INTERNATIONAL TROPICAL TIMBER ORGANIZATION

ITTO

PROJECT PROPOSAL

This is not the final document. Integration of recommendations from the 60th Expert Panel is ongoing.

TITLE:	DEVELOPING SILVICULTURAL MANAGEMENT MODELS FOR FOREST RESTORATION BASED ON THE USE OF SEED TREES FOR THE ESTABLISHMENT OF NATURAL AND ARTIFICIAL REGENERATION IN THE PROVINCE OF TAHUAMANU, PERU
SERIAL NUMBER:	PD 942/25 Rev.1 (F)
COMMITTEE:	REFORESTATION AND FOREST MANAGEMENT
SUBMITTED BY:	GOVERNMENT OF PERU
ORIGINAL LANGUAGE:	SPANISH

SUMMARY

This project seeks to silviculturally manage seed trees, to find a procedure that will encourage the production of seeds and natural and artificial regeneration, leading to the restoration of harvested species populations for the next harvesting cycle by ensuring that these trees reach the desired wood quality and quantity in the areas under forest management.

The results of the project will contribute to the development of a silvicultural system to be applied in the restoration of commercial species populations in areas under forest management plans and operational plans in support of forest concessions and native communities. The methodology developed may be replicated in other forest regions of the country and throughout the tropics, thus contributing to national forest development.

The evaluation of seed trees located in forest concessions and native community areas, where 20% of harvestable trees are required to be retained as seed trees to allow for the regeneration of endangered CITES-listed species, will initially assess seed production capacity; the pollinators of each species and their status, as well as seed dispersers, will be identified, all of which will lead to the establishment of a silvicultural development model for the target species. The main beneficiaries of this project are native communities and forest concessionaires, as well as stakeholders engaged in forest plantations, as they will have access to quality-controlled seeds.

This project has been adjusted to be implemented in 60 months with 5 annual phases (of 12 months each), maintaining the same objectives and amounts.

EXECUTING AGENCY:	NATIONAL FORESTRY CHAMBER (CNF)
COLLABORATING AGENCIES	Ministry of Agrarian Development and Irrigation (MIDAGRI) National Forest and Wildlife Service (SERFOR) Ministry of the Environment (MINAM) Associated Nature and Development Consultants (CANDES) Regional Forest and Wildlife Authority of Madre de Dios Forest concessions and native communities in the region
DURATION:	60 MONTHS (To be implemented in 5 annual stages) *
ESTIMATED STARTING DATE	UPON PROJECT APPROVAL

BUDGET AND PROPOSED FUNDING SOURCES:

Source	Contribution in US$
ITTO	**1,061,040**
CNF	850,572
TOTAL	**1,911,612**

**Budget details by stage are shown on the following page.*

(*) PROJECT IMPLEMENTATION STAGES

Stage / Year	Funding source		
	ITTO	National counterpart	Total
1 (Year 1)	222 536	185 270	407 806
2 (Year 1)	227 685	165 992	393 677
3 (Year 1)	241 624	167 770	409 394
4 (Year 1)	212 732	162 770	375 502
5 (Year 1)	156 463	168 770	325 233
Total	1 061 040	850 572	1 911 612

The first stage involves the establishment of methodological procedures and the beginning of the field assessment, requiring the implementation of the other stages for the monitoring of the established plots.

Table of contents

PROJECT BRIEF

Since 2002, the National Agrarian University of La Molina (*Universidad Nacional Agraria La Molina* – UNALM) has been working on a long-term strategy to develop silvicultural tools and outputs that could lead to the unlisting of CITES-listed species (mahogany and cedar), and in recent years the National Forestry Chamber has joined this initiative.

Forest concessions and native communities have not yet developed sufficient silvicultural skills. The key problem identified by the project is the limited natural regeneration of mahogany (*Swietenia macrophylla*), cedar (*Cedrela* spp.) and shihuahuaco (*Dipteryx* spp.), as well as the low probability of developing and reaching adequate maturity to ensure the restoration of these species' populations and the generation of economic returns over time, without diminishing the ecological and environmental functions of forests. These target species are included within Executive Resolution No. 118-2019 MINAGRI-SERFOR, which also covers other species of the same genus.

The scope of the project has been narrowed down to cover the assessment of 3 species, including 2 CITES-listed species plus an additional one that some countries have proposed to list – mahogany (*Swietenia macrophylla*), cedar (*Cedrela* spp.) and shihuahuaco (*Dypteryx* spp.).

This project seeks to validate silvicultural methods to assess and monitor seed trees of **three (3)** commercial species with good post-logging regeneration potential by analyzing their phenology, which involves seed production and dispersal, as well as the establishment of regeneration and seedling development. Furthermore, the project is expected to develop silvicultural techniques for each species, in order to establish a silvicultural model that can be applied in forest management plans and operational plans.

The project is aimed at finding a procedure that will encourage the production of seeds, which will lead to the restoration of species through natural and artificial regeneration, ensuring that these species reach the desired wood quality and quantity in the areas under forest management.

Four main causes of this problem have been identified: first, the limited production of good quality seeds, which leads to the second cause related to uncertainty about the species population restoration; this in turn leads to the third cause, which is the lack of establishment of individuals of the target species thus impairing their development to reach the desired maturity. The third cause is in turn due to the fourth identified cause i.e. that the few existing silvicultural studies have not been adequately disseminated or included in training programs, resulting in a lack of knowledge about silvicultural techniques.

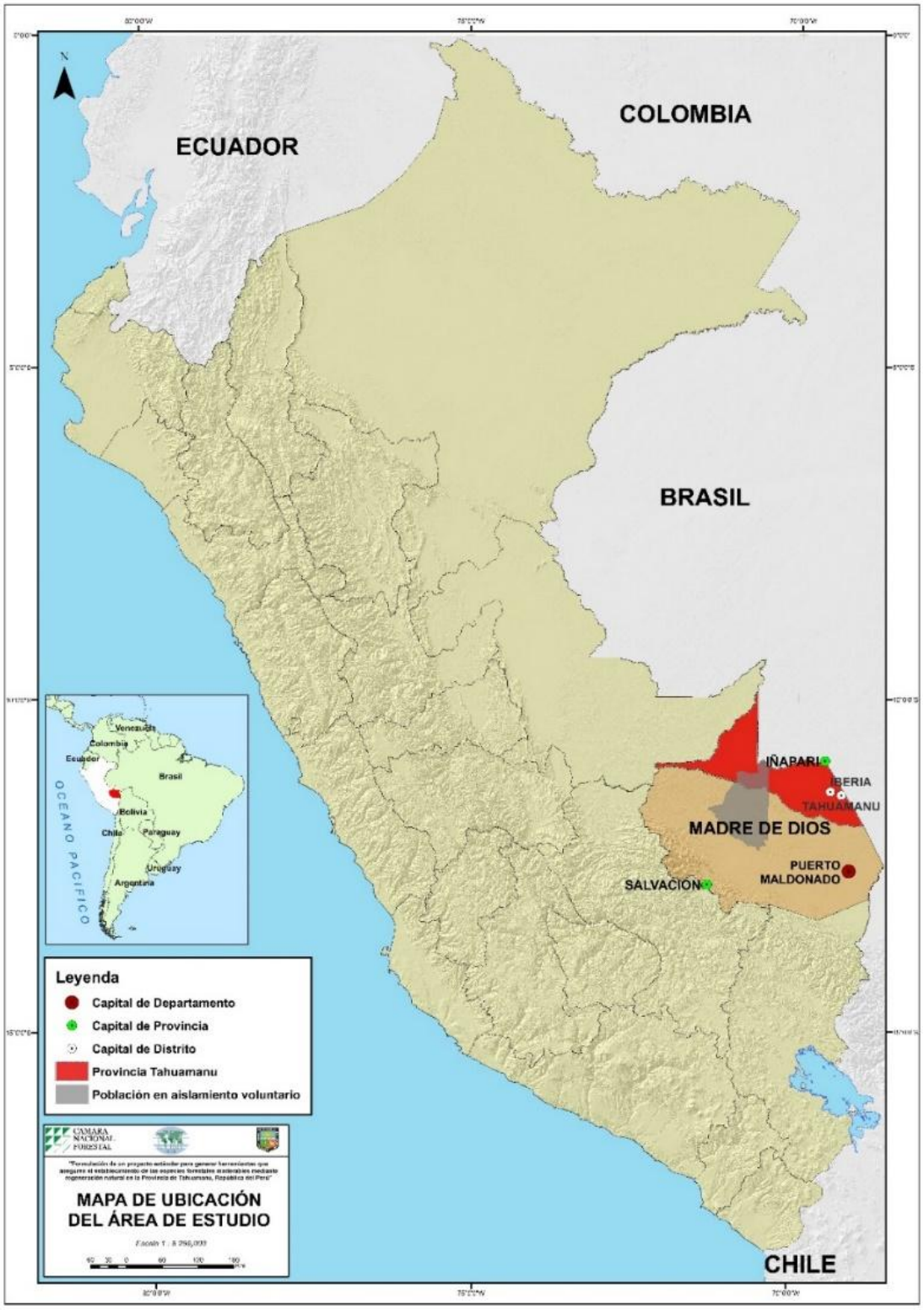
The outcomes of the project will contribute to the restoration of commercial species populations, which will directly help forest concessions and native communities, and the methodology developed will be suitable for replication in other forest regions of the country, thus contributing to national forest development.

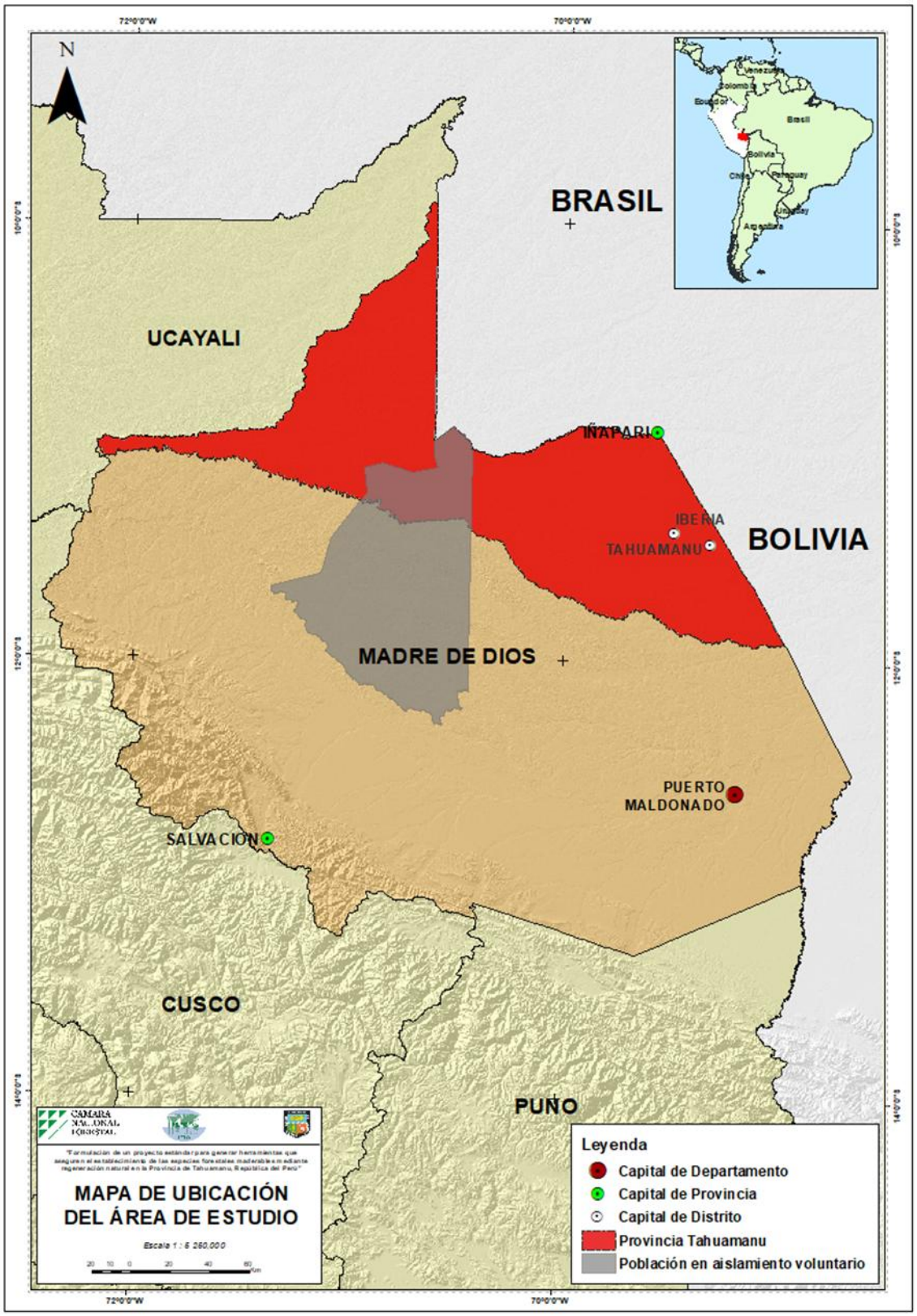
The implementation of the project has been planned in 5 consecutive stages of 12 months each (a total of 60 months), according to donor recommendations, since it is very difficult to obtain the total funding all at once, while it is feasible to obtain partial funding in stages; however, this first stage will ensure the basic conditions for research, guidelines and the establishment of plots; the remaining four stages will provide follow-up and generate knowledge on the biological behaviour of the species for seed production and natural regeneration. The objectives, outputs, outcomes and impacts of the original project are maintained, but its implementation will take 60 months instead of 37 months as originally planned.

LIST OF ACRONYMS AND ABBREVIATIONS

ACCA	Asociación para la Conservación de la Cuenca Amazónica
ADEX	Asociación de exportadores (*Exporters Association)*
CIP	***Colegio de Ingenieros del Perú (Peruvian Society of Forest Engineers)***
CITE Madera	Centro de Innovación Tecnológica de la Madera (Center for Wood Technology Innovation)
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNF	Cámara Nacional Forestal *(National Forestry Chamber)*
FENAMAD	Federación Nativa del Río Madre de Dios y Afluentes (Native Federation of the Madre de Dios River and its Affluents)
GFMP	General Forest Management Plan
GOREMAD	Gobierno Regional de Madre de Dios *(Regional Government of Madre de Dios)*
GRFFS-MDD	Gerencia Regional Forestal y de Fauna Silvestre de Madre de Dios *(Regional Forest and Wildlife Authority of Madre de Dios)*
IBC	Instituto del Bien Común (Institute for the Common Good)
IGN	Instituto Geográfico Nacional (National Geographic Institute)
IIAP	Instituto de Investigaciones de la Amazonía Peruana (Peruvian Amazon Research Institute)
INEI	Instituto Nacional de Estadística (National Institute of Statistics)
INIA	Instituto Nacional de Innovación Agraria (National Institute for Agrarian Innovation)
INRENA	Instituto Nacional de Recursos Naturales (National Institute for Natural Resources)
ITTO	International Tropical Timber Organization
MEF	Ministerio de Economía y Finanzas (*Ministry of Economy and Finance))*
MIDAGRI	Ministerio de Desarrollo Agrario y Riego *(Ministry of Agriculture and Irrigation)*
MINAM	Ministerio del Ambiente (Ministry of the Environment)
NGO	Non-governmental organization
OSINFOR	Organismo Supervisor de los Recursos Forestales y de Fauna Silvestre *(Timber Forest Resources Supervisory Agency)*
OP	Operational Plan
PCM	Presidencia del Consejo de Ministros (Head of the Council of Ministers)
RAP	***Red ambiental peruana (Peruvian Environmental Network)***
SENAMHI	Servicio Nacional de Meteorología e Hidrografía (National Meteorology and Hydrography Service)
SERFOR	Servicio Nacional Forestal y de Fauna Silvestre (National Forest and Wildlife Service)
UGFFS	Unidad de Gestión Forestal y de Fauna Silvestre *(Forest and Wildlife Management Unit)*
UNALM	Universidad Nacional Agraria la Molina *(National Agrarian University of La Molina)*
UNAMAD	Universidad Nacional Amazónica de Madre de Dios *(National Amazon University of Madre de Dios)*

MAP OF PROJECT AREA

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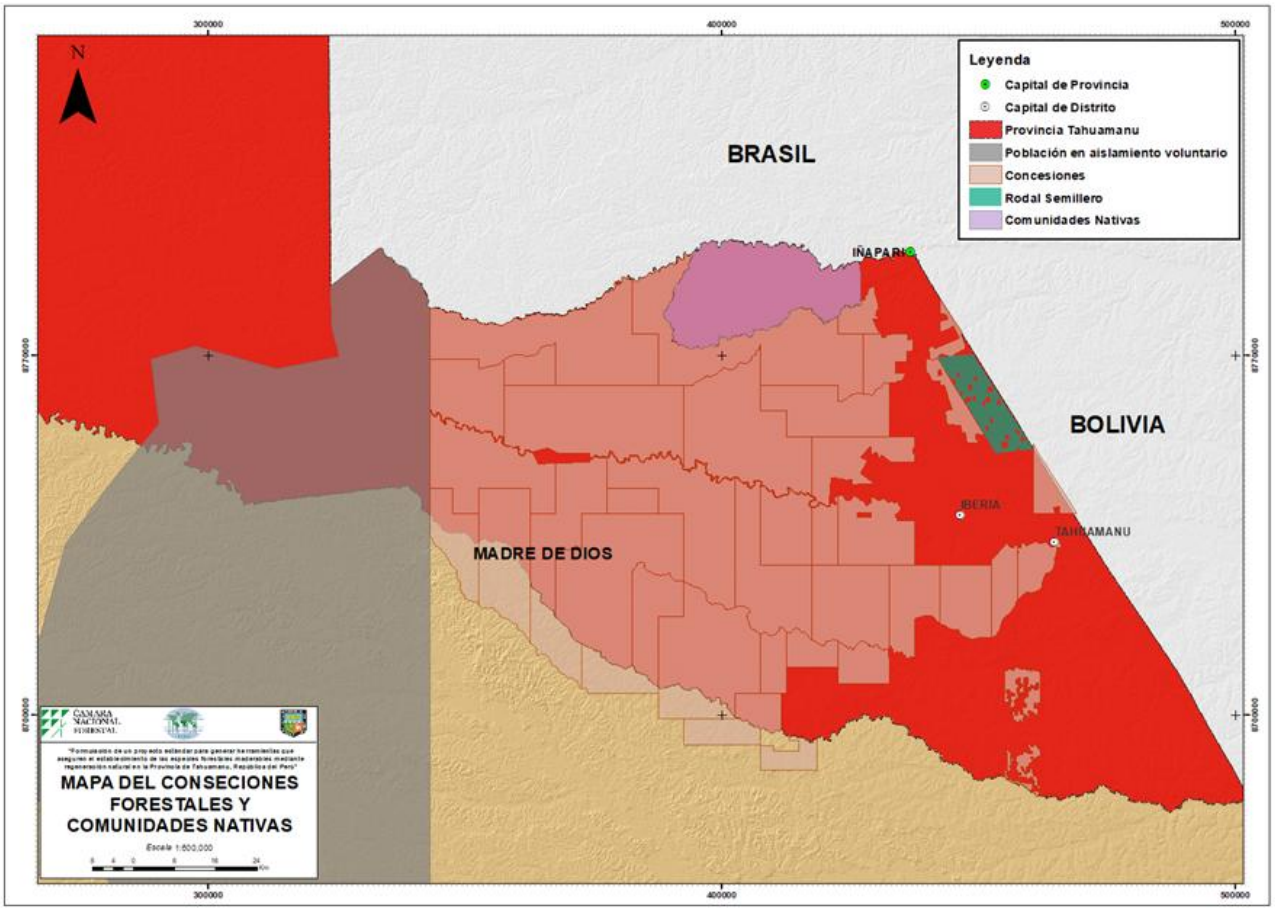
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BOLIVIA
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CAMARA NACIONAL FORESTAL
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PART 1. PROJECT CONTEXT

1.1 Origin

In 2002, the National Agrarian University of La Molina (*Universidad Nacional Agraria la Molina* - UNALM), as the CITES scientific authority in the country, made it a national objective to ensure that mahogany populations would not be further depleted and that, in the long term, big-leaf mahogany (*Swietenia macrophylla)*, which is listed in CITES Appendix II, would once again become a free-trade species. To this end, UNALM has been developing a research and information gathering strategy for this species throughout the years, by using different sources of financing and by establishing partnerships with public and private agencies, such as ITTO, CITES and CNF. Cedar *(Cedrela* spp.) was subsequently included in this program as this species is listed in CITES Appendix III.

It is important to point out that the results obtained from various UNALM studies have always been used as guidelines for the development of policies and strategies aimed at the sustainability of timber species, including the formulation of non-detriment findings to establish annual quotas for mahogany exports.

To date, significant progress has been made in research related to the reproductive behaviour of both *Swietenia macrophylla* (mahogany) and *Cedrela* spp. (cedar). However, there is an urgent need to carry out further in-depth and specialized research so as to obtain more information on their phenology and their potential pollinators and dispersers as well as on the monitoring of plantation establishment and natural regeneration responses for both species.

In addition, given the high harvesting levels and the pressure exerted on high density tree species, also known as “hardwoods”, it is important to determine the status of shihuahuaco (*Dipteryx* spp.), as well as other associated species, because, due to the lack of baseline studies, it has not been possible to estimate the ***quality of the*** remaining forest mass of these species and to assess if the retained seed trees are sufficient to restore their original populations. It is therefore necessary to implement a study to determine the population status of these species, taking into account their natural regeneration behaviour and tree reproductive strategies.

Moreover, since 2002, with the enforcement of the Forestry Law (Act No. 27308), the sector started to implement a forest concession model for commercial harvesting, which was subsequently strengthened and updated through Act No. 29763, promulgated in 2011. Under this model, in order to access the forest, concession holders are required to submit a General Forest Management Plan (GFMP) and an Operational Plan (OP) as planning and management tools. The guidelines for the formulation of these plans were adopted in 2003 and updated in 2016; they establish that silvicultural treatments and monitoring activities and interventions are considered to be “optional” and that priority must be given to the preservation of seed trees as the main restoration treatment. In addition, these guidelines state that because of the lack of information in relation to costs, benefits and impacts and the limited number of experiences in Peruvian Amazon forests, these activities are being progressively implemented and can be developed, as pilot projects, in forest concession areas. Similarly, forest monitoring activities can be carried out by groups of concession holders who share the same geographic environment, by establishing partnerships with specialized institutions such as universities and other agencies. Furthermore, the 2016 version establishes that the number of trees to be retained per species should be 20 per cent.

Therefore, despite the fact that Peru has taken the decision to prioritize these activities and has adopted the required legal instruments aimed at sustainable forest management, it is still necessary to implement research work that will provide information on silvicultural and monitoring activities for species of interest, in addition to providing an appropriate knowledge base and environment that will ensure the continuity of this type of research by making it part of the responsibilities of both concession holders and forest authorities.

This proposal is based on a methodological breakthrough developed with the support of the ITTO-CITES Programme (“Management of mahogany (*Swietenia macrophylla* King.) and cedar (*Cedrela* spp.) seed stands in a forest concession for the conservation of the Tahuamanu Seed Stand”) where an evaluation and monitoring methodology was developed for the phenology and establishment of natural mahogany and cedar regeneration. The project will use, adjust and validate field work activities based on experts’ feedback, thus helping to obtain information on other important commercial species.

The experience acquired throughout the years of work on mahogany (*Swietenia macrophylla* King.) and cedar (*Cedrela* spp.), as well as other species that are being intensively used, has shown that selected and retained seed trees are not managed according to appropriate silvicultural plans, and there is a general lack of knowledge on how to treat them to ensure adequate natural regeneration. In this context, the study should also include shihuahuaco (*Dipteryx* spp.) with the possibility of introducing additional species that are associated with these three selected species, such as huayo sugar (*Hymenaea courbaril*), ishpingo (*Amburana cearensis*, *Amburana acreana*), and manchinga (*Brosimum alicastrum*), among others.

This proposal is based on the technical report prepared for the pre-project "Development of a full project proposal to generate tools to ensure the establishment of timber forest species through natural regeneration in the province of Tahuamanu, Peru", which, during a six-month implementation period, established an updated seed-tree database, obtained contributions from key forest authorities and users, and developed a methodological proposal to assess and monitor seed trees and regeneration, as well as considering silvicultural trials to identify natural and artificial regeneration responses when the project is implemented.

Studies conducted in 2016 established that forest units under harvesting should retain 20% of harvestable trees as seed trees to allow for species regeneration or potential planting. Even though there is insufficient knowledge about pollinators, seed dispersers, and the establishment of future plants, this enables groups engaged in forest planting to have access to quality-controlled seeds.

1.2 Relevance

1.2.1 Conformity with ITTO's objectives and priorities

This proposal seeks to continue the research line pursued by UNALM to generate knowledge on the phenology and seed-dispersal behaviour of CITES-listed species as well as other species of current commercial value, so as to ensure the sustainable supply of timber stocks, understand the reproductive strategies of target species, and encourage their establishment, thus promoting forest activities as a sustainable business for both forest concessions and native communities. To this end, the project is aimed at the achievement of the objectives set out in Article 1 of the International Tropical Timber Agreement (2006) as shown below:

ITTA Article 1 Objectives	Justification
c) Contributing to sustainable development and to poverty alleviation.	The project will generate technical tools to be adopted by local stakeholders, promoting sustainable forest management and hence attractive investment opportunities by ensuring the restoration of future populations and harvestable timber volumes of the target species.
f) Promoting and supporting research and development with a view to improving forest management and efficiency of wood utilization and the competitiveness of wood products relative to other materials, as well as increasing the capacity to conserve and enhance other forest values in timber producing tropical forests.	The silvicultural model to be developed for the restoration of the populations of harvested species will ensure the correct implementation of forest management plans and operational plans as well as the monitoring of the restoration of the populations of harvested forest species.
j) Encouraging members to support and develop tropical timber reforestation, as well as rehabilitation and restoration of degraded forest land, with due regard for the interests of local communities dependent on forest resources.	The results of the study will contribute to assessing the quantity and quality of timber tree seeds, which will facilitate the development of a silvicultural strategy to be used in the sustainable management of natural forests and the restoration of degraded areas.
m) Encouraging members to develop national policies aimed at sustainable utilization and conservation of timber producing forests, and maintaining ecological balance, in the context of the tropical timber trade.	Project results will provide national policy-makers with technical and scientific tools to guide their decisions in the development of policies and strategies to ensure the sustainability of timber species under harvesting.

ITTA Article 1 Objectives	Justification
n) Strengthening the capacity of members to improve forest law enforcement and governance, and address illegal logging and related trade in tropical timber.	The development of silvicultural techniques and the understanding of the regeneration of forest species under harvesting will provide both national and local forest authorities with the necessary tools to make adjustments to update legal mechanisms towards sustainable forest management.
o) Encouraging information sharing for a better understanding of voluntary mechanisms such as, *inter alia,* certification, to promote sustainable management of tropical forests, and assisting members with their efforts in this area.	The understanding of phenological cycles and seed dispersal behaviour, as well as the establishment of natural regeneration of species and/or seed production for plantation programs will facilitate the transfer of lessons learned through a capacity-building program and the dissemination of results.
q) Promoting better understanding of the contribution of non-timber forest products and environmental services to the sustainable management of tropical forests with the aim of enhancing the capacity of members to develop strategies to strengthen such contributions in the context of sustainable forest management, and cooperating with relevant institutions and processes to this end.	Considering seeds as non-timber forest products, the proposed study will increase the knowledge on the phenology and the quantity and quality of seeds of target species, generating information on the best collection season and germination data to ensure the availability of quality seeds, which could have a potential market, including for other potential uses such as cosmetics and medicinal applications, among others.
r) Encouraging members to recognize the role of forest-dependent indigenous and local communities in achieving sustainable forest management and develop strategies to enhance the capacity of these communities to sustainably manage tropical timber producing forests.	The silvicultural models to be developed for the restoration of harvested timber species will also be applicable to the forests of native communities with forest management plans, thus ensuring adequate monitoring of seed trees.

This proposal is also consistent with the ITTO Strategic Action Plan as stated below:

ITTO Strategic Action	Justification
Strategic priority 1. Promote good governance and enabling policy frameworks for strengthening SFM and related trade and enhancing SFM financing and investment	The development of a silvicultural model for the management of seed trees, seed production and seed dispersal, as well as the establishment of regeneration, will significantly contribute to the implementation of regulatory frameworks with a scientific and technological basis, recognizing the costs involved in their implementation.
Strategic priority 3. Enhance the conservation and sustainable use of biodiversity in tropical timber producing forests	The project outcomes will help sustain an adequate, valid methodology to be applied in forest concessions and native communities with the sole objective of restoring logged-over natural populations or maintaining their current status, without affecting existing biotic relations with other fauna and flora species and generating a possible ecological balance in logged-over forests. In addition, the local communities will benefit from this balance as they will be able to use forest resources without impacting or reducing the quantity and quality of ecosystem services.
Strategic priority 6. Build and develop human resource capacity to implement SFM and increase trade in forest goods and services from sustainably managed forests	The technical and scientific documents based on the silvicultural models to be produced as project outputs will be an easy-to-understand source of knowledge, which will help develop capacities in seed area management and adequate seed treatments as well as natural regeneration establishment.

1.2.2 Relevance to submitting country's policies

The project proposal is consistent with each of the five policy areas and relevant guidelines set out in the National Forest and Wildlife Policy (NF&WP) as follows:

NF&WP Objectives	Justification
Policy area 1. Governance and institutional framework **Guideline 1:** Strengthening inter-institutional management. **Guideline 2:** Improving resource management and political, legal, administrative, technical, economic and financial conditions.	The silvicultural models to be developed by the project for the restoration of timber species populations will facilitate the updating of the regulatory framework to require the application of various treatments in a consistent and effective manner to be verified by the relevant authorities. This will provide a tool for the improvement of forest resource management with technical and scientific elements, which will facilitate the supervision of the implementation and monitoring of forest management and operational plans in forest concessions and native communities.
Policy area 2. Sustainability **Guideline 1:** Conservation, protection, maintenance, improved and sustainable management and forest plantations, based on an ecosystem approach **Guideline 2:** Management for the conservation and sustainable utilization of forest ecosystems	The technical tools to be developed, applied and validated by the project will provide forest authorities and stakeholders with guidelines to ensure forest sustainability and promote the implementation of sustainable forest management over the largest area possible. This will help achieve the objective of removing mahogany and cedar species from CITES Appendices II and III, respectively.
Policy area 3. Competitiveness **Single guideline:** Increasing productivity levels and strengthening competitiveness based on social and environmental standards	Ensuring the restoration of species under harvesting gives additional value to forests, both in concession areas and on native community lands. Likewise, phenological knowledge is needed to determine the productive season and obtain mature seeds with potential to be used for plantations or to be managed for the establishment of natural regeneration.
Policy area 4. Social inclusion and inter-cultural relations **Guideline 1:** Conservation of forest resources and intercultural dialogue involving technical and scientific developments **Guideline 2:** Development and consolidation of forest management, including community forestry, in all its sustainable practices and uses, as well as sustainable harvesting, including local populations	The silvicultural tools developed by the project will be disseminated at the local and community levels, providing training in a suitable language and using adequate teaching techniques so as to strengthen the capacities of young people, women and members of indigenous peoples and local communities, who will also benefit from forest sustainability as they will have a sufficient quantity and quality of resources available. Furthermore, ancestral knowledge will also be used in the implementation of the project so as to cover different perspectives and treatments to be applied in support of the forest.
Policy area 5. Knowledge, science and technology **Guideline 1:** Promoting research, innovation, training and technology transfer in the forestry field. **Guideline 2:** Implementing and guiding research for sustainable use and conservation benefits to produce goods and services, in processes to be integrated into the market.	The strategic partnership between CNF, UNALM, UNAMAD, SERFOR, GRFFS-MDD, forest concessions and communities, other government organizations and the private sector will ensure the adequate transfer of knowledge, the strengthening of stakeholder capacities at various levels, the use of silvicultural activities to encourage and promote regeneration establishment and the continuation of research to eventually remove mahogany and cedar species from CITES appendices and ensure the establishment of other species' regeneration.

1.2.3 Conformity with the United Nations Sustainable Development Goals (SDG)

Sustainable Development Goal	Justification
SDG 4: Quality education 	The strategic partnership between the CNF, UNALM, UNAMAD, SERFOR, GRFFS-MDD, concessionaires and communities, and other governmental and private sector agencies will allow for adequate knowledge transfer, strengthening stakeholder capacities at different levels and implementing silvicultural activities to motivate and encourage the establishment of regeneration and continue to establish research lines to remove mahogany and cedar from CITES and ensure the regeneration of other species. In addition, awareness-raising actions for forest conservation in schools in the study area are proposed.
SDG 5: Gender equality 	The project will promote the participation of women from native and local communities, as well as teachers for awareness-raising in schools. Furthermore, part of the technical team will be made up of women at different levels (collaborators, technicians, professionals).
SDG 9: Industry, innovation and infrastructure 	Tools and procedures will be developed to monitor forests in support of sustainable forest management, which will facilitate the restoration of traded tree species.
SDG 12: Responsible consumption and production 	The main objective of the project is to develop tools and procedures that will allow concession holders and communities to monitor, analyse and make better decisions for the restoration of commercial species and encourage the establishment of forest plantations.
SDG 13: Climate action 	Having studies on forest regeneration, both technically and financially, will make it possible to understand the effort that concession holders and communities must make in the search for species sustainability, maintaining the forest as a space that ensures natural regeneration; in addition, the research on genetic material to be conducted will help to encourage and motivate entrepreneurs to establish plantations in degraded areas.
SDG 15: Life on land 	Forest conservation contributes to the restoration of ecological processes, preserving habitats for plant life and wildlife.
SDG 17: Partnerships for the Goals 	The project will coordinate with public and private stakeholders related to the conservation and sustainable use of forests, involving national and regional forest authorities, as well as academia as a training facility for professionals and forestry enterprises involved in forest management.

1.3 Target area

1.3.1 Geographic location

The study is focused on the Amazon region of Peru, specifically in the Department of Madre de Dios, Province of Tahuamanu, where significant populations of seed trees of mahogany, cedar, shihuahuaco, estoraque and some other associated species have been identified in areas under harvesting in forest concessions and native communities.

There are 33 timber forest concessions and one native community operating in Tahuamanu. These are focused on the harvesting of different timber species under general forest management plans and operational plans, which require the retention of 20% of the seed trees of the different species from the entire harvestable population, as well as proper silvicultural management of each species to ensure their restoration.

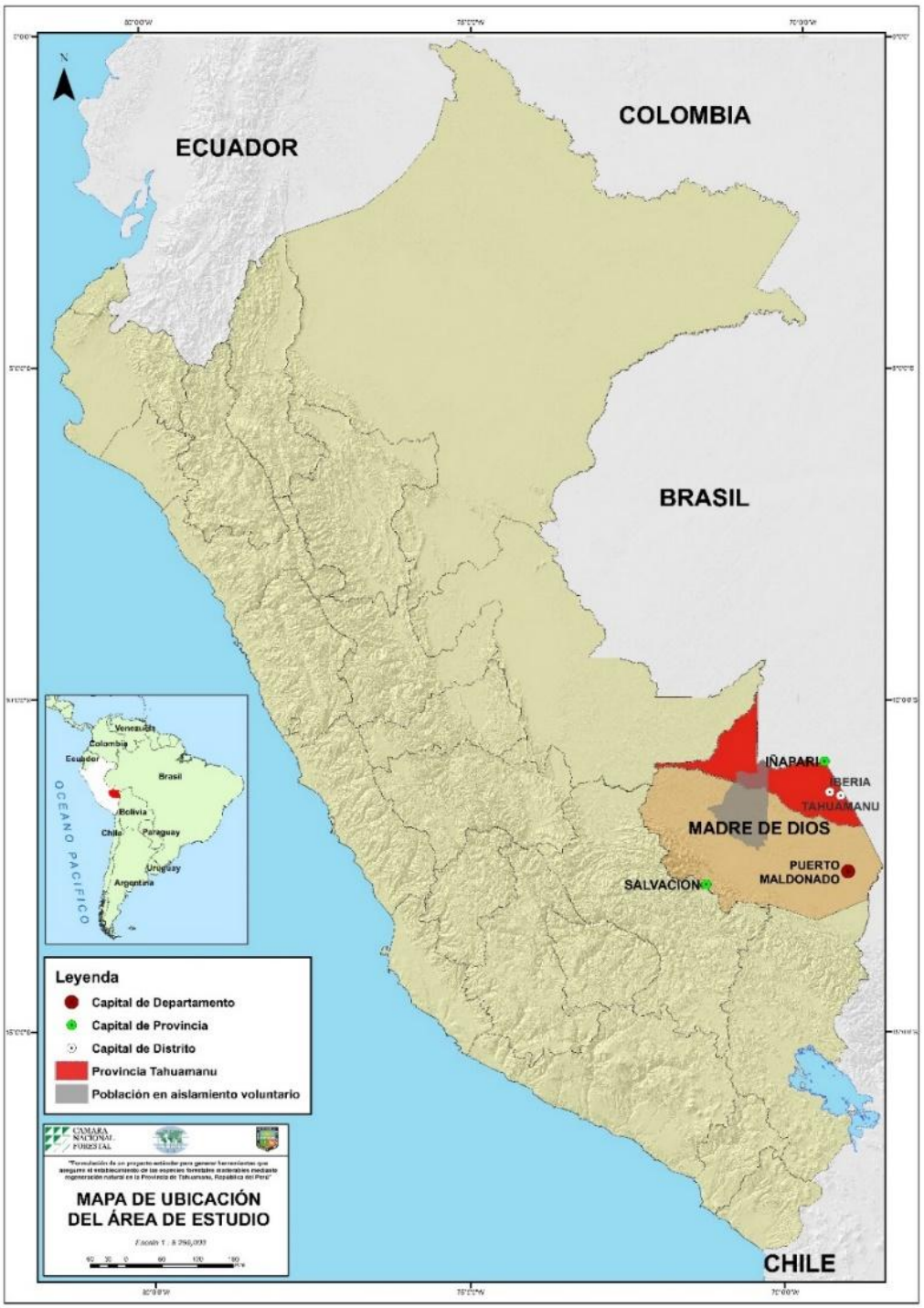


Figure 1. Location map of study area

1.3.2 Economic, environmental, cultural and social aspects

The department of Madre de Dios has a population of 140,508 in an area of 85,301 km^2 divided into three provinces and 11 districts, as detailed in Table 1.

Table 1. Administrative division of the Department of Madre de Dios

Province	Capital	Districts	Area (km²)	Population (2016)	Altitude (m.a.s.l.)
Tambopata	Puerto Maldonado	4	36 268.49	101 787	205
Manu	Salvación	4	27 835.17	24 572	527
Tahuamanu	Iñapari	3	21 196.88	14 149	245
TOTAL			85 300.54	140 508	

The province of Tahuamanu has a population of 14,149 and covers an area of 21,196 km^2. The forest sector in the province of Tahuamanu is one of the most formalized sectors in the country and has the largest number of certified forests (547,399 ha), which represents 51.8% of the total number of certified forests in Peru. Furthermore, 31% of permanent production forests (PPFs) in Tahuamanu are under non-timber concessions, with Brazil nut being a major source of income. Similarly, the province of Tahuamanu has the largest number of processing plants in Madre de Dios, accounting for 53.7% of the total number of processing plants in the region.[1]

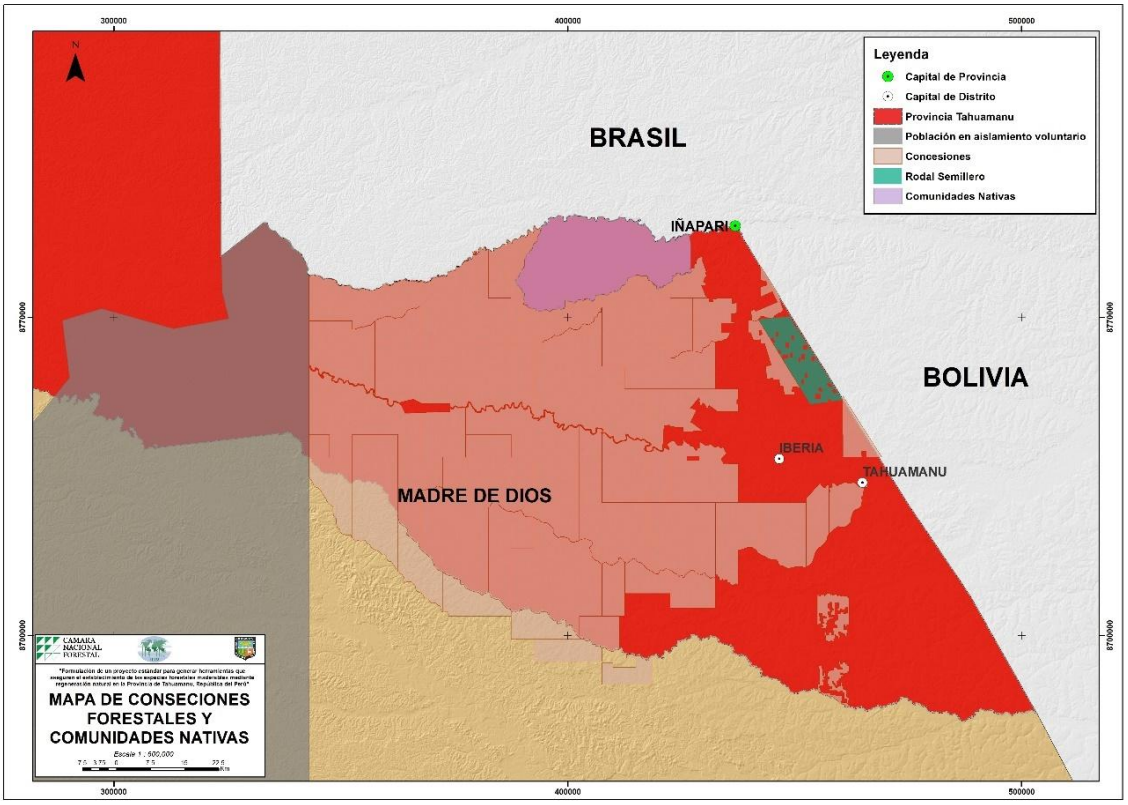


Figure 2. Location of timber concessions and native communities in Tahuamanu

[1] https://www.actualidadambiental.pe/presentan-experiencia-en-implementacion-del-modelo-de-gestion-forestal-local-en-tahuamanu/

In addition, Regional Ordinance No. 012-2021-RMDD/CR established the Tahuamanu Forestry and Wildlife Management Unit (UGFFS) in the Province of Tahuamanu, Department of Madre de Dios, which covers 1,040,846.83 ha, according to the official land demarcation, with its headquarters in the city of Iberia, capital of the district of Iberia.

In Madre de Dios there are several activities that are not forest-friendly, causing an annual loss of forest mass; similarly, the province of Tahuamanu also has different degrees of impacts caused by these non-forest-compatible activities.

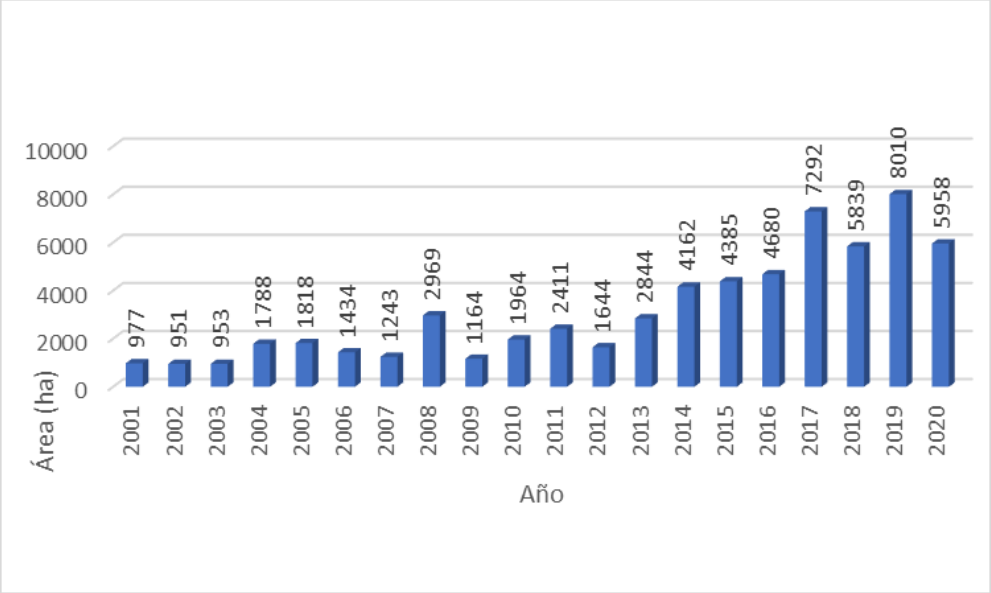


Figure 3. Forest loss rate in the Tahuamanu Province
Source: Geobosque

Between 2001 and 2020, Madre de Dios had a cumulative forest loss of approximately 254,153 ha, and Tahuamanu alone had a cumulative loss of approximately 62,486 ha during the same period (Source: Geobosques).

According to figures from the Peruvian National Institute of Statistics and Information Technology (INEI), Madre de Dios accounted for 0.4% of the national Gross Value Added (GVA) in 2020, ranking last at the national level. The average annual GVA growth rate between 2011 and 2020 was –4.1%. The main economic activity was trade, with a 15.5 % share of departmental GVA, followed by the mining sector with 15.0 %; agriculture, livestock, hunting and forestry with 11.5 %, with a growth of 4.1% on average over the last 10 years; construction with 8.1 %; and public administration and defense with 8.0%, among the main activities.

In 2020, a total of 13,760 formal companies were registered, with 99.7% classified as MSMEs (Office of Economic Studies, Ministry of Production). Of the 850 manufacturing companies registered in the department, 96.2% are microenterprises, 3.3% are small enterprises, 0.4% are large enterprises, and 0.1% are medium-sized enterprises. Out of the total number of companies in the manufacturing sector, the province of Tambopata accounts for 87.2%, followed by the province of Manu with 7.9% and Tahuamanu with 4.9%. According to the International Standard Industrial Classification of All Economic Activities (ISIC), the main manufacturing economic activities in the department included metal products (217 companies), food and beverages (175 companies), furniture production and other industries (157companies), and wood products (Ministry of Production) (97 companies).

In 2020, 96.0% of the Economically Active Population (EAP) in the department of Madre de Dios was employed and 4.0% was unemployed (*Perú en Cifras*, INEI 2020).

The dominant ecosystem in the target area is tropical moist forest, which covers almost the whole area of the Tambopata and Manú provinces.

The climate in Madre de Dios is tropical humid, with abundant rainfall and an average annual temperature in the city of Puerto Maldonado of 26°C, with maximum temperatures of 38°C between August and September and minimum temperatures of up to 8°C between May and August. There are two distinct seasons in the department: the dry season, between May and October; and the rainy season, between December and April.

Water resources are made up of a series of abundant rivers and streams that cross the department from west to east. These resources are important for the department because they are the main means of communication and transport ("*Caracterización del Departamento de Madre de Dios*", Central Reserve Bank of Peru, Cusco Branch 2022).

The private sector has limited experience in reforestation actions; national projects do not have adequate control; seeds are distributed and planted, and a budget is allocated for these two activities, while the follow-up and care is left up to farmers, without adequate supervision, so planted seedlings do not reach their full development. Individual interests prevail, mainly those of timber companies (Regional Government of Madre de Dios-GOREMAD).

Based on the above indicators, the project seeks to increase silvicultural knowledge to achieve sustainable forest management, which will improve the conditions of enterprises and communities, thus also improving the conditions of local populations. All of this will be achieved through a continuous production of quality forest products over time.

The region's population is made up of 53% men and 47% women. Women account for 23% of the total number of people involved in forestry activities in concessions and reforestation programs. The project will help increase this involvement by including women in the various activities and stages of production, giving them preference in training and education.

The region exports US$163 million FOB, with sawnwood accounting for 3.12% and profiled timber for 1.8%. Roundwood production and shihuahuaco wood production account for 16% and 4% of the region's GDP, respectively.

1.4 Expected outcomes at project completion

Upon project completion, there will be silvicultural models for the management of seed trees and their establishment in natural regeneration or in plantations, so as to restore harvested forest species populations to ensure the second and subsequent harvesting rotations, while seeking to maintain the economic and ecological value of forests.

The knowledge generated by the project to define silvicultural models will lay the foundations for future research according to the challenges that may arise over time.

The project envisages intensive dissemination to forest management and operational plan operators, with the participation of native community members, forest regents, forest policy-makers, and legal enforcement agents, among others.

The contribution to decision-makers and policymakers in the forest management field will have a scientific and technological basis to make the most appropriate decisions.

The scientific and technical knowledge generated by the project will provide adequate guidance for the management and monitoring of species, providing information on the benefits of future forests constituting the new forest mass with better timber quality.

As a result of the project, there will be information available to help in the formulation or adjustment of mechanisms to benefit the restoration of species populations; in addition, there will be a tool that will serve as an input for forest auditing, verification and supervision by relevant forest agencies, thus ensuring adequate monitoring of the implementation of forest management plans.

Finally, the project seeks to lay the first scientific-technical foundations to establish silvicultural models so that national and regional forest authorities and forest users can replicate these models and monitor their effectiveness in forest restoration.

Seeds will be produced for forest plantation programs in various areas so that, after the selection of seed trees, high quality reproductive material may be produced both in forest concessions and in areas under forest permits.

Direct project beneficiaries will include native communities and forest concessions, as they will be able to develop and implement silvicultural plans for the restoration of harvested species, as well as reforesters. Indirectly, the results will be used by public policy makers responsible for enforcing legal provisions.

PART 2. PROJECT RATIONALE

2.1 Rationale

It is important to point out that throughout the last 20 years of implementation of the forest concession and permit model, most of the forest management plans are already starting or are about to start the second rotation of forest harvesting. However, very few people know to what extent high-value species have recovered and if they are in a condition to be harvested, because the only action taken was the retention of seed trees assuming that forests would recover based on their natural regeneration; in other words, very little has been done to take the necessary silvicultural actions to guarantee their reforestation. This proposal seeks to ensure the restoration of species populations through the design of seed-tree management models, based on the assessment of their pollination, dispersal, establishment and subsequent development patterns, in addition to generating reproductive materials to carry out forest plantation programs with quality inputs.

Figure 4. CITES process timeline

2002-2008	2009	2011	2013		2015			2015
Appointment of UNALM as scientific authority for timber species	UNALM is endorsed to exercise the role of CITES scientific authority	Forestry and Wildlife Law	National forest and wildlife policy	Forest management regulations	Wildlife management regulations	Forest plantation and agroforestry system management regulations	Regulations for forest and wildlife management by native and rural communities	MINAM establishes CITES Animals and Plants Committees (No. 340-2015 MINAM)
INRENA	RM No. 038-2009 MINAM	Act No. 29763	D.S. No. 09-2013-MINAGRI	DS No. 018-2015-MINAGRI	DS No. 019-2015-MINAGRI	DS No. 020-2015-MINAGRI	DS No. 021-2015-MINAGRI	RM No. 340-2015 MINAM)

In 2002, the National Agrarian University of La Molina (UNALM), appointed as the CITES Scientific Authority for timber species, presented a work strategy with the objective of restoring trees of commercial species after harvesting and stressing the importance of seed trees:

- **First stage: immediately**
  This initial stage had to be carried out in a very short period of time as a response to international community demands; it was successfully completed and allowed for the preparation of non-detriment findings for the species.
- **Second stage: short term**
  To carry out studies of the population sizes of CITES-listed species; the methodology has been extended to other species. It was carried out with the support of ITTO and CITES, facilitating the preparation of non-detriment findings on a scientific and technical basis.
- **Third stage: medium term**
  This stage involves the development of silvicultural techniques that allow for adequate species restoration, beginning with the production of seeds and the management and monitoring of seed trees.
- **Fourth stage: long term**
  Species are restored or under a system that allows for their harvesting with rotations combining natural regeneration and potential plantations.

Of these four proposed stages, the first two have already been completed while the third stage is under implementation, although with delays despite the efforts of concessions and communities because it is essential to develop a system for the silvicultural management of seed trees to ensure the generation of reproductive materials to obtain adequate natural or artificial regeneration.

It is important to note the support that UNALM and CNF have received from ITTO to ensure forest management as the best way to use tropical forests and adequately restore species populations. In addition, one of the results of the pre-project was the systematization of interviews with forest concession holders and native community members, which indicated the lack of support from government agencies and especially the lack of research on silvicultural development in tropical forests.

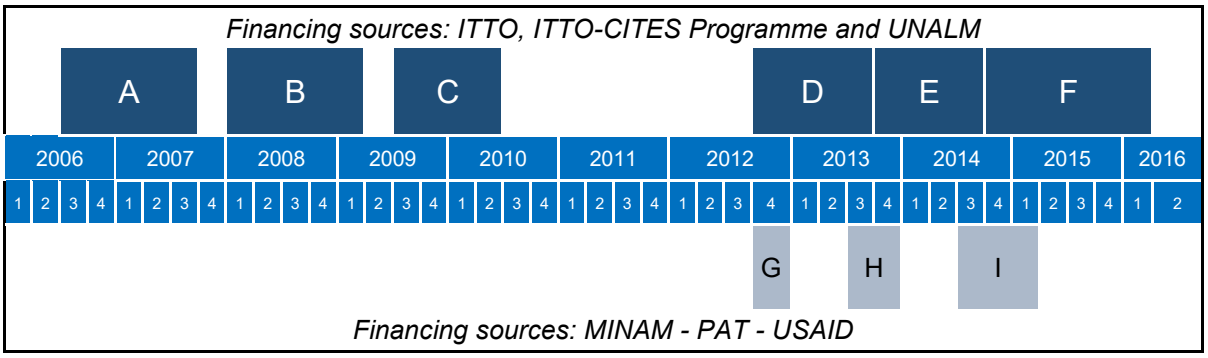


Figure 5. Studies carried out by UNALM and MINAM since 2006

Where:

A. *Evaluation of commercial stocks and strategy for the sustainable management of bigleaf mahogany (Swietenia macrophylla King.) in Peru.*
B. *Evaluation of commercial stocks and strategy for the sustainable management of bigleaf mahogany (Swietenia macrophylla King.) in Peru"- Extension to Cedar (Cedrela spp.)*
C. *Design, validation and adjustment of the methodology for ongoing monitoring and evaluation of bigleaf mahogany and cedar sample plots in Peru.*
D. *Assessment of regeneration of natural bigleaf mahogany and cedar populations in Peru - Madre de Dios*
E. *Confirmatory assessment of forest inventories of mahogany and cedar species.*
F. *Management of mahogany (Swietenia macrophylla King.) and cedar (Cedrela spp.) seed stands in a forest concession for the conservation of the Tahuamanu Seed Stand in the province of Tahuamanu, Madre de Dios, Peru.*
G. *Assessment of mahogany and cedar regeneration in Madre de Dios, Peru.*
H. *Development of a cedar stock map and assessment of mahogany and cedar regeneration in Ucayali, Peru.*
I. *Consultancy services to assess mahogany and cedar regeneration in the San Martin and Loreto regions.*

This development proposal is focused on species restoration and the economics of management plans, considering the need to develop a silvicultural system for the populations of harvested species so as to ensure the adequate use of seed trees that today are merely retained without the application of any treatment in the hope that they will develop in the areas as required by forest users.

2.1.1 Institutional set-up and organizational issues

National Forestry Chamber – CNF

The CNF was established more than 30 years ago and it was officially recognized by the Ministry of Agriculture through Ministerial Resolution No. 00321-89-AG of 20 September 1989, as a private organization representing the timber sector before public institutions and agencies of the agricultural, industrial and export sectors. Its membership includes: the National Confederation of Micro and Small Enterprise Associations (*Confederación Nacional de Gremios de la Micro y Pequeña Empresa* -- CONAMYPE); Small and Medium Forest Producers and Industrialists Association of Peru (*Asociación Forestal de Pequeños y Medianos Productores y Empresarios del Perú* -- AFORPYME); Timber Producers Association of the Department of Ucayali (*Asociación de Madereros del Departamento de Ucayali* -- AMDU); Timber Logging and Reforestation Association of the Ucayali Region (*Asociación de Extractores Madereros y Reforestadores de la Región de Ucayali* -- AEMRU); Peruvian Environmental Network (*Red Ambiental Peruana* -- RAP); Association for Integrated Research and Development (*Asociación para la Investigación y el Desarrollo Integral* -- AIDER); Peruvian Foundation for the Conservation of Nature (*Fundación Peruana para la Conservación de la Naturaleza* -- PRO NATURALEZA); Peruvian Society of Engineers (*Colegio de Ingenieros del Perú* -- CIP); Peruvian Association of Forest Engineers (*Asociación Peruana de Ingenieros Forestales* -- APIF); National Agrarian University of La Molina (*Universidad Nacional Agraria La Molina* -- UNALM); Civil Association for Forest Development (*Asociación Civil para el Desarrollo Forestal* -- FORESTAS); AIDESEP Regional Organization, Ucayali – ORAU; the Consultancy Firm PERUFOREST S.A.; and the company *Bosque, Agua, Cultura y Vida SRL.*

The National Forestry Chamber will be the executing agency of this project. The CNF represents the private sector and serves as a platform for the interaction of its members and representative organizations of timber producers in the main regions of the project's area of action. The role of the CNF, as a non-profit civil association, is consistent with its institutional objective of promoting the sustainable development of the forest sector, harmonizing conservation principles with scientific, technological and socioeconomic development. Its objectives are:

- Promoting the sustainable use of forest resources, harmonizing the principles of conservation with technology and economic and social development.
- Coordinating national forest activities and acting as the main interlocutor of the private forest sector before public and private institutions and agencies.
- Proposing and achieving efficient and stable forest policies to encourage forest management, industry, trade and the promotion of exports.
- Building up and disseminating an adequate image of the forest activity at the national level consistent with the magnitude of the resource and its territorial significance.
- Providing feedback/making statements on issues of national interest.
- Designing and implementing research, training and development projects related to forestry.

The CNF, as the executing agency, will be responsible for the institutional communication and coordination of the project. At the beginning of project implementation, a communication plan will be developed and the CNF will designate a professional who will coordinate its implementation. Communication and outreach activities will be carried out both externally, prioritizing the project's target beneficiaries and other stakeholders linked to forest activities, and internally, among the members of the institution and its staff. Project activities, as well as project outputs, topics of interest, opinions, etc. will be disseminated through the Internet, the institutional web portal, emails, as well as through the use of social media networks, such as Facebook and WhatsApp, among others, which will ensure a fluid, fast, powerful and low cost communication process. Video conference platforms will also be used.

National Agrarian University of La Molina – UNALM

The mission of the National Agrarian University of La Molina is to provide high quality professional, humanistic, scientific and technological training in the agricultural, forestry, livestock, fisheries, food and economic sectors, generating knowledge and developing skills through basic and applied research for innovation, extension and social projection within a framework of ongoing improvement, ethical principles, and social and environmental accountability, to contribute to sustainable development in the country (see Annex 1).

Direct participants in the project will be the National Forestry Chamber (CNF), as executing agency, and the National Agrarian University of La Molina (UNALM), through its Faculty of Forestry. SERFOR will also be involved in the project.

2.1.2 Stakeholder analysis

Table 2. Project stakeholder analysis

Stakeholder group	Characteristics	Problems, needs, interests	Strengths	Involvement in the project
Primary stakeholders				
Native communities: Belgica native community and others	Communities engaged in forest harvesting under forest management systems. They work through third parties that provide forest management services and establish infrastructure. **Seeking a development model for sustainable forest management that is suitable for forestry production and forest restoration and helps improve the living standards of the local population.** **Promoting the participation of women in decision-making and their involvement in the production of high-quality seeds.**	Limited knowledge of silvicultural management and timber product markets. Limited knowledge and interest in the management of seed trees for production recovery. Manpower with few qualifications or devoted to other activities. **Lack of knowledge about the ecological environment and lack of appropriate technologies, resulting in low productivity and low income levels for the local population.**	Interest in increasing timber production in accordance with the requirements of the general forest management plans and operational plans, improving the regeneration of high-value species. Willingness to improve competitiveness and the implementation of silvicultural plans to make better use of seed trees. **Availability of forests with high potential species. The rational harvesting of native forests presents interesting prospects.** **Overcoming the lack of knowledge on the use of species and establishing management plans for the harvesting of large areas would provide optimal conditions for the development of forestry industries.**	Primary project stakeholders. Primary source of information. Silvicultural trials will be applied to identify the necessary models. Awareness-raising and training on the benefits of silvicultural management. Providing access to the forest and the use of infrastructure by the project's technical staff.

Forest concessions: Consolidado Maderacre, Maderyja, Consolidado Otorongo – Chullachaqui, Catahua and others	They control extensive areas of forest and are timber loggers. In some cases, they have their own logging/harvesting machinery. They are responsible for implementing forest management plans and forest operational plans. They know about production methods in the forest but only a few are involved in silvicultural actions for the restoration of harvested species.	Lack of knowledge in seed production cycles, monitoring of natural regeneration establishment and no certainty that the same productivity will be achieved in the second cutting cycle.	Interested in increasing the number of individuals that can be harvested in the second rotation and in knowing how to manage seed trees in natural and artificial propagation of species.	Primary stakeholders as forest producers through natural forest management. Primary source of information. The project will build capacities based on their experience and will strengthen forest and silvicultural management. Providing access to the forest and the use of infrastructure by the project's technical staff.
Secondary stakeholders				
National Forest Authority (SERFOR)	Regulatory and policy-guiding agency in the forestry field. Provides technical support to the regional forest authority.	It requires further studies and research in order to develop standards and guidelines for forest management.	Establishment of legal provisions for the regulation and monitoring of forest activities.	Support in the implementation of the project.
Regional Forest Authority (GRFFS MDD)	Agency responsible for law enforcement at the regional level.	High labour turnover and workload. Need greater capacity for adequate implementation of standards and guidelines.	Knowledge of local context and conditions.	Local coordination for project activities.
National public organizations requiring knowledge such as Universities (UNAMAD, UNALM), technological institutes, Peruvian Amazon Research Institute (IIAP).	They have research departments and laboratories such as the Alwyn Gentry Herbarium (UNAMAD), as well as forest engineering, biology and technology faculties, among other units linked to the development of forest species production and restoration.	Limited budget for forest research on topics such as the use of seed trees in the natural or artificial regeneration of species harvested from Amazon forests.	Highly trained professionals in different fields of expertise. With adequate funding, they could set up programs that include studies on natural or artificial regeneration of timber species in managed forests with silvicultural development.	Secondary and reference information source to establish project methodologies. They can support the development of forest management and operational plans under the application of silvicultural techniques. Strategic collaborators in specific project topics.
Tertiary stakeholders				
Private organizations: ADEX, Chambers of Commerce, National Industry Society	Institutions involved in the development of export enterprises. Interested in increasing and maintaining timber production with limited support to the forest sector.	To obtain information on export demand for forest products	Experience and knowledge about the requirements of international markets	Secondary information source. The project will organize actions with these institutions to ensure forest production under forest and silvicultural management.

Regional and local NGOs working in support of forest development	They actively participate in the implementation of development plans. They contribute to the development of regional forest activities; however, they have limited knowledge of forest management plans, operational plans and especially silvicultural treatments for the restoration of forests and harvested species.	Insufficient financial resources.	Experience in development activities and financial management	Direct participation in project activities aimed at capacity building among stakeholders. The project will promote collaborative work and the development of synergies with these organizations.

The project's primary stakeholders include the forest concessions and native communities with forests under approved forest management plans and operational plans under implementation; secondary stakeholders are the forest authorities, both at the national and regional levels, as well as the academic sector. Other project stakeholders, defined as tertiary stakeholders, are non-governmental agencies, state projects and private organizations.

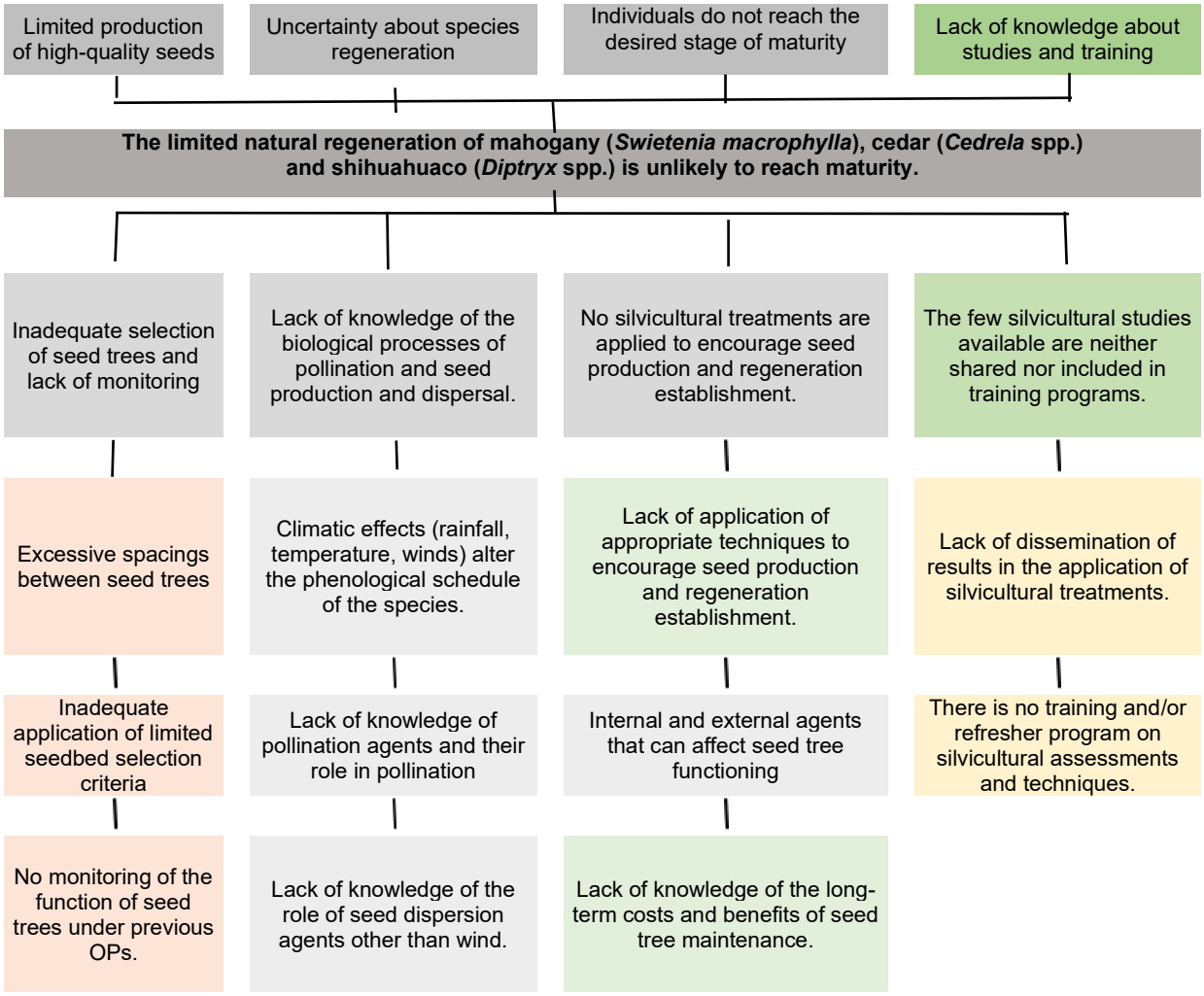
2.1.3 Problem analysis

Peru has extensive natural forests, with the second largest Amazon forest area in South America which covers a total of 69,020,330 ha, and these forests are characterized by high diversity of forest species and by high volumes of potentially harvestable species whose timber can be processed and marketed; however, forest concessions and native communities have not developed sufficient silvicultural skills.

Against this background, the key problem identified by the project is the limited natural regeneration of mahogany (*Swietenia macrophylla*), cedar (*Cedrela* spp.) and shihuahuaco (*Dipteryx* spp.), which are unlikely to develop and reach adequate maturity to ensure the restoration of these species populations and the generation of economic returns over time, without diminishing the ecological and environmental functions of forests.

Four causes leading to the key problem have been identified and are detailed in Table 3.

Table 3. Problem Tree



To solve the key problem, the project will ensure that the forest concessions and native communities that are harvesting timber species and leaving their seed trees behind as indicated in the guidelines for the formulation of management and operational plans, apply silvicultural models according to site-specific conditions. The project will work directly with concession holders and native communities to improve the skills of the personnel in charge of forest operations.

2.1.4 Logical Framework Matrix

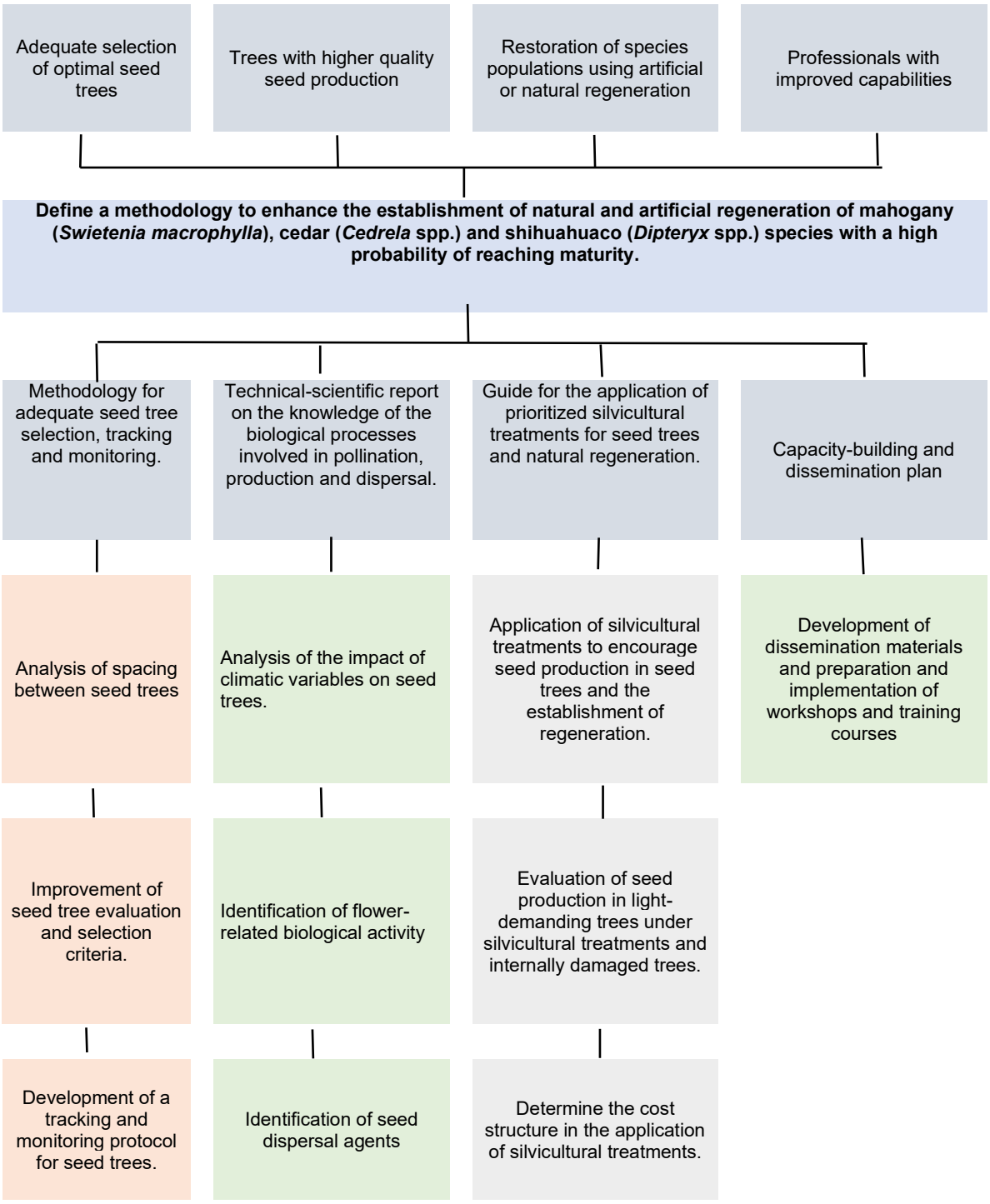
Table 4. Logical framework matrix t

Intervention strategy	Measurable indicators	Means of verification	Key assumptions
Development objective ***Contribute to the development of a silvicultural model for the production of seeds of species subject to forest harvesting, ensuring their maturity in sufficient quality and quantity to guarantee the establishment of natural and artificial regeneration in areas under forest management.***	**Technical recommendations for forestry authorities (at the national and regional levels) using project results to formulate forest management guidelines to be applied by concession holders and native communities.**	Authorized operators' reports on the implementation of operational plans	Authorities recognize, disseminate and officialize the use of silvicultural methods and monitoring of seed trees and regeneration. Operators adopt and implement the silvicultural recommendations in the management areas.
Specific objective ***Define the criteria and techniques to select the best seed trees and ensure the production of high-quality mature seeds in good quantities to guarantee high-quality natural and artificial regeneration of mahogany (Swietenia macrophylla), cedar (Cedrela spp.) and shihuahuaco (Dipteryx spp.) species.***	**By the end of the project there will be: three silvicultural models tested and disseminated. Additionally, a model will have been generated for each of the species under study according to their characteristics and local conditions with the silvicultural techniques required to establish the maturity of seeds and their behaviour in natural and artificial regeneration.**	Technical documents on seed tree selection, treatment application and regeneration establishment.	Authorized operators adopt and apply the procedures established for seed tree selection, seed tree monitoring, application of silvicultural treatments and regeneration establishment.
Outputs			
1. Methodology for adequate seed tree selection, tracking and monitoring.	Four validated methods to evaluate, classify, select and monitor seed trees to ensure proper functioning.	A methodological guide for adequate seed tree assessment, classification, selection, tracking and monitoring.	It is possible to monitor two phenological periods for the same species. There are no climatic anomalies in the sampling area and assessment period. Timely issuance of research permit including collection. Authorizations for entry, stay and assessment in the permits. Identification and exclusion of areas that have third parties performing non-compliant activities that would put personnel at risk.
2. Knowledge of the biological processes involved in pollination, production and dispersal.	Knowledge of the biological and climatic processes involved in the phenology of each species.	Technical-scientific report on the knowledge of the biological processes involved in pollination, production and dispersal.	
3. Silvicultural treatments for seed trees and natural regeneration.	Identification of four technically feasible treatments to encourage seed production and regeneration establishment.	Guide for the application of prioritized silvicultural treatments for seed trees and natural regeneration.	

Intervention strategy	Measurable indicators	Means of verification	Key assumptions
4. Capacity building	50 forest stakeholders adequately trained in silvicultural techniques to manage seed trees and natural regeneration.	Report of training activities	Continued involvement of local academic institutions in Madre de Dios.
Activity 1.1 Analysis of spacing between seed trees	An updated database	UNALM-FCF Database Commercial Surveys	Availability of access and overnight accommodation facilities in the sampling sites located within authorized areas
Activity 1.2 Improvement of seed tree evaluation and selection criteria.	**150** seed trees assessed for the **3** species under study	Technical field reports Botanical identification certificates Soil characterization analysis Results analysis report	Availability of access and overnight accommodation facilities in the sampling sites located within authorized areas
Activity 1.3 Development of a tracking and monitoring protocol for seed trees.	A guide for seed tree tracking and monitoring	Technical field reports Seed germination analysis report Results analysis report	Availability of access and overnight accommodation facilities in the sampling sites located within authorized areas
Activity 2.1 Analysis of the impact of climatic variables on seed trees.	An analysis of the climate-phenology relationship	Climate data report Technical analysis report	Availability of access and overnight accommodation facilities in the sampling sites located within authorized areas
Activity 2.2 Identification of flower-related biological activity	A description of biological activity related to flowers and inflorescences.	Technical field report Pollinator identification report Technical analysis report	Availability of access and overnight accommodation facilities in the sampling sites located within authorized areas
Activity 2.3 Identification of seed dispersal agents	A list of seed dispersal agents in assessed trees.	Technical field report Report on dispersal agents and seed destruction agents Technical analysis report	Availability of access and overnight accommodation facilities in the sampling sites located within authorized areas

Intervention strategy	Measurable indicators	Means of verification	Key assumptions
Activity 3.1 Application of silvicultural treatments to encourage seed production in seed trees and the establishment of regeneration.	A silvicultural model that can be applied to seed trees and that promotes the establishment of regeneration.	Report of test results	Availability of access and overnight accommodation facilities in the sampling sites located within authorized areas
Activity 3.2 Evaluation of seed production in light-demanding trees under silvicultural treatments and internally damaged trees.	A silvicultural model that can be applied to trees with unfavorable conditions.	Report of test results	Availability of access and overnight accommodation facilities in the sampling sites located within authorized areas
Activity 3.3 Determine the cost structure in the application of silvicultural treatments.	A cost structure for the application of silvicultural models.	Economic report on application of silvicultural models	Availability of access and overnight accommodation facilities in the sampling sites located within authorized areas
Activity 4.1 Development of dissemination materials and preparation and implementation of workshops and training courses	50 people trained	Training report	Continued involvement of local academic institutions in Madre de Dios.

Table 5. Solutions Tree



2.2 Objectives

2.2.1 Development objective

Contribute to the development of a silvicultural model for the production of seeds of species subject to forest harvesting, ensuring their maturity in sufficient quality and quantity to guarantee the establishment of natural and artificial regeneration in areas under forest management.

2.2.2 Specific objective

Define the criteria and techniques to select the best seed trees and ensure the production of high-quality mature seeds in good quantities to guarantee high-quality natural and artificial regeneration of mahogany (Swietenia macrophylla), cedar (Cedrela spp.) and shihuahuaco (Dipteryx spp.) species.

PART 3. DESCRIPTION OF PROJECT INTERVENTIONS

3.1 Outputs and Activities

3.1.1 Outputs

Output 1.- Methodology for adequate seed tree selection, tracking and monitoring.

A set of criteria for selecting the best seed trees will be tested, including diameter, height and crown shape, among other parameters for each species, which will facilitate the development of a technical manual for forest managers, including both native communities and forest concession holders. This manual will include climatic and biological aspects to establish a seed collection schedule.

Output 2.- Knowledge of the biological processes involved in pollination, production and dispersal.

Flowering and related biological activity will be evaluated to identify pollinators and correlate this information with climate data to determine seed production periods and seed quality. This will provide information on dispersal seasons and seed dispersal agents, as well as the establishment of new plants for population restoration. These results will assist native communities and forest concession holders in developing their forest management plans and/or plans of operation, as well as in caring for wildlife, including insects.

Output 3.- Silvicultural treatments for seed trees and natural regeneration.

Based on the results obtained under outputs 1 and 2, a silvicultural system will be designed for each species to increase seed production and ensure its establishment in the field. At the end of the project, a silvicultural methodology will be in place to enable regeneration and allow forest managers to better design their forest management plans and plans of operation.

Output 4.- Capacity building

Following the dissemination of results and the use of manuals, methodologies such as these will be applied in areas under silvicultural activities, demonstrating the possibility of restoring target species so that forest land managers and forest regents can include them as part of silvicultural activities when developing their general management plans and plans of operation.

3.1.2 Activities

For Output 1: Methodology for adequate seed tree selection, tracking and monitoring

Activity 1.1 Analysis of spacing between seed trees

Based on the information obtained in each forest inventory to prepare forest management plans and operational plans, as well as data from OSINFOR's SIGO, SERFOR, the regional forestry authority and the UNALM-CITES-ITTO project, there will be updated data available on seed trees in the study area, which will serve as the basis for evaluation and monitoring.

The spacing between seed trees is very important because of the activity of pollinators and the way the flowers are fertilized; after harvesting, the spacing between seed trees can become very large and seed production can be reduced. This activity comprises several tasks, including the collection of information on the location of seed trees in the region to update the existing database, which requires a certain amount of equipment and computer programs for the spacing analysis to be carried out by project researchers, as well as the technical monitoring and supervision to be conducted by national experts.

Activity 1.2 Improvement of seed tree evaluation and selection criteria

Pre-established evaluation criteria will be applied to 200 trees (in total for the 4 species) to make the necessary adjustments to the final evaluation criteria, which involves the botanical identification of selected individuals, as well as the collection of soil samples. This will lead to the identification of requirements for each species

and the implementation of soil analyses in the established groups, and seed-tree monitoring will provide information on periodic growth and ages of trees.

Activity 1.3 Development of a tracking and monitoring protocol for seed trees

Selected seed trees will be tested and monitored; these activities will involve monitoring seed dispersal and production in the field, as well as fruit collection for laboratory analysis on seed germination. Based on the results of these activities, a seed-tree tracking and monitoring guide will be prepared.

For Output 2: Knowledge of the biological processes involved in pollination, production and dispersal

Activity 2.1 Analysis of the impact of climatic variables on seed trees

Based on the climatic data, such as pp, T, RH, winds and others, to be collected in stations installed in at least two sites near target groups and the observation of phenology, the relationship or influence of climate on the production of fruits and seeds will be determined, thus facilitating the assessment of reproductive material.

Activity 2.2 Identification of flower-related biological activity

Determining the flower-related biological activity will allow for the identification of potential pollinators through the installation of camera traps and physical traps to ensure the capture and identification of insects.

Activity 2.3 Identification of seed dispersal agents

Seeds are dispersed by different mechanisms that need to be identified in order to assess where new seedlings may be established. This also implies knowing the biological agents that feed on fruits and seeds, which are part of the destruction process, reducing the possibilities of regeneration establishment. On this basis, a list of seed dispersal agents in assessed trees will be obtained.

For Output 3: Silvicultural treatments for seed trees and natural regeneration

Activity 3.1 Application of silvicultural treatments to encourage seed production in seed trees and the establishment of regeneration

Different silvicultural techniques will be applied to enable seed trees to produce a sufficient number of seeds and achieve an adequate regeneration of harvested species, as well as a surplus for artificial regeneration.

The different stages of seed trees will be monitored and evaluated on an ongoing basis, which involves assessing budding periods, flowering periods, beginning of fruit-bearing cycles, fruit and seed maturation, and seed dispersal.

Activity 3.2 Evaluation of seed production in light-demanding trees under silvicultural treatments and internally damaged trees

Through phenological monitoring and the application of silvicultural treatments, seed production will be determined, in quality and quantity, in internally damaged trees and trees with high competition due to lack of lighting. At the end of the project, there will be a silvicultural model applicable to trees with unfavourable conditions.

With regard to the silvicultural method to be used, information will be compiled from national and international experiences to generate a methodological basis to complement the methodological achievements of projects carried out by the National Agrarian University of La Molina, under the UNALM-ITTO-CITES agreement.

Activity 3.3 Determine the cost structure in the application of silvicultural treatments

A structure of fixed and variable costs will be established for all silvicultural treatments validated after the trials. This will provide information to authorized operators on the levels of investment required for these treatments.

For Output 4: Capacity building

Activity 4.1 Development of dissemination materials and preparation and implementation of workshops and training courses

Based on the partial and final results of evaluation and monitoring activities, dissemination materials, guides and publications will be prepared to share these results. In addition, ongoing training will be provided to at least 50 concession and community workers to apply the models developed during the implementation of the project.

Forest concessions generally hire workers to carry out the various tasks required to implement their general forest management and operational plans, while in the communities these tasks are carried out by community members; in both cases, the people who carry out this work need to be adequately trained to better understand the proposed methodologies. Likewise, workers should adopt the methodological procedures and become fully familiar with them as part of their work.

According to the development of the different target species, a number of field days will be scheduled, especially for producers.

3.2 Implementation approaches and methods

The project will be implemented in cooperation with stakeholders and beneficiaries who are directly or indirectly interested in the restoration of harvested species populations. The project will use a participatory approach (including both men and women) to achieve its proposed objective, as it will promote participation in the implementation of activities through a shared vision aimed at raising the level of competitiveness of producers and enhancing the sustainable use of forest resources in the region. The implementation of the project will focus on restoring the production of timber from managed forests through the adequate application of silvicultural treatments and strengthening forest management in accordance with the following intervention strategies:

- Collection of information on forest management plans and operational plans. Information on seed trees will be sought from different regional and national institutions and local stakeholders.
- Capacity building for efficient forest management. In a participatory manner with men and women in charge of forest management units, problems limiting efficiency in the application of appropriate silvicultural techniques will be identified. The project will establish solutions to these problems.
- Gender equity approach. This is a crosscutting issue impacting all project activities; therefore, the equal participation of men and women will be checked and promoted in all activities to be carried out throughout the project implementation period.

With regard to gender equity, it is important to point out that women will participate as part of the research team (office and field levels). Similarly, during the training process, an equitable participation between men and women will also be ensured, giving women the opportunity to be incorporated into forest management tasks.

In addition, the SERFOR document on capacity building will be taken into account:

- **Inter-cultural approach: it considers that the management of the forest and its resources should be developed within a framework of recognition, respect and appreciation of the presence and interaction of different cultures, under their cosmovision, allowing for the possibility of generating shared cultural expressions, which may be acquired through dialogue and an attitude of mutual respect. Traditional knowledge in the management and use of forest and wildlife resources and biodiversity shall be recognized (Forestry and Wildlife Law 2012).**
- **Rights-based approach: it starts by recognizing people as individuals with rights and not as objects to be taken care of, i.e. as people with the capacity to defend and demand their legally recognized rights. It also recognizes that they are citizens with duties who participate in the social world, fostering a democratic life. This approach promotes the consolidation of democracy, contributing to the promotion of individual freedoms, the collective rights of all peoples and their participation in public affairs; strengthening coexistence and transparency in educational institutions; reducing situations of inequity; and seeking the peaceful resolution of conflicts (MINEDU, 2017).**

- **Gender approach: it is a way of looking at reality by identifying the roles and tasks performed by both men and women in society, as well as the asymmetries, power relations and inequalities that occur between them. It makes it possible to understand and explain the causes of these asymmetries and inequalities, and to formulate measures (policies, mechanisms, affirmative actions, standards, etc.) that contribute to overcoming social gender gaps (National Forest and Wildlife Policy, 2013).**
- **Territorial approach: this approach constitutes a systemic, integrated vision of a given territory in the short, medium and long terms, which corresponds to the holistic vision of the forest in the indigenous cosmovision, enabling intercultural dialogue as a central aspect of forest management. In other words, it involves land planning considering its economic potential and attention to social, cultural and environmental issues, for which it integrates spaces, stakeholders, and production of goods and services, as well as public policies for intervention.**

The project implementation strategy is based on the work plan, which establishes the activities to be carried out on a yearly and quarterly basis, with each partial outcome to be disseminated according to its contribution to the relevant approach (see Table 6).

3.3 Work plan

Table 6. Work Plan

OUTPUTS/ACTIVITIES		RESPONSIBLE PARTY	YEAR 1 / QUARTER				YEAR 2 / QUARTER				YEAR 3 / QUARTER				YEAR 4 / QUARTER				YEAR 5 / QUARTER			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1: Methodology for adequate seed tree selection, tracking and monitoring																						
Activity 1.1	Analysis of spacing between seed trees	Director Forestry Coordinator I Forestry Coordinator II GIS Specialist	1	1	1																	
Activity 1.2	Improvement of seed tree evaluation and selection criteria	Director Forestry Coordinator I Forestry Coordinator II GIS Specialist I		1	1	1								1	1	1						
Activity 1.3	Development of a tracking and monitoring protocol for seed trees	Director Forest Coordinator I Forest Coordinator II				1	1								1	1	1					
Output 2: Knowledge of the biological processes involved in pollination, production and dispersal																						
Activity 2.1	Analysis of the impact of climatic variables on seed trees	Director Forestry Coordinator I Forestry Coordinator II				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Activity 2.2	Identification of flower-related biological activity	Identification of seed dispersal agents				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Activity 2.3	Identification of seed dispersal agents	Director Forestry Coordinator I GIS Specialist Forestry Coordinator II				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Output 3: Silvicultural treatments for seed trees and natural regeneration																						
Activity 3.1	Application of silvicultural treatments to encourage seed production in seed trees and the establishment of regeneration	Director Forestry Coordinator I Forestry Coordinator II				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Activity 3.2	Evaluation of seed production in light-demanding trees under silvicultural treatments and internally damaged trees	Director Forestry Coordinator I GIS Specialist Forestry Coordinator II				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Activity 3.3	Determine the cost structure in the application of silvicultural treatments	Director Forestry Coordinator I Forestry Coordinator II													1				1		1	
Output 4: Capacity building																						
Activity 4.1	Development of dissemination materials and preparation and implementation of workshops and training courses	Director Forestry Coordinator I Forestry Coordinator II				1	1					1	1							1	1	
Output 5: Project management																						
Activity 5.1	Project implementation, evaluation, follow-up, and monitoring	Director Forestry Coordinator I Forestry Coordinator II	1		1		1		1		1		1		1	1		1		1		1

3.4 Budget

3.4.1 Master budget

Table 7. Master Budget Schedule

Activity / Description	Budget item	Year 1	Year 2	Year 3	Year 4	Year 5	Unit	Unit cost	Total cost	Year 1	Year 2	Year 3	Year 4	Year 5	National Contribution
Output 1: Methodology for adequate seed tree selection, tracking and monitoring															
Analysis of spacing between seed trees	Activity 1.1														
National experts	11	12.4	0.0	0.0	0.0	0.0	Man-month	1471	18180	18180	0	0	0	0	22273
Improvement of seed tree evaluation and selection criteria	Activity 1.2														
National experts	11	12.4	0.0	1.6	2.8	0.0	Man-month	1471	24739	18180	0	2426	4133	0	22273
Field assessment experts	12	11.1	0.0	2.2	4.1	0.0	Fieldtrip/person	467	8126	5175	0	1014	1936	0	2422
Duty travel	31	6.2	0.0	1.0	1.8	0.0		350	3130	2154	0	355	621	0	
Field assessment equipment	44.1	3	0	0	0	0	Toolkit	1950	5850	5850	0	0	0	0	1967
Meals, materials, clothing and supplies	51	6.0	0.0	1.1	2.0	0.0	Fieldtrip cost	1300	11807	7784	0	1391	2632	0	
Other consumable items	52	0.0	0.0	1.1	2.1	0.0	Miscell./fieldtrip	50	159	0	0	55	105	0	
Specialized and logistic services	61	5.0	0.0	1.2	2.0	0.0	Miscell./event	2500	20561	12550	0	3060	4951	0	38185
Contingencies	63	22.5	0.0	2.9	5.5	0.0	Miscellaneous	50	1541	1125	0	143	273	0	
Development of a tracking and monitoring protocol for seed trees	Activity 1.3														
National experts	11	4.1	1.7	0.0	4.2	0.0	Man-month	1471	14803	6060	2543	0	6200	0	22273
Output 2: Knowledge of the biological processes involved in pollination, production and dispersal															
Analysis of the impact of climatic variables on seed trees	Activity 2.1														
National experts	11	4.1	6.9	6.6	5.6	5.4	Man-month	1471	42176	6060	10173	9704	8267	7971	22273
Field assessment experts	12	3.7	10.2	8.7	8.3	4.6	Fieldtrip/person	467	16545	1725	4760	4057	3873	2130	2000
Duty travel	31	2.1	3.6	4.1	3.5	3.1		350	5731	718	1275	1421	1242	1076	
Field assessment equipment	44.1	1	0	0	0	0	Toolkit	1950	1950	1950	0	0	0	0	1966
Meals, materials, clothing and supplies	51	2.0	6.1	4.3	4.0	1.9	Fieldtrip cost	1300	23843	2595	7919	5565	5264	2500	
Other consumable items	52	0.0	4.8	4.4	4.2	2.6	Miscell./fieldtrip	50	798	0	240	219	209	130	
Specialized and logistic services	61	1.7	4.2	4.9	4.0	3.1	Miscell./event	2500	44583	4183	10623	12241	9901	7633	38185
Contingencies	63	7.5	16.0	11.4	10.9	10.3	Miscellaneous	50	2806	375	800	571	545	514	
Identification of flower-related biological activity	Activity 2.2														
National experts	11	4.1	6.9	6.6	5.6	5.4	Man-month	1471	42176	6060	10173	9704	8267	7971	22273
Field assessment experts	12	3.7	10.2	8.7	8.3	4.6	Fieldtrip/person	467	16545	1725	4760	4057	3873	2130	2000
Duty travel	31	2.1	3.6	4.1	3.5	3.1		350	5731	718	1275	1421	1242	1076	
Field assessment equipment	44.1	1	0	0	0	0	Toolkit	1950	1950	1950	0	0	0	0	1966
Meals, materials, clothing and supplies	51	2.0	6.1	4.3	4.0	1.9	Fieldtrip cost	1300	23843	2595	7919	5565	5264	2500	
Other consumable items	52	0.0	4.8	4.4	4.2	2.6	Miscell./fieldtrip	50	798	0	240	219	209	130	
Specialized and logistic services	61	1.7	4.2	4.9	4.0	3.1	Miscell./event	2500	44583	4183	10623	12241	9901	7633	38185
Contingencies	63	7.5	16.0	11.4	10.9	10.3	Miscellaneous	50	2806	375	800	571	545	514	
Identification of seed dispersal agents	Activity 2.3														
National experts	11	4.1	6.9	6.6	5.6	5.4	Man-month	1471	42176	6060	10173	9704	8267	7971	22273
Field assessment experts	12	3.7	10.2	8.7	8.3	4.6	Fieldtrip/person	467	16545	1725	4760	4057	3873	2130	2000
Duty travel	31	2.1	3.6	4.1	3.5	3.1		350	5731	718	1275	1421	1242	1076	
Field assessment equipment	44.1	1	0	0	0	0	Toolkit	1950	1950	1950	0	0	0	0	1966
Meals, materials, clothing and supplies	51	2.0	6.1	4.3	4.0	1.9	Fieldtrip cost	1300	23843	2595	7919	5565	5264	2500	
Other consumable items	52	0.0	4.8	4.4	4.2	2.6	Miscell./fieldtrip	50	798	0	240	219	209	130	
Specialized and logistic services	61	1.7	4.2	4.9	4.0	3.1	Miscell./event	2500	44583	4183	10623	12241	9901	7633	38185
Contingencies	63	7.5	16.0	11.4	10.9	10.3	Miscellaneous	50	2806	375	800	571	545	514	
Output 3: Silvicultural treatments for seed trees and natural regeneration															

Activity / Description	Budget item	Year 1	Year 2	Year 3	Year 4	Year 5	Unit	Unit cost	Total cost	Year 1	Year 2	Year 3	Year 4	Year 5	National Contribution
Application of silvicultural treatments to encourage seed production in seed trees and the establishment of regeneration	Activity 3.1														
National experts	11	4.1	6.9	6.6	5.6	5.4	Man-month	1471	42176	6060	10173	9704	8267	7971	22273
Field assessment experts	12	3.7	10.2	8.7	8.3	4.6	Fieldtrip/person	467	16545	1725	4760	4057	3873	2130	2000
Duty travel	31	2.1	3.6	4.1	3.5	3.1		350	5731	718	1275	1421	1242	1076	
Field assessment equipment	44.1	1	0	0	0	0	Toolkit	1950	1950	1950	0	0	0	0	1966
Meals, materials, clothing and supplies	51	2.0	6.1	4.3	4.0	1.9	Fieldtrip cost	1300	23843	2595	7919	5565	5264	2500	
Other consumable items	52	0.0	4.8	4.4	4.2	2.6	Miscell./fieldtrip	50	798	0	240	219	209	130	
Specialized and logistic services	61	1.7	4.2	4.9	4.0	3.1	Miscell./event	2500	44583	4183	10623	12241	9901	7633	38185
Contingencies	63	7.5	16.0	11.4	10.9	10.3	Miscellaneous	50	2806	375	800	571	545	514	
Evaluation of seed production in light-demanding trees under silvicultural treatments and internally damaged trees	Activity 3.2														
National experts	11	4.1	6.9	6.6	5.6	5.4	Man-month	1471	42176	6060	10173	9704	8267	7971	22273
Field assessment experts	12	3.7	10.2	8.7	8.3	4.6	Fieldtrip/person	467	16545	1725	4760	4057	3873	2130	2000
Duty travel	31	2.1	3.6	4.1	3.5	3.1		350	5731	718	1275	1421	1242	1076	
Field assessment equipment	44.1	1	0	0	0	0	Toolkit	1950	1950	1950	0	0	0	0	1966
Meals, materials, clothing and supplies	51	2.0	6.1	4.3	4.0	1.9	Fieldtrip cost	1300	23843	2595	7919	5565	5264	2500	
Other consumable items	52	0.0	4.8	4.4	4.2	2.6	Miscell./fieldtrip	50	798	0	240	219	209	130	
Specialized and logistic services	61	1.3	3.4	3.9	4.0	2.4	Miscell./event	2500	37646	3347	8499	9793	9901	6107	38190
Contingencies	63	7.5	16.0	11.4	10.9	10.3	Miscellaneous	50	2806	375	800	571	545	514	
Determine the cost structure in the application of silvicultural treatments	Activity 3.3														
National experts	11	0.0	0.0	0.0	1.4	5.4	Man-month	1471	10038	0	0	0	2067	7971	22273
Duty travel	31	0.0	0.0	0.0	0.9	3.1		350	1386	0	0	0	310	1076	
Output 4: Capacity building															
Development of dissemination materials and preparation and implementation of workshops and training courses	Activity 4.1														
National experts	11	2.7	1.2	2.2	0.0	3.6	Man-month	1471	14285	4040	1696	3235	0	5314	22273
Duty travel	31	1.4	0.6	1.4	0.0	2.0		350	1882	479	213	474	0	717	
Specialized and logistic services	61	0.3	0.8	1.0	0.0	0.6	Miscell./event	2500	6936	837	2125	2448		1527	38185
Output 5: Project management															
Project implementation, evaluation, follow-up and monitoring	Activity 5.1														
National experts	11	2.7	1.2	1.1	1.4	1.8	Man-month	1471	12077	4040	1696	1617	2067	2657	22273
Duty travel	31	1.4	0.6	0.7	0.9	1.0		350	1597	479	213	237	310	359	
Rent fees and duties	41														295000
Office computer equipment	44.2	3.0	0	0	0	0	Equipment	2333	7000	7000	0	0	0	0	
Office furniture	45														3450
Office utilities	53														15600
Office supplies	54	10.0	12.0	12.0	12.0	12.0	Miscell./month	131.7	7640	1320	1580	1580	1580	1580	
Taxes and charges on financial transactions	62	12.0	19.2	12.0	12.0	12.0		20.8	1400	250	400	250	250	250	
Management costs	71	12	12	12	12	12	Costs/month	833.3	50000	10000	10000	10000	10000	10000	

3.4.2 Consolidated budget by component

Table 8. Consolidated project budget by component (US$)

Budget component (TOTAL)	Total	Year 1	Year 2	Year 3	Year 4	Year 5
10 PERSONNEL	653272	155700	123872	125450	120450	127800
11.1 Project Director	96000	19200	19200	19200	19200	19200
11.2 Forestry Coordinator ***I*** *	84000	16800	16800	16800	16800	16800
11.3 Forestry Coordinator ***II*** *	84000	16800	16800	16800	16800	16800
11.4 GIS Specialist	18000	7000	2000	3000	3000	3000
11.5 Coordinator – UNALM	102000	20400	20400	20400	20400	20400
11.6 Coordinator – UNAMAD	102000	20400	20400	20400	20400	20400
11.7 Forestry consultant	41000	18000	0	5000	0	18000
11.8 Dendrochronology expert	10000	10000	0	0	0	0
11.9 Botanical identification expert	13000	11000	2000	0	0	0
12.1 Assistants	26950	2800	8400	6300	6300	3150
12.2 Crew leaders	59000	7500	14000	15000	15000	7500
12.3 Field assistants	0	0	0	0	0	0
12.4 Field botanist	0	0	0	0	0	0
12.5 GIS Assistant - UNALM	9000	1800	1800	1800	1800	1800
12.6 Cleaning and maintenance personnel	3422	500	672	750	750	750
12.7 Dendrochronology assistant	4900	3500	1400	0	0	0
12.8 Botanical identification assistant	0	0	0	0	0	0
30 DUTY TRAVEL	36653	6700	6800	8170	7450	7533
31.1 Coordinator / Expert / Assistant	15443	3100	3120	3100	3100	3023
32.1 Coordinator / Expert / Assistant	14070	2800	2880	2800	2800	2790
33.1 Coordinator / Expert / Assistant	5700	800	800	1550	1550	1000
33.2 Course professionals / regents	1440	0	0	720	0	720
40 CAPITAL ITEMS	332850	96850	59000	59000	59000	59000
41.1 Headquarters	100000	20000	20000	20000	20000	20000
41.2 Regional premises	50000	10000	10000	10000	10000	10000
41.3 Forest use fee	145000	29000	29000	29000	29000	29000
44.1 Capital equipment	0	0	0	0	0	0
44.1.1 GPS	3400	3400	0	0	0	0
44.1.10 Support equipment	500	500	0	0	0	0
44.1.10 Weather station	0	0	0	0	0	0
44.1.11 High resolution camera traps	9000	9000	0	0	0	0
44.1.12 Automatic photometers	1500	1500	0	0	0	0
44.1.2 Diameter tape	900	900	0	0	0	0
44.1.3 Analog clinometer hypsometer	900	900	0	0	0	0
44.1.4 Analog compass	1500	1500	0	0	0	0
44.1.5 Digital camera	2000	2000	0	0	0	0
44.1.6 Satellite phone	1900	1900	0	0	0	0
44.1.7 Binoculars	1000	1000	0	0	0	0
44.1.8 Camera with telephoto lens	3000	3000	0	0	0	0
44.1.9 Pressler auger (electric)	1800	1800	0	0	0	0
44.2 Computer equipment	0	0	0	0	0	0
44.2.1 Desktop computer (CPU & monitor)	4000	4000	0	0	0	0
44.2.2 High-end computer (Processing of images)	0	0	0	0	0	0

Budget component (TOTAL)	Total	Year 1	Year 2	Year 3	Year 4	Year 5
44.2.3 Laptop (High capacity)	0	0	0	0	0	0
44.2.3 Multifunctional printer (Scanner - printer - photocopier A3)	2500	2500	0	0	0	0
44.2.4 Laptop (Basic)	0	0	0	0	0	0
44.2.5 External Hard Drive	500	500	0	0	0	0
44.3 Other	0	0	0	0	0	0
44.3.1 Cellular devices	0	0	0	0	0	0
44.3.1 Projector	0	0	0	0	0	0
44.3.2 Television set	0	0	0	0	0	0
45.1 Desks	1250	1250	0	0	0	0
45.2 Tables	500	500	0	0	0	0
45.3 Chairs	500	500	0	0	0	0
45.4 Cabinets	1200	1200	0	0	0	0
50 CONSUMABLE ITEMS	158410	25196	45493	35069	34803	17850
51.1 Food	43383	0	17593	10395	10395	5000
51.2 Field materials	52115	0	18000	14558	14558	5000
51.2.1 Tree climbing and safety equipment	4000	4000	0	0	0	0
51.3 Miscellaneous materials	11522	11256	0	266	0	0
51.4 Field and safety apparel	0	0	0	0	0	0
51.5 Medicines and antiophidics	1500	1500	0	0	0	0
51.6 Fuel and lubricants	18500	4000	4000	4000	4000	2500
52.1 Sundry	4150	0	1200	1150	1150	650
53.1 Water supply	3600	720	720	720	720	720
53.2 Electricity	7200	1440	1440	1440	1440	1440
53.3 Telephone / Internet	4800	960	960	960	960	960
54.1 Stationery (A3 / A4)	1240	120	280	280	280	280
54.2 Ink / toner	3400	600	700	700	700	700
54.3 Desk supplies	3000	600	600	600	600	600
60 MISCELLANEOUS	527745	83517	118117	124817	115007	86287
61.1 Transport rental services	223500	36000	51000	48000	48000	40500
61.11 Training services, implementation and installation of tree climbing equipment	3500	3500	0	0	0	0
61.12 Entomological identification service	37600	8400	8400	8400	8400	4000
61.13 Wildlife identification service	8000	2000	2000	2000	2000	0
61.14 Equipment maintenance	4900	0	700	1400	1400	1400
61.15 Costs of the course of evaluation, monitoring and treatment application	20000	0	0	10000	0	10000
61.16 Costs of organization and implementation of dissemination workshops	1350	450	0	450	0	450
61.17 Proofreading / editing / printing services	3500	0	0	0	0	3500
61.18 Payment of publication fees	100	0	0	0	0	100
61.19 Miscellaneous office expenses	4400	1200	800	800	800	800
61.2 Satellite communication services	0	0	0	0	0	0
61.21 Maintenance and repairs	640	0	0	0	640	0
61.22 Computer licenses (GIS)	6000	6000	0	0	0	0
61.22 Auditorium - meeting room rental services	1800	300	600	300	300	300
61.23 Office automation licenses	0	0	0	0	0	0
61.3 Field support services	74085	9417	18417	18417	18417	9417
61.4 RPA (Drone) rental services	0	0	0	0	0	0

Budget component (TOTAL)	Total	Year 1	Year 2	Year 3	Year 4	Year 5
61.5 Dendrology Laboratory Service (Herbarium)	48000	6000	12000	12000	12000	6000
61.6 Wood anatomy laboratory service (dendrochronology)	48000	6000	12000	12000	12000	6000
61.7 High-risk insurance/ Health and pension (SCTR)	8000	1000	2000	2000	2000	1000
61.8 Seed laboratory services (seed analysis)	17400	0	5800	5800	5800	0
61.9 Climate data analysis service	0	0	0	0	0	0
62.1 Bank and financial charges	1400	250	400	250	250	250
63.1 Contingencies	15570	3000	4000	3000	3000	2570
70 NATIONAL MANAGEMENT COSTS	50000	10000	10000	10000	10000	10000
71.1 Accounting and cash expenses	50000	10000	10000	10000	10000	10000
80 PROJECT MONITORING & ADMINISTRATION	152683	29843	30395	46888	28793	16764
81.1 ITTO monitoring and review	24000	6000	6000	6000	6000	0
82.1 ITTO mid-term evaluation	15000	0	0	15000	0	0
83.1 ITTO programme support costs (12% of items 10–82 above)	113683	23843	24395	25888	22793	16764
100 TOTAL	1911612	407806	393677	409394	375502	325233

**** See Annex 3 for a detailed description of tasks assigned to each coordinator.***

3.4.3 ITTO budget by component

Table 9. ITTO budget by component for revised project (in US$)**

Budget component (ITTO)	Total	Year 1	Year 2	Year 3	Year 4	Year 5
10 PERSONNEL	**395850**	**94600**	**80600**	**77100**	**77100**	**66450**
11.1 Project Director	96000	19200	19200	19200	19200	19200
11.2 Forestry Coordinator ***I*** *	84000	16800	16800	16800	16800	16800
11.3 Forestry Coordinator ***II*** *	84000	16800	16800	16800	16800	16800
11.4 GIS Specialist	18000	7000	2000	3000	3000	3000
11.5 Coordinator – UNALM	0			0	0	0
11.6 Coordinator – UNAMAD	0			0	0	0
11.7 Forestry consultant	0			0	0	0
11.8 Dendrochronology expert	10000	10000	0	0	0	0
11.9 Botanical identification expert	13000	11000	2000	0	0	0
12.1 Assistants	26950	2800	8400	6300	6300	3150
12.2 Crew leaders	59000	7500	14000	15000	15000	7500
12.3 Field assistants	0		0	0	0	0
12.4 Field botanist	0					
12.5 GIS Assistant - UNALM	0					
12.6 Cleaning and maintenance personnel	0					
12.7 Dendrochronology assistant	4900	3500	1400	0	0	0
12.8 Botanical identification assistant	0	0	0	0	0	0
30 DUTY TRAVEL	**36653**	**6700**	**6800**	**8170**	**7450**	**7533**
31.1 Coordinator / Expert / Assistant	15443	3100	3120	3100	3100	3023
32.1 Coordinator / Expert / Assistant	14070	2800	2880	2800	2800	2790
33.1 Coordinator / Expert / Assistant	5700	800	800	1550	1550	1000
33.2 Course professionals / regents	1440	0	0	720	0	720
40 CAPITAL ITEMS	**22600**	**22600**	**0**	**0**	**0**	**0**
41.1 Headquarters	0					
41.2 Regional premises	0					
41.3 Forest use fee	0					
44.1 Capital equipment	0	0	0	0	0	0
44.1.1 GPS	1600	1600	0	0	0	0
44.1.10 Support equipment	300	300	0	0	0	0
44.1.10 Weather station	0		0	0	0	0
44.1.11 High resolution camera traps	9000	9000	0	0	0	0
44.1.12 Automatic photometers	1500	1500	0	0	0	0
44.1.2 Diameter tape	0		0	0	0	0
44.1.3 Analog clinometer hypsometer	0		0	0	0	0
44.1.4 Analog compass	600	600	0	0	0	0
44.1.5 Digital camera	800	800	0	0	0	0
44.1.6 Satellite phone	0		0	0	0	0
44.1.7 Binoculars	600	600	0	0	0	0
44.1.8 Camera with telephoto lens	0	0	0	0	0	0

Budget component (ITTO)	Total	Year 1	Year 2	Year 3	Year 4	Year 5
44.1.9 Pressler auger (electric)	1200	1200	0	0	0	0
44.2 Computer equipment	0	0	0	0	0	0
44.2.1 Desktop computer (CPU & monitor)	4000	4000	0	0	0	0
44.2.2 High-end computer (Processing of images)	0	0	0	0	0	0
44.2.3 Laptop (High capacity)	0	0	0	0	0	0
44.2.3 Multifunctional printer (Scanner - printer - photocopier A3)	2500	2500	0	0	0	0
44.2.4 Laptop (Basic)	0		0	0	0	0
44.2.5 External Hard Drive	500	500	0	0	0	0
44.3 Other	0	0	0	0	0	0
44.3.1 Cellular devices	0	0	0	0	0	0
44.3.1 Projector	0		0	0	0	0
44.3.2 Television set	0	0	0	0	0	0
45.1 Desks	0					
45.2 Tables	0					
45.3 Chairs	0					
45.4 Cabinets	0					
50 CONSUMABLE ITEMS	**142810**	**22076**	**42373**	**31949**	**31683**	**14730**
51.1 Food	43383		17593	10395	10395	5000
51.2 Field materials	52115		18000	14558	14558	5000
51.2.1 Tree climbing and safety equipment	4000	4000	0	0	0	0
51.3 Miscellaneous materials	11522	11256	0	266	0	0
51.4 Field and safety apparel	0	0	0	0	0	0
51.5 Medicines and antiophidics	1500	1500	0	0	0	0
51.6 Fuel and lubricants	18500	4000	4000	4000	4000	2500
52.1 Sundry	4150		1200	1150	1150	650
53.1 Water supply	0					
53.2 Electricity	0					
53.3 Telephone / Internet	0					
54.1 Stationery (A3 / A4)	1240	120	280	280	280	280
54.2 Ink / toner	3400	600	700	700	700	700
54.3 Desk supplies	3000	600	600	600	600	600
60 MISCELLANEOUS	**260445**	**36717**	**57517**	**67517**	**57707**	**40987**
61.1 Transport rental services	60000	7500	15000	15000	15000	7500
61.11 Training services, implementation and installation of tree climbing equipment	3500	3500	0	0	0	0
61.12 Entomological identification service	37600	8400	8400	8400	8400	4000
61.13 Wildlife identification service	8000	2000	2000	2000	2000	0
61.14 Equipment maintenance	4900		700	1400	1400	1400
61.15 Costs of the course of evaluation, monitoring and treatment application	20000		0	10000	0	10000
61.16 Costs of organization and implementation of dissemination workshops	1350	450		450	0	450
61.17 Proofreading / editing / printing services	3500	0	0		0	3500

Budget component (ITTO)	Total	Year 1	Year 2	Year 3	Year 4	Year 5
61.18 Payment of publication fees	100	0	0	0	0	100
61.19 Miscellaneous office expenses	4400	1200	800	800	800	800
61.2 Satellite communication services	0					
61.21 Maintenance and repairs	640			0	640	0
61.22 Computer licenses (GIS)	0					
61.22 Auditorium - meeting room rental services	0					
61.23 Office automation licenses	0		0	0	0	0
61.3 Field support services	74085	9417	18417	18417	18417	9417
61.4 RPA (Drone) rental services	0	0	0	0	0	0
61.5 Dendrology Laboratory Service (Herbarium)	0					
61.6 Wood anatomy laboratory service (dendrochronology)	0					
61.7 High-risk insurance/ Health and pension (SCTR)	8000	1000	2000	2000	2000	1000
61.8 Seed laboratory services (seed analysis)	17400		5800	5800	5800	0
61.9 Climate data analysis service	0	0	0	0	0	0
62.1 Bank and financial charges	1400	250	400	250	250	250
63.1 Contingencies	15570	3000	4000	3000	3000	2570
70 NATIONAL MANAGEMENT COSTS	**50000**	**10000**	**10000**	**10000**	**10000**	**10000**
71.1 Accounting and cash expenses	50000	10000	10000	10000	10000	10000
80 PROJECT MONITORING & ADMINISTRATION	**152683**	**29843**	**30395**	**46888**	**28793**	**16764**
81.1 ITTO monitoring and review	24000	6000	6000	6000	6000	0
82.1 ITTO mid-term evaluation	15000	0	0	15000	0	0
83.1 ITTO programme support costs (12% of items 10–82 above)	113683	23843	24395	25888	22793	16764
100 TOTAL	**1061040**	**222536**	**227685**	**241624**	**212732**	**156463**

**** See Annex 3 for a detailed description of tasks assigned to each coordinator.***

**** Note: the budget has been reduced by removing Estoraque species from the evaluation and adjusting the costs of field crews, field work and equipment accordingly.**

3.4.4 Executing agency budget by component

Table 10. Executing agency budget by component (in US$)

Budget component (TOTAL)	Total	Year 1	Year 2	Year 3	Year 4	Year 5
10 PERSONNEL	**257422**	**61100**	**43272**	**48350**	**43350**	**61350**
11.1 Project Director	0					
11.2 Forestry Coordinator ***I****	0					
11.3 Forestry Coordinator ***II****	0					
11.4 GIS Specialist	0					
11.5 Coordinator – UNALM	102000	20400	20400	20400	20400	20400
11.6 Coordinator – UNAMAD	102000	20400	20400	20400	20400	20400
11.7 Forestry consultant	41000	18000		5000		18000
11.8 Dendrochronology expert	0					
11.9 Botanical identification expert	0					
12.1 Assistants	0					
12.2 Crew leaders	0					
12.3 Field assistants	0					
12.4 Field botanist	0					
12.5 GIS Assistant - UNALM	9000	1800	1800	1800	1800	1800
12.6 Cleaning and maintenance personnel	3422	500	672	750	750	750
12.7 Dendrochronology assistant	0					
12.8 Botanical identification assistant	0					
30 DUTY TRAVEL	**0**	**0**	**0**	**0**	**0**	**0**
31.1 Coordinator / Expert / Assistant	0					
32.1 Coordinator / Expert / Assistant	0					
33.1 Coordinator / Expert / Assistant	0					
33.2 Course professionals / regents	0					
40 CAPITAL ITEMS	**310250**	**74250**	**59000**	**59000**	**59000**	**59000**
41.1 Headquarters	100000	20000	20000	20000	20000	20000
41.2 Regional premises	50000	10000	10000	10000	10000	10000
41.3 Forest use fee	145000	29000	29000	29000	29000	29000
44.1 Capital equipment	0					
44.1.1 GPS	1800	1800	0	0	0	0
44.1.10 Support equipment	200	200	0	0	0	0
44.1.10 Weather station	0					
44.1.11 High resolution camera traps	0					
44.1.12 Automatic photometers	0					
44.1.2 Diameter tape	900	900	0	0	0	0
44.1.3 Analog clinometer hypsometer	900	900	0	0	0	0
44.1.4 Analog compass	900	900	0	0	0	0
44.1.5 Digital camera	1200	1200	0	0	0	0
44.1.6 Satellite phone	1900	1900	0	0	0	0
44.1.7 Binoculars	400	400	0	0	0	0
44.1.8 Camera with telephoto lens	3000	3000	0	0	0	0
44.1.9 Pressler auger (electric)	600	600	0	0	0	0
44.2 Computer equipment	0					
44.2.1 Desktop computer (CPU & monitor)	0					
44.2.2 High-end computer (Processing of images)	0					

Budget component (TOTAL)	Total	Year 1	Year 2	Year 3	Year 4	Year 5
44.2.3 Laptop (High capacity)	0					
44.2.3 Multifunctional printer (Scanner - printer - photocopier A3)	0					
44.2.4 Laptop (Basic)	0					
44.2.5 External Hard Drive	0					
44.3 Other	0					
44.3.1 Cellular devices	0					
44.3.1 Projector	0					
44.3.2 Television set	0					
45.1 Desks	1250	1250	0	0	0	0
45.2 Tables	500	500	0	0	0	0
45.3 Chairs	500	500	0	0	0	0
45.4 Cabinets	1200	1200	0	0	0	0
50 CONSUMABLE ITEMS	**15600**	**3120**	**3120**	**3120**	**3120**	**3120**
51.1 Food	0					
51.2 Field materials	0					
51.2.1 Tree climbing and safety equipment	0					
51.3 Miscellaneous materials	0					
51.4 Field and safety apparel	0					
51.5 Medicines and antiophidics	0					
51.6 Fuel and lubricants	0					
52.1 Sundry	0					
53.1 Water supply	3600	720	720	720	720	720
53.2 Electricity	7200	1440	1440	1440	1440	1440
53.3 Telephone / Internet	4800	960	960	960	960	960
54.1 Stationery (A3 / A4)	0					
54.2 Ink / toner	0					
54.3 Desk supplies	0					
60 MISCELLANEOUS	**267300**	**46800**	**60600**	**57300**	**57300**	**45300**
61.1 Transport rental services	163500	28500	36000	33000	33000	33000
61.11 Training services, implementation and installation of tree climbing equipment	0					
61.12 Entomological identification service	0					
61.13 Wildlife identification service	0					
61.14 Equipment maintenance	0					
61.15 Costs of the course of evaluation, monitoring and treatment application	0					
61.16 Costs of organization and implementation of dissemination workshops	0					
61.17 Proofreading / editing / printing services	0					
61.18 Payment of publication fees	0					
61.19 Miscellaneous office expenses	0					
61.2 Satellite communication services	0					
61.21 Maintenance and repairs	0					
61.22 Computer licenses (GIS)	6000	6000	0	0	0	0
61.22 Auditorium - meeting room rental services	1800	300	600	300	300	300
61.23 Office automation licenses	0					
61.3 Field support services	0					
61.4 RPA (Drone) rental services	0					

Budget component (TOTAL)	Total	Year 1	Year 2	Year 3	Year 4	Year 5
61.5 Dendrology Laboratory Service (Herbarium)	48000	6000	12000	12000	12000	6000
61.6 Wood anatomy laboratory service (dendrochronology)	48000	6000	12000	12000	12000	6000
61.7 High-risk insurance/ Health and pension (SCTR)	0					
61.8 Seed laboratory services (seed analysis)	0					
61.9 Climate data analysis service	0					
62.1 Bank and financial charges	0					
63.1 Contingencies	0					
70 NATIONAL MANAGEMENT COSTS	**0**	**0**	**0**	**0**	**0**	**0**
71.1 Accounting and cash expenses	0					
80 PROJECT MONITORING & ADMINISTRATION	**0**	**0**	**0**	**0**	**0**	**0**
81.1 ITTO monitoring and review	0					
82.1 ITTO mid-term evaluation	0					
83.1 ITTO programme support costs (12% of items 10–82 above)	0					
100 TOTAL	**850572**	**185270**	**165992**	**167770**	**162770**	**168770**

**** See Annex 3 for a detailed description of tasks assigned to each coordinator.***

3.5 Assumptions, risks and sustainability

3.5.1 Assumptions and risks

The main assumptions that will guarantee the success of the project include the following:

- Development objective: ongoing compliance with laws and agreements on the implementation of management plans and operational plans, with restoration of harvested species populations through the application of silvicultural models as proposed; stakeholders maintain their interest and support the implementation of the project; and willingness of forest concessions and native communities to continue promoting positive change to achieve the sustainable development of target species by maintaining their economic and ecological value.
- Specific objective: forest concessions and native communities maintain their openness, are willing to share information and actively participate in project activities by providing the necessary areas for the installation of plots, contributing to monitoring actions even after project completion, and facilitating the collection of necessary information in their plots until the next harvesting cycle.
- Outputs: the assumptions related to forest concessions and native communities include: the application of silvicultural techniques to improve and enhance the role of seed trees as well as to improve productivity with a view to increasing the number of harvestable trees in the second rotation. In addition, forest concessions and native communities should be willing to interact and share information, as well as being actively involved in training workshops and courses and in dialogue spaces; while in relation to forest authorities, the assumption is an ongoing interest in promoting mechanisms to improve the legislation and support the implementation of silvicultural treatments.

The main risks that could affect the implementation of the project and the mitigation measures that would need to be implemented would be as follows:

- Development objective: the most important risk would be that users of permanent production forests do not show willingness to comply with forest legislation and show indifference to demonstrate that silvicultural methods can be applied to improve forest productivity from an economic and ecological viewpoint. The countermeasures that the project would take would be to carry out awareness campaigns to change attitudes and to work with users who abide by the current forest legislation and show interest in applying traceability mechanisms in the implementation of management plans.
- Specific objective: one of the risks to consider is that some of the concession holders and native communities could be reluctant to provide their areas for the establishment of silvicultural plots and share information. If this situation were to arise, other sources such as forest authorities would be used, in addition to increasing awareness-raising actions.
- Outputs: the most important risks are that permanent production forest users show little interest in improving the restoration of natural forests under harvesting, receiving training and supporting project actions. A risk involving forest authorities would be that they do not to continue providing the necessary support to concession holders and communities. To mitigate these potential risks, the project would implement awareness-raising campaigns addressed to forest authorities, permanent production forest users and decision and policy makers, and would design promotion mechanisms for users.

3.5.2 Sustainability

Forest concessions and native communities in the project's area of influence are highly involved and committed to working for the sustainable development of Amazon forests. Project objectives and activities are aimed at improving the technical and silvicultural efficiency of forest management and operational plans to contribute to the development of the Amazon region in general. Thus, project sustainability will be ensured by having highly sensitized permanent production forest users who will ensure the ongoing sustainability of project outputs and forest productivity. The methodology for knowledge transfer will be continued by the CNF, UNALM and UNAMAD by supporting project beneficiaries in the practical implementation of the knowledge acquired through training, workshops and technical assistance.

Furthermore, the CNF and UNALM will continue to participate in the opinion forum called "Executive Roundtable for Forest Sector Development" under the leadership of the Ministry of Economics and Finance (*Ministerio de Economía y Finanzas* – MEF), which aims to identify, promote and propose actions to boost the forest sector and to enable and promote the competitiveness of this sector to contribute to economic and ecological growth, as well as ensuring that all relevant technical views are taken into account.

The project's economic sustainability will be maintained by forestry producers who will continue to apply the results, while UNALM and UNAMAD will continue to conduct relevant research activities.

PART 4. IMPLEMENTATION ARRANGEMENTS

4.1 Organization structure and stakeholder involvement mechanisms

4.1.1 Executing agency and partners

The National Forestry Chamber (*Cámara Nacional Forestal* – CNF*)* will be responsible for the implementation of the project through a steering committee made up of representatives of forest-sector government agencies, forest concessions and native communities implementing forest management and operational plans, and the National University of Madre de Dios (*Universidad Nacional de Madre de Dios* – UNAMAD*)*. To this end, the participation of various forest-related organizations will be ensured, including public agencies and NGOs, among others. All of these interested parties will be involved in work meetings, training, and technical assistance and support, with a view to improving the restoration of logged-over forests.

The main objectives of the National Forestry Chamber are to promote the sustainable use of forest resources, harmonizing the principles of conservation with technology and economic and social development, and to achieve efficient and sound forest policies to encourage the development of forest management on a silvicultural basis for the restoration of harvested species populations in support of the industry, trade and the promotion of exports. The CNF has been working with forest stakeholders for more than 30 years. Past experiences implemented by the CNF in cooperation with ITTO and the National Forest Authority (SERFOR, formerly INRENA) include completed ITTO Projects PD 23/00 Rev.4 (F) “Promotion and transfer of knowledge on sustainable forest management models to timber producers”, PD 621/11 Rev.3 (M) “Traceability of timber produced by forest concessions and native communities in Madre de Dios and Ucayali”, PD 540/09 Rev.2 (I) “Support to improve the productivity of the Peruvian timber industry for the production of higher value-added products”, and PD 421/06 (F) “Strengthening of the Production Chain for Timber from Forest Concessions and Other Forests under Management”, among others.

The National Agrarian University of La Molina (*Universidad Nacional Agraria La Molina* – UNALM) has been working for the development of the forestry sector for 58 years, establishing a number of research actions in the areas of ecology, silviculture, the best use of tropical timber and introduction of new species into the market. It was also the designated Scientific Authority for timber species from 2002 to 2015, to comply with the mandate of the commitments of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). In 2002, UNALM submitted a long-term work plan to remove mahogany and cedar species from CITES listings, which meant working on the restoration of their populations; thus, with the support of ITTO and later under the ITTO-CITES Programme, studies of cedar and mahogany populations were implemented through UNALM-ITTO Project PD 251/03 Rev. 3 (F). Studies were later continued under the project "Management of seed stands of mahogany (*Swietenia macrophylla* King.) and cedar (*Cedrela* spp.) in a forest concession for the conservation of the Tahuamanu seed stand in the province of Tahuamanu, Madre de Dios, Peru", supported by the CITES-ITTO Programme in 2015, which provided the basis for this project proposal. In brief, UNALM has had a 20-year partnership with ITTO implementing studies in support of endangered species.

The institution responsible for implementing the project is the National Forestry Chamber.

4.1.2 Project management team

The project management team will be appointed by the executing agency and will be made up of a project director, two technical coordinators (I and II), a professional field assistant and a monitoring officer. The Lima office will be the main headquarters and will be located on the premises of the CNF. The Project Director and the Project Coordinators will be based in UNALM, Lima, and will travel regularly to the Madre de Dios region; the professional assistant will be based in the premises of UNAMAD, in Puerto Maldonado. The coordinator will provide administrative, accounting and technical support from the Lima office.

A Steering Committee will be established at the highest level of the project organizational structure. This Committee will be responsible for supervising and monitoring the project, ensuring that project expenditures are kept within the approved budget and making any necessary adjustments, and reviewing the implementation of activities, among other responsibilities. The Committee will be made up of a representative of each of the institutions participating in the project i.e. the National Forestry Chamber (CNF) as chair of the Committee, the International Tropical Timber Organization (ITTO), the National Forest and Wildlife Service (*Servicio Nacional Forestal y de Fauna Silvestre* – SERFOR*)*, the National Agrarian University of La Molina (*Universidad Nacional Agraria La Molina* – UNALM) and the National University of Madre de Dios (*Universidad*

Nacional de Madre de Dios – UNAMAD), **as well as donor representatives**. The Project Director will act only as the Secretary of this Committee.

4.1.3 Stakeholder involvement mechanisms

A consultative committee will be established in the city of Puerto Maldonado, Madre de Dios, as a consultation platform to guide project actions. This committee will be made up of representatives of project beneficiaries (concessions and native communities), SERFOR, the Regional Forest and Wildlife Authority of Madre de Dios (GRFFS/MDD) and the National University of Madre de Dios (UNAMAD), **as well as donor representatives** and guest participants that may be invited by the Committee.

The purpose of the Consultative Committee is to provide information on project implementation to all interested parties and ensure their participation, in addition to offering a platform for stakeholders to contribute to the project. The Consultative Committee may request and receive information and provide guidance, but it will not have an official duty under the project. Its recommendations will be submitted to the chair of the Project Steering Committee. The project organizational chart is shown below:

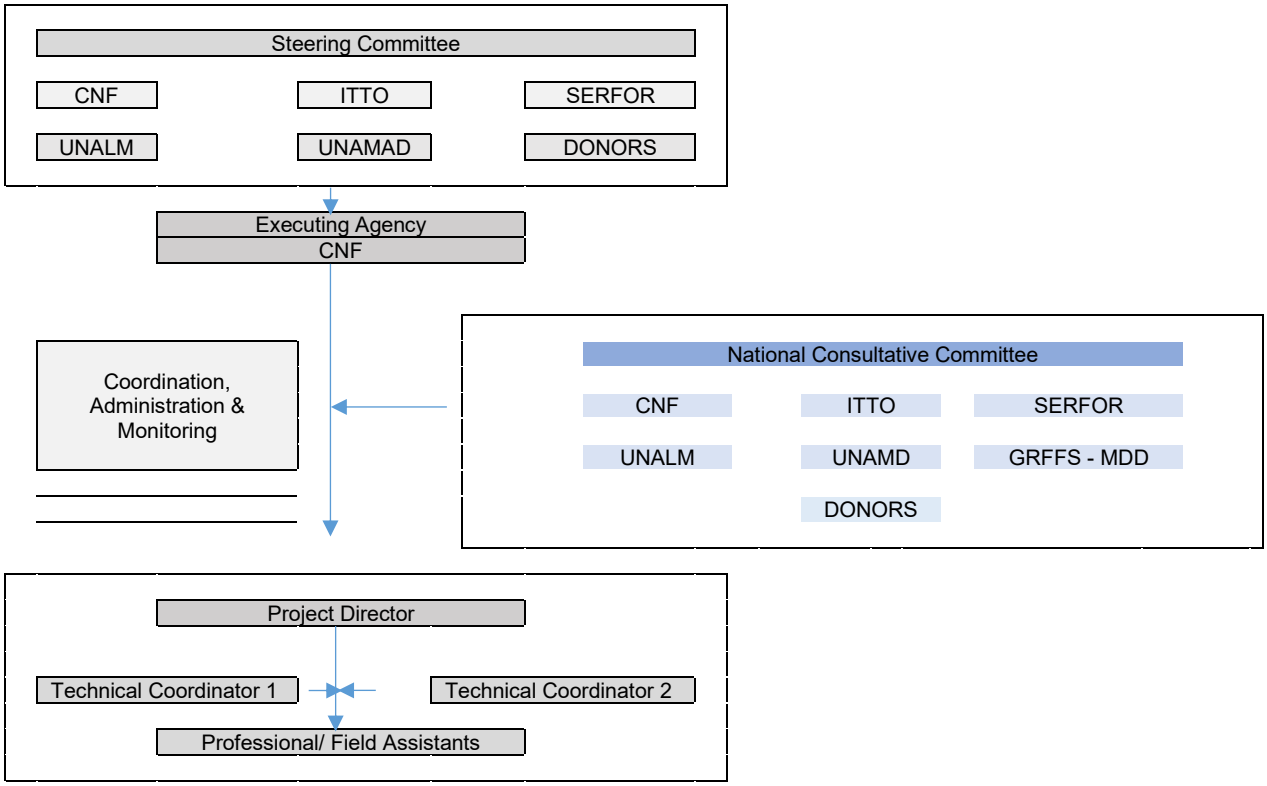


Figure 6. Project organizational chart*

***Note: including donors.**

4.2 Reporting, review, monitoring and evaluation

The following reports will be submitted:

- Inception report (upon project approval)
- Yearly plan of operation (together with the inception report)
- Technical report (every six months during project implementation)
- Financial reports (on an annual basis and upon project completion)
- Project completion report (upon project completion)

A basic monitoring system will be applied that will involve internal monitoring procedures as described below.

Internal monitoring: The system will ensure the successful implementation of the Project including adjustments of the work plan and/or YPO and the implementation of defined corrective actions. Internal monitoring will include the following subjects:

- Follow up of commitments resulting from the agreement between ITTO and the Executing Agency;
- Progress and proper execution of work;
- Timely delivery and quality of outputs;
- Progress report on the extent to which the specific objective has been achieved;
- Social, economic and environmental impacts and the effect of mitigating measures;
- Final audit at project completion.

4.3 Dissemination and mainstreaming of project learning

4.3.1 Dissemination of project results

Project results will be reported to beneficiaries through various events, including courses, workshops, field visits, technical meetings, conferences, congresses and congress presentations, as well as documents in printed and digital formats to be published by the project and other information to be posted on existing electronic platforms such as the websites of CNF and SERFOR, the Regional Government of Madre de Dios (GOREMAD), the National Agrarian University of La Molina (UNALM) and the National University of Madre de Dios (UNAMAD) so as to ensure widespread dissemination at the national and international levels. In addition, the project's professional staff will be available to users, both in person and online, for additional enquiries and consultations.

A. Preparation of dissemination materials:

Initially, methodological guides will be prepared, which will serve as technical guidelines for project implementation and as technical inputs for the professionals of forest concessions and native communities.

Subsequently, to disseminate preliminary project outcomes, newsletters will be developed to show progress and achievements.

Finally, a book on project results and final outputs will be published, following national library standards.

B. Face-to-face events

For the dissemination of project outcomes, the first stage will be carried out through workshops with the participation of professionals responsible for the management of concessions and native communities, in order to develop new skills but also to obtain feedback from their own experience. These workshops will also include the participation of forest authorities, such as SERFOR and the Forest Management Division of the Madre de Dios Regional Government (GOREMAD), as well as other institutions involved in the forest sector.

In a second stage, starting from the second year of the project, workshops will be held to show the partial results and achievements of the project, with the same goals and stakeholders as the first year's workshop. This may eventually lead to the updating of the project's work plan.

In a third stage, the final outputs of the project will be presented, with the participation of different institutions directly and/or indirectly involved in the implementation of the project. This will be a technical meeting to be held in the city of Puerto Maldonado, Madre de Dios.

C. Virtual media

Using the CNF's official web platform, all documents produced by the project will be posted in electronic format. Likewise, in order to ensure wider dissemination, useful links will be posted on the official websites of SERFOR, the National Agrarian University of La Molina (UNALM) and the National University of Madre de Dios (UNAMAD).

The social networks of the aforementioned institutions will be used to disseminate the progress, achievements and results of the project, as well as announcements of workshops and meetings.

4.3.2 Mainstreaming of project learning

Project results will be transferred to beneficiaries through events such as courses, workshops, field visits, technical meetings, conferences, congresses and presentations in different types of gatherings, as well as printed and electronic documents generated by the project and other information to be posted on existing electronic platforms such as the websites of CNF and SERFOR, the Regional Government of Madre de Dios (GOREMDD), the National Agrarian University of La Molina (UNALM) and the National University of Madre de Dios (UNAMAD), thus ensuring widespread dissemination at the national and international levels. In addition, the project's professional staff will be available to users, both in person and online, for additional enquiries.

For the mainstreaming of project progress and results, the following levels will be considered:

- **Experience-sharing level – to be carried out through field internships, aimed at technicians and forest policymakers of public institutions (SERFOR, GOREMAD Forest Management Division, OSINFOR), and representatives of private institutions: concessionaires, native communities and other stakeholders in the forestry field.**
- **Project learning level – through universities, with the aim of improving the training of professionals, demonstrating the project's silvicultural methodological results, and supplementing the training of forest technicians and field assistants (community members). Additionally, during the implementation of the project, an exchange of experiences will also be organized, including the sharing of practices used by the local population and field workers who are well aware of the characteristics and functioning of forests.**
- ***Project results will be mainstreamed into forest management plans and plans of operation through forest land managers, highlighting the benefits to be gained when reaching the second rotation in their forest management units (40 years later).***

ANNEXES

ANNEX 1. Profile of the executing agency

NATIONAL FORESTRY CHAMBER

Address: Ramón Dagnino No. 369. Jesús María, Lima 11, Peru.
Telephone: (511) 956 384 829
E-mail: cnf@cnf.org.pe
Website: www.cnf.org.pe

The National Forestry Chamber (Cámara Nacional Forestal – CNF) is a non-profit civil association established on 16 August 1989 after a consensus-building process between the most representative institutions at the national level in the fields of forest production and conservation as well as forest and conservation professionals.

The objectives of the CNF are as follows:

- Promoting the sustainable use of forest resources, harmonizing the principles of conservation with technology and economic and social development;
- Coordinating national forest activities, and acting as the main interlocutor of the private forest sector before public and private institutions and agencies;
- Proposing and achieving efficient and sound forest policies to encourage forest management, industry, trade and the promotion of exports;
- Protecting the national forest production;
- Building up and disseminating an adequate image of the forest activity at the national level consistent with the magnitude of the resource and its territorial significance;
- Providing feedback/making statements on issues of national interest;
- Designing and implementing research, training and development projects related to forestry.

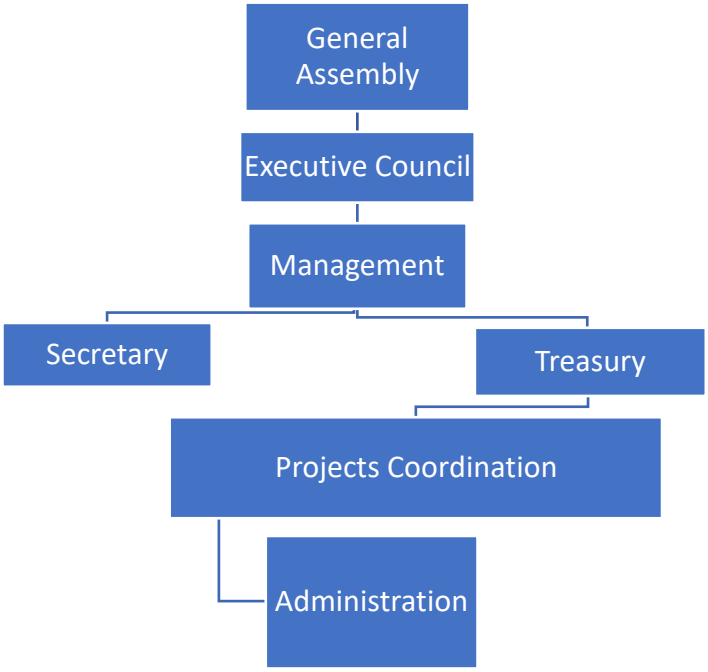


Figure 7. CNF organizational chart

The National Forestry Chamber is headquartered in the city of Lima, where it has an office that is conveniently equipped for ongoing communication via the internet and mobile telephones with its two coordination offices in the cities of Pucallpa and Puerto Maldonado.

List of studies carried out by CNF over the last few years

Period	Title	Funding source	Total cost in US$
Jul – Feb 2022	Commissioned study on "Identification and development of business opportunities for nature-based solutions and sustainable use of biodiversity in the "varillales" *(white sand forests)* and successional forests of Loreto"	USAID Prevent Project – Combating Environmental Crimes	$ 25,982
Apr – Jun 2021	Process towards the new Peruvian forest policy	WWF - PERU	$ 8,437
Mar – Sep 2021	Small Project: "Process towards the new Peruvian forest policy"	International Tropical Timber Organization - ITTO	$ 10,000
Nov 2020 – Aug 2021	"Design of a pilot project to identify and articulate public procurement of legal timber in Ucayali"	WWF - PERU	$ 13,220.83
Jun – Dec 2019	"Baseline of legal timber supply in Peru, including technical, social and commercial aspects"	USAID PRO -BOSQUES	$ 79,191
Jul – Nov 2019	"Implementation of surveys and systematization of results of the study and improving timber legality in Peru"	PROFONANPE	$ 34,481
Oct 2017 – Jan 2018	"Shiringa production chain to strengthen competitiveness"	Programme for Inclusive and Competitiveness Sustainable Forest Development in the Peruvian Amazon Region – SERFOR - CAF	$ 43,582

List of ITTO projects implemented by CNF

Period	Project Title	Total cost (US$)	CNF Contrib. (US$)	ITTO Contrib. (US$)
Oct. 2013 – Mar. 2016	PD 621/11 Rev.3 (M) "Traceability of timber produced by forest concessions and native communities in Madre de Dios and Ucayali"	627,157	278,125	349,032
Oct. 2012 – Mar. 2015	PD 540/09 Rev.2 (I) "Support to improve the productivity of the Peruvian timber industry for the production of higher value-added products"	873,440	425,078	448,362
Mar. – Nov. 2011	Support for the implementation of the 5th Latin American Forestry Congress	166,129	116,129	50,000
Nov. 2007 – May- 2010	PD 421/06 Rev.2 (F) "Strengthening of the production chain for timber from forest concessions and other forests under management".	986,225	405.693	580.532
Oct. 2004 – Mar. 2007	PD 23/00 Rev.4 (F) "Promotion and Transfer of Knowledge on Sustainable Forest Management Models to Timber Producers"	812,777	392.565	420.212
Mar. 1992 – Nov. 1993	PD 37/88 Rev.3 (I) "Industrial utilization of new forest species in Peru" - Phase II	841,750	380,500	461,250
Apr. 1990 – Mar. 1992	PD 37/88 Rev.3 (I) "Industrial utilization of new forest species in Peru" - Phase I	829,250	380,500	448,750

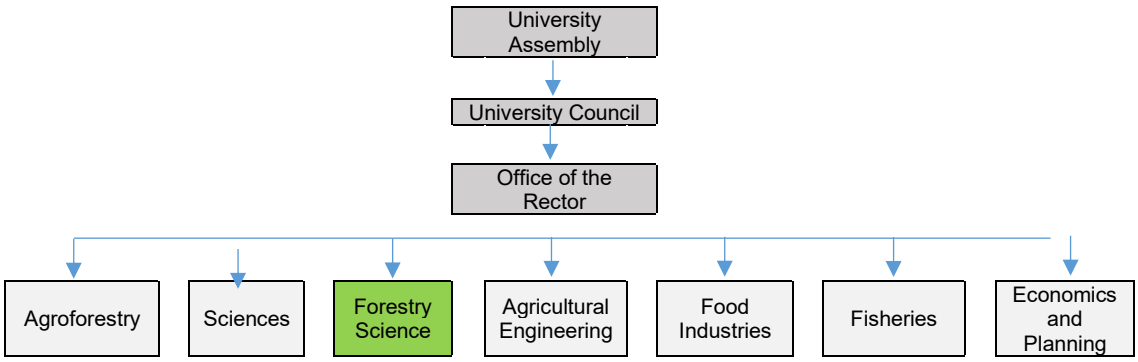
NATIONAL AGRARIAN UNIVERSITY OF LA MOLINA – UNALM

The National Agrarian University of La Molina was established on 22 July 1902 as an education institution specialized in agricultural and veterinary sciences. In 1961, the following faculties began to function as academic institutions: Agronomy, Zootechnics, Agricultural Engineering and Sciences as well as the School of Economics and Planning and the Postgraduate School. The Faculties of Forestry Sciences, Fisheries and Food Industries became operational in 1963, 1966 and 1969, respectively.

The University Assembly is the highest governing body and, as a collegiate entity, it represents the academic community and is responsible for issuing the general policies of the University. The University Council is UNALM's highest body of management, coordination and academic and administrative operation. The faculty is the fundamental unit of organization and management, as well as human, academic and professional training, involving teaching-learning processes; research, development and innovation activities (R+D+I); and university extension and social projection projects, in coordination with their respective systems.

The Rector is the spokesperson and legal representative of UNALM. He/she is in charge of the guidance, conduction, and management of the institution's government, and together with the Academic and Research Vice-Rectors, is responsible for the use of the institution's resources, notwithstanding the applicable civil, criminal or administrative liability. The faculties are directed by a Dean, who is the governing authority that represents the faculty, presides over the sessions of the Faculty Council and executes its agreements.

Figure 8. Simplified organizational chart of UNALM



List of ITTO projects implemented by UNALM

Period	Project Title	Total cost (US$)	UNALM Contrib. (US$)	ITTO Contrib. (US$)
Mar. 2006 – Oct. 2007	UNALM-ITTO Project PD 251/03 Rev. 3 (F): "Evaluation of commercial stocks and strategy for the sustainable management of mahogany (*Swietenia macrophylla*) in Peru" (ITTO)	527 978	176 978	351 000
Nov. 2007 – Mar. 2009	UNALM-ITTO Project PD 251/03 Rev. 3 (F): "Evaluation of commercial stocks and strategy for the sustainable management of bigleaf mahogany (*Swietenia macrophylla*) in Peru-Extension to Cedar (*Cedrela* spp.)" (ITTO-CITES)	551 829	176 978	374 851
Aug. 2009 – Jul. 2010	Design, validation and adjustment of the methodology for ongoing monitoring and evaluation of bigleaf mahogany and cedar sample plots in Peru (ITTO-CITES)	220 719	90 993	129 729
Nov. 2012 – Oct. 2013	Assessment of regeneration of natural bigleaf mahogany and cedar populations in Peru - Madre de Dios (ITTO-CITES)	199 790	71 500	128 290
Nov. 2013 – Jul. 2014	UNALM-CITES-ITTO Project "Confirmatory assessment of forest inventories of mahogany and cedar species" (ITTO-CITES)	245 280	111 700	133 580
Aug. 2014 – Jan. 2016	UNALM-CITES-ITTO "Management of mahogany (*Swietenia macrophylla* King.) and cedar (*Cedrela* spp.) seed stands in a forest concession for the conservation of the Tahuamanu Seed Stand in the Province of Tahuamanu, Madre de Dios, Peru"	449 436	250 000	199 436

ANNEX 2. Terms of reference of personnel provided by the executing agency

Terms of reference for the project coordinator – UNALM

Qualifications

- Registered forest engineer
- A minimum of 10 years of experience in forest assessments, forest inventories and/or forest management
- Experience in the coordination of studies, research work and/or consultancies in the forestry field
- Experience in geographic information systems and the use of RPA technology
- Experience in capacity building in the forestry field
- Publications on forestry issues

Duties

- Participate in the consultative committee
- Facilitate project planning, monitoring and evaluation
- Establish coordination mechanisms with the project collaborating agencies
- Represent UNALM in consultative and steering committee meetings

Terms of reference for the project coordinator – UNAMAD

Qualifications

- Registered forest engineer or biologist or professional in a related field
- A minimum of 10 years of experience in forest assessment activities
- Experience in the coordination of studies, research work and/or consultancies in the forestry field
- Experience in capacity building in the forestry field
- Publications on forestry issues

Duties

- Participate in the consultative committee
- Facilitate project planning, monitoring and evaluation
- Establish coordination mechanisms with the project collaborating agencies
- Represent UNAMAD in consultative and steering committee meetings

ANNEX 3. Terms of reference of key personnel funded by ITTO

Terms of reference for the Project Director

Qualifications

- Registered forest engineer
- A minimum of 15 years of professional experience
- Experience in the formulation, implementation and management of forest projects, working with forest concessions and native communities
- Verbal and written communication skills
- Experience and leadership skills for the coordination of international cooperation projects
- Experience in research in the areas of forest ecology, silviculture and forest management. Publications on timber species population studies. Preparation of Non-detriment Findings (NDF) for timber species, document reports and/or technical analyses for species listed in CITES Appendices.

Duties

- Manage the technical aspects of the project and the implementation of activities
- Manage and supervise the technical team for project implementation
- Design and supervise work plans for the achievement of project objectives
- Work on an ongoing basis in coordination with the UNALM coordinator, UNAMAD coordinator, and Forest Coordinators I and II
- Prepare project reports

Terms of reference for Forestry Coordinator I

Qualifications

- Professional in forest engineering, forestry science, natural resources, forest ecology and/or biology
- General experience: a minimum of fifteen (15) years in public and/or private agencies
- Specific experience:
    a. Five (5) years as coordinator in forest assessment, forestry, forest conservation and/or forest management studies
    b. Five (5) years in work related to timber species listed in CITES Appendices
    c. Five (5) years in geographic information systems
- Preferably with a master's degree in natural resource management or forest management or conservation
- Publications on forestry issues

Duties

- Coordinate the technical activities of the project
- Coordinate with CITES Management and Scientific Authorities
- Organize work meetings with different stakeholders supporting the project
- Coordinate with the Project Director and Forest Coordinator II
- Participate in the development of the field methodology
- Participate in the preparation of project documents
- Participate in meetings with the project consultative committee
- Participate in technical and/or internal meetings of the project team

Terms of reference for Forestry Coordinator II

Qualifications

- Professional in forest engineering, forestry science, natural resources, forest ecology and/or biology
- General experience: a minimum of ten (10) years in public and/or private agencies
- Specific experience:
    a. Five (5) years as coordinator, director, leader or officer in charge of forest assessment, forestry, forest conservation, forest management and/or forest inventory studies
    b. Five (5) years in work related to projects and/or services for timber species listed in CITES Appendices
- Expertise: specialization in forest assessments, forest management, forest stewardship, forest inventories and/or geographic information systems
- Publications on forestry issues

Duties

- Coordinate the collection of information or data from other studies
- Coordinate field activities
- Participate in the development of the field methodology
- Participate in the preparation of project documents
- Supervise the systematization of data and information
- Participate in technical meetings with the Project Director, Forest Coordinator I and GIS expert
- Participate in project consultative committee meetings

Terms of reference for the Geographic Information Systems Specialist

Qualifications

- Forest engineer or geographer
- A minimum of 3 years of experience in forest projects or studies.
- A minimum of 5 years of experience in work related to geographic information systems, with accredited pilot certification for RPA vehicles
- Knowledge in the use and management of geographic information system programs

Duties

- Responsible for the development of the project's forest mapping.
- Update the UNALM database.
- Assist in the preparation of project documents.
- Assist in the implementation of project activities.

ANNEX 4. List of concessions and communities

Holder	Area (ha)	Permit / Contract
Comunidad Nativa Bélgica	53 563.57	17-TAH/P-MAD-A-078-2011
Agroindustrial Victoria S.A.C.**	6 365.5	17-TAH/C-J-038-02
Consolidado Forestal Otorongo S.A.C.***	13 794.74	17-TAH/C-J-017-02
Empresa Forestal Portillo S.A.C	5 472.35	17-TAH/C-J-018-02
Grupo Campesino Fernández El Muerto N° 007-2-I****	5 932.17	17-TAH/C-J-041-02
Forestal Rio Huáscar S.R.L.	25 533.41	17-TAH/C-J-022-02
Forestal Otorongo S.A.C***	23 266.13	17-TAH/C-J-044-02
Inversiones Chullacchaquis S.R.L****.	33 795.72	17-TAH/C-J-040-02
Empresa Inversiones Yacare S.R.L.****	14 292.9	17-TAH/C-J-045-02
Nilda Espinoza Lopez	8 355.24	17-TAH/C-J-050-02
Nilda Espinoza Lopez	2 786.85	17-TAH/C-J-050-02
Maderacre S.A.C.*	49 377.89	17-TAH/C-J-001-02
Amatec (Exp.A)*	20 950.34	17-TAH/C-J-035-02
Cocama E.I.R.L.*	13 877.6	17-TAH/C-J-036-02
Aserradero Espinoza S.A*.	35 154.91	17-TAH/C-J-026-02
Cocama E.I.R.L. (Exp.A) *	26 232.72	17-TAH/C-J-024-02
Cocama E.I.R.L. (Exp.B) *	5 863.79	17-TAH/C-J-025-02
Maderera Canales Tahuamanu S.A.C**.	18 190.51	17-TAH/C-J-012-02
Maderera Canales Tahuamanu S.A.C.**	28 314.58	17-TAH/C-J-013-02
Inversiones Forestales Chullachaqui Sociedad Anónima Cerrada-Inforc S.A.C****.	47 756.54	17-TAH/C-J-028-02
Maderera Industrial Isabelita S.A.C	43 809.25	17-TAH/C-J-019-02
Empresa Agricola Las Gramas S.A.C.*	46 913.99	17-TAH/C-J-033-02
Maderyja S.A.C.	49 549.49	17-TAH/C-J-004-02
Forestal Otorongo S.A.C***	17 420.93	17-TAH/C-J-042-02
Forestal Otorongo S.A.C***	13 417.11	17-TAH/C-J-043-02
Empresa Maderera Croacia S.A.C.	5 738.38	17-TAH/C-J-020-03
Empresa Ecoforestal Camanejo's S.A.C.	7 210.81	17-TAH/C-J-021-03
Corporación Forestal Tres Fronteras S.R.L.	14 621.31	17-TAH/C-J-048-02
Corporación Forestal Tres Fronteras S.R.L.	5 272.33	17-TAH/C-J-048-02
Forestal Monago S.R.L.***	7 433.08	17-TAH/C-J-009-03
Empresa Forestal David S.A.C.***	5 904.71	17-TAH/C-J-003-03
Maderera Laura S.R.L.	8 295.27	17-TAH/C-J-006-03
Empresa Forestal Pumaquiro S.A.C.	4 769.94	17-TAH/C-J-017-03
Forestal Shay Jame S.A.C.	6 918.33	17-TAH/C-J-001-03
Macario Huamán Huamán E.I.R.L.	7 103.73	17-TAH/C-J-005-03
Empresa Forestal Capirona S.A.C.	5 000.00	17-TAH/C-J-019-03
Empresa Forestal Pavayacu I S.A.C.	9 842.51	17-TAH/C-J-029-03
Maderera Extracción, Transformación Y Comercialización Iberia S.A.C.-Emetci*	22 128.27	17-TAH/C-J-054-02
Maderera Extracción, Transformación Y Comercialización Iberia S.A.C.-Emetci	13 222.67	17-TAH/C-J-053-02

* Companies forming a consolidated entity, grouped by the number of asterisks.
Source: Prepared by the authors

ANNEX 5. Response to the ITTO Expert Panel's assessment of PD 929/22 (F)

RECOMMENDATION	RESPONSE
Expert Panel's Recommendation	The scope of the evaluation has been reduced to 3 species i.e. the 2 species that are already listed in CITES Appendices plus one additional species that some countries have proposed to list in CITES: mahogany (*Swietenia macrophylla*), cedar (*Cedrela* spp.) and shihuahuaco (*Dipteryx* spp.).
R1. Clearly elaborate the economic, social, and environmental situation of the study area in Section 1.3.2 (Social, Cultural, Economic and Environmental aspects). And indicate how these may affect the project, either negatively or positively	Information on the economic, social and environmental aspects of the study area has been incorporated. See pages 13 and 14.
R2. Further elaborate on the engagement of indigenous communities, as well as the status and role of women in communities in Section 2.1.2 (Stakeholder analysis)	The engagement of the indigenous communities is described in greater detail, both in terms of their characteristics and their problems, detailing their problems, needs, interests and potential. Likewise, an explanation has been included on how women will participate in the implementation of the project. See Table 2 on pages 18-20.
R3. Improve Section 2.1.3 (Problem analysis) by constructing the problem tree to show levels of relationships / interconnectedness by means of arrows or simple branching establishing a flow	The presentation of Table 3 has been improved by showing flow connectors (page 21).
R4. Review the presentation of the indicators for the development and specific objectives in Section 2.1.4 (Logical frame matrix), Section 2.2.1 (Development objective and indicators) and Section 2.2.2 (Specific objective and indicators)	The presentation of the development and specific objectives as well as the indicators has been improved, as can be seen in Table No. 4 (page 22) and in sections 2.2.1 and 2.2.2 on page 26.
R5. For Activity 1.1 (Analysis of spacing between seed trees) of Output 1, explain the rationale for this activity for which budget is allocated	The information has been supplemented with the following paragraph: *The spacing between seed trees is very important because of the activity of pollinators and the way the flowers are fertilized; after harvesting, the spacing between seed trees can become very large and seed production can be reduced. This activity comprises several tasks, including the collection of information on the location of seed trees in the region to update the existing database, which requires a certain amount of equipment and computer programs for the spacing analysis to be carried out by project researchers, as well as the technical monitoring and supervision to be conducted by national experts.* See page 28.
R6. Improve the presentation of the outputs in Section 3.1.1 by further elaborating the measurement of their achievements in quantity, quality, time and space	More details have been provided on the planning of activities to ensure the achievement of the four outputs proposed in the project. See pages 27 and 28.
R7. Improve the presentation of Activity 3.1 (phenology studies) by elaborating an idea of what exactly will be investigated (e.g., timing of flowering, budding, pollinator visit/timing, etc.). Elaborate what type of silvicultural methods are available for intervention (Activity 3.2). More elaborate on the target of concession/ community workers in Activity 4.1	*The presentation of this section has been improved by adding the following paragraphs:* *Activity 3.1 Application of silvicultural treatments to encourage seed production in seed trees and the establishment of regeneration* *The different stages of seed trees will be monitored and evaluated on an ongoing basis, which involves assessing budding periods, flowering periods, beginning of fruit-bearing cycles, fruit and seed maturation, and seed dispersal.* *Activity 3.2 Evaluation of seed production in light-demanding trees under silvicultural treatments and internally damaged trees* *With regard to the silvicultural method to be used, information will be compiled from national and international experiences to generate a methodological basis to complement the methodological achievements of projects carried out by the National Agrarian University of La Molina, under the UNALM-ITTO-CITES agreement.* *Activity 4.1 Development of dissemination materials and preparation and implementation of workshops and training courses* *Forest concessions generally hire workers to carry out the various tasks required to implement their general forest management and operational plans, while in the communities these tasks are carried*

	out by community members; in both cases, the people who carry out this work need to be adequately trained to better understand the proposed methodologies. Likewise, workers should adopt the methodological procedures and become fully familiar with them as part of their work. See page 29.
R8. Improve Section 3.2 (implementation approached and methods) by describing in more details the effective and concrete participation processes and approaches, especially with respect to women	Section 3.2 has been supplemented with additional information from documents published by government institutions. See pages 30 and 31.
R9. Improve Section 3.3 (Work plan) by indicating each activity under each of Outputs 1-4	The output headings have been clarified in Table 6 of the project work plan. Page 32.
R10. In the membership of the PSC meeting in Section 4.1.2 (Project management team), representatives of the project's donors should be included. In Figure 6 (Project organization chart), Section 4.1.3 (Stakeholder involvement mechanisms), the donor representative must be included among the membership of the PSC as well	Donor representatives were included in the project management team, and the organizational chart has been revised accordingly. See pages 46 and 47.
R11. Improve Section 4.3.1 (Dissemination of project results) and Section 4.3.2 (Mainstreaming project learning) by outlining the proposed plan for each occasion	These sections have been developed in accordance with the ITTO manual for project formulation. The following sub-headings have been incorporated into the Dissemination section: *A. Preparation of dissemination materials:* *B. Face-to-face events* *C. Virtual media* *For the mainstreaming of project progress and results, the following levels will be considered:* • *Experience-sharing level – to be carried out through field internships, aimed at technicians and forest policymakers of public institutions (SERFOR, GOREMAD Forest Management Division, OSINFOR), and representatives of private institutions: concessionaires, native communities and other stakeholders in the forestry field.* • *Project learning level – through universities, with the aim of improving the training of professionals, demonstrating the project's silvicultural methodological results, and supplementing the training of forest technicians and field assistants (community members). Additionally, during the implementation of the project, an exchange of experiences will also be organized, including the sharing of practices used by the local population and field workers who are well aware of the characteristics and functioning of forests.* See pages 47 and 48.
R12. Review and amend the ITTO budget in line with the above overall assessment and specific recommendations and also in the following way: a) In Table 3.4.3 (ITTO budget by component), review the unit prices for equipment ranging from laptops to cameras. These must be revised downwards. The number of personnel involved in the project is quite high, which inflate the budget as a whole. The budget for Director and technical team is on the higher side ($169, 200) as it looks like they will have a "salary", this needs to be reviewed. Field assistants and brigade leaders attract a whopping $180,000 in the ITTO budget, the number should be reviewed downwards.	The recommendation of the Expert Panel has been addressed, adjusting the project to include the evaluation of 3 species: Cedar and Mahogany (CITES) and Shihuahuaco. Furthermore, since one species has been removed from the evaluation, a field brigade has also been reduced. The fees of the Director and Coordinators have also been revised downwards. However, it is important to point out that these professionals will work full time and will receive a salary (Director - US$1600 per month; coordinators - US$1400 per month), which is an average salary as compared to the current income of professionals in the country. All budget tables under section 3.4 of the project document, including the proposed master budget and the tables for the overall project budget and the ITTO budget, have been revised accordingly. See pages 33-42

Drone rental ($45,000), accounting and cash expenses ($72,000), contingencies ($94, 245) must all be reviewed downwards as they all inflate the budget. In addition, some high-budget components should be clarified. These include food ($80,325), field material ($92.250), transport rental services ($111,750), and field support services ($125,100) b) Recalculate the ITTO Programme Support Costs (budget sub-item 83) so as to conform with standard rate of 12% of the total ITTO project costs (on budget items 10 to 82), and c) Adjust all budget tables, taking into account the correct amount regarding the budget sub-item 83.	The national contribution has not been modified, and the national commitment remains unchanged.

ANNEX 6. Response to the 60th ITTO Expert Panel's assessment of PD 942/25 (F)

RECOMMENDATION	RESPONSE
1. Ensure that the project brief follows the ITTO Manual for Project Formulation. It should present in a succinct manner the development and specific objectives, how these will be achieved; how achievement will be measured; expected outputs and outcomes and a description of the main beneficiaries	***The evaluation of seed trees located in forest concessions and native community areas, where 20% of harvestable trees are required to be retained as seed trees to allow for the regeneration of endangered CITES-listed species, will initially assess seed production capacity; the pollinators of each species and their status, as well as seed dispersers, will be identified, all of which will lead to the establishment of a silvicultural development model for the target species. The main beneficiaries of this project are native communities and forest concessionaires, as well as stakeholders engaged in forest plantations, as they will have access to quality-controlled seeds.***
2. Revise the list of acronyms to ensure it is completed. For example, meaning of CIP and RAP are missing.	CIP Peruvian Society of Forest Engineers RAP Peruvian Environmental Network
3. Improve the scale and legends of the target area's map focusing on the province of Tahuamanu	Maps, legends and scales have been improved
4. Initiatives described under origin, section 1.1, are fragmented. Relationships among the various initiatives could improve the flow on this section.	***Studies conducted in 2016 established that forest units under harvesting should retain 20% of harvestable trees as seed trees to allow for species regeneration or potential planting. Even though there is insufficient knowledge about pollinators, seed dispersers, and the establishment of future plants, this enables groups engaged in forest planting to have access to quality-controlled seeds.***
5. Section 1.3.2 economic, environmental, cultural and social aspects needs to be refined by indicating how these conditions will impact project implementation. Include relevant references of the target area to the ITTO policy guidelines on gender equality and empowering women and for the environmental and social management guidelines.	***The region's population is made up of 53% men and 47% women. Women account for 23% of the total number of people involved in forestry activities in concessions and reforestation programs. The project will help increase this involvement by including women in the various activities and stages of production, giving them preference in training and education.*** ***The region exports US$163 million FOB, with sawnwood accounting for 3.12% and profiled timber for 1.8%. Roundwood production and shihuahuaco wood production account for 16% and 4% of the region's GDP, respectively.***
6. For section 1.4, expected outputs at project completion, it is unclear who are the main beneficiaries and how they will benefit. Clarification should be provided.	***Direct project beneficiaries will include native communities and forest concessions, as they will be able to develop and implement silvicultural plans for the restoration of harvested species, as well as reforesters. Indirectly, the results will be used by public policy makers responsible for enforcing legal provisions.***
7. Section 2.1.1 institutional set-up and organizational issues needs to be focused. The list of institutions involved is extensive, should be narrowed to relevant partners	***Direct participants in the project will be the National Forestry Chamber (CNF), as executing agency, and the National Agrarian University of La Molina (UNALM), through its Faculty of Forestry. SERFOR will also be involved in the project.***
8. Objectives should be revised in accordance with the ITTO Manual for Project Formulation. There should be one development objective and one specific objective. Modifications should be also reflected in the logical framework matrix. In the latter activities should be removed and measurable indicators should be revised (SMART—Specific, measurable, appropriate, realistic, time-bound).	***Development objective:*** ***Contribute to the development of a silvicultural model for the production of seeds of species subject to forest harvesting, ensuring their maturity in sufficient quality and quantity to guarantee the establishment of natural and artificial regeneration in areas under forest management.*** ***Specific objective:*** ***Define the criteria and techniques to select the best seed trees and ensure the production of high-quality mature seeds in good quantities to guarantee high-quality natural and artificial regeneration of mahogany (Swietenia macrophylla), cedar (Cedrela spp.) and shihuahuaco (Dipteryx spp.) species.***
9. Outputs should be redrafted as per pages 39–40 of the ITTO Manual for Project Formulation. There is only one activity under	**Output 1**. ***A set of criteria for selecting the best seed trees will be tested, including diameter, height and crown shape, among other parameters for each species, which will facilitate the***

output 4, thus considering adding relevant activities for its achievement.	***development of a technical manual for forest managers, including both native communities and forest concession holders. This manual will include climatic and biological aspects to establish a seed collection schedule.*** **Output 2.** ***Flowering and related biological activity will be evaluated to identify pollinators and correlate this information with climate data to determine seed production periods and seed quality. This will provide information on dispersal seasons and seed dispersal agents, as well as the establishment of new plants for population restoration. These results will assist native communities and forest concession holders in developing their forest management plans and/or plans of operation, as well as in caring for wildlife, including insects.*** **Output 3**. ***Based on the results obtained under outputs 1 and 2, a silvicultural system will be designed for each species to increase seed production and ensure its establishment in the field. At the end of the project, a silvicultural methodology will be in place to enable regeneration and allow forest managers to better design their forest management plans and plans of operation.*** **Output 4**. ***Following the dissemination of results and the use of manuals, methodologies such as these will be applied in areas under silvicultural activities, demonstrating the possibility of restoring target species so that forest land managers and forest regents can include them as part of silvicultural activities when developing their general management plans and plans of operation.*** ***According to the development of the different target species, a number of field days will be scheduled, especially for producers.***
10. Divide implementation approaches and methods according to the stages of the project.	***The project implementation strategy is based on the work plan, which establishes the activities to be carried out each year and quarter, with each partial outcome to be disseminated according to its contribution to the relevant approach (see Table 6).***
11. Budget tables should be presented in a more concise manner. Difference between Forestry Coordinator 1 (G) and Forestry Coordinator should be provided.	11.2 Forestry Coordinator ***I **** 11.3 Forestry Coordinator ***II **** **** See Annex 3 for a detailed description of tasks assigned to each coordinator.***
12. Section 3.5.2, sustainability, should also include economic sustainability after project completion.	***The project's economic sustainability will be maintained by forestry producers who will continue to apply the results, while UNALM and UNAMAD will continue to conduct relevant research activities.***
13 Under implementation arrangements, one entity should be designated as the executing agency responsible for project implementation. There should not be two executing agencies.	***The institution responsible for implementing the project is the National Forestry Chamber.***
14. For section 4.3.2. mainstreaming project learning, clarification should be provided on how project results will be incorporated into general forest management plans and plans of operation.	• ***Project results will be mainstreamed into forest management plans and plans of operation through forest land managers, highlighting the benefits to be gained when reaching the second rotation in their forest management units (40 years later).***
15. Include an Annex that shows the overall assessment and specific recommendations of the 60th Expert Panel and respective modifications in tabular form. Modifications should also be highlighted (bold and underlined) in the text.	Included