.
- Prepare and submit regular activity reports to the Project General Coordinator.

Duration: 24 months

Location: La Paz

CONSULTANT IN GEOGRAPHIC INFORMATION SYSTEMS

Under the supervision of the General Coordinator and the Technical Coordinator, and in coordination with the other project professionals, the GIS Consultant will perform the following duties:

- Integrate the existing GIS data base.
- Carry out spatial analysis and assisted classification based on satellite imagery processing.
- Design and prepare the Forestry Map of Bolivia.
- Prepare and submit regular activity reports to the General Coordinator.
- Coordinate and monitor the activities of the work team under his responsibility.

Duration: 24 months

Location: La Paz

FOREST INVENTORY CONSULTANT

Under the supervision of the General Coordinator and the Technical Coordinator, and in coordination with the other project professionals, the Forest Inventory Consultant will perform the following duties:

- Coordinate field activities for the establishment of permanent plots and other forestry data.
- Carry out data processing for the identification of forestry estimators and volume functions required in accordance with the proposed methodology.
- Coordinate the activities of the work team under his responsibility.

Duration: 24 months

Location: La Paz

