

# INTERNATIONAL TROPICAL TIMBER ORGANIZATION

## ITTO

### PROJECT DOCUMENT

<b>TITLE:</b>	APPLICATION OF INTERMEDIATE TECHNOLOGIES FOR SUSTAINABLE FOREST HARVESTING
<b>SERIAL NUMBER:</b>	PD 233/03 Rev.2 (I)
<b>COMMITTEE:</b>	FOREST INDUSTRY
<b>SUBMITTED BY:</b>	GOVERNMENT OF PERU
<b>ORIGINAL LANGUAGE:</b>	SPANISH

#### SUMMARY

This project proposal incorporates all the recommendations made by the 26th Expert Panel for Project Appraisal, convened in Yokohama, Japan, on 4-8 August 2003.

The aim of this project is to contribute to technological and environmental development in the country through the implementation of a training, extension, dissemination, promotion and implementation program for the use of appropriate intermediate technologies for forest harvesting in forest concession areas under the management of small and medium timber producers and native communities located in the major Amazon regions of the country (Madre de Dios, Ucayali, San Martin, Huanuco, Loreto and Selva Central).

Technological packages comprising portable sawmills and log extraction and sawnwood transport equipment will be developed with a view to achieving better production levels in forest harvesting operations on the basis of reduced environmental impact techniques and increasing harvesting volumes per hectare and tree unit as compared to the traditional systems currently in place. One of these traditional systems, which is widespread among illegal and low-income loggers, is the use of chainsaws in the longitudinal sawing of timber, which generates high waste levels and is only geared to high commercial value species such as cedar and mahogany.

The initial project contribution will be the implementation of 14 harvesting modules to be delivered to small forest industrialists through a revolving fund to be set up for the acquisition of additional modules, which will be delivered to new beneficiaries under the responsibility of FONDEBOSQUE.

In addition, 4 pilot modules will be implemented and will serve as the basis for the development of an extensive training and dissemination program on appropriate intermediate technologies for forest harvesting.

The project will also contribute to the strengthening of the forest concession process initiated by the Peruvian Government, taking into account that a large number of small forest industrialists with no basic infrastructure or financial resources have been granted legal tenure over their forest areas.

<b>EXECUTING AGENCY:</b>	FONDO DE PROMOCIÓN DEL DESARROLLO FORESTAL – FONDEBOSQUE
<b>DURATION:</b>	24 MONTHS
<b>APPROXIMATE STARTING DATE:</b>	UPON APPROVAL AND FINANCING

<b>BUDGET AND PROPOSED SOURCES OF FINANCE:</b>	<b>Source</b>	<b>Contribution in US\$</b>
	ITTO	552,089
	FONDEBOSQUE	193,818
	<b>TOTAL</b>	<b>745,907</b>

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## **PART I: CONTEXT**

### **1. ORIGIN**

After an evaluation and review of Project PD 16/00 (I) "Support for the Sustainable Development of Small Forest Industrialists", submitted by the Peruvian Government in 2000, the 19th ITTO Expert Panel recommended that a pre-project be firstly implemented to collect the necessary information on the experience gained with the use of existing portable sawmills in Peru, as well as increasing the information available on institutional planning of areas allocated for long-term concessions and for small-scale timber harvesting, associated land tenure issues for the areas in both categories, the experience generated by the operation of portable sawmills and the technical characteristics of portable sawmills and the timber resources involved.

The implementation of Pre-Project PPD 6/00 Rev.1 (I) "Formulation of a Project Proposal to Support the Sustainable Development of Small Forest Industries" was initiated in November 2002 with the financial support of the International Tropical Timber Organization (ITTO) and the National Institute for Natural Resources (INRENA) as the implementing agency. The pre-project had an initial duration of 6 months and was later extended for an additional two-month period (November 2002 – June 2003). Since March 2003, it received the support of the Forest Development Promotion Fund (FONDEBOSQUE), a body established by the Peruvian Government to promote forest development in the country and coordinate actions aimed at the development of harvesting modules with the use of appropriate intermediate technologies to be proposed for small and medium scale forest industrialists.

The reason that gave rise to the original project proposal PD 16/00 (I) in 2000 was the widespread use of chainsaws for the longitudinal sawing of timber, which leads to high timber waste levels and which, given its easy operation and low cost, has become a popular tool commonly used by low-income loggers and particularly by illegal loggers who plunder the forests.

In order to control the use of chainsaws for longitudinal sawing, the Peruvian Government in 1999 promulgated Supreme Decree No. 39-99-AG, which in its Article 10 bans the use of chainsaws in longitudinal sawing, and in 2000, Act No. 27308 – Forestry and Wildlife Law – was passed, including Title V on "Protection of Forest and Wildlife Resources", Article 27 on "Forest burning and easement", which in its Appendix 27.3 states that "The use of chainsaws, or other similar tools and equipment for longitudinal sawing of timber species for commercial and industrial purposes shall be banned, except as otherwise established by the regulations". However, the problem still persists because of the widespread use of this logging method by a large number of small loggers throughout the country. Thus, the banning of this method has led to its illegal use as well as the use of additives to clean the timber produced, which in turn leads to even higher waste levels. Therefore, there is an urgent need to identify, promote, disseminate and implement alternative low-cost and reduced environmental impact technologies to replace the use of chainsaws in longitudinal sawing.

After the promulgation of the Forestry and Wildlife Law, the Ministry of Agriculture, through INRENA, initiated a forest management process by granting forest concessions through public tender in March 2002. The results of this public tender process carried out to date in the regions of Madre de Dios, Ucayali, San Martín and Huánuco, indicate that a good proportion of the stakeholders that have been granted legal tenure of forests are small forest industrialists and many of them do not have appropriate equipment and machinery to carry out forest harvesting operations.

This project proposal is aimed at disseminating and promoting the use of appropriate intermediate technologies for forest harvesting through the use of modules in the harvesting and primary processing of timber in the forest, thus effectively contributing to the consolidation of the concession process.

### **2. SECTORAL POLICIES**

This project is consistent with the strategies and policies implemented by the Peruvian State through the promulgation of the following legislation:

The Ministry of Agriculture Constitutional Law, which stipulates that the Ministry of Agriculture should promote the sustained development of the agrarian sector and is responsible for formulating, coordinating and evaluating national policies related to the agrarian sector in the field of natural resource preservation and conservation.

The National Institute for Natural Resources (INRENA) is responsible for the promotion and sound use and conservation of natural resources with the active participation of the private sector. It is aimed at the rational and integrated management and utilisation of renewable natural resources and their ecological environment to achieve sustainable development.

The recently promulgated Forestry and Wildlife Law (Act No. 27308), replacing Decree Law No. 21147 of 1972, regulates the sustainable utilisation and conservation of forests and forest lands for the benefit of present and future generations, harmonising the social, economic and ecological interests of the country. This Law requires, as the basis for sustainable forest management, the preliminary evaluation and demarcation of forest resources. To this end, an ongoing national forest inventory programme should be implemented as well as a regular integrated evaluation of major forest ecosystems in accordance with the priorities established in the national and regional development plans.

The Forestry and Wildlife Law of Peru (Act No. 27308), in its Article 3, item 3.3, establishes that the Ministry of Agriculture shall be the regulatory agency in charge of promoting the sustainable use and conservation of forest and wildlife resources. In addition, the regulations of the Forestry and Wildlife Law, approved by virtue of Supreme Decree No. 014-2001-AG, in their Article 344, establish the Forest Development Promotion Fund – FONDEBOSQUE, as a private institution with the primary objective of promoting sustainable forest development.

The Natural Protected Areas Law (Act No. 26834) regulates the management of the National System of State Protected Areas (SINANPE) and sustainable management and utilisation instruments for natural protected areas.

The Organic Law for the Sustainable Harvesting of Natural Resources (Act No. 26821) provides the general framework for the conservation of biological diversity and sustainable utilisation of biodiversity resources. It contains provisions regarding forest planning, inventories and monitoring, conservation mechanisms, rural and indigenous communities, and scientific and technological research.

### **3. PROGRAMMES AND OPERATIONAL ACTIVITIES**

INRENA is a forest-related line agency attached to the Ministry of Agriculture. Its main objective is to propose policies, plans and standards for the sustainable use of forest resources and supervise and monitor their implementation, as well as monitoring and promoting the sound use, conservation and preservation of forest resources. Similarly, the Institute must define and implement the Forestry Action Plan in the country.

The Forestry Action Plan has specifically taken into account the process of administrative-political regionalization that has taken place in the country through three "Regional Forest Priority Action Fora" implemented in 1991 with the participation of 241 participants including universities, NGOs, producers associations, rural and native communities, and forest related-projects, as well as higher priority actions and strategies to identify project proposals. All this is being incorporated into the Decentralisation Framework Law issued by the Government in 1999, the new Forestry and Wildlife Law promulgated in 2000 and the new Regionalization Law No. 27867, promulgated by the Peruvian Government in November 2002, which establishes and regulates the structure, organisation, competence and functions of regional governments and defines the decentralised democratic organisation of the regional governments in accordance with the Constitution and the decentralisation baseline legislation.

The regulations of the Forestry and Wildlife Law, approved through Supreme Decree No. 014-2001-AG, in their Article 344, establish the Forest Development Promotion Fund – FONDEBOSQUE, as a private institution of public and social interest with legal capacity and existence, whose main objective is to contribute to and facilitate the development of plans, projects and activities aimed at the promotion of sustainable forest and wildlife development. Major activities in this field are aimed at promoting forest management, the conservation of forest heritage and forest plantations, afforestation, eco-tourism, agroforestry, timber industry, eco-businesses, wildlife management, environmental services, rehabilitation and regeneration of endangered spaces, promotion of forest and wildlife research, and support to forest stakeholders. The members of FONDEBOSQUE's Governing Council are from the public sector and are appointed through sectoral ministerial resolution, while private sector representatives are appointed by the organisations they represent. FONDEBOSQUE became operational in 2002 and today (June 2003) has 6 regional offices in the Amazon regions of Madre de Dios and Ucayali, as well as 5 regional offices that are to be established by September 2003 in Loreto, Pasco, Cusco, San Martin and Huanuco. In addition, FONDEBOSQUE has concluded important agreements with international technical cooperation agencies, regional governments and government bodies for the development of forest activities in the country and is

responsible for the implementation of forest-related projects in coordination with INRENA and the Ministry of Agriculture.

This project is consistent with the plans and targets of FONDEBOSQUE and the Peruvian Government, which promotes the use of new species and sustainable forest management, low environmental impact harvesting, the application of appropriate intermediate technologies, and the promotion of new national and international markets. The implementation of forest harvesting modules using intermediate technologies focused on portable sawmills as a major component constitutes an alternative for the development of forest activities by small timber industrials and for the sustainable use of forest resources. The use of these technologies will lead to increased and improved log utilisation, achieving better yields, which will in turn lead to an increased number of timber species being utilised, improved product quality and a substantial increase in economic returns for the beneficiaries. Most importantly, all this will be achieved through reduced environmental impact harvesting techniques.

Furthermore, ITTO, through its Committee on Forest Industry, has promoted timber industrialization projects in Peru so as to foster the cooperation between producers and consumers.

The main projects implemented in the country in this area with ITTO support include:

- PD 16/87 "Tropical Timber Standardisation",
- PD 18/87 "Computerised Selection of Species for Various End-Uses",
- PD 37/88 "Industrial Utilisation of New Forest Species in Peru",
- PD 150/91 "Identification and Nomenclature of Commercial Tropical Timber Species in the Andean Sub-region",
- PD 152/91 "Harmonisation and Promotion of Technical Standards for Tropical Timber Species in the Sub-region".

## **PART II: THE PROJECT**

### **1. PROJECT OBJECTIVES**

#### **1.1 Development objective**

Contribute to technological and environmental development in the country so as to improve forest production through the incorporation of appropriate intermediate technologies in forest harvesting.

#### **1.2 Specific objective**

Improve the production of small timber industries in six regions of the Peruvian Amazon.

### **2. JUSTIFICATION**

#### **2.1. The problem to be addressed**

The present mode of legal forest tenure through the grant of forest concessions for timber harvesting in areas over 5,000 hectares and for over 40 years - renewable -, obtained by public tender, provides a legal guarantee for the settlement in these areas and allows long-term planning of production. In recent years (25) under Decree Law N. 21147, forest utilisation became chaotic under yearly contracts for areas under one thousand hectares and for periods of one or two years. The forest sector was affected by unreliability, lack of control and abuse. A few foreign timber companies benefited to the detriment of most of the small timber producers, thus encouraging unreliable work, mining of forest resources and selective cutting of valuable species.

Small timber producers who do not have the necessary economic resources or technological alternatives to suit their reality, opt for the use of chainsaws for longitudinal sawing, which generates high levels of timber waste and low sawnwood yields. This is mainly due to the imperfections in the cut, giving rise to the need for an over-sizing of the pieces to later finish them to the desired size with bandsaws and/or circular saws.

In the Madre de Dios region, for some ten (10) years now, small scale timber producers have used an intermediate type of technology that is not suitable for forest harvesting; the portable sawmills manufactured in small workshops at Puerto Maldonado are not suitable: they have serious technical limitations such as the use of small petrol engines (Briggs & Stratton 16 Hp) to drive 42 inch diameter discs, the log support gear usually does not work as such, they are not strong and therefore they can only use timber blocks that have been prepared with a chainsaw to be sawn and/or cleaned later.

Furthermore, because of the lack of appropriate equipment for hauling and storing logs, these sawmills are moved from tree to tree, thus limiting the time specifically used for sawing: a large amount of time is used for setting up, dismantling and transport to the sawmill.

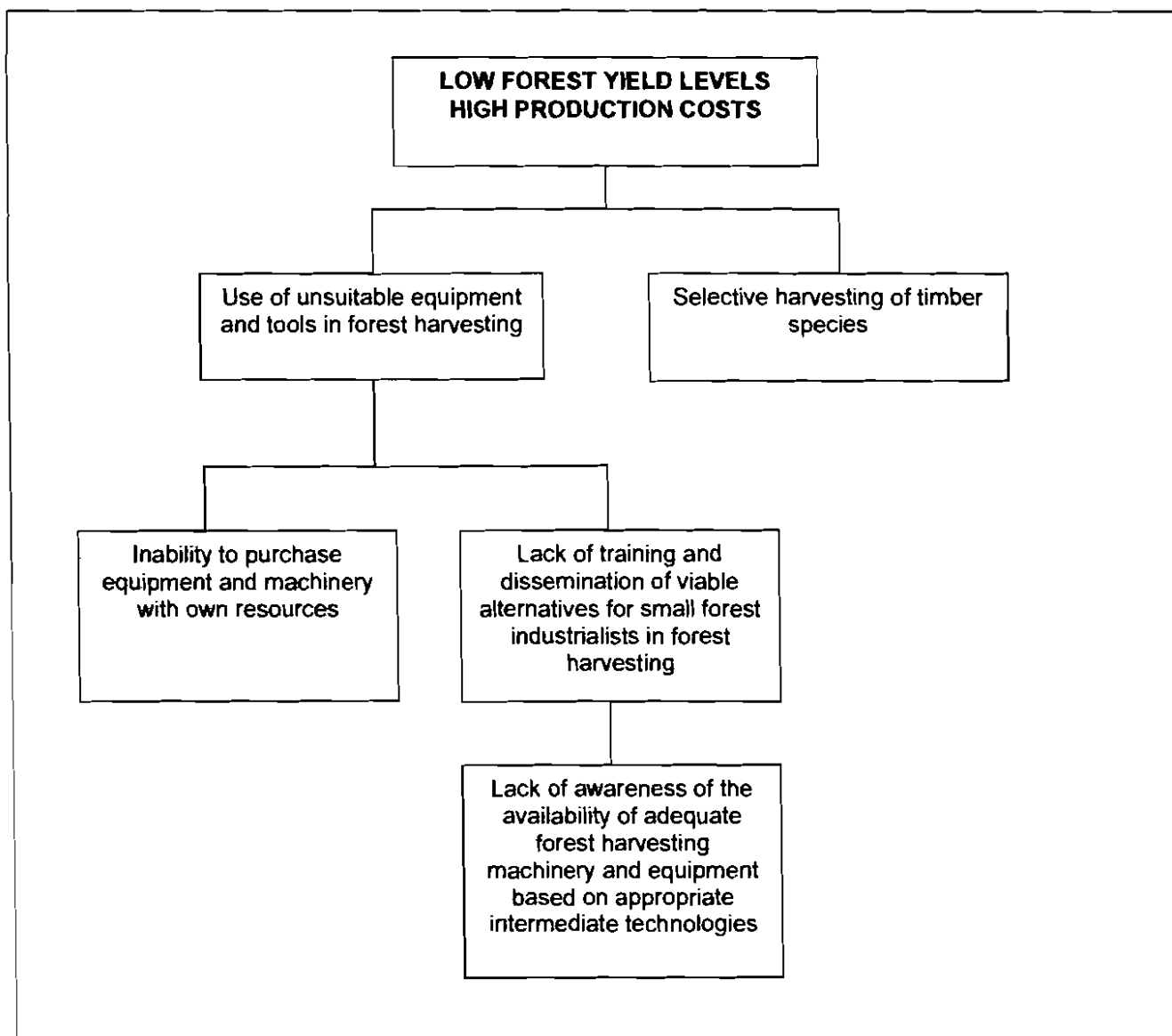
The use of this unsuitable equipment and ineffective organisation systems means high operating costs in the various stages of forest harvesting, so much so that it is only viable to log valuable species such as mahogany and cedar; it is impossible to work on other species because sale prices for these common hardwoods are below production costs.

As a result of the problem analysis, it was concluded that there is a lack of awareness of the availability of adequate forest harvesting machinery and equipment based on the use of appropriate intermediate technologies. Thus, the project envisages training programs and dissemination of these technologies to provide viable alternatives to small forest industrialists.

The inability to acquire machinery and equipment will be addressed through a revolving fund based on the requirement that management plans, yearly plans of operation, business plans and loan applications should all envisage the utilisation of at least six timber species.

The use of adequate equipment and tools for forest harvesting will lead to an increase in forest yield levels and a reduction in production costs. See Figure No. 1.

**FIGURE No. 1**  
**PROBLEM TREE**





## **2.2 Intended situation after Project completion**

At the end of two years of project implementation the situation should be as follows:

The problem of availability of reliable and necessary information (database) on appropriate intermediate technologies for forest harvesting, will have been solved.

The need to incorporate appropriate intermediate technologies both for harvesting and primary processing will have been disseminated and promoted in the most representative areas of the Amazon region (geographic area of the Project), both among users and among decision making bodies, as a national strategy to improve low environmental impact harvesting of timber resources.

Technological forest harvesting packages are available that apply Appropriate Intermediate Technology, and have been tested and validated and have shown their efficiency for various forest harvesting tasks, to be used in tropical forests of the Peruvian Amazon regions.

Small and medium forest industrialists will have incorporated into their harvesting activities, validated forest harvesting modules of proven efficiency, that are suitable for their economic conditions and have contributed to profitable production. This will enable them to obtain suitable levels of income to satisfy their basic needs, fulfil their commitments relating to the payment of harvesting rights and implementation of the Management Plan and to capitalise with the purchase of new higher yield plant and machinery.

In 24 months the project will have managed to implement a training, extension, dissemination, promotion and implementation program for the use of Appropriate Intermediate Technology in forest harvesting with low environmental impact in small and medium industrialists' and native communities' forest concessions in the most important Amazon regions of Peru (Madre de Dios, Ucayali, San Martín, Huanuco, Loreto, Selva Central and Cusco).

Technology packages consisting of three types of forest harvesting modules, as proposed by the Project, will mainly comprise portable sawmills of various types, models and yields, log harvesting and sawnwood transport equipment. Higher yield and low environmental impact forest harvesting will lead to increased harvesting volumes per hectare and tree unit.

There will be workers and technical personnel duly qualified in the various plant and machinery use, operation and maintenance techniques, for the forest harvesting modules using appropriate intermediate technology.

Beneficiaries will have fulfilled the terms of the contract concluded with FONDEBOSQUE, for the use of the forest harvesting modules provided. Their use will become the alternative technology for the small and medium forest industrialists to carry out their forest activity in an adequate manner; furthermore, chainsaw use for longitudinal sawing will be reduced.

Regional governments and FONDEBOSQUE will have concluded agreements for the validation and implementation of appropriate intermediate technologies in forest harvesting in the most important regions of the Peruvian Amazon, thus introducing low environmental impact forest harvesting systems into the forestry process.

## **2.3 Project Strategy**

The aim of this project is to contribute to technological and environmental development in the country through the implementation of a wide-ranging training, extension, dissemination, promotion and implementation program for the use of appropriate intermediate technologies for low environmental impact forest harvesting; to this end, three types of harvesting modules have been identified: Technology Package 1: small portable circular sawmill; Technology package 2: small portable band sawmill; and Technology package 3: a semi-portable band sawmill; each technology package also contains log harvesting and sawnwood transport equipment. Annex D contains the technical specifications of plant and machinery included in the technology packages distributed in this project.

For the training, extension and promotion program for the application of appropriate intermediate technologies in forest harvesting, FONDEBOSQUE will be in charge and possession of four (4) modules: one (1) with Technology package No. 1, one (1) with Technology package No. 2, and two (2) with Technology package No. 3; the above mentioned Program will be implemented in the seven (7) Amazon

regions of the country. The first 4 regions chosen for the first year of the Project were selected on the basis of the progress already made in the forest concession granting process (Madre de Dios, Ucayali, San Martín and Huanuco); and the 3 regions planned for the second year are Loreto, whose process is in progress, and Selva Central and Cusco, where the process is still to be defined. In each region, concessions will be identified where the pilot forest harvesting training modules will be set up, mainly taking into account access and short distance to population centres in order to fulfil its role of disseminating knowledge on the application of appropriate intermediate technologies.

A forest industry expert with experience in portable sawmills and five forest engineers or technicians with experience in harvesting and portable sawmilling will be recruited for the promotion, extension and training programme on appropriate intermediate technologies.

The above professionals will work on an ongoing basis in the beneficiaries' concession areas to provide training and guidance and to supervise the operation and maintenance of harvesting modules.

As for the implementation of harvesting modules for small industrialists selected as beneficiaries, the Project will have fourteen (14) modules to be delivered, ten (10) in the first year and four (4) in the second year. For this purpose, beneficiaries will be adequately identified and selected, taking into consideration forest legal tenure, management plans approved by INRENA with yearly plans of operation based on the harvesting of at least six timber species, minimum experience in timber activity and access to forest concessions. The identification of the most appropriate sites for the first harvesting modules from the point of view of their access to the forest will be carried out with a view to facilitating the observation of demonstrations of harvesting module operation by local authorities, forest consultants, and particularly other small forest industrialists, thus achieving the expected multiplier effect.

Yearly plans of operation, business plans and loan applications should all provide for the harvesting of at least six timber species. Monitoring compliance with this requirement will be under the responsibility of project forest professionals and/or technicians, who will work on an ongoing basis in the beneficiaries' concession areas.

With the repayment of loans during the project implementation period, it will be possible to purchase another eight (08) harvesting modules, which will be delivered to new beneficiaries.

At the time of purchasing the selected harvesting modules (portable sawmills, portable winches, log hauling vehicles, sawnwood transport wagons and harvesting rigging), special attention will be paid to their strength and appropriate design, with a view to harvesting trees of the various species present in our tropical forests and withstanding the demanding working conditions. Special account will be taken also of their production by industrial means, and of an adequate stock of spare parts, technical service and, most importantly, a registered trademark warranty. Pre-project PD 6/00 Rev.1 (I) identified plant and machinery for the three technology packages. To this end, manufacturers and/or representatives of the most well-known portable sawmills in the country were invited to demonstrate the advantages of their equipment in workshops organised and implemented by FONDEBOSQUE and the Pre-project. The composition of each alternative proposed was determined by joint and participatory decision of small forest industrialists.

Education material such as manuals, practical guides and audiovisual material will be prepared and produced on the use, maintenance and harvesting systems using appropriate intermediate technology that will contribute to the fulfilment of the objectives of this Project.

Furthermore, to inform on and disseminate the benefits and advantages of the use of intermediate technologies in forest harvesting, demonstration workshops will be organised on the use and maintenance of the equipment and machinery included in these harvesting modules.

Special attention will be paid to the follow-up, monitoring and evaluation of project activities to enable the collection and systematisation of the new experiences of working with appropriate intermediate technologies and to the ability to replicate them in other projects; mechanisms tailored to each region and target beneficiary will be developed to this end.

It must be pointed out that the value of the dissemination and implementation modules to be delivered to the beneficiaries in the first and second years will be recovered by FONDEBOSQUE in order to ensure the sustainability of the project, by purchasing new equipment to be delivered to new beneficiaries. A repayment schedule is included in the Annex.

## **2.4 Target beneficiaries**

The beneficiaries of the 14 harvesting modules purchased with Project funds will be small forest industrialists and native communities settled in the most representative regions of the Peruvian Amazon, i.e. Madre de Dios, Ucayali, San Martín, Huanuco, Loreto, Cusco and Selva Central; the number of beneficiaries targeted for each region was calculated on the basis of the presence of small forest industrialists with forest concessions and the volume of illegal logging as well as the areas where chainsaw use is quite significant. Therefore in the first year, 10 modules will be delivered, with 4 modules being delivered in the second year.

With the repayment of loans, eight (08) forest harvesting modules will be purchased during the project implementation period, which will be delivered to new beneficiaries.

The selection of beneficiaries for the first year of the Project will be in the Madre de Dios, Ucayali San Martín and Huanuco regions, taking into account that the concessions process has already taken place in those areas, and for the second year in the Loreto region where the process is in progress, and Selva Central and Cusco where it is still to be defined.

Regarding native communities, the Bélgica community was identified in the Madre de Dios region; it is located on the border with Brazil, on the banks of the Acre river, and it is surrounded by forest concessions. In Selva Central the Ashaninka native communities will be supported; they are settled in the area of influence of the Ene, Perené and Tambo rivers. The final identification of the native community to be benefited will be decided in coordination with the mayor (political authority) of the Río Tambo district, who belongs to the Ashaninka ethnic group.

The importance of providing support to these native communities has been considered as a strategy to showcase to the other native communities of Madre de Dios and Selva Central as well as a multiplier effect, particularly since many native communities deliver their forests to informal timber producers because of a lack of economic resources and technological alternatives. These resources are used without applying any sustainability criteria and almost always without any benefit for the native communities.

## **2.5 Technical and scientific aspects**

There is virtually no forest utilisation (harvesting and primary processing on site) applying appropriate intermediate technologies today, with the exception of the Madre de Dios region where there is some experience in the use of portable sawmills and equipment for sawnwood transport, which are manufactured in small workshops in Puerto Maldonado and are of very basic technology. Production costs (harvesting, processing and transport of sawnwood) with this inappropriate technology are high and it only lets them work on valuable species (mahogany and cedar), with high levels of waste.

Considering the limited experience and dissemination on the use of appropriate intermediate technologies in forest utilisation, the Project will systematise the experience gained and the preparation of technical documents that will allow for the validation of the use of different equipment and machinery included in the forest harvesting modules proposed by the project.

The appropriate intermediate technologies harvesting modules are the most suitable for the small forest industrialist - concession holder, in view of their features: they are of simple construction and/or manufacture; the materials used in their construction are appropriate for the chosen areas of work; they are low cost and of adequate service life and strength; they are easy to operate and/or handle, their adequate weight facilitates their transport in the forest without the need for major access ways; the equipment and machinery are easy to maintain, there is an adequate supply of parts and spare parts, and most importantly, their forest impact is low and they generate new sources of employment.

During the months of June and July 2003, FONDEBOSQUE, jointly with the persons in charge of Pre-project PDD 6/00 Rev. 1 (I), organised two demonstration workshops in Ucayali and Madre de Dios, targeting small forest industrialists - concession holders and forest consultants, on the operation of the various types of portable sawmills available on the domestic market, portable winches, Sulky-style log hauling carts and sawnwood transport wagons. These events will provide the opportunity to disseminate the first technological advances in the use of appropriate intermediate technologies in Peru and will serve as a foundation for the implementation of this Project.

## **2.6 Economic aspects**

With each day, forest activities gain increasing importance at the global level because of their socioeconomic and environmental implications, when they occur in managed areas, with the aim of conserving forest resources and avoiding degradation of the environment as a result of production; they should be a permanent source of economic benefits and should improve the quality of life of local residents. In Peru over the past two years, a forest activity management process has begun through the granting of forest concessions, adequate forest harvesting by small forest industrialists, applying appropriate intermediate technology. This will allow a significant increase in the forest sector potential, generating development for the local population, through the generation of new sources of employment.

It is important to note that in this new forest activity order, the opportunity has arisen for a good number of small forest industrialists, to gain access to the forest by the public tender of forest concessions; many of them do not have appropriate equipment and machinery or the economic resources to purchase them. This is causing them difficulties in fulfilling their obligations to INRENA (payment of harvesting rights, design and implementation of management plans) and it is likely that many of these concessions will revert to the State as a result.

The implementation of this Project will contribute to supporting small forest industrialists by providing the necessary tools to carry out adequate forest harvesting, with acceptable yields, that will allow them to make a profit to satisfy their basic needs, fulfil their commitments to INRENA, pay for any loans (value of the harvesting module) and in the medium term, enable them to capitalise by acquiring machinery with a view to higher yields.

The present process of forest activity management through forest concessions by public tender in harvesting units of 5,000 (five thousand) to 10,000 (ten thousand) hectares for a period of 40 (forty) years, renewable, up to a total number of harvesting units which all told, may be no greater than 50,000 (fifty thousand) hectares, will greatly reduce the number of forest concessions, thus allowing INRENA, the body in charge of natural resource control and monitoring, to act more effectively in the future.

## **2.7 Environmental aspects**

In view of the nature of the project, it does not involve significant risks of environmental impact since it will be implemented in forest concession areas, with established management plans, as well as using appropriate intermediate technologies for forest harvesting using harvesting and primary processing modules on site (portable sawmills, portable winches, log hauling carts and harvesting rigging) which, because of their operation, have a low environmental impact.

Furthermore, the use of appropriate intermediate technologies as proposed in this Project will facilitate the replacement of chainsaws for longitudinal sawing, a method that generates a high level of waste and does not allow for the rational utilisation of timber, and which, because of its selective logging mode (valuable species), has been causing the depletion of this valuable resource.

Some native communities have also been considered among the beneficiaries; because of the lack of economic resources and technical assistance, they have been forced to deliver their forests to informal timber producers who selectively harvest without any technical basis, thus plundering their valuable resources with the consequent damage to the environment. By providing harvesting modules and technical assistance for the implementation of appropriate intermediate technology in low forest management areas, the project will lead to the sound utilisation of their resources without causing major damage to the environment.

## **2.8 Social aspects**

Project objectives of making a contribution to the development of forest activities through the implementation of harvesting modules with appropriate intermediate technologies, will enable the beneficiaries to achieve a considerable increase in yield levels and to reduce harvesting costs. Therefore, it will generate more income, thus improving the socioeconomic status of the beneficiaries, as well as contributing to generate new sources of work.

The active involvement of beneficiaries in the dissemination and promotion of this new technological alternative and its multiplier effect will enable other small forest industrialists, native communities and other organisations in these regions within the scope of the project but which are not project beneficiaries, to incorporate this new alternative and gain the benefits that it may provide.

It must be pointed out that with the banning of chainsaws, a large number of users have been left without work or have found themselves working illegally, obtaining meagre resources, since timber traffickers pay low prices for the timber that has been illegally processed with chainsaws. The consequence of this is that small timber producers are left without any other economic alternative; this gives rise to a serious social problem. The implementation of this project will generate a regional and national strategy that, if implemented, will develop forest activities that may bring important improvements in income or benefits for direct forest users.

## **2.9 Risks**

A high percentage (over 50 %) of forest concessions belong to small timber producers, and a good number of these are in a very insecure situation: they do not have economic resources to enable them to implement management plans and pay harvesting rights, and it is likely that some concessions will revert to the State. INRENA has established a commission to assess the situation of these small industrialists - concession holders in Madre de Dios and Ucayali, regions where there is a significant problem in this respect. By the end of 2003, the final composition of small forest industrialists - concession holders who have fulfilled their obligations will be defined. Therefore, in 2004, when the Project is expected to start, beneficiary selection will be done taking this into consideration. The correct selection of beneficiaries will contribute to the reduction of risks that might hinder the fulfilment of the Project objectives

The large scope of the Project may affect its development. Therefore, it will be necessary to design follow-up and assessment mechanisms for each module to be delivered by the project, in order to ensure the repayment of loans.

## **3. OUTPUTS**

### **3.1 Specific objective**

Improve the production of small timber industries in six regions of the Peruvian Amazon.

**Output 1:** Harvesting modules installed and operational in six Amazon regions.

The budget for the acquisition of harvesting modules will be taken from a Revolving Fund to which forest concessions will apply.

**Output 2:** Development and implementation of training, extension, dissemination and promotion programme for the application of appropriate intermediate technologies in forest harvesting.

The lack of awareness amongst most forest concession holders of the availability of appropriate intermediate technologies for forest harvesting has been confirmed during the pre-project that gave rise to this project proposal. Intermediate technology dissemination and training is needed for forest industries in general and our country's context in particular (small and medium forest industries).

**Output 3:** Technical assistance for the formulation and implementation of annual harvesting plans, business plans, monitoring, evaluation and validation.

Yearly plans of operation for each forest concession will enable us to develop a business plan for the beneficiaries, which will include the monitoring of both financial (including the revolving fund) and forest management aspects.

## **4. ACTIVITIES**

**Output 1:** Harvesting modules installed and operational in six Amazon regions (Madre de Dios, Ucayali, San Martín, Huánuco, Loreto and Selva Central).

**Activity 1.1:** Select harvesting modules beneficiaries and concessions where the training and dissemination programme for appropriate intermediate technologies for forest harvesting will be implemented. This activity will involve the selection of project beneficiaries in coordination with small forest industrialists /concessionaires and native community organisations. Basic considerations for the selection of beneficiaries will include legal forest tenure, forest management plans approved by INRENA, and a minimum experience in timber production activities. With regard to the selection of concessions for the training programme, in

addition to the aforementioned factors for the selection of project beneficiaries, the accessibility of concession areas will also be considered.

**Activity 1.2:** Install and operationalise harvesting modules.

Pre-Project PPD 6/00 Rev.1 (I), in cooperation with FONDEBOSQUE and small forest industrialists, identified the technical characteristics of the equipment and machinery required for the intermediate technology harvesting modules. The acquisition of equipment and machinery will take place at the beginning of each year so that they can later be transported to selected concessions to be installed and operationalised.

**Output 2:** Development and implementation of training, extension, dissemination and promotion programme for the application of appropriate intermediate technologies in forest harvesting.

**Activity 2.1:** Training, technical assistance and supervision of the operation and maintenance of harvesting modules. This activity will be carried out by specialised technicians and project management (Project Coordinator and Industry Expert) in the beneficiaries' concessions for on-site training and technical assistance so as to improve the skills of workers in the said activities as well as in low environmental impact logging techniques.

**Activity 2.2:** Training, promotion and dissemination of the use of appropriate intermediate technologies in forest harvesting in the Amazon regions covered by the project. Considering the need for the dissemination and mass communication of knowledge, benefits and advantages of the use of this technology, events (courses/workshops) will be implemented for local authorities, government and non-government organisations, public officers, forest consultants, small and medium scale forest industrialists and native community members. In addition, audio-visual materials will be prepared to be distributed to regional universities, technological institutes and colleges, so as to ensure their identification with this new forest harvesting strategy.

**Activity 2.3:** Prepare a forest harvesting manual (practical guidelines) based on appropriate intermediate technology modules. Preparation of teaching materials on the use and maintenance of harvesting systems based on appropriate intermediate technology, including all equipment and machinery used in the harvesting modules.

**Output 3:** Technical assistance for the formulation and implementation of annual harvesting plans, business plans, monitoring, evaluation and validation of the use of intermediate technologies in forest harvesting.

**Activity 3.1:** Develop a business plan for each beneficiary on the basis of the yearly plan of operation for each concession area, considering the monitoring of both financial (including revolving fund) and forest management aspects.

**Activity 3.2:** Advise, assist and assess the beneficiaries regarding the annual harvesting plans for their forest concessions, including the formulation of harvesting plans and provision of technical assistance for their implementation.

**Activity 3.3:** Design a harvesting follow-up and evaluation mechanism for each beneficiary. The monitoring and evaluation of forest harvesting operations carried out by each beneficiary will enable the Project to compile and systematise work experience using appropriate intermediate technologies for the preparation of a technical document to validate these appropriate intermediate technologies.

**Activity 3.4:** Design mechanisms for the monitoring of credit payment by beneficiaries to replenish the revolving fund.

The financial arrangement to be agreed to with the beneficiaries will be based on the credit payment schedule shown in the Annex.

The proposal is as follows:

An interest rate of 15% per annum in US\$.

A grace period of three months after delivery of modules with payment of interest only. At the end of the grace period, quarterly payments for a total of seven installments.

## 5. LOGICAL FRAMEWORK WORKSHEETS

Project Elements	Indicators	Means of verification	Important Assumptions
<b>DEVELOPMENT OBJECTIVE:</b> Contribute to technological and environmental development in the country so as to improve forest production through the incorporation of appropriate intermediate technologies in forest harvesting.	<ul style="list-style-type: none"> <li>- Forest production yield per hectare.</li> <li>- Cost of forest harvesting.</li> </ul>	<ul style="list-style-type: none"> <li>- Production reports and annual forest harvesting report.</li> <li>- Production chain cost study.</li> <li>- Economic and financial study on forest concessions.</li> </ul>	<ul style="list-style-type: none"> <li>- High-level forest sector stakeholders undertake a commitment to implement the strategy.</li> </ul>
<b>SPECIFIC OBJECTIVE:</b> Improve the production of small timber industries in six regions of the Peruvian Amazon	<ul style="list-style-type: none"> <li>- 14 beneficiaries (small forest industrialists with legal forest tenure incorporate and apply appropriate intermediate technologies in their harvesting plans by December 2005.</li> <li>- Concessionaires not directly benefited by the Project also apply intermediate technologies in their forest harvesting operations.</li> </ul>	<ul style="list-style-type: none"> <li>- List of beneficiaries registered with INRENA.</li> <li>- Production reports from harvesting modules allocated to beneficiaries.</li> <li>- INRENA reports on timber production increase per hectare.</li> <li>- Reduction in the use of chainsaws for longitudinal sawing.</li> <li>- Record of concessionaires using intermediate technologies in forest harvesting.</li> </ul>	<ul style="list-style-type: none"> <li>- Small industrialists are willing to apply intermediate technologies in forest harvesting as an alternative to the use of chainsaws in longitudinal timber sawing.</li> </ul>
<b>OUTPUTS:</b>			
<b>Output 1:</b> Harvesting modules installed and operational in six Amazon regions	-14 concessionaires apply appropriate intermediate technologies in their forest harvesting operations.	- Purchase/sale contracts for harvesting modules between FONDEBOSQUE and beneficiaries.	- Beneficiaries' interest in acquiring harvesting modules based on appropriate intermediate technology.
<b>Activity 1.1:</b> Select harvesting modules beneficiaries	- 14 forest concessionaires identified and selected as target beneficiaries.	- Minutes of meetings. Attendance records. - Register of beneficiaries.	- Adequate beneficiaries qualifications.
<b>Activity 1.2:</b> Install and operationalise harvesting modules	- 14 harvesting modules become operational by 2005.	- Installation report. - Production reports for each module.	
<b>Output 2:</b> Development and implementation of training, extension, dissemination and promotion programme for the application of appropriate intermediate technologies in forest harvesting	- 10 courses/workshops on the use, management and maintenance of forest harvesting modules. - 4 harvesting modules installed for training purposes.	- Formal course/workshop attendance records. - Training module attendance records. - Manual on the use of intermediate technologies in forest harvesting.	- The quality of training and technical assistance meets users' demand.
<b>Activity 2.1:</b> Training, technical assistance and supervision of the operation and maintenance of harvesting modules	- 200 trained workers efficiently operating harvesting modules by December 2005.	- Reports on workers' training on forest harvesting modules. - Monitoring and evaluation sheets.	

Project Elements	Indicators	Means of verification	Important Assumptions
<b>Activity 2.2:</b> Training, promotion and dissemination of the use of appropriate intermediate technologies in forest harvesting in the Amazon regions covered by the project	<ul style="list-style-type: none"> <li>- 250 people have had first-hand experience with the advantages and benefits of the use of forest harvesting modules.</li> <li>- 100 people (local/regional authorities, forest consultants, public officers) have had first-hand experience with the benefits of using intermediate technologies in harvesting.</li> <li>- 05 audio-visual materials.</li> </ul>	<ul style="list-style-type: none"> <li>- Record of attendance to formal demonstration workshops.</li> <li>- Record of attendance to training modules. Report on promotion and dissemination demonstration events.</li> <li>- 05 videos on dissemination of techniques for the use of harvesting modules.</li> </ul>	<ul style="list-style-type: none"> <li>- Identification of Amazon Regional Governments in the strategy for the use of intermediate technologies by small forest industrialists.</li> <li>- Financial cooperation from regional governments.</li> </ul>
<b>Activity 2.3:</b> Prepare a forest harvesting manual (practical guidelines) based on appropriate intermediate technology modules	- Manual document on practical guidelines for the use of appropriate intermediate technologies in forest harvesting.	- 1,500 manuals distributed.	
<b>Output 3:</b> Technical assistance for the formulation and implementation of annual harvesting plans, business plans, monitoring, evaluation and validation	<ul style="list-style-type: none"> <li>- 14 harvesting plans formulated and under implementation.</li> <li>- 14 annual financial plans under implementation.</li> <li>- 03 types of technological packages for forest harvesting validated by 2005.</li> </ul>	<ul style="list-style-type: none"> <li>- Implementation reports on formulated harvesting plans.</li> <li>- Implementation reports on formulated financial plans.</li> <li>- Technical documents on 03 validated technological packages for forest harvesting.</li> </ul>	- The effectiveness of three types of forest harvesting modules using appropriate intermediate technologies and reduced environmental impact has been demonstrated.
<b>Activity 3.1:</b> Develop a business plan for each beneficiary on the basis of the yearly plan of operation for each concession area, considering the monitoring of both financial (including revolving fund) and forest management aspects	- 14 business plans formulated to cover each of the beneficiaries	- Business plan document	
<b>Activity 3.2:</b> Assist, advise and assess the beneficiaries regarding the annual harvesting plans for their forest concessions	<ul style="list-style-type: none"> <li>- 14 harvesting plans formulated and under implementation.</li> <li>- Assistance to beneficiaries for the implementation of annual harvesting plans.</li> </ul>	<ul style="list-style-type: none"> <li>- Plans formulated.</li> <li>- Monthly reports on the implementation of annual harvesting plans.</li> </ul>	
<b>Activity 3.3:</b> Design a harvesting follow-up and evaluation mechanism for each beneficiary	- 14 beneficiaries supervised and evaluated in their harvesting activities.	<ul style="list-style-type: none"> <li>- Document on monitoring and evaluation mechanisms.</li> <li>- Monitoring and evaluation reports.</li> <li>- Technical validation documents.</li> </ul>	- Beneficiaries' informal activities have been addressed.
<b>Activity 3.4:</b> Design mechanisms for the monitoring of credit payment by beneficiaries to replenish the revolving fund	- 14 beneficiaries' annual financial plans (incomings and outgoings) for forest harvesting.	- Financial plans	- The funds used for the acquisition of modules are fully recovered through beneficiaries' payments.



## SCHEDULE OF ACTIVITIES

WORK PLAN	YEAR 1												YEAR 2											
ACTIVITIES	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
<b>OUTPUT 1 : (22) Harvesting modules installed and operational in project areas within the Amazon region (including 08 modules acquired through credit payment)</b>	<b>OUTPUT 1</b>																							
Activity 1.1 : Select harvesting modules beneficiaries																								
Activity 1.2 : Install and operationalise harvesting modules																								
<b>OUTPUT 2 : Development and implementation of training, extension, dissemination and promotion programme for the application of appropriate intermediate technologies in forest harvesting</b>	<b>OUTPUT 2</b>																							
Activity 2.1 : Training, technical assistance and supervision of the operation and maintenance of harvesting modules																								
Activity 2.2 : Training, promotion and dissemination of the use of appropriate intermediate technologies in forest harvesting in the Amazon regions covered by the project																								
Activity 2.3 : Prepare a forest harvesting manual (practical guidelines) based on appropriate intermediate technology modules																								
<b>OUTPUT 3 : Technical assistance for the formulation and implementation of annual harvesting plans, business plans, monitoring, evaluation and validation</b>	<b>OUTPUT 3</b>																							
Activity 3.1 : Develop business plan for each beneficiary																								
Activity 3.2 : Assist, advise and assess beneficiaries re harvesting plans																								
Activity 3.3 : Follow-up, evaluation and supervision of forest harvesting																								
Activity 3.4 : Design mechanisms for the monitoring of credit payments for the replenishment of the revolving fund																								

## 7. BUDGET

### 7.1 CONSOLIDATED PROJECT BUDGET BY FINANCING SOURCE

BUDGET COMPONENTS		ITTO	FONDEBOSQUE	TOTAL
10	<b>PROJECT PERSONNEL</b>			
	11	National Coordinator	48,000	48,000
	12	Forest Industry Expert	36,000	36,000
	13	Specialised technicians (5) (22 months)	66,000	66,000
	19	<b>Component Total</b>	<b>150,000</b>	<b>150,000</b>
30	<b>DUTY TRAVEL</b>			
	31	DSA	23,040	12,800
	32	Transport costs	13,120	4,660
	39	<b>Component Total</b>	<b>36,160</b>	<b>17,460</b>
40	<b>CAPITAL ITEMS</b>			
	41	Computer equipment (3)	3,600	2,000
	42	Motor vehicles (4)	7,000	3,500
	43	Revolving fund for harvesting Modules (I)(II)	196,000	28,000
		Revolving fund for harvesting Modules (III)	32,000	32,000
	49	<b>Component Total</b>	<b>238,600</b>	<b>65,500</b>
50	<b>CONSUMABLE ITEMS</b>			
	51	Raw materials	5,000	5,000
	52	Fuel /utilities	15,000	10,000
	59	<b>Component Total</b>	<b>20,000</b>	<b>15,000</b>
60	<b>MISCELLANEOUS</b>			
	61	Promotion and dissemination events (courses, workshops and harvesting manual)	10,000	10,000
	62	Sundry	2,000	1,000
	69	<b>Component Total</b>	<b>12,000</b>	<b>11,000</b>
		<b>SUBTOTAL 1</b>	<b>456,760</b>	<b>108,960</b>
70	<b>EXECUTING AGENCY MANAGEMENT COSTS (15%)</b>			
	79	<b>Component Total</b>		<b>84,858</b>
		<b>SUBTOTAL 2</b>	<b>193,818</b>	<b>650,578</b>
80	<b>ITTO ADMIN., MONITORING AND EVALUATION</b>			
	81	Monitoring and review costs	10,000	10,000
	82	Programme Support Costs	28,006	28,006
	89	<b>Component Total</b>	<b>38,006</b>	<b>38,006</b>
90		Refund of pre-project costs	57,323	57,323
100	<b>GRAND TOTAL</b>		<b>552,089</b>	<b>745,907</b>

### 7.1.1 CONSOLIDATED YEARLY PROJECT BUDGET – ITTO

BUDGET COMPONENTS		ITTO	Year 1	Year 2	
10	<b>PROJECT PERSONNEL</b>				
	11	National Coordinator	48,000	24,000	24,000
	12	Forest industry expert	36,000	18,000	18,000
	13	Specialised technicians (5) (22 months)	66,000	30,000	36,000
	<b>19 Component Total</b>	<b>150,000</b>	<b>72,000</b>	<b>78,000</b>	
30	<b>DUTY TRAVEL</b>				
	31	DSA	23,040	11,520	11,520
	32	Transport costs	13,120	6,560	6,560
	<b>39 Component Total</b>	<b>36,160</b>	<b>18,080</b>	<b>18,080</b>	
40	<b>CAPITAL ITEMS</b>				
	41	Computer equipment (3)	3,600	3,600	
	42	Motor vehicles (4)	7,000	7,000	
	43	Revolving fund for harvesting modules (I)(II) Revolving fund for harvesting modules (III)	196,000 32,000	140,000 32,000	56,000
	<b>49 Component Total</b>	<b>238,600</b>	<b>182,600</b>	<b>56,000</b>	
50	<b>CONSUMABLE ITEMS</b>				
	51	Raw materials	5,000	2,500	2,500
	52	Fuel /utilities	15,000	7,500	7,500
	<b>59 Component Total</b>	<b>20,000</b>	<b>10,000</b>	<b>10,000</b>	
60	<b>MISCELLANEOUS</b>				
	61	Promotion and dissemination events (courses, workshops and harvesting manual)	10,000	5,000	5,000
	62	Sundry	2,000	1,000	1,000
	<b>69 Component Total</b>	<b>12,000</b>	<b>6,000</b>	<b>6,000</b>	
	<b>SUBTOTAL 1</b>	<b>456,760</b>	<b>288,680</b>	<b>168,080</b>	
80	<b>ITTO ADMIN., MONITORING AND EVALUATION</b>				
	81	Monitoring and review costs	10,000		
	82	Programme Support Costs	28,006		
	<b>Sub-total 2</b>	<b>494,766</b>			
90	Refund of pre-project costs	57,323			
100	<b>GRAND TOTAL</b>	<b>552,089</b>			

**7.1.2 CONSOLIDATED YEARLY PROJECT BUDGET – FONDEBOSQUE**

<b>BUDGET COMPONENTS</b>		<b>FONDEBOSQUE</b>	<b>Year 1</b>	<b>Year 2</b>	
<b>10</b>	<b>PROJECT PERSONNEL</b>				
	11	National Coordinator			
	12	Forest industry expert			
	13	Specialised technicians (5) (22 months)			
	<b>19</b>	<b>Component Total</b>			
<b>30</b>	<b>DUTY TRAVEL</b>				
	31	DSA	12,800	6,400	
	32	Transport costs	4,660	2,330	
	<b>39</b>	<b>Component Total</b>	<b>17,460</b>	<b>8,730</b>	
<b>40</b>	<b>CAPITAL ITEMS</b>				
	41	Computer equipment (3)	2,000	2,000	
	42	Motor vehicles (4)	3,500	3,500	
	43	Revolving fund for harvesting modules (I)(II)	28,000		28,000
		Revolving fund for harvesting modules (III)	32,000	32,000	
<b>49</b>	<b>Component Total</b>	<b>65,500</b>	<b>37,500</b>	<b>28,000</b>	
<b>50</b>	<b>CONSUMABLE ITEMS</b>				
	51	Raw materials	5,000	3,000	
	52	Fuel /utilities	10,000	5,000	
	<b>59</b>	<b>Component Total</b>	<b>15,000</b>	<b>8,000</b>	<b>7,000</b>
<b>60</b>	<b>MISCELLANEOUS</b>				
	61	Promotion and dissemination events (courses, workshops and harvesting manual)	10,000	5,500	
	62	Sundry	1,000	500	
	<b>69</b>	<b>Component Total</b>	<b>11,000</b>	<b>6,000</b>	<b>5,000</b>
	<b>SUBTOTAL 1</b>		<b>108,960</b>	<b>60,230</b>	<b>48,730</b>
<b>70</b>	<b>EXECUTING AGENCY MANAGEMENT COSTS (15%)</b>				
	<b>79</b>	<b>Component Total</b>	<b>84,858</b>		
<b>100</b>	<b>GRAND TOTAL</b>		<b>193,818</b>		

## 7.2 YEARLY PROJECT BUDGET BY FINANCING SOURCE:

### 7.2.1 YEARLY PROJECT BUDGET BY FINANCING SOURCE – ITTO

Budget components	Annual disbursements		
	Total	Year 1	Year 2
10. Project personnel	150,000	72,000	78,000
30. Duty travel	36,160	18,080	18,080
40. Capital items	238,600	182,600	56,000
50. Consumable items	20,000	10,000	10,000
60. Miscellaneous	12,000	6,000	6,000
<b>Subtotal 1</b>	<b>456,760</b>	<b>288,680</b>	<b>168,080</b>
80. ITTO Admin., Monitoring and Evaluation			
<b>81 Monitoring and review costs</b>	<b>10,000</b>		
<b>Subtotal 2</b>	<b>466,760</b>		
<b>82 Programme Support Costs (6% of Subtotal 2)</b>	<b>28,006</b>		
90. Refund of pre-project costs	57,323		
<b>ITTO TOTAL</b>	<b>552,089</b>		

### 7.2.2 YEARLY PROJECT BUDGET BY FINANCING SOURCE – FONDEBOSQUE

Budget components	Annual disbursements		
	Total	Year 1	Year 2
10. Project personnel			
30. Duty travel	17,460	8,730	8,730
40. Capital items	65,500	37,500	28,000
50. Consumable items	15,000	8,000	7,000
60. Miscellaneous	11,000	6,000	5,000
<b>Subtotal 1</b>	<b>108,960</b>	<b>60,230</b>	<b>48,730</b>
70. Executing Agency Management Costs (15% of overall project budget by activity)	84,858		
<b>EXECUTING AGENCY / HOST GOV'T (FONDEBOSQUE) TOTAL</b>	<b>193,818</b>		

### 7.3 OVERALL PROJECT BUDGET BY ACTIVITY

ACTIVITIES	TECHNICAL STAFF	MONTHS	US\$ MONTH	PROJECT PERSONNEL	SUB-CONTRACTS	DUTY TRAVEL	CAPITAL ITEMS	CONSUMABLE ITEMS	MISCEL-LANEOUS	TOTAL US\$
<b>Output 1: Harvesting modules installed and operational in six Amazon regions</b>										
Activity 1.1: Select harvesting mod. beneficiaries and concession areas to implement training programme	Professional (a)	2	2000	4000						
	Professional (b)	2	1500	3000		3268	1360	2924	500	15052
		0								
Activity 1.2: Install and operationalise harvesting modules	Professional (a)	4	2000	8000						
	Professional (b)	4	1500	6000		9186	198680	5832	500	240198
	Technicians (5)	4	3000	12000						
<b>Output 2: Development and implementation of training, extension, dissemination and promotion programme for the application of appropriate intermediate technologies in forest harvesting</b>										
Activity 2.1: Training, technical assistance and supervision of the operation and maintenance of harvesting modules	Professional (a)	4	2000	8000						
	Professional (b)	4	1500	6000		10454	2680	5832	500	51466
	Technicians (5)	6	3000	18000						
Activity 2.2: Training, promotion and dissemin. of the use of appropriate intermediate technologies in forest harvesting in the project areas	Professional (a)	8	2000	16000						
	Professional (b)	8	1500	12000		15664	97360	11664	17000	181708
	Technicians (5)	4	3000	12000						
Activity 2.3: Prepare a forest harvesting manual (practical guidelines) based on appropriate intermediate technology modules	Professional (a)	1	2000	2000						
	Professional (b)	1	1500	1500		1634	670	1458	125	7387
<b>Output 3: Technical assistance for the formulation and implementation of annual harvesting plans, business plans, monitoring, evaluation and validation</b>										
Activity 3.1: Develop a business plan for each beneficiary	Professional (c)	16	1000		16000(*)					
Activity 3.2: Assist, advise and assess the beneficiaries regarding annual harvesting plans	Professional (a)	3	2000	6000						
	Professional (b)	3	1500	4500		10126	2010	4374	4125	55135
	Technicians (5)	8	3000	24000						

ACTIVITIES	TECHNICAL STAFF	MONTHS	US\$ MONTH	PROJECT PERSONNEL	SUB-CONTRACTS	DUTY TRAVEL	CAPITAL ITEMS	CONSUMABLE ITEMS	MISCELLANEOUS	TOTAL US\$
Activity 3.3: Design a harvesting follow-up and evaluation mechanism for each beneficiary	Professional (a)	1	2000	2000						
	Professional (b)	1	1500	1500		1634	670	1458	125	7387
Activity 3.4: Design mechanisms to facilitate credit payment by users	Professional (a)	1	2000	2000						
	Professional (b)	1	1500	1500		1634	670	1458	125	7387
<b>TOTAL</b>				150.000		53.620	304.100	35.000	23.000	565.720

(\*) To be covered as administrative costs (FONDEBOSQUE)

## 7.4 ECONOMIC AND FINANCIAL VIABILITY ANALYSIS

An economic and financial analysis of the proposal is given below. The strategy for the structuring and management of the revolving fund for the purchase of capital items is also included.

### 7.4.1 Economic and financial analysis of the technological proposal

The economic and financial assessment of a 9,000-hectare forest concession in Ucayali was carried out for a period of 5 years as an example of a potential project beneficiary. The analysis was based on the following assumptions: forest harvesting fees of US\$1.10 per hectare/year and the sale of 6 sawnwood species (*Tornillo, Shihuahuaco, Mohena, Capirona, Copaiba* and *Pumaquiro*). These species are marketed in three different sizes: commercial size (80%), long and narrow (15%) and short (5%), which are sold at the local market without including other by-products. Furthermore, an income tax of 15% and financing costs at a 15% AER were assumed, with quarterly payments over two years and an initial grace period of one quarter amounting to US\$14,000 for the harvesting module.

The financial analysis was based on an initial investment of US\$34,013, focusing mainly on a working capital of 21% with fixed assets of 60% and deferred income of 19%. In year 1, the sale 158,400 board feet of six timber species has been assumed at an average sale price of US\$0.30/bd ft. This is expected to generate an income of US\$48,199, which will gradually increase in accordance with the growth plan. The profit/loss statement shows net profits of US\$8,078 for year 1, with a profit on sales of 16.7%, which will gradually increase every year to reach a level of 27.7% by year 5 – See Table No. 1.

The economic and financial assessment was based on the update of net benefit flows projected for the period covered by the analysis. As indicated in Table No. 2, the analysis showed an economic NPV of US\$6,491 and a financial NPV of US\$7,470 at an OCC of 25%. In addition, the economic IRR of the investment amounted to 30% with a financial IRR of 36%.

<b>Table No.1</b> <b>Estado de Ganancias y Pérdidas</b> <b>Al 31 de Diciembre de 2003</b>		<b>Table No.2</b> <b>Economic Profitability Indicators</b> <b>(at various OCC levels)</b>	
<b>Ingresos</b>	<b>48.199</b>		
<b>Costos Operativos</b>	<b>-34.814</b>		
<b>Costos variables</b>	<b>-22.462</b>		
Sueldos	-12.527		
Alimentación	-2.914		
Equipos varios necesarios por zafra	-1.939		
Uso y mantenimiento de Aserradero Portátil	-2.178		
Uso y mantenimiento de Motosierra	-836		
Uso y mantenimiento del motor pkpk	-1.283		
Uso y mantenimiento de Carros	-217		
Uso y mantenimientos de Carretas	-29		
Uso y mantenimiento del Winche	-540		
<b>Costos fijos</b>	<b>-12.351</b>		
Sueldo de Administrador, Contador y Secretaria	-3.943		
Pago de Alquiler de Oficina	-1.029		
Derechos de Utilización de Bosque	-5.940		
Plan Operativo Anual	-1.440		
<b>Gastos Financieros</b>	<b>-1.797</b>		
Depreciación + Amortización	-2.667		
<b>Utilidad Antes de Impuestos</b>	<b>8.921</b>		
Impuesto a la renta (15%)	1.338		
<b>Utilidad Neta</b>	<b>7.583</b>		

Based on the analysis of the indicators obtained, it can be concluded that the proposal for upgrading forest harvesting operations in concession areas through the application of intermediate technologies is economically and financially viable, as can be observed in Table No. 3 through the projection of economic and financial flows for the period covered by the analysis.

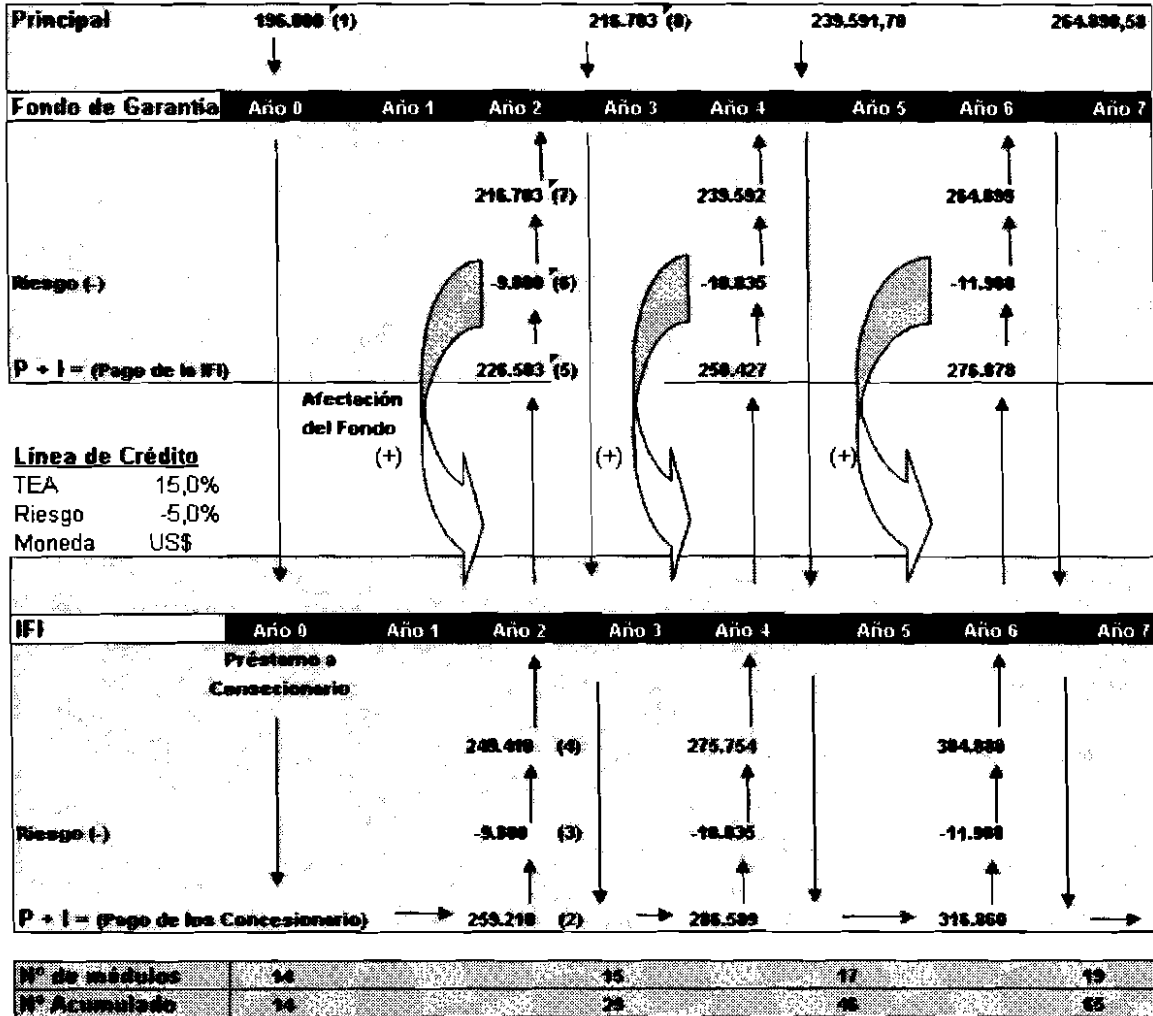


FIGURE No. 2

EXAMPLE OF THE USE OF A CREDIT GUARANTEE FUND FOR CAPITAL ITEMS

**Capitalización del Fondo**

TEA 7,5%  
Moneda US\$



- (1) Apertura de certificados bancarios en una IFI como Fondo de Garantía para préstamos a concesionarios
- (2) Pago de los créditos por los concesionarios, principal más interés(P+I)
- (3) Riesgo de 5% como cartera pesada
- (4) Recuperación neta de los créditos por la IFI
- (5) Monto bruto a pagar por la IFI por el depósito del Fondo de Garantía
- (6) Afectación del Fondo de Garantía como resultado de la cartera pesada
- (7) Saldo neto del Fondo de Garantía
- (8) Renovación de certificados del Fondo de Garantía - Inicio de nuevo ciclo

#### **7.4.2 Establishment and management of a Revolving Fund for the acquisition of capital items**

FONDEBOSQUE has successfully implemented a number of forestry projects at the national level. It has acquired substantial experience in the implementation of projects to provide technical support to producers and business initiatives aimed at creating business incentives and development strengthening. The institution has a high-level team of professionals who are very familiar with the sector in areas that include the technical aspects of forest management, financial services and business management activities.

FONDEBOSQUE's general strategy is based on the implementation of field initiatives with the active participation of forest producers in the formulation and implementation of projects aimed at contributing to the solution of problems related to the development of the sector through the implementation of technical assistance, training and business management activities.

Its financial strategy is aimed at consolidating the supply of financial services for the sector through the provision of revolving and assisted lines of credit for forest concessionaires by Intermediary Financial Institutions (IFI).

The main objective of these lines of credit is to provide high-quality financial services so as to ensure the modernization and capitalization of beneficiary companies and to secure these lines of credit for them within the formal financial sector. To this end, FONDEBOSQUE, in coordination with the IFIs, keeps a healthy and balanced portfolio of loans, in terms of profitability and risk, through an updated system of administrative and financial procedures for the supervision and monitoring of loans.

To date, FONDEBOSQUE has granted nearly 50 revolving and assisted loans, amounting to a total of US\$ 144,927, to forest concessionaires in Madre de Dios and Ucayali. These loans are granted at competitive rates for a maximum of US\$ 2,898. Furthermore, given the increasing demand, FONDEBOSQUE sought to increase the amount of individual loans granted by signing a framework cooperation agreement with the Agricultural Bank (AGROBANCO). FONDEBOSQUE will provide loans for forestry projects at the national level, with credit lines for forest concessionaires of up to US\$ 13,478 to be provided by the aforementioned bank.

##### ***Structuring and management of the Revolving Fund for the acquisition of capital items:***

The core element of the revolving fund will be the establishment of an initial fund with the contribution from ITTO, which will be made available to organised forest concessionaires. The fund will grant loans of US\$ 14,000 each for the acquisition of capital items; these funds will then be recovered and will be made available to other borrowers in order to ensure the sustainability of the development process.

For the purposes of this project, FONDEBOSQUE will support the credit operations of forest concessionaires through the utilisation of the available fund of US\$ 196,000 as a "guarantee fund" for an IFI. This fund will be capitalised through the issue of fixed term certificates by the IFI at an effective interest rate higher than the risk factor involved (higher than 5%) - see example in Figure No. 2.

The management and allocation of the Guarantee Fund will be carried out in coordination with the IFI through the assessment of loan applications submitted by forest concessionaires. FONDEBOSQUE will support the loan application process as follows: 1) regional technicians will assess loan applications to determine the technical viability of the business, ensuring that the loan package is in accordance with FONDEBOSQUE's credit policy guidelines, and will make sure that all the information required by the IFI is attached to the application form; and 2) FONDEBOSQUE's Promotion and Development Management Unit will verify that the business proposal of each concessionaire is economically and financially viable, and will submit it to the IFI for final approval.

As the companies become capitalised and can guarantee payment of loans with their own resources, their dependence on the Guarantee Fund will decrease and their financial self-sustainability will be consolidated.

### **PART III: OPERATIONAL ARRANGEMENTS**

#### **1. Management structure**

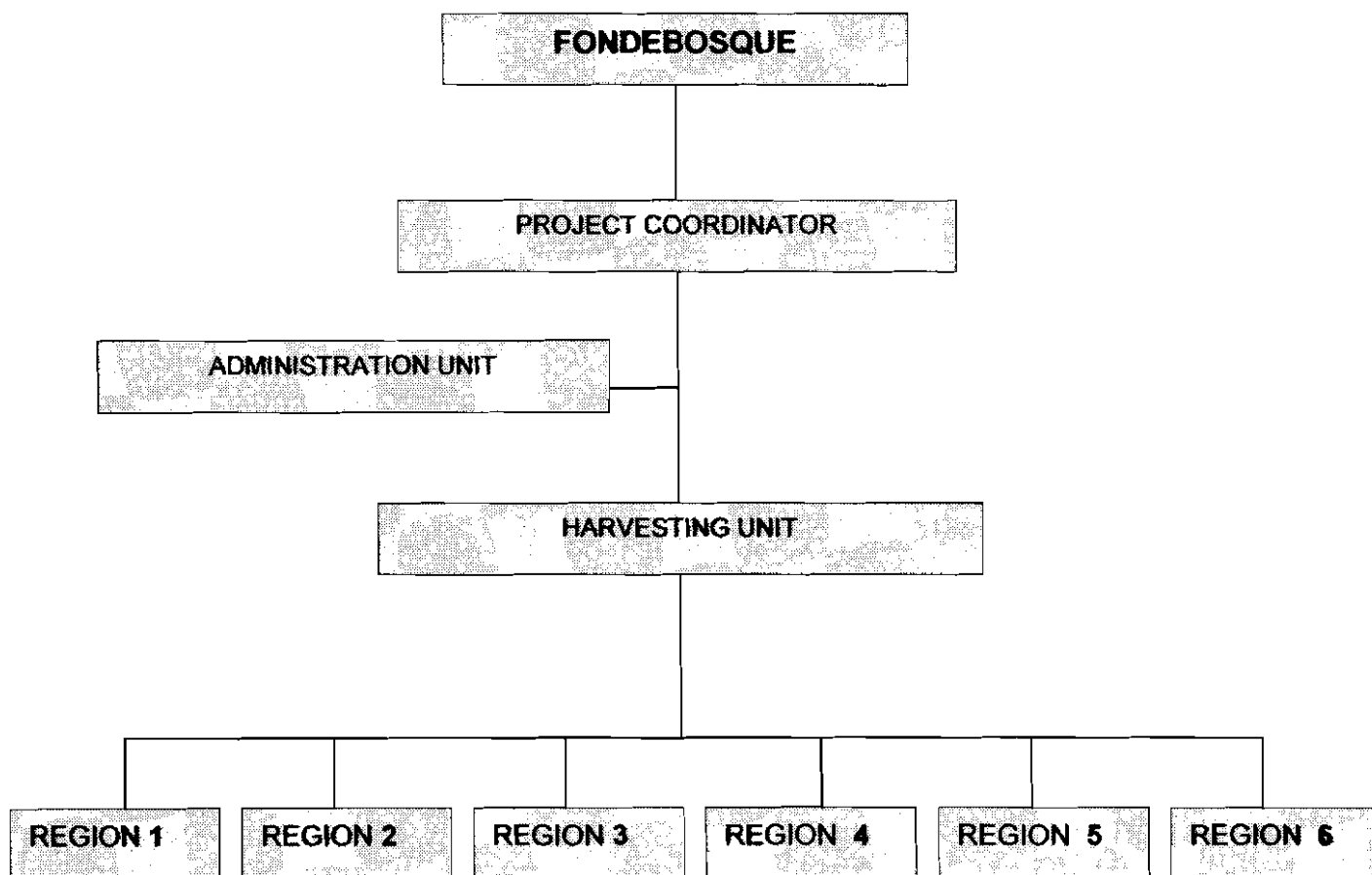
FONDEBOSQUE will be responsible to ITTO for the administrative aspects of project implementation. A Steering Committee will be established at the highest level of the project organisational structure. This Committee will be made up of a FONDEBOSQUE officer, FONDEBOSQUE Executive Director as chairperson, an INRENA officer, the Head of INRENA and/or the Wildlife and Forest Director, the Coordinator of the Project on "Support for the sustainable development of small forest industrialists through the use of appropriate intermediate technologies in forest harvesting modules", two regional government representatives, two representatives of users/beneficiaries, an ITTO representative, and a representative from donor countries.

This Committee will meet at least once a year to establish project policies and strategies and to monitor project activities.

The daily management of the project will be under the responsibility of the Project Coordinator, who will be supervised by FONDEBOSQUE Executive Director.

The administrative structure of the project will be as follows:

#### **PROJECT ORGANISATIONAL CHART**



## **2. Monitoring, reporting and evaluation**

ITTO and FONDEBOSQUE, as Steering Committee members, will be jointly responsible for the control, evaluation and monitoring of the financial and forest management aspects of the project. Two meetings will be held during the first year to ensure smooth project start-up; annual meetings will be held during the second and third year unless otherwise decided by the Committee. FONDEBOSQUE will be in charge of internal control and auditing during project implementation. Regular audits will be carried out, and the audit reports will be made available to the Steering Committee. The Project Coordinator will be responsible for the preparation of regular progress reports and the project completion report, including financial statements, in accordance with ITTO regulations.

## **3. Future operation and maintenance**

The harvesting modules purchase/sale funds will be administered by FONDEBOSQUE during the implementation of the project. This institution will be responsible for recovering the value of forest harvesting modules delivered to beneficiary concessionaires, even after the conclusion of the initial phase of the project reflected in this proposal. The revolving fund will be used to continue the implementation of the national training, extension and promotion program on the use of appropriate intermediate technologies in forest harvesting, as well as the acquisition of new equipment and machinery for the benefit of other forest concessionaires and/or communities.

## **4. Project key staff**

The project key staff will include a national expert with extensive experience in the establishment and use of intermediate technologies for forest harvesting, who will act as project coordinator; a forest industry expert with experience in the establishment and use of portable sawmills; five technicians with experience in the management of portable sawmills and forest logging; and administrative personnel, who will be in charge of managing the project budget and administering the funds used in the purchase of harvesting modules.

The terms of reference for the above staff are as follows:

### National Expert – Project Coordinator

Accredited forest engineer with a minimum of 15 years experience in the area of forest management and forest industry, with a specialisation in the development of intermediate technologies for forest harvesting (logging and primary processing).

### Forest Industry Expert

Accredited forest engineer with a minimum of 15 years experience in the area of forest industry with special emphasis on the use of portable sawmills.

### Technicians in charge of harvesting modules

Forest engineers or technicians with a minimum work experience of 10 years in the Amazon region and with a knowledge of the establishment and use of portable sawmills and forest logging.

### Project Administrator

Professional with university degree in administration and/or economics and with 10 years experience in development projects and revolving funds.

## **PART IV: THE TROPICAL TIMBER FRAMEWORK**

### **1. Compliance with ITTA, 1994 objectives**

The proposed project is closely related to many of the objectives set out in Article 1 of the International Tropical Timber Agreement, 1994. A description of the relevance of expected project outputs to these objectives is given below:

- ❖ Objective a: The Project will provide technical and scientific information on environmental, ecological, economic, social and cultural aspects, which will be supplied at the national and international levels and will facilitate consultations and field visits by the personnel working in the Amazon sub-region.
- ❖ Objective c: The Project will contribute to the process of sustainable forest management and development, establishing forest planning and zoning activities for an improved administration, integrated utilisation and conservation of resources.
- ❖ Objective d: The local capacity of the country and other ITTO members will be enhanced in relation to the implementation of strategies and mechanisms for the market introduction of products and resources from sustainably managed forests that are socially, economically and ecologically viable.
- ❖ Objective e: Sustainable forest management will lead to the establishment of production areas for local consumption with potential to satisfy, in the medium to long term, the demand of the international trade, ensuring the harmonisation of strategies to achieve equitable prices for producers and consumers.
- ❖ Objective f: The integrated management of resources, including forests, water, soils, timber and non-timber products, will be ensured with the active participation of the local communities, using the most suitable methodologies and technologies developed as a result of research and development activities.
- ❖ Objective g: Project actions will serve as an example for the use of knowledge acquired at a larger scale and will promote possibilities for private and public investment with a view to improving the capacity for sustainable management and conservation of Amazon forests.
- ❖ Objective i: Using adequate sustainable forest management mechanisms and appropriate silvicultural practices, it will be possible to achieve a better utilisation and more efficient processing of various timber and non-timber forest products.
- ❖ Objective m: The Project will generate relevant information on forest management, zoning and characterisation technologies as well as on sustainable forest utilisation, and will help to improve access to knowledge and information in this field.

### **2. Compliance with ITTO Action Plan**

The proposed project is consistent with the project-related activities of the Organisation described in Article 25 of the ITTA 1994. Furthermore, the proposal takes into account the priorities and guidelines established in the ITTO Libreville Action Plan (1998 – 2001). In particular, it is related to the area of Forest Industry (section 3.3 of the Action Plan) and specifically to Goal 1, actions 1, 2 and 5, and Goal 2, actions 1, 2, 4 and 7.

With regard to Goal 1, the Project envisages activities aimed at sustainable production, increase of knowledge and information for the establishment of sustainable forest management guidelines, and support to raise awareness at all levels. As the sustainable utilisation and conservation of forest ecosystems with the participation of the local communities are socially and economically viable, the project will provide production alternatives to prevent the implementation of destructive and illegal logging activities and to ensure the multiple-use management of forest areas with the participation of the local communities concerned and the relevant agencies in the countries involved.

The Project is consistent with Goal 2, actions 1, 3, 4 and 5 because expected project outputs are related to the adequate and sustainable use of resources by developing and implementing management guidelines and criteria.

## **ANNEXES**

## ANNEX A

### PROFILE OF THE EXECUTING AGENCY: FONDEBOSQUE

#### Background of the Executing Agency

Article 344 of the Regulations of the Forestry and Wildlife Law, approved through Supreme Decree No. 014-2001-AG, stipulates the establishment of the Forest Development Promotion Fund (Fondo de Promoción del Desarrollo Forestal – FONDEBOSQUE) as a private institution of public and social interest, with legal capacity, whose main objective is to contribute to and facilitate the development of plans, projects and activities aimed at the promotion of sustainable forest and wildlife development. The main activities of the Fund are geared to the promotion of forest management, the conservation of the forest heritage, forest plantations, afforestation, eco-tourism, agroforestry, timber industry, eco-businesses, wildlife management, environmental services, restoration and regeneration of endangered species, forest and wildlife research promotion, and support to stakeholders involved in forest activities.

The members of FONDEBOSQUE's Executive Council are both from the public sector, who are appointed through ministerial resolution, and from the private sector, who are appointed by the organisations they represent. FONDEBOSQUE became operational in 2002 and at present (June 2003) it has 6 regional offices in major Amazon regions. The Fund has also concluded important agreements with international technical cooperation agencies, regional governments and government bodies for the development of forest activities in the country, and is responsible for the implementation of forest-related projects in coordination with INRENA and the Ministry of Agriculture.

FONDEBOSQUE's institutional principles are based on the autonomy, efficiency and transparency of the Fund's management, the participation of social, economic and environmental sectors, gender equity and trust in the relationship with the stakeholders of those sectors.

FONDEBOSQUE began its activities in August 2002. Since then, it has carried out activities aimed at the implementation of its organisational and management capacity.

On 1 October 2002, FONDEBOSQUE and the Embassy of the Netherlands signed agreement No. PE022701 on the Project "Support to the implementation of the Forest Development Promotion Fund – FONDEBOSQUE, Phase I", which is aimed at providing financial support to this currently insolvent Fund.

#### FONDEBOSQUE OBJECTIVES

In accordance with its by-laws, FONDEBOSQUE will finance, in an expeditious, transparent and decentralised manner, plans, programs, projects and activities aimed at promoting sustainable forest management and harvesting in all types of forests, including:

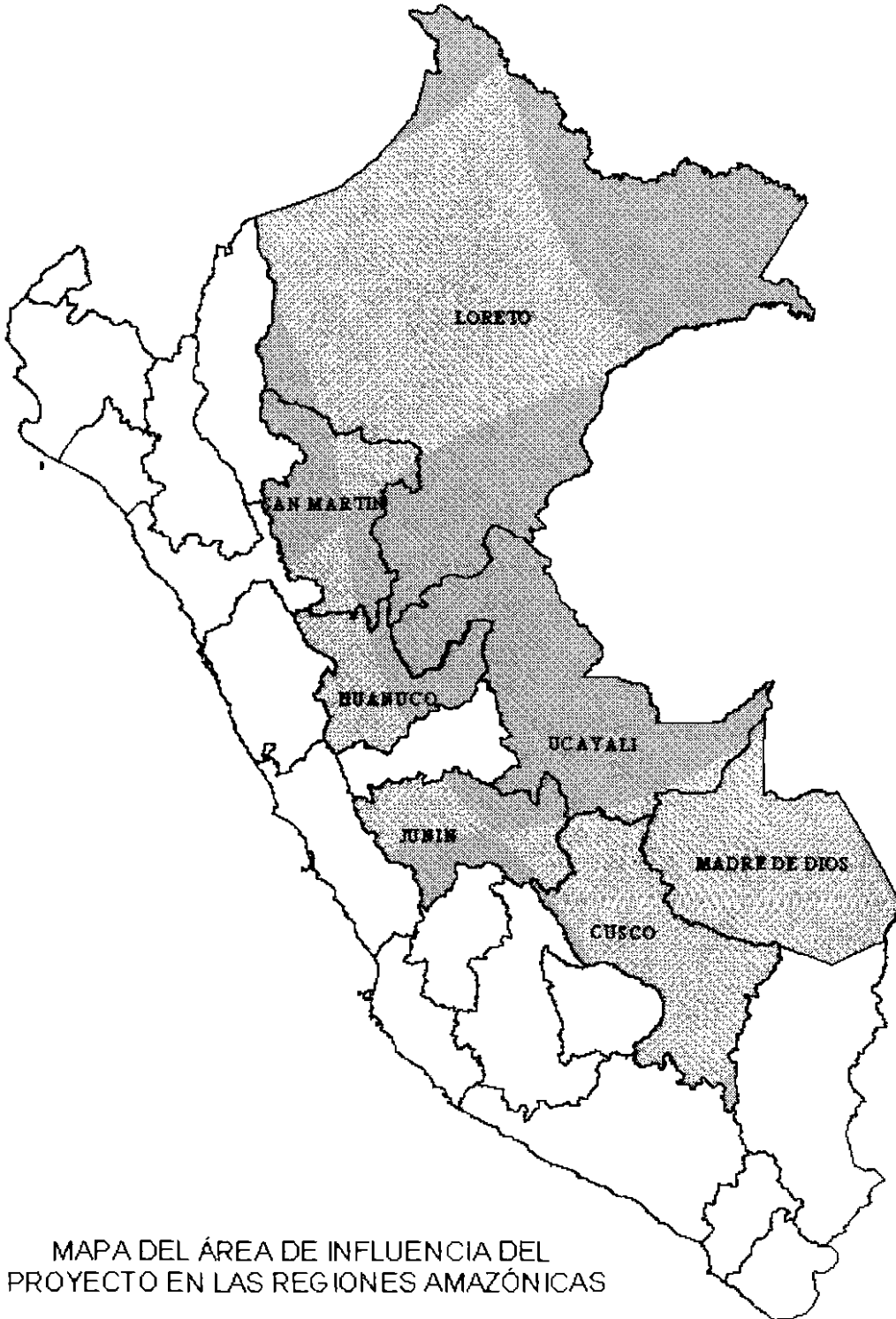
- a. Technical assistance and training to local communities with a view to sustainable forest management.
- b. Forest and wildlife research.
- c. Afforestation and reforestation, tree planting in ecological belts, rehabilitation of degraded and/or deforested lands.
- d. Natural regeneration management and silvicultural activities for production and protection purposes and for the provision of environmental services.
- e. Conservation programs and projects.
- f. Endangered species restoration and reforestation.
- g. Sustainability practices through an efficient and competitive timber industry integrating forest management, value-added processing, and domestic and international markets.

- h. Education, dissemination and training activities in accordance with its objectives.
- i. Strategic actions for forests and sustainable forest management, including the management of counterpart funds in the funding of other related institutions, negotiations regarding environmental services and carbon sequestration, promotion of certified products, eco-businesses, market information and identification, establishment of chains of value, joint ventures, certificates of origin, and participation in international events in the relevant field, among others.



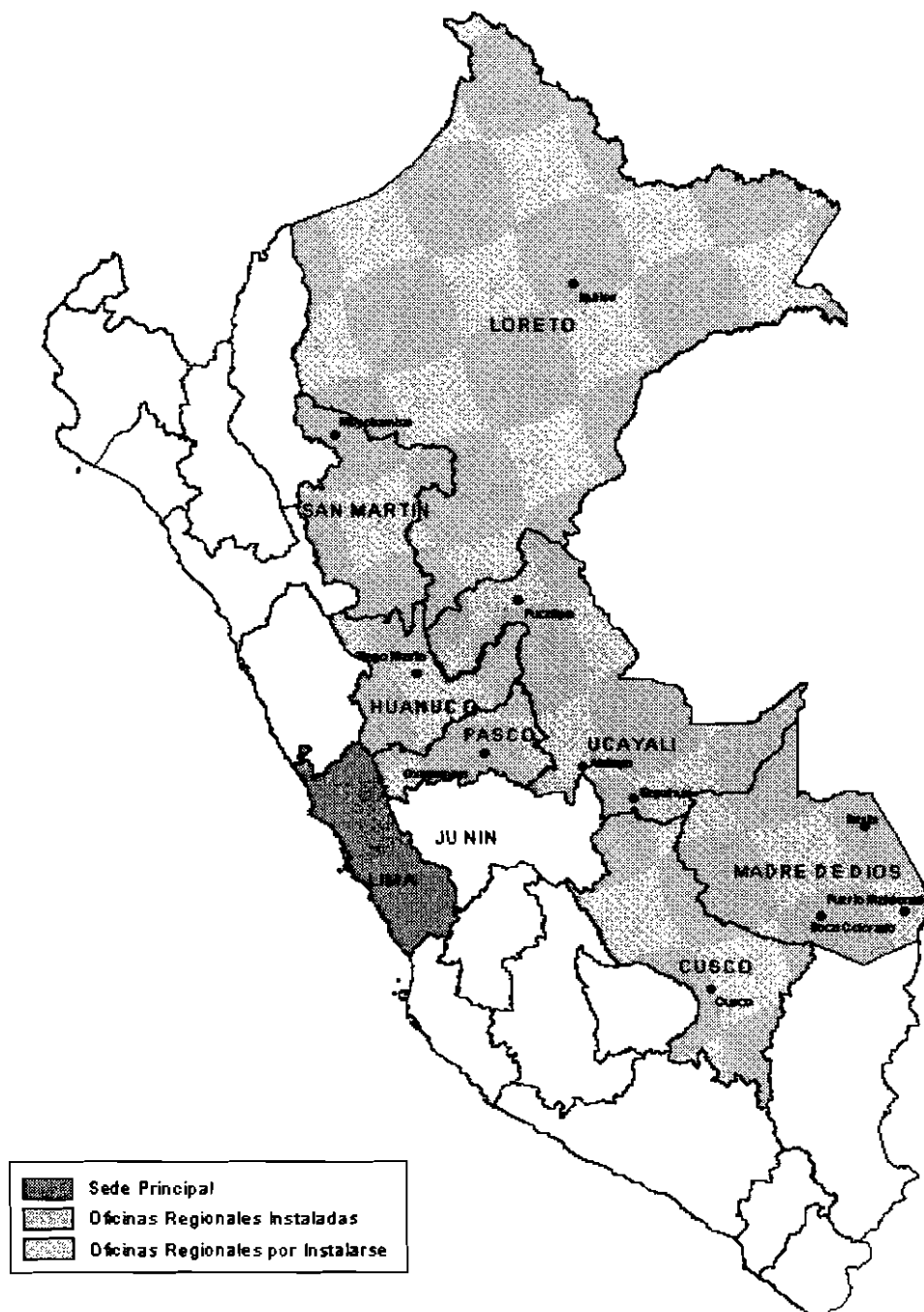
**ANNEX B**

**MAP OF PROJECT AREA**



ANNEX C

LOCATION MAP OF FONDEBOSQUE REGIONAL OFFICES



MAPA DE UBICACIÓN DE LAS OFICINAS DE FONDEBOSQUE

**ANNEX D**

**TECHNOLOGICAL PACKAGES PROPOSED BY THE PROJECT**

**TECHNOLOGICAL PACKAGE No. 1:** Comprising a portable circular sawmill, two chainsaw-operated portable winches, two log-hauling carts, and a sawnwood transport wagon.

**Characteristics of equipment and machinery**

Main specifications	Equipment and Machinery			
	Portable sawmill	Portable winch	Log-hauling cart	Sawnwood transport wagon
<b>Portable circular sawmill (1 unit)</b>	<b>Average unit cost US \$ 10,000.00</b>			
Motor	Gasoline/ 20 Hp.			
Cutting element	Disc: 8" – 10"			
Cutting capacity (log diameter)	Up to 120 cm			
Standard wood cutting speed	> 5.5 metres / minute			
Feeding mechanism	Manual			
Log cutting length	> 15 feet with attachments			
Total sawmill weight	400 kg			
Production capacity	More than 1,500 bf./day			
Sharpening equipment	Included			
Track capacity	15 feet plus (attachment)			
<b>Portable Lewis Winch 400 (2 units)</b>	<b>Average unit cost US \$ 800.00 (CIF)</b>			
Maximum weight		18 kg		
Winch drum capacity		45 m		
Pulling/traction capacity		4,000 kg		
Operated by		chainsaw		
<b>Log hauling cart (2 units)</b>	<b>Average unit cost US \$800.00</b>			
Log diameter capacity			1 m	
No. of wheels			4	
Load capacity			2000 kg	
Loading			Manual	
Hoop size			15"	
<b>Sawnwood transport wagon (1 unit)</b>	<b>Average unit cost US \$ 600.00</b>			
No. of wheels				3
Hoop size				15"
Load capacity				250 / 500 bf
<b>Extraction pulleys (cable, 2 latch jacks, 2 hooks)</b>	<b>Average cost of kit US \$ 200.00</b>			
<b>TOTAL COST OF TECHNOLOGICAL PACKAGE No. 1</b>				<b>US \$14,000</b>

**TECHNOLOGICAL PACKAGE No. 2:** Comprising a portable band sawmill, two chainsaw-operated portable winches, two log-hauling carts, and a sawnwood transport wagon.

**Characteristics of equipment and machinery**

Main specifications	Equipment and machinery			
	Portable sawmill	Portable winch	Log-hauling cart	Sawnwood transport wagon
<b>Portable band sawmill (1 unit)</b>	<b>Average unit cost US \$ 10,000.00</b>			
Motor	Gasoline > 20 Hp.			
Sawmill weight	420 kg			
Cutting element	band saw			
Cutting capacity (log diameter)	up to 85 cm			
Standard wood cutting speed	> 7.5 metres / minute			
Feeding mechanism	Manual			
Log cutting length	Unlimited (with attachment)			
Fuel tank capacity	5 gallons			
Production capacity	up to 1,800 bf/day			
Sharpening & setting equipment	Battery operated - 12 V			
Track capacity	Unlimited (attachments)			
<b>Portable Lewis Winch 400 (2 units)</b>	<b>Average unit cost US \$ 800.00 (CIF)</b>			
Maximum weight		18 kg		
Winch drum capacity		45 m		
Pulling/traction capacity		4,000 kg		
Operated by		chainsaw		
<b>Log-hauling cart (2 units)</b>	<b>Average unit cost US \$800.00</b>			
Log diameter capacity			1 m	
No. of wheels			4	
Load capacity			2,000 kg	
Loading			Manual	
Hoop size			15"	
Made of			Iron	
<b>Sawnwood transport wagon (1 unit))</b>	<b>Average unit cost US \$ 600.00</b>			
No. of wheels				3
Hoop size				15"
Load capacity				250 / 500 bf
Extraction pulleys (cable, 2 latch jacks, 2 hooks)	<b>Average cost of kit US \$ 200.00</b>			
<b>TOTAL COST OF TECHNOLOGICAL PACKAGE No. 2</b>				<b>US \$14,000</b>

**TECHNOLOGICAL PACKAGE No. 3:** Comprising a semi-stationary band sawmill, two chainsaw-operated portable winches, two log-hauling carts, and two sawnwood transport wagons.

**Characteristics of equipment and machinery**

Main specifications	Equipment and machinery			
	Portable sawmill	Portable winch	Log-hauling cart	Transport cart
<b>Semi-stationary sawmill (1 unit)</b>	<b>Average cost SIC US \$ 27,300.00</b>			
Motor	Petrol - 33 Hp			
Sawmill weight	2,200 kg			
Cutting element	Band saw			
Cutting capacity (log diameter)	Maximum 36 inches			
Standard wood cutting speed	> 10.75 metres / minute			
Feeding mechanism	Automatic			
Log cutting length	15 feet or more (attachment)			
Fuel tank capacity	6 gallons			
Production capacity	More than 3,000 bf/day			
Sharpening & setting equipment	Battery operated - 12 V			
Log capacity	15 feet or more (with attachments)			
<b>Portable Lewis Winch 400 (2 units)</b>	<b>Average unit cost US \$ 800.00</b>			
Maximum weight		18 kg		
Winch drum capacity		45 m		
Pulling/traction capacity		4,000 kg		
Operated by		chainsaw		
<b>Log hauling cart (2 units))</b>	<b>Average unit cost US \$ 800.00</b>			
Log diameter capacity			1 m	
No. of wheels			4	
Load capacity			2,000 kg	
Hoop size			15"	
Made of			Iron	
<b>Sawnwood transport wagon (1 unit)</b>	<b>Average unit cost US 1,200.00</b>			
No. of wheels				4
Hoop size				15"
Load capacity				> 500 pt.
<b>Extraction pulleys (cable, 4 latch jacks, 2 hooks)</b>	<b>Average cost of kit US \$ 300.00</b>			
<b>COST OF TECHNOLOGICAL PACKAGE No. 3:</b>			<b>US \$32,000.00</b>	

**ANNEX E**

**ITTO SIX-MONTHLY DISBURSEMENTS**

Budget components		Year 1		Year 2		Total
		Semester 1	Semester 2	Semester 1	Semester 2	
10	Project personnel	33,000	39,000	39,000	39,000	150,000
30	Duty travel	9,040	9,040	9,040	9,040	36,160
40	Capital items	182,600		56,000		238,600
50	Consumable items	5,000	5,000	5,000	5,000	20,000
60	Miscellaneous	4,000	2,000	4,000	2,000	12,000
	<b>SUBTOTAL 1</b>	<b>233,640</b>	<b>55,040</b>	<b>113,040</b>	<b>55,040</b>	<b>456,760</b>
80	ITTO Admin., Monitoring & Evaluation					
	81. Monitoring and review costs					10,000
	<b>SUBTOTAL 2</b>					<b>466,760</b>
	82. Programme Support Costs (6% of subtotal 2)					28,006
90	Refund of pre-project costs					57,323
<b>100</b>	<b>ITTO TOTAL</b>					<b>552,089</b>

**FONDEBOSQUE SIX-MONTHLY DISBURSEMENTS**

Budget components		Year 1		Year 2		Total
		Semester 1	Semester 2	Semester 1	Semester 2	
10	Project personnel					
30	Duty travel	4,365	4,365	4,365	4,365	17,460
40	Capital items	37,500		28,000		65,500
50	Consumable items	4,000	4,000	3,500	3,500	15,000
60	Miscellaneous	3,000	3,000	2,500	2,500	11,000
	<b>SUBTOTAL 1</b>	<b>48,865</b>	<b>11,365</b>	<b>38,365</b>	<b>10,365</b>	<b>108,960</b>
70	Administrative costs	18,215	16,215	18,214	16,214	68,858
	Subcontract – Training program support	3,000	5,000	3,000	5,000	16,000
	Total Executing Agency Management Costs (15%)	<b>21,215</b>	<b>21,215</b>	<b>21,214</b>	<b>21,214</b>	<b>84,858</b>
	<b>GRAND TOTAL</b>					<b>193,818</b>

ANNEX F

MODIFICATIONS MADE IN RESPONSE TO THE OBSERVATIONS  
OF THE 26TH ITTO EXPERT PANEL

ORIGINAL TEXT	REVISED TEXT
<p><b>Cover (page 1)</b></p> <p><b>Title:</b> SUPPORT FOR THE SUSTAINABLE DEVELOPMENT OF SMALL FOREST INDUSTRIALISTS THROUGH THE USE OF APPROPRIATE INTERMEDIATE TECHNOLOGIES IN FOREST HARVESTING</p> <p><b>Summary:</b> The initial project contribution will be the implementation of 14 harvesting modules to be delivered to small forest industrialists and 4 pilot modules that will serve as the basis for the development of an extensive training and dissemination program on appropriate intermediate technologies for forest harvesting.</p>	<p><b>Cover</b></p> <p><b>Title:</b> APPLICATION OF INTERMEDIATE TECHNOLOGIES FOR SUSTAINABLE FOREST HARVESTING</p> <p><b>Summary:</b> The initial project contribution will be the implementation of 14 harvesting modules to be delivered to small forest industrialists <u>through a revolving fund to be set up for the acquisition of additional modules, which will be delivered to new beneficiaries under the responsibility of FONDEBOSQUE.</u></p> <p><u>In addition, 4 pilot modules will be implemented</u> and will serve as the basis for the development of an extensive training and dissemination program on appropriate intermediate technologies for forest harvesting.</p>
<p><b>Page 4:</b> This project is consistent with FONDEBOSQUE's plans and targets, as the implementation of forest harvesting modules using intermediate technologies focused on portable sawmills as a major component constitute an alternative for the development of forest activities by small timber industrialists and for the sustainable use of forest resources. The use of these technologies will lead to increased and improved log utilisation, achieving better yields, which will in turn lead to an increased number of timber species being utilised, improved product quality and a substantial increase in economic returns for the beneficiaries. Most importantly, all this will be achieved through reduced environmental impact harvesting techniques.</p>	<p>This project is consistent with the plans and targets of FONDEBOSQUE <u>and the Peruvian Government, which promotes the use of new species and sustainable forest management, low environmental impact harvesting, the application of appropriate intermediate technologies, and the promotion of new national and international markets.</u> The implementation of forest harvesting modules using intermediate technologies focused on portable sawmills as a major component constitutes an alternative for the development of forest activities by small timber industrialists and for the sustainable use of forest resources. The use of these technologies will lead to increased and improved log utilisation, achieving better yields, which will in turn lead to an increased number of timber species being utilised, improved product quality and a substantial increase in economic returns for the beneficiaries. Most importantly, all this will be achieved through reduced environmental impact harvesting techniques.</p>
<p><b>1.1 Specific objective (page 5)</b> Small forest industrialists in the most representative Amazon regions of Peru will use appropriate intermediate technologies in forest harvesting, thus improving their production.</p>	<p><u>1.1 Specific objective</u> <u>Improve the production of small timber industries in six regions of the Peruvian Amazon.</u></p>

ORIGINAL TEXT	REVISED TEXT
<p><b>2. Justification</b>  <b>2.1 Problem to be addressed (page 5)</b>  There are also some accessories for the chainsaw at the mill, such as those called "Headframes or Chullachaqui", which provide a more uniform cut, though the preparation of the logs for use is done with the chainsaw (cutting of the log), with the additional problem of edging, so the whole operation generates a high level of waste. This is the reason why these two cutting methods are banned by Peruvian Government legal provisions. However, it has not been possible to control this activity and it is widespread throughout the nation.</p>	<p><b>2. Justification</b>  <b>2.1 Problem to be addressed</b>  <u>TEXT DELETED</u></p>
<p><b>2. Justification</b>  <b>2.1 Problem to be addressed (page 5)</b>  In the months following the enactment of the new forest law 27308 a good number of small scale timber producers (basically from Madre de Dios and Ucayali) became INRENA's strategic allies when recognising that contracts for less than 1,000 hectares were not a solution for the sustainable development of the Amazon regions, and that in most cases they only served the purpose of laundering chainsaw processed timber from unauthorised areas. Paradoxically, they were the first to take up this new forest vision for the country.</p> <p>For small scale timber producers, now forest industrialists with timber harvesting concessions, most of whom do not have suitable technology alternatives for forest harvesting, it is necessary to provide training and promote, implement and especially validate the use of plant and machinery included in appropriate intermediate technology modules that are the object of this project proposal.</p> <p>The failure of these small forest industrialists would mean a step back in the forest activity management process and the ongoing use of chainsaws for longitudinal sawing. It should be noted that certain forest sectors are still pressuring to continue in the past, obviously because their interests are affected.</p>	<p><b>2. Justification</b>  <b>2.1 Problem to be addressed</b>  <u>TEXT DELETED</u></p>
	<p><b><u>2. Justification</u></b>  <b><u>2.1 Problem to be addressed (page 6)</u></b></p> <p><b><u>As a result of the problem analysis, it was concluded that there is a lack of awareness of the availability of adequate forest harvesting machinery and equipment based on the use of appropriate intermediate technologies. Thus, the project envisages training programs and dissemination of these technologies to provide viable alternatives to small forest industrialists.</u></b></p> <p><b><u>The inability to acquire machinery and equipment will be addressed through a revolving fund based on the requirement that management plans, yearly plans of operation, business plans and loan applications should all envisage the</u></b></p>



ORIGINAL TEXT	REVISED TEXT
	<p><u>utilisation of at least six timber species.</u></p> <p><u>The use of adequate equipment and tools for forest harvesting will lead to an increase in forest yield levels and a reduction in production costs. See Figure No. 1.</u></p>
<p><b>Problem Tree (page 6)</b> <b>Top box</b></p> <p>ILLEGAL LOGGING RISK OF LOSING FOREST CONCESSIONS</p>	<p><b>Problem Tree</b> <b>Top box</b></p> <p><u>LOW FOREST YIELD LEVELS</u> <u>HIGH PRODUCTION COSTS</u></p>
<p><b>Problem Tree (page 6)</b> <b>Bottom box</b></p> <p>Use of banned tools in forest harvesting</p>	<p><b>Problem Tree</b> <b>Bottom box</b></p> <p><u>Lack of awareness of the availability of adequate forest harvesting machinery and equipment based on appropriate intermediate technologies</u></p>
<p><b>2.3 Project strategy (page 7)</b></p> <p>As for the implementation of harvesting modules for small industrialists selected as beneficiaries, the Project will have fourteen (14) modules to be delivered, ten (10) in the first year and four in the second year. For this purpose, beneficiaries will be identified and selected appropriately, taking into consideration forest legal tenure, management plans approved by INRENA, .....</p>	<p><b>2.3 Project strategy</b></p> <p><u>A forest industry expert with experience in portable sawmills and five forest engineers or technicians with experience in harvesting and portable sawmilling will be recruited for the promotion, extension and training programme on appropriate intermediate technologies.</u></p> <p><u>The above professionals will work on an ongoing basis in the beneficiaries' concession areas to provide training and guidance and to supervise the operation and maintenance of harvesting modules.</u></p> <p>As for the implementation of harvesting modules for small industrialists selected as beneficiaries, the Project will have fourteen (14) modules to be delivered, ten (10) in the first year and four (4) in the second year. For this purpose, beneficiaries will be adequately identified and selected, taking into consideration forest legal tenure, management plans approved by INRENA <u>with yearly plans of operation based on the harvesting of at least six timber species, ....</u></p>
	<p><b>2.3 Project strategy (page 9)</b></p> <p><u>Yearly plans of operation, business plans and loan applications should all provide for the harvesting of at least six timber species. Monitoring compliance with this requirement will be under the responsibility of project forest professionals and/or technicians, who will work on an ongoing basis in the beneficiaries' concession areas.</u></p> <p><u>With the repayment of loans during the project implementation period, it will be possible to</u></p>

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	<b><u>purchase another eight (08) harvesting modules, which will be delivered to new beneficiaries.</u></b>
<p><b>2.3 Project strategy (page 8)</b></p> <p>It must be pointed out that the value of the dissemination and implementation modules to be delivered to the beneficiaries in the first and second years will be recovered by FONDEBOSQUE in order to ensure the sustainability of the project, by purchasing new equipment to be delivered to new beneficiaries, and also by continuing with the training, dissemination and promotion program on appropriate intermediate technology for forest harvesting.</p>	<p><b>2.3 Project strategy</b></p> <p>It must be pointed out that the value of the dissemination and implementation modules to be delivered to the beneficiaries in the first and second years will be recovered by FONDEBOSQUE in order to ensure the sustainability of the project, by purchasing new equipment to be delivered to new beneficiaries. <b><u>A repayment schedule is included in the Annex.</u></b></p>
	<p><b>2.6 Target beneficiaries (page 10)</b></p> <p><b><u>With the repayment of loans, eight (08) forest harvesting modules will be purchased during the project implementation period, which will be delivered to new beneficiaries.</u></b></p>
<p><b>2.6 Economic aspects (page 9)</b></p> <p>The previous system, harvesting carried out in concessions under one thousand hectares, gave rise to the proliferation of forest contracts, making it difficult for INRENA to control and monitor. Illegal logging got out of control, the use of banned tools (chainsaw) was and still is common, and selective logging, targeting only valuable species, by a good number of small timber producers was the only way to make a profit.</p> <p>The present process of forest activity management through forest concessions by public tender in harvesting units of 5,000 (five thousand) to 10,000 (ten thousand) hectares for a period of 40 (forty) years, renewable, up to a total number of harvesting units which all told, may be no greater than 50,000 (fifty thousand) hectares, will greatly reduce the number of forest concessions, thus allowing INRENA, the body in charge of natural resource control and monitoring, to act more effectively in the future. Furthermore, forest users (concession holders) will have better alternatives for managed forest harvesting by using the most appropriate technologies, and in the case of small timber producers this would be intermediate technology.</p>	<p><b>2.6 Economic aspects</b></p> <p>The present process of forest activity management through forest concessions by public tender in harvesting units of 5,000 (five thousand) to 10,000 (ten thousand) hectares for a period of 40 (forty) years, renewable, up to a total number of harvesting units which all told, may be no greater than 50,000 (fifty thousand) hectares, will greatly reduce the number of forest concessions, thus allowing INRENA, the body in charge of natural resource control and monitoring, to act more effectively in the future.</p>
<p><b>2.9 Risks (page 10)</b></p> <p>The large scope of the Project may affect its development. Therefore, it will be necessary to design follow-up and assessment mechanisms for each module to be delivered by the project, advice and assistance for concession holder harvesting plans in order to gain the expected benefits and identify and design an appropriate recovery mechanism for the return of any modules that are not appropriately used.</p>	<p><b>2.9 Risks</b></p> <p>The large scope of the Project may affect its development. Therefore, it will be necessary to design follow-up and assessment mechanisms for each module to be delivered by the project, in order to ensure the repayment of loans.</p>

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<p><b>3.1 Specific objective (page 10)</b></p> <p>Small forest industrialists in the most representative Amazon regions of Peru will benefit from and improve forest production by using appropriate intermediate technologies based on forest harvesting modules.</p>	<p><b>3.1 Specific objective</b></p> <p><u><i>Improve the production of small timber industries in six regions of the Peruvian Amazon.</i></u></p>
<p><b>Output 1 (page 10)</b></p> <p><b>Output 1:</b> Harvesting modules installed and operational in six Amazon regions (Madre de Dios, Ucayali, San Martín, Huánuco, Loreto, Selva Central and Cusco).</p>	<p><b>Output 1</b></p> <p>Harvesting modules installed and operational in six Amazon regions.</p> <p><u><i>The budget for the acquisition of harvesting modules will be taken from a Revolving Fund to which forest concessions will apply.</i></u></p>
<p><b>Output 2 (page 11)</b></p> <p>Development and implementation of training, extension, dissemination and promotion programme for the application of appropriate intermediate technologies in forest harvesting.</p>	<p><b>Output 2:</b></p> <p>Development and implementation of training, extension, dissemination and promotion programme for the application of appropriate intermediate technologies in forest harvesting.</p> <p><u><i>The lack of awareness amongst most forest concession holders of the availability of appropriate intermediate technologies for forest harvesting has been confirmed during the pre-project that gave rise to this project proposal. Intermediate technology dissemination and training is needed for forest industries in general and our country's context in particular (small and medium forest industries).</i></u></p>
<p><b>Output 3 (page 11)</b></p> <p>Technical assistance for the formulation and implementation of harvesting plans, annual financial plans (incomings – outgoings) and evaluation/validation of the use of intermediate technologies in forest harvesting.</p>	<p><b>Output 3:</b></p> <p>Technical assistance for the formulation and implementation of annual harvesting plans, <u><i>business plans, monitoring, evaluation and validation.</i></u></p> <p><u><i>Yearly plans of operation for each forest concession will enable us to develop a business plan for the beneficiaries, which will include the monitoring of both financial (including the revolving fund) and forest management aspects.</i></u></p>
<p><b>Activity 3.1 (page 11)</b></p> <p>Assist and advise the beneficiaries regarding their harvesting plans, including the formulation of harvesting plans and provision of technical assistance for their implementation.</p>	<p><b>Activity 3.1:</b></p> <p><u><i>Develop a business plan for each beneficiary on the basis of the yearly plan of operation for each concession area, considering the monitoring of both financial (including revolving fund) and forest management aspects.</i></u></p>
<p><b>Activity 3.2 (page 11)</b></p> <p>Design a harvesting follow-up and evaluation mechanism for each beneficiary. The monitoring and evaluation of forest harvesting operations carried out by each beneficiary will enable the Project to compile and systematise work experience using appropriate intermediate technologies for the preparation of a technical document to validate these appropriate intermediate technologies.</p>	<p><b>Activity 3.2:</b></p> <p><u><i>Advise, assist and assess the beneficiaries regarding the annual harvesting plans for their forest concessions, including the formulation of harvesting plans and provision of technical assistance for their implementation.</i></u></p>

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<p><b>Activity 3.3 (page 12)</b></p> <p>Design mechanisms to facilitate credit payments by users and beneficiaries based on a financial plan to be developed.</p>	<p><b>Activity 3.3:</b>  <u>Design a harvesting follow-up and evaluation mechanism for each beneficiary. The monitoring and evaluation of forest harvesting operations carried out by each beneficiary will enable the Project to compile and systematise work experience using appropriate intermediate technologies for the preparation of a technical document to validate these appropriate intermediate technologies.</u></p>
	<p><b>Activity 3.4:</b>  <u>Design mechanisms for the monitoring of credit payment by beneficiaries to replenish the revolving fund.</u>  <u>The financial arrangement to be agreed to with the beneficiaries will be based on the credit payment schedule shown in the Annex.</u>  <u>The proposal is as follows:</u>  <u>An interest rate of 15% per annum in US\$.</u>  <u>A grace period of three months after delivery of modules with payment of interest only. At the end of the grace period, quarterly payments for a total of seven installments.</u></p>
<p><b>5. LOGICAL FRAMEWORK WORKSHEETS (page 13)</b></p> <p><b>Development objective – Indicator</b></p> <p>The use of intermediate technologies in forest harvesting is incorporated into the National Forestry Strategy of Peru.</p>	<p><b>5. LOGICAL FRAMEWORK WORKSHEETS</b></p> <p>Development objective - Indicators</p> <ul style="list-style-type: none"> <li>- <u>Forest production yield per hectare.</u></li> <li>- <u>Cost of forest harvesting.</u></li> </ul>
<p><b>5. LOGICAL FRAMEWORK WORKSHEETS (page 13)</b></p> <p><b>Development objective – Means of verification</b></p> <p>Increased forest production yield per hectare.</p>	<p><b>5. LOGICAL FRAMEWORK WORKSHEETS</b></p> <p>Development objective - Means of verification</p> <ul style="list-style-type: none"> <li>- <u>Production reports and annual forest harvesting report.</u></li> <li>- <u>Production chain cost study.</u></li> <li>- <u>Economic and financial study on forest concessions.</u></li> </ul>
<p><b>5. LOGICAL FRAMEWORK WORKSHEETS (page 13)</b></p> <p><b>Specific objective – Description</b></p> <p>Small forest industrialists in the most representative Amazon regions of Peru will benefit from and improve forest production by using appropriate intermediate technologies based on forest harvesting modules</p>	<p><b>5. LOGICAL FRAMEWORK WORKSHEETS</b></p> <p><b>Specific objective – Description</b></p> <p><u>Improve the production of small timber industries in six regions of the Peruvian Amazon</u></p>

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<p><b>Output 3 (page 14)</b></p> <p>Technical assistance for the formulation and implementation of harvesting plans, annual financial plans (incomings – outgoings) and evaluation/validation of the use of intermediate technologies in forest harvesting</p>	<p><b>Output 3</b></p> <p>Technical assistance for the formulation and implementation of annual harvesting plans, <u><b>business plans, monitoring, evaluation and validation</b></u></p>
<p><b>Activity 3.1 (page 14)</b></p> <p>Assist and advise the beneficiaries regarding their harvesting plans</p>	<p><b>Activity 3.1</b></p> <p><u><b>Develop a business plan for each beneficiary on the basis of the yearly plan of operation for each concession area, considering the monitoring of both financial (including revolving fund) and forest management aspects</b></u></p>
	<p><b>Activity 3.1 – Indicator (page 15)</b></p> <p>- 14 business plans formulated to cover each of the beneficiaries</p>
	<p><b>Activity 3.1 – Means of verification (page 15)</b></p> <p>- Business plan document</p>
<p><b>Activity 3.2 (page 14)</b></p> <p>Design a harvesting follow-up and evaluation mechanism for each beneficiary</p>	<p><b>Activity 3.2</b></p> <p><u><b>Assist, advise and assess the beneficiaries regarding the annual harvesting plans for their forest concessions</b></u></p>
<p><b>Activity 3.3 (page 14)</b></p> <p>Design mechanisms to recover funds used for the acquisition of harvesting modules</p>	<p><b>Activity 3.3</b></p> <p><u><b>Design a harvesting follow-up and evaluation mechanism for each beneficiary</b></u></p>
	<p><b>Activity 3.4</b></p> <p><u><b>Design mechanisms for the monitoring of credit payment by beneficiaries to replenish the revolving fund</b></u></p>
<p><b>7. BUDGET</b></p> <p><b>7.1 Consolidated budget by financing source (page 16)</b></p> <p><b>7.1.1 Consolidated yearly project budget – ITTO (page 17)</b></p> <p><b>7.1.2 Consolidated yearly project budget – FONDEBOSQUE (page 18)</b></p> <p>40 CAPITAL ITEMS 41 Computer equipment (3) 42 Motor vehicles (4) 43 Harvesting modules (I)(II) Harvesting modules (III)</p>	<p><b>7. BUDGET</b></p> <p><b>7.1 Consolidated budget by financing source (page 17)</b></p> <p><b>7.1.1 Consolidated yearly project budget – ITTO (page 18)</b></p> <p><b>7.1.2 Consolidated yearly project budget – FONDEBOSQUE (page 19)</b></p> <p>40 CAPITAL ITEMS 41 Computer equipment (3) 42 Motor vehicles (4) <u><b>43 Revolving fund for harvesting modules (I)(II) Revolving fund for harvesting modules (III)</b></u></p>

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	<p><b>7.4 ECONOMIC AND FINANCIAL VIABILITY ANALYSIS (page 23)</b></p> <p><i><b><u>In line with the Expert Panel's recommendation, an economic and financial viability analysis has been incorporated in the proposal, including a description of the revolving fund.</u></b></i></p>
<p><b>PART III: OPERATIONAL ARRANGEMENTS</b></p> <p><b>1. Management structure (page 20)</b></p> <p>FONDEBOSQUE will be responsible to ITTO for the administrative aspects of project implementation. A Steering Committee will be established at the highest level of the project organisational structure. This Committee will be made up of a FONDEBOSQUE officer, FONDEBOSQUE Executive Director as chairperson, an INRENA officer, the Head of INRENA and/or the Wildlife and Forest Director, the Coordinator of the Project on "Support for the sustainable development of small forest industrialists through the use of appropriate intermediate technologies in forest harvesting modules", two regional government representatives, two representatives of users/beneficiaries, and an ITTO representative.</p>	<p><b>PART III: OPERATIONAL ARRANGEMENTS</b></p> <p><b>1. Management structure</b></p> <p>FONDEBOSQUE will be responsible to ITTO for the administrative aspects of project implementation. A Steering Committee will be established at the highest level of the project organisational structure. This Committee will be made up of a FONDEBOSQUE officer, FONDEBOSQUE Executive Director as chairperson, an INRENA officer, the Head of INRENA and/or the Wildlife and Forest Director, the Coordinator of the Project on "Support for the sustainable development of small forest industrialists through the use of appropriate intermediate technologies in forest harvesting modules", two regional government representatives, two representatives of users/beneficiaries, an ITTO representative, <b><u>and a representative from donor countries.</u></b></p>
<p><b>PROJECT ORGANISATIONAL CHART (PAGE 20)</b></p> <p>STEERING COMMITTEE</p>	<p><b>PROJECT ORGANISATIONAL CHART</b></p> <p><b><u>FONDEBOSQUE</u></b></p>
<p><b>2. Monitoring, reporting and evaluation (page 21)</b></p> <p>ITTO and FONDEBOSQUE, as Steering Committee members, will be jointly responsible for the monitoring and evaluation of project achievements. Two meetings will be held during the first year to ensure smooth project start-up; annual meetings will be held during the second and third year unless otherwise decided by the Committee. FONDEBOSQUE will be in charge of internal control and auditing during project implementation. Regular audits will be carried out, and the audit reports will be made available to the Steering Committee. The Project Coordinator will be responsible for the preparation of regular progress reports and the project completion report in accordance with ITTO regulations.</p>	<p><b>2. Monitoring, reporting and evaluation</b></p> <p>ITTO and FONDEBOSQUE, as Steering Committee members, will be jointly responsible for the control, evaluation <b><u>and monitoring of the financial and forest management aspects of the project.</u></b> Two meetings will be held during the first year to ensure smooth project start-up; annual meetings will be held during the second and third year unless otherwise decided by the Committee. FONDEBOSQUE will be in charge of internal control and auditing during project implementation. Regular audits will be carried out, and the audit reports will be made available to the Steering Committee. The Project Coordinator will be responsible for the preparation of regular progress reports and the project completion report, <b><u>including financial statements, in accordance with ITTO regulations.</u></b></p>

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<p><b>3. Future operation and maintenance (page 21)</b></p> <p>The harvesting modules purchase/sale funds will be administered by FONDEBOSQUE during the implementation of the project. This institution will be responsible for recovering the value of forest harvesting modules delivered to beneficiary concessionaires to ensure project sustainability and will continue the implementation of national training, extension and promotion programs on the use of appropriate intermediate technologies in forest harvesting, as well as the acquisition of new equipment and machinery for the benefit of other concessionaires and/or native communities.</p>	<p><b>3. Future operation and maintenance</b></p> <p>The harvesting modules purchase/sale funds will be administered by FONDEBOSQUE during the implementation of the project. This institution will be responsible for recovering the value of forest harvesting modules delivered to beneficiary concessionaires, <u><i>even after the conclusion of the initial phase of the project reflected in this proposal. The revolving fund will be used to continue the implementation of the national training, extension and promotion program on the use of appropriate intermediate technologies in forest harvesting, as well as the acquisition of new equipment and machinery for the benefit of other forest concessionaires and/or communities.</i></u></p>

**ANNEX G**

**HARVESTING MODULES REPAYMENT SCHEDULE (US\$)**

Loan                    \$14,000  
Interest                15%

	<b>INSTALLMENTS (US\$)</b>							
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
Amount due		(2.294)	(2.294)	(2.294)	(2.294)	(2.294)	(2.294)	(2.294)
Principal		(1.797)	(1.860)	(1.927)	(1.995)	(2.066)	(2.140)	(2.216)
Interest	(498)	(498)	(434)	(368)	(299)	(228)	(155)	(79)

**REPAYMENT SCHEDULE FOR BENEFICIARIES DURING PROJECT IMPLEMENTATION**

<b>DESCRIPTION</b>	<b>MONTHS</b>																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Delivery of modules				M 10												M 4								
Grace period																								
Payment of installments US\$ (*)							I 10			P 10			P 10			P 10			P 10			P 14		
Acquisition of new harvesting modules												M 1				M 2			M 1			M 2		M 2

**Notes:**

Eight (8) new modules will be acquired based on the repayment of credits during the project implementation period.

(\*) Payment of 7th installment will be due in March 2006.

P: Payment

M: Harvesting Modules

I: Revolving Fund interest