INTERNATIONAL TROPICAL TIMBER ORGANIZATION

ITTO

PROJECT PROPOSAL

TITLE	GENERATION OF FUNDAMENTAL INFORMATION FOR THE SECOND CUTTING CYCLE IN THE AMAZON RAINFOREST
SERIAL NUMBER	PD 939/24 Rev.1 (F)
COMMITTEE	REFORESTATION AND FOREST MANAGEMENT
SUBMITTED BY	GOVERNMENT OF BRAZIL
ORIGINAL LANGUAGE	ENGLISH

SUMMARY

This project proposal aims at the generation of critical and unprecedented information about timber stocks in production forests submitted to a second cycle harvest in the Brazilian Amazon. The project will conduct the harvesting and collect data in a second-cycle forest, harvested in 1993 and located in the municipality of Paragominas, Pará state, Brazil. In this area, harvesting operations will be conducted using Reduced-Impact Logging (RIL) and Conventional Logging (CL) techniques, for experimental purposes. Furthermore, the project will follow harvesting activities and collect data in two second-cycle forests where RIL techniques will be applied. One of these areas, exploited in 2001, is also located in Paragominas and the other, harvested in 1996, is located in the municipality of Itacoatiara, Amazonas state, Brazil. The project also intends to carry out forest inventory and measurements in two more areas harvested after 2000, in the states of Roraima and Mato Grosso, Brazil. Key scientific information about forest management from these sites will be disseminated by academia (universities), forestry professionals and the timber industry**.** The update of regulations related to directives for 2nd cycle logging in the Brazilian Amazon is also intended from the results achieved. Following, the list of timber species more abundant in 2nd cycle production forests will be used in initiatives directed towards disseminating their use by market operators, engineers, architects and in internal civil or infrastructural constructions markets. Actions of this project also include the capacity building and training of main lumber buyer groups in the civil construction markets about the uses and characteristics of these species.

EXECUTING AGENCY	ESALQ-USP
DURATION	36 MONTHS
APPROXIMATE STARTING DATE	TO BE DETERMINED

BUDGET AND PROPOSED SOURCES OF FINANCE

Source	Contribution in US$	Local Currency Equivalent
ITTO	**400,000.00**	
FAPESP	33,014.66	
Precious Forest Foundation	170,400.00	
TOTAL	**603,414.66**	

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PROJECT BRIEF

Recent studies indicate that reduced impact logging may not be sufficient for sustainable long-term forestry yields. Some important evidence has shown that one of the reasons is the slow recovery of the volume of species harvested in the first cycle, below 50% of the initial values.

Other results have shown that the high post-harvest mortality of harvested species lasts up to 11 years after harvesting. Long-term studies have also observed that there is a low natural regeneration of commercial species that have been harvested due to large volumes logged per cutting cycle. Therefore, there is a lack of information beyond the first harvest and many studies have shown that timber yields might not be sustainable over time.

This project is novel since it intends to generate and disseminate essential information on available timber stocks and production from forests undergoing the second harvest cycle. As a specific objective, it is intended that, at the end of the project, the actors involved in the tropical timber supply chain are aware that second cycle production forests, especially the ones harvested under sound practices in the first cycle, are viable to be logged, offering timber stocks and species composition of interest to the markets.

The key actors that will be directly involved in the project are organized into 3 large groups: (i) primary stakeholders (loggers and forestry practitioners, forest concessionaires, market operators, engineers and timber specifiers); (ii) secondary stakeholders (forest agencies, civil society organizations, timber and logger unions, research groups), and (iii) tertiary stakeholders (timber consumers, education entities and universities e forest project investors).

The major assumption of this project is related to the fact that there is an increasing societal interest in the Amazon rainforest conservation to stop the expansion of deforestation caused by land use change. The actual political situation of the country has aggravated the environmental and climatic agenda in the last few years, while forest agencies have lost budget, personnel and administrative autonomy. Despite all these risks, we are positive that a few sectors in the timber supply chain are moving in an opposite direction, in a way that we believe that this project still has fair chances of success. The sustainability of this project will come from the stakeholders' understanding that in the second production cycle, in areas harvested under sound management practices, the species composition will be different from those harvested in the first cycle.

We request USD 590,744.68 from the ITTO. Around 30% of the ITTO budget is allocated to project personnel, and 9% to capital items. The project also has financial support from the São Paulo State Research Support Foundation (FAPESP) agency, which will contribute around USD 33,014.66. Finally, funds raised with Precious Forest Foundation represent USD 176,415.00. The Luiz de Queiroz College of Agriculture / University of São Paulo (ESALQ-USP) will execute the project through the administrative and financial management of the Luiz de Queiroz Agricultural Studies Foundation (FEALQ).

LIST OF ABBREVIATIONS AND ACRONYMS

AIMEX	**Association of Timber Exporting Industries of the State of Pará**
ATIBT	**International Tropical Timber Technical Association**
CA	Collaborating Agency
CAR	Rural Environmental Registry
CELOS	Centre for Agricultural Research in Suriname
CGFLOP	National Commission for the Management of Public Forests
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CONAMA	National Council for the Environment
CONFLORESTA	**Brazilian Association of Concessionaire Companies**
CL	Conventional logging
CLT	Cross-laminated timber
CRA	Environmental Reserve Quotas

CSO	Civil society organization
DBH	**Diameter at breast height**
EA	Executing Agency
EMBRAPA	Brazilian agricultural research company
ESALQ-USP	Luiz de Queiroz College of Agriculture/University of São Paulo
ESG	Environmental, social and governance
EUTR	The European Union Timber Regulation
FAPESP	São Paulo State Research Support Foundation
FCAP-UFRA	Faculty of Agricultural Sciences of Pará/ Federal Rural University of the Amazon
FEALQ	Luiz de Queiroz Agricultural Studies Foundation
FM	Forest Management
FSC	Forest Stewardship Council
GDP	Gross Domestic Product
IBAMA	The Brazilian Institute of the Environment and Renewable Natural Resources
IBGE	Brazilian Institute for Geography and Statistics
IDH	Human Development Index
IFT	Tropical Forest Institute
INPA	National Institute for Research in the Amazon
IMAFLORA	Institute for Forestry and Agriculture Management and Certification
IMAZON	Institute of Man and the Environment of the Amazon
IPT	Technological Research Institute
ITTA	**International Tropical Timber Agreement**
ITTO	International Tropical Timber Organization
LKS	Lesser Known Species
MAPA	Ministry of Agriculture, Livestock and Supply
MMA	Ministry of the Environment
MSU	Michigan State University
NDC	National Development Council
NDF	Non-Detriment Findings
NGO	Nongovernmental Organization
LPF	Forest Products Laboratory
PAC	Project Advisory Committee
PFF	Precious Forest Foundation
PMFS	Sustainable Forest Management Plans
PRA	Environmental Regularization Program
RIL	Reduced-Impact logging
SAN	Sustainable Agriculture Network- Rainforest Alliance
SEBRAE	Brazilian Micro and Small Enterprise Support Service
SEMA	Environmental Secretariat of municipality
SCS	Second cycle species
SFB	Brazilian Forest Service
SFM	Sustainable Forest Management
SINAFLOR	National System for Control of the Origin of Forest Products
TFF	Tropical Forest Foundation
UFAM	**Federal University of Amazon**
UFMT	**Federal University of Mato Grosso**
UFOPA	**Federal University of Western Pará**
UFRA	**Federal Rural University of Amazon**
UFRRJ	**Federal Rural University of Rio de Janeiro**
UnB	**University of Brasilia**
USAID	**U.S. Agency for International Development**

PART 1: THE CONTEXT

1.1 Origin

There is a lack of information coming from field experiments about second cycle species and timber volumes, being most of the conclusions originated from modeling and simulations. **Due to the lack of information, there are insufficient technical directives to drive specific regulations for the conduction of second cycle harvesting in tropical production forests, such as in the Amazon region. This project proposal aims to understand the state of production forests in the Brazilian Amazon that will undergo a second harvest cycle and generate critical and new information about their timber stocks. The project will assist the harvesting and collect data in a second-cycle forest using RIL for experimental purposes and monitor harvesting using RIL in two other areas, with the intent of conducting research and further revealing best forestry practices to drive conservation regulations to be applied by the Amazon logging industry.**

The site for harvest conduction is the "Fazenda Agrosete", Pará state. This experimental site originated from a project incepted in 1992, leaded by researchers from IMAZON. This experiment involved participation of young professionals graduating from the local forestry university (UFRA) to support the conduction of a research aimed on understanding environmental and economic implications from the application of RIL to produce timber, comparing the performance of such system with CL practices used in eastern Amazon in those days. The project was funded by USAID and the logging operations were conducted in 1993. Immediately after harvesting, permanent plots were established in the two explored areas (RIL and CL) and in a control area measuring 350 m x 700 m, totaling an area of 24.5 m per plot. The forest dynamics in these plots were monitored in 1993, 1994, 1995, 1996, 1998, 2000, 2003, 2006, 2009, 2014, 2017, and 2023. All individuals of commercial species with DBH >10 cm and non-commercial species with DBH ≥ 25 cm were monitored within each 24.5 ha plot. Additionally, a single additional rectangular subplot of 5.25 ha (75 x 700 m) was established in each 24.5 ha plot, where data were collected from all individuals of non-commercial species with DBH >10 and <25 cm. The total number of individuals monitored in the three plots is slightly more than 30,000 individuals. The total area to be harvested for the second cut is 180 ha, of which 105 ha were managed with the best forest management techniques and 75 ha with conventional logging. An area of 30 ha was reserved as a control. The publications generated from the data collected in this experiment laid the foundation for the forest management and ecology program at IMAZON. In 1995, the IFT was also created, an institution that would disseminate these new RIL practices learned in the experiment to a wider audience. To date, TFF Brazil/IFT has trained more than 20,000 people in sound forest management practices in the Brazilian Amazon, including audiences ranging from chainsaw and machine operators to forestry technicians, engineers, professionals, and government officials.

The two sites to follow harvest operations and collect data are "Fazenda 2000", Amazon state, and "Fazenda Rio Capim", Pará state. The "Fazenda 2000" of 80,571 ha is managed by Mil Madeireira Itacoatiara Ltda, a company that belongs to the Precious Woods Group, a large FSC certified enterprise. The Management Plan of Mil company is based on the CELOS system (Centre for Agricultural Research in Suriname and Agricultural University of Wageningen) enriched with data collected from INPA and EMBRAPA. Its design is based on selective cutting of approximately 15 m3/ha, in annual compartments of approximately 2,000 ha net, with an expected cycle of 25 years. Logging operations in the area were carried out in 1996 and monitoring by a continuous inventory system using 14 permanent 1 ha plots was carried out in 1996, 1997, 1998, 2001, 2014 and 2023. All individuals of commercial and non-commercial species with DBH ≥ 15 cm were inventoried. The total number of individuals monitored in the permanent plots between 1996 and 2014 were 8,090 individuals, distributed in 244 species, and 48 families, being 55 commercial species. The total area to be harvested using RIL (specifically CELOS system) for the second cut is 1,000 ha.

The "Fazenda Rio Capim" owned by CIKEL-Brasil, Verde group has a total area of about 140,000 ha. In 2001, CIKEL received FSC certification for the sustainable management of 75,000 ha of production forests. Since then, CIKEL has been harvesting using RIL techniques with a minimum cutting diameter of 55 cm for all commercial species, a cutting cycle of 35 years and a harvest intensity of 30 m 3/ha. The annual logging plan usually covered between 2000 and 5000 ha. Before RIL logging in 2001, 18 experimental 1 ha plots were set up in which all trees DBH ≥ 20 cm were inventoried in 2004, 2005, 2006, 2008, 2010 and 2012. In 2008, the 18 plots encompassed 4102 trees representing 42 families, 119 genera, and 193 species. The total area

to be harvested for the second cut is 200 ha. These three experimental sites were maintained resting since the last cutting event, in a way to be allowed by Law to be harvested a second time. In September, 2023, some funds were raised by this project team with the PFF to start pre-harvesting activities and data gathering in these farms. While harvesting was still not conducted in these sites by the time this proposal was being submitted, the request from funding posed here intends to complement and give continuity to the ongoing project supported by PFF.

In addition to the areas mentioned above, the project aims to conduct forest inventories and tree measurements in another two areas to support the second cycle data obtained. The sites are the "Fazenda Vale Verde", Roraima state and the "Fazenda Sinopema", Mato Grosso state. The "Fazenda Vale Verde" owned by Zeg Florestal, Capitale group, has a total area of about 14,000 ha. It was logged in 2007 by the "Fit Florestal" company. The "Fazenda Sinopema" is a property of 52,097 ha, managed by the "Sinopema Indústria e Comércio de Madeiras". It was logged in 2000, and the annual logging plan usually covered 2,000 ha. Both areas have an expected cycle of 25 years.

1.2 Relevance

1.2.1. Conformity with ITTO's objectives and priorities

The project will make an effective contribution to the ITTA Objective 2006 (Table 1, below) and ITTO **Action 2022 - 2026** (Table 2).

Table 1: ITTA Objectives 2006 towards which this project will contribute.

ITTA Objective	Project Contribution
(c) Contributing to sustainable development and to poverty alleviation	The project will contribute by generating the necessary information for the second harvest cycle, promoting the improvement of forest management techniques and public policies in force, updating them according to the recommendations necessary for a second sustainable harvest cycle to occur
(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	Promoting the second harvest cycle will encourage the improvement of management techniques and will make it possible to understand what is coming from wood production after 30 years of forest exploitation, and thus promote the adequacy of environmental legislation for the second harvest cycle
(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.	As previously mentioned, the generation of information on the second harvest cycle in the Brazilian Amazon will make it possible to understand the ecological and economic results of forest management, and with these results stimulate the updating of current legislation.

Table 2: The project objectives will contribute to the following ITTO Strategic Plan Action **2022 - 2026**.

ITTO Strategic Action Plan 2022 – 2026	
Strategic Priority 1	**Governance and investment** Promote good governance and policy frameworks to enhance financing and investment in sustainable tropical forest management, legal and sustainable forest product supply chains and related trade.
Strategic Priority 2	**Economies and tropical timber trade** Increase the contribution of the tropical forest sector to national and local economies and resilient livelihoods, including through the further processing and trade of tropical timber and other forest products and services.

Strategic Priority 4	**Statistics and information** Improve the quality, availability and timeliness of information on tropical forest product markets, supply chains and international trade, including challenges and opportunities related to market access, expansion and diversification.
Crosscutting strategy 1	**Capacity building in member countries** Target 25: Support initiatives to promote cross-sectoral coordination at the national and local levels
Crosscutting strategy 4	**Promote gender equality and the empowerment of women** Target 37: Enhance/accelerate application and operationalization of ITTO's Policy Guidelines on Gender Equality and Empowering Women, including in the context of ITTO's data collection and statistical processes and the streamlined project cycle now being piloted

1.2.2 Relevance to the submitting country's policies

This proposed project is relevant to Brazil's forestry and timber industry development policies. The following are the main policies that are in favor of project implementation in the categories designated below:

(a) Private-forest management

- The main regulations governing sustainable forest management in Brazil are **Normative Instruction 05**, of December 11, 2006, and **Normative Instruction 06**, of December 15, 2006 from the Ministry of the Environment (MMA). Both provide for technical procedures for the elaboration, presentation, execution and technical evaluation of sustainable forest management plans in natural forests and their forms of succession in the Amazon, and on forest replacement and consumption of forest raw materials;
- **Brazilian forest code, Law no. 12.651, of May 25, 2012, describes the term sustainable management in article 3, item VII.** The management of natural vegetation to obtain economic, social and environmental benefits, respecting the mechanisms for sustaining ecosystem management and considering, cumulatively or alternatively, the use of multiple wood species, of multiple products and by-products, as well as the use of other goods and services;
- Two other important resolutions for forest management in Brazil are that of the National Council for the Environment (CONAMA), being **nº 406 of February 2, 2009** and **nº 497**, **of August 19, 2020**. Both resolutions provide procedures for inspection of consuming or transforming industries of native wood products and by-products.

(b) Forest concessions

- **Law No. 11,284, of March 2, 2006**, provides for the management of public forests on the coordination of SFB, which governs sustainable production in these areas. Currently 1.6 million ha are under forest concessions.
- **Decree No. 6,063, of March 20, 2007**, provides for the National Register of Public Forests and regulates, at the federal level, the allocation of public forests to local communities, and regulates the mechanisms of Law No. 11,284.

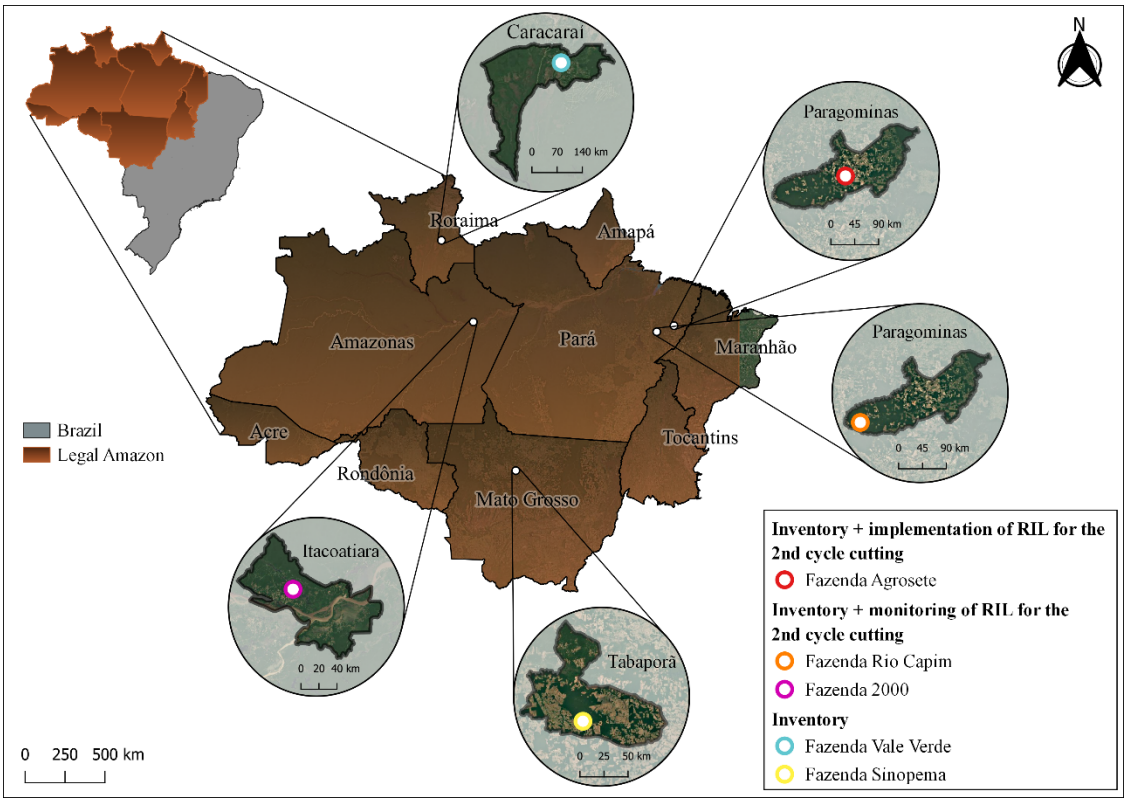
(c) Control and inspection system

- Another important Brazilian public policy system is the National System for Control of the Origin of Forest Products - SINAFLOR, established by normative instruction **nº 21 of December 24, 2014**, with the purpose of controlling the origin of wood, charcoal and other forest products and by-products and integrate the respective data from the different federative entities.
- The Official National List of Endangered Flora Species is another fundamental tool for forest management in Brazil, instituted through MMA Ordinance **nº 443, of December 17, 2014**.
- The normative instruction MMA **nº. 01, of April 15, 2014**, publishes the lists of species included in I, II and III CITES appendix.
- **The normative instruction IBAMA nº. 28, of Dezember 11, 2024, establishes the management procedures and NDF for species of the genera Handroanthus, Tabebuia, Dipteryx and Cedrela included in II CITES appendix.**

1.3 Target area

1.3.1 Geographic location

The project covers five sites of four Brazilian logging states, one of the sites in the Northern Amazon (Fazenda Vale Verde), two in the Eastern Amazon (Fazenda Agrosete and Fazenda Rio Capim), one in the Central Amazon (Fazenda 2000) and one in the Southern Amazon (Fazenda Sinopema). "Fazenda Vale Verde" is located in the municipality of Caracaraí, Roraima state, approximately 139 km from the state capital, Boa Vista, between the coordinates 1º 33' N and 60º 44' W. "Fazenda Agrosete" and "Fazenda Rio Capim" are located in the municipality of Paragominas, northeast of Pará state, approximately 292 km from the state capital, Belém, between the coordinates 3º 15' S and 47º 50' W, and 3° 40' S and 48º 40' W, respectively. The "Fazenda 2000" is located in the municipality of Itacoatiara, east center of the State of Amazonas, approximately 270 km from the state capital, Manaus, between the coordinates 2º 53' S and 58º 48' W. "Fazenda Sinopema" is located in the municipality of Tabaporã, Mato Grosso, approximately 292 km from the state capital, Cuiabá, between the coordinates 11°24 S and 56°33' W. Forests in "Fazenda Vale Verde", "Fazenda Agrosete", "Fazenda Rio Capim" and "Fazenda 2000" are classified as Dense Ombrophilous with canopy height ranging from 25 to 40 m, while "Fazenda Sinopema" is classified as Open Ombrophilous with canopy height ranging from 25 to 30 m. Many ¿of these areas are located in the so-called "Arc of Fire and Deforestation", a reference to the belt that extends across the peripheral areas of the Amazon from eastern Pará and Mato Grosso to western Rondônia and Acre.



1.3.2 Social, cultural, economic and environmental aspects

(a) Paragominas

It has an area of ~ 1.9 Mha. According to the national census of 2022, it is the largest population in Pará state with ~ 105 k people, 49.63% are women and 50.37% men, and 78% live in urban areas and 22% in rural areas. It originated from a settlement established at the margins of the BR 010 federal road. It was recognized in 1965, its IDH in 2010 was estimated at 0.645.

According to SEBRAE, the number of registered employees is ~ 23k, 12.7% correspond to retail trade, 11.7% to agriculture, livestock and related services, 6.7% to the wood products transformation and 4.1 % to forest production. Paragominas was established as one of the main

logging centers in the Amazon in the 1980s, concentrating over 200 sawmills dedicated to lumber production for the expansion of civil construction and housing in south/southeastern Brazil. Economic incentives given by the government since the 1970s and the opening of major highways (BR 010 started construction in the 1960s) favored the rapid conversion of forests to agricultural commodity expansion. From the 1990s onwards, research institutes fostered the development of innovations and improvements in forest management techniques, such as the one developed by Imazon and, later, by TFF Brazil/IFT. In 1998, the first systematic assessment of the local timber industry found 155 timber mills operating, consuming, annually, 2,3 M m^3 of logs and generating 12k jobs. The current GDP of the municipality is USD 542M according to IBGE.

According to Global Forest Watch, in 2010, Paragominas had 1.51 Mha of natural forest, extending over 79% of its land area. In 2023, it lost 7.65 kha of natural forest, equivalent to 5.71 Mt of CO_2 emissions. The average annual rainfall is 1750 mm and temperature 26.3 °C, the dry season occurs between June and November, and the peak fire season typically begins in late July and lasts around 22 weeks. The prolonged 2023 drought placed the region in a state of calamity, delaying the planting of short-cycle crops which normally begin in December. 68 fire alerts were reported between 3rd of December 2023 and 1st of December 2024.

(b) Itacoatiara

It has an area of ~ 0.9 Mha. It is the second most populated city in Amazonas state with ~ 103 k people, 51% are women and 49% men, and 77% live in urban areas and 23% in rural and riverside areas. It was founded in 1760, its IDH in 2010 was estimated at 0.644.

The number of registered employees is ~ 16k, 63% correspond to public administration, defense and social security, 6.9% to wood products transformation and 0.7% to forest production. The region concentrates most of the state's industrial timber activity. It concentrates four of the seven largest industries in the state, being the municipality with the largest part of the timber industry activity. There is an unequivocal pressure to convert land into agricultural areas, especially because Itacoatiara became in 1997-98 one of the main bulk ports in the northern region of the country, transporting production from the north of Mato Grosso and Rondônia that arrives by ferries through the Madeira River Waterway.

In 2010 it had 669 kha of natural forest, extending over 76% of its land area. In 2023, it lost 8.60 kha of natural forest, equivalent to 5.58 Mt of CO_2 emissions. The average annual rainfall is 2200 mm and temperature 26°C, dry season occurs between September and December, and the peak fire season typically begins in late July and lasts around 13 weeks. In 2024, the city's worst drought in 26 years of measurement was recorded. The river's water level reached 32 centimeters, affecting more than 28k people and isolating more than 100 communities. The 2024 drought generated public and private losses exceeding R$620 million. 51 fire alerts were reported between 3rd of December 2023 and 1st of December 2024.

(c) Caracaraí

It has an area of ~ 4.7 Mha. It is the third most populated city in Roraima state with ~ 20 k people, 47% are women and 53% men, and 59% live in urban areas and 41% in rural areas. It was founded in 1955, its IDH in 2010 was estimated at 0.624.

The number of registered employees is ~ 1.5k, 66% correspond to public administration, defense and social security, 11.6% correspond to retail trade, 5.9% to agriculture, livestock and related services, 0.6% to forest production, 0.007% to wood products transformation. Since the end of 1980, timber production from the municipality and others of the southern region of the state have mainly supplied the wood market of Amazonas state. Currently, within the state, it is one of those that suffers most from unauthorized logging, deforestation and the use of pesticides in areas adjacent to indigenous lands in the state.

In 2010, it had 4.27 Mha of tree cover, extending over 90% of its land area. In 2023, it lost 11.4 kha of tree cover, equivalent to 6.76 Mt of CO_2 emissions. The average annual rainfall is around 1750 mm and temperature 26.5°C, dry season occurs between September and March, and the peak fire season typically begins in mid-January and lasts around 13 weeks. Between February and March 2024, Caracaraí was one of the municipalities declared in a climate emergency situation due to the presence of hot spots that broke the record for the historical series

monitored since 1999 and caused water shortages and forest fires. 394 fire alerts were reported between 17th of December 2023 and 15th of December 2024.

(d) Tabaporâ

It has an area of ~ 0.8 Mha and presents a population of ~ 9 k people, 47 % are women and 53% men, and 53% live in urban areas and 47% in rural areas. It was founded in 1991, its IDH in 2010 was estimated at 0.70.

The number of registered employees is ~ 2.7k, 25.5% correspond to the agribusiness and livestock sector, 1% to forest extraction and forestry mechanization, and 1% to wood products transformation. Logging in the region intensified in the 1980s. Tabaporâ, along with 43 other municipalities in the state, includes more than 5 thousand producers and nearly 1,800 industries and businesses. In 2017, the forest base sector acquired more than BRA$ 47 million in taxes. One of the biggest problems in the sector is that some areas of timber production in the region have overlapping indigenous lands.

In 2010, it had 525 kha of tree cover, extending over 64% of its land area. In 2023, it lost 4.62 kha of tree cover, equivalent to 2.60 Mt of CO_2 emissions.The average annual rainfall is around 2500 mm and temperature 24°C, dry season occurs between May and September, and the peak fire season typically begins in late-April and lasts around 25 weeks. 100 fire alerts were reported between 17th of December 2023 and 15th of December 2024.

Project approach to social, cultural, economic and environmental challenges

The project proposes strategies for maintaining the productive value of managed forests that will benefit all stakeholders, including large and medium-sized companies, community associations and small individual producers. The environmental sustainability challenges of the sites will be addressed by assessing information on tree species diversity, with a focus on CITES species and species sensitive to management, and developing strategies to conserve them. In the areas where the second cycle will be carried out, we will generate data from the assessment of low-impact logging practices, for their monitoring and improvement. Data on the accumulated history and carbon balance of logging operations will also be analyzed as a means of monitoring forest ecosystem services. In addition, the project plans to integrate research on timber properties and potential uses of species, as well as harvest residues, to generate information that will help shape new forest-based socioeconomic opportunities and benefits.

1.3.3 Expected outcomes at project completion

The intended changes and benefits coming from this project are described below:

Outcome 1. Technical directives to harvest second cycle production forests are clearly described in a way that loggers and forestry practitioners understand what to expect in terms of forest composition, costs, profitability and required environmental conservation practices.

Outcome 2. A proposition for regulations at the national and subnational level is available for policy makers and FM/conservation advocacy civil society groups.

Outcome 3. Typical timber species available in second cycle production forests are described in terms of their characteristics and known by buyers, engineers, architects and specifiers.

Outcome 4. A prototype of at least one new product using LKS and/or second cycle species is developed and available to upscale in production by forest investors.

Outcome 5. The conduction of forest management and RIL in areas logged in the past becomes an economic land use option for landowners, mainly in the old frontiers, posing an alternative for the ongoing and continuous degradation of forests in the Amazon.

PART 2: THE PROJECT

2.1. Rationale

2.1.1. Institutional set-up and organizational issues

Logging in the forest areas covered by the project is legally permitted by the Brazilian Forest Code, Law No. 11,284 of March 2, 2006. According to this law, the SFB, an agency linked to the MMA, is responsible for promoting sustainable management through the application of RIL practices. Forest management can be carried out in public forests through bidding for concessions or on private lands on a portion of the property designated as "legal reserves," as is the case with the farms covered by the project. These legal reserves correspond to 80% of the property that must be maintained under forest cover as a strategic stock of timber and natural resources required by the Forest Code. The law also establishes that forests subject to logging in concessions and private lands must be kept standing for an initial cutting cycle of 25 to 35 years. In practice, these legal requirements are largely ineffective. Most legal reserves on private rural properties are not large enough to sustain logging during harvesting cycles. The legally required permits to harvest these forests over a period of one to several years are acquired through PMFS approved by IBAMA. However, once logging is done, there are few practical reasons and government incentives to convince landowners to keep the forests standing. This problem occurs mainly in new agricultural frontiers (such as the municipalities of Paragominas, Itacoatiara, Tabaporã and Caracaraí), where the rising opportunity costs of land create perverse incentives to convert these areas to cattle ranching and/or soy. While deforestation creates environmental liabilities for landowners, the market for commodities such as beef and soy remains largely indifferent to compliance. This context is compounded by corruption and the inability of government agencies to enforce the law. These challenges are being addressed at the federal level by IBAMA and the Department of Biodiversity and Forests, SFB, which are partners in this project.

In the timber production sector, even the "good" loggers, those who follow the law, are experiencing a diminishing set of incentives to keep forests standing. Markets have traditionally rewarded producers of high-value timber species such as ipe (Handroanthus spp., Tabebuia spp.), cedar (Cedrela spp.) and cumaru (Dipterix odorata), which are listed as CITES species, which promotes little diversification of other timber species. Therefore, those who conserve forests in the long term are stuck with forests that are considered to have little economic value in terms of species composition, while the regeneration of valuable hardwoods can take significantly longer periods of time than the logging cycles established by law. These issues are reported in forums of institutions of the productive sector, such as AIMEX, the Concessionaires Associations, CONFLORESTA and ATIBT, partnerships of the project.

Most studies on logging cycles and their intensities are based on forest growth models, while there is little empirical basis in terms of production forests with an age and conservation status sufficiently suitable for a second logging cycle. This lack of studies will be addressed by the project through scientific collaborations that have already been established with Embrapa and universities that have developed works close to the study areas, such as UFRA, UFAM, UFOPA and UFMT, in addition to UFRRJ, which helped with database management, and UnB with economic studies. Agencies in the Amazon states, such as SEMAs, also have little information and no technical guidelines to authorize second-cycle logging. In a vicious circle, markets are not adapted to second-cycle species, since the logic of buyers is to continue acquiring species that are well known to consumers and have their characteristics mapped, tested and studied. Thus, there is a need for qualified information on second-cycle timber species for market operators, experts and consumers. It is also important to take a step forward in this discussion by including representatives of civil society such as IMAFLORA, "Amigos da Terra", IMAZON, "Rede Mulher Florestal" and IFT. The public space used to bring together the entities involved in these discussions is already in place, organized by IMAFLORA around the so-called 'Solutions Forum' for legality and forest conservation in the Brazilian Amazon, a space from which the project benefits.

2.1.2 Stakeholder analysis

Stakeholder group	Characteristics	Problems, needs, interests	Potentials	Involvement in the project
Primary stakeholders				
Loggers and forestry practitioners	Landowners and practitioners conducting logging and applying forest management.	Little empirical information on 2nd cycle species and timber volumes. Uncertainty about the feasibility of 2nd cycle logging.	Know-how on the application of RIL and logging. Understanding of the economic needs for competitive logging.	Timber companies will be directly involved in the field experiments and measurements.
Forest concessionaires	Forest producers operating in public lands. A 2nd cycle is predicted in the contract for a few producing units.	Idem above. Concessionaires need accurate information on what to expect for the 2nd harvest in a way to plan ahead.	Idem above.	Concessionaires will be involved in the workshops and debates promoted by the project.
Market operators	Professionals working with timber markets, in the national and international lumber supply chains.	Interest in finding the best sources of timber and products. Also, increasing concern about legality and sustainability	Know how to market timber, how to convince buyers, how to promote sustainability in the chain	Operators will be involved in the debates promoted by the project and the capacity building initiatives
Engineers and specifiers	Professionals responsible to choose the products and species used in civil construction projects	Need to choose the best products, with lower costs, sustainability criteria and reliable information and sourcing	Know the applications of timber species and products in the final main markets (civil construction)	Idem above
Secondary stakeholders				
Forest agencies	Responsible for the licensing and enforcement of forestry and the environmental Law	Need to know how to guarantee Law compliance and conservation in the long run. Also, technical directives for 2nd cycle harvesting of production forests	Know precisely how technical directives can be translated to regulations and how to apply them.	Involved in the debates and workshops promoted by the project
Civil society organizations	Mission of supporting society in conservation and Law compliance projects and initiatives	Need to know options for forest conservation, including the conduction of 2nd cycle logging.	Know how to engage society and key actors, know how to outreach the project results.	Idem above
Timber and loggers unions	Support their associates in their concerns and priorities	The same as the loggers and concessionaires	The same as the loggers and concessionaires	Idem above
Research groups	Advancing in science and knowledge	Need to gather more collective experiences, results and information on 2nd cycle harvesting and forest dynamics	Know how to bring technical and scientific robustness to the project results	Idem above
Tertiary stakeholders				

Stakeholder group	Characteristics	Problems, needs, interests	Potentials	Involvement in the project
Timber consumers	Typically, medium class families, in the national and international level	Need to know the best construction materials and options. Sustainability concerns are increasing.	Upscale consumption of products and species.	These actors will be indirectly impacted by the market operators, engineers and timber specifiers.
Education entities and universities	Capacity building and extension of scientific and technical knowledge	Update contents and knowledge. Sustainability concerns are increasing.	Upscale the awareness on the use of 2nd cycle timber species	Indirectly impacted by project results
Forest investors	Persons, groups or funds that look for opportunities	Browse for better forestry investment opportunities competitive to other investments. Sustainability concerns (ESG) are increasing.	Upscale the use of 2nd cycle timber species and potentially investing in new products.	Involved in the debates and workshops promoted by the project

2.1.3 Problem analysis

The project problem tree is represented in Figure 1. In summary, the key problem the project is intended to address is the uncertainty about the second harvest timber stocks and related economic returns in production forests in the Brazilian Amazon. That uncertainty, as discussed in section 2.1.1., gives incentives to landowners to promote high-grading of valuable species in production forests and degradation of natural resources in a continuous cycle of opening new forest frontiers, until leading these areas to deforestation for the implementation of agricultural commodities. While there is a massive lack of empirical information about timber stocks and available species in production forests conserved between the first and the second cycles, the general assumption is that, due to the low recovery of typical first cycle timber species, the logging in further cycles will be infeasible due to an economically poorer forest composition. It contributes to this scenario the fact that current markets are flooded with lumber products largely coming from illegal logging due to the high priority and prices given to a few species, feeding a continuous vicious cycle. **This context has as major effects the scarcity of empirical logging experiences beyond the first cycle, the concentration of markets orbiting a limited set of species, and robust incentives to weaken the conservation status of production forests in the long run, leading to deforestation. In fact, recent studies (Andrade et al. 2022) showed that 50% of the timber markets from the Brazilian Amazon are composed of products coming from 20 valuable species.**

Figure 1. The project's problem tree.

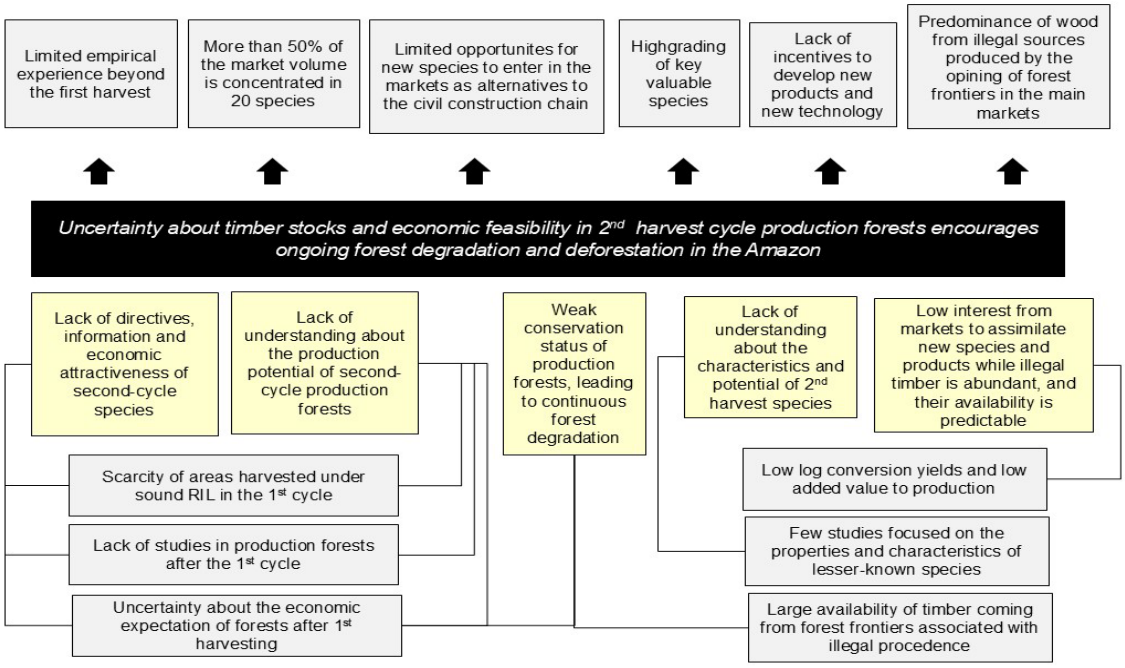
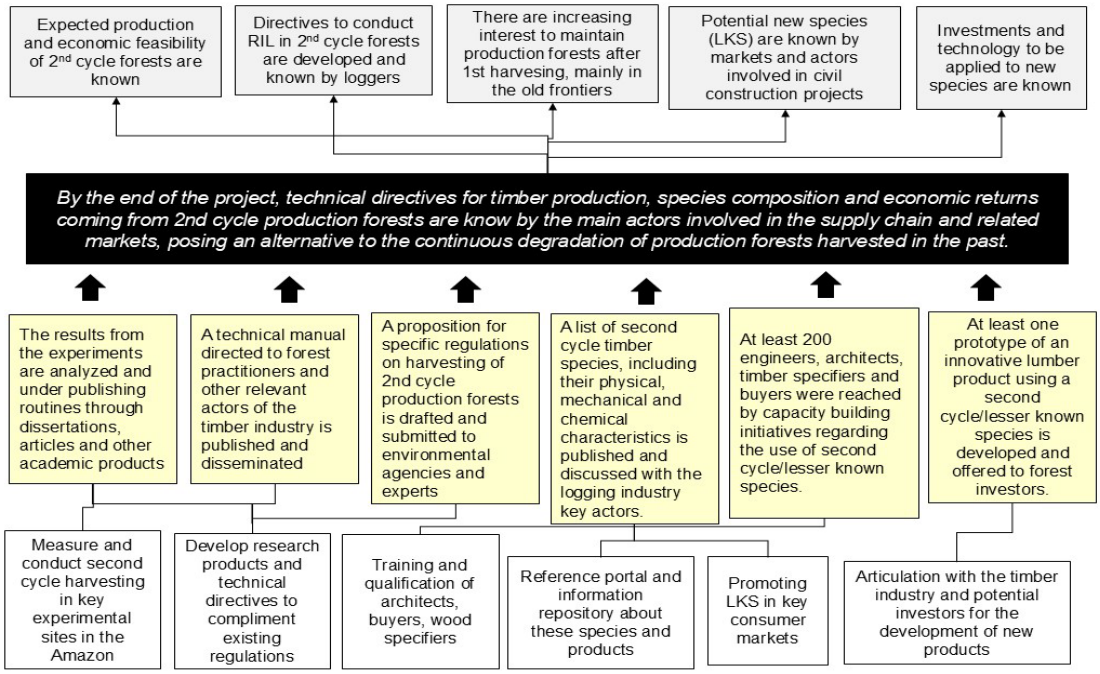


Figure 2. The project's objective tree.



The major assumption of this project is that it is possible to give a significant contribution towards the solution of this problem by establishing an empirical basis about the timber stocks and available species in second cycle production forests conserved since the first logging event. Six outputs were specifically designed to address this challenge. As a specific objective, by the end of the project, the actors involved in the tropical timber supply chain will be aware that second cycle production forests, especially the ones harvested under sound practices in the first cycle, are viable to be logged, offering timber stocks and species composition of interest to the markets. To guarantee this objective, the project proposes not only the experimental harvesting and measurements of second cycle production forests, but also the promotion of related species to market operators and other relevant stakeholders in the lumber supply chain.

2.1.4 Logical framework matrix

Strategy of intervention	Measurable indicators	Means of verification	Key assumptions
Development objective: *By the end of the project, technical directives for timber production, species composition and economic returns coming from 2nd cycle production forests are known by the main actors involved in the supply chain and related markets, posing an alternative to the continuous degradation of production forests harvested in the past*	***Impact indicators*** - # of scientific and technical products generated by the project - # and area of 2nd cycle production forests with potential to conduct FM/RIL - # of directives created for 2nd cycle timber harvesting - # of 2nd cycle/LK species and volumes harvested - # of people from the main stakeholder groups reached by the awareness and capacity building initiatives originated by this project - # of national and subnational regulations on 2nd cycle production forests - # and volumes of lumber products with higher value added using 2nd cycle/LK species	- Browsing by articles, manuals, publications about 2nd cycle forestry in the Amazon - Search in official portals the area, number of sites, and regulations related to 2nd cycle forests - Search in the official control system data portals the volumes of LKS harvested in the Amazon - Search in the industry portals (FSC info as example) the species and products marketed by key companies in the Amazon	- There is interest from forest producers and practitioners in the conduction of 2nd cycle forestry in the Amazon - Markets are interested in the availability of new species with sound procedence - Timber supply chains will develop in a way to avoid illegal or uncertain origin - Decision-makers and governments are open to conservation alternatives despite the existence of perverse incentives towards deforestation
Specific objective: *By the end of the project, the actors involved in the tropical timber supply chain are aware that second cycle production forests, especially the ones harvested under sound practices in the first cycle, are viable to be logged, offering timber stocks and species composition of interest to the markets.*	***Outcome indicators*** - # of scientific publications generated - # of technical publications and manuals generated - # of policy propositions for 2nd cycle forestry - # of species (2nd cycle/LKS) with their characteristics assessed - # of species (2nd cycle/LKS) and volumes assimilated by markets - # of key actors of the timber supply chain trained and aware on the use of SCS/LKS - # of new products/prototypes created using LKS	Idem above.	- There is a short-term interest focused on a viable economic alternative for forests submitted to harvesting in the past, especially in private lands in regions of the Amazon in which incentives for land conversion are present. - Markets are able to assimilate new species and pay fair prices for products from sound origin. - There is a growing and irreversible trend that timber supply chains will develop in a way to avoid illegal or uncertain origin
Output 1. *The results from the experiments are analyzed and under publishing routines through dissertations, articles and other academic products*	***Output indicators*** - # of publications - # of downloads in the scientific portals	- Browsing by articles, manuals, publications about 2nd cycle forestry in the Amazon in the academia and scientific portals	- Harvesting in the experimental sites will be successfully concluded and these areas will be measured in the project period.
Output 2. *A technical manual directed to forest practitioners and other*	- # of publications **- # of downloads in the**	- Browsing by articles, manuals, publications about 2nd cycle forestry in the	- Harvesting in the experimental sites will be successfully concluded and

Strategy of intervention	Measurable indicators	Means of verification	Key assumptions
relevant actors of the timber industry is published and disseminated.	**portal to be created**	Amazon in the academia and scientific portals	these areas will be measured in the project period.
Output 3. *A proposition for specific regulations on harvesting of second cycle production forests is drafted and submitted to environmental agencies and experts for consultation and further improvement.*	- # of publications, technical directives and propositions generated	- Search for regulations and normative instruments available in the subnational government portals about this subject.	- Decision-makers and governments are open to conservation alternatives despite the existence of perverse incentives towards deforestation
Output 4. *A list of second cycle timber species, including their physical, mechanical and chemical characteristics is published and discussed with the logging industry key actors.*	- # of publications focused on 2nd cycle timber species published - # of publications, articles, etc., describing LKS. - # of downloads in the portal to be created - # of technical meetings and workshops conducted with key actors	- Browse in the industry portals about events and workshops being conducted or attended by industry representatives - Compile the platform statistics on access and downloads	- There is interest from forest producers and practitioners in the conduction of 2nd cycle forestry in the Amazon - Markets are interested in the availability of new species from sound origin - Timber supply chains will develop in a way to avoid illegal or uncertain origin
Output 5. *At least 200 engineers, architects, timber specifiers and buyers were reached by capacity building initiatives regarding the use of second cycle/lesser known species.*	- # of materials developed for capacity building initiatives - # of events conducted - # of people reached by the initiatives	- Browse in the industry portals about events and workshops being conducted or attended by industry representatives - Compile the platform statistics on access and downloads	Idem above
Output 6. *At least one prototype of an innovative lumber product using a second cycle/lesser known species is developed and offered to forest investors.*	- # of meetings and encounters with timber sector representatives - # of prototypes developed with timber from LKS from 2nd cycle forests - # of meetings with forest investors	- News and articles about forest industry and forestry products	- There is a genuine interested from the timber industry in developing new products with larger sustainability and a clear link with forest conservation

2.2 Objectives

2.2.1 Development objective and impact indicators

The development objective of this project, by the end of the project, is that technical directives for timber production, species composition and economic returns coming from 2nd cycle production forests are known by the main actors involved in the supply chain and related markets, posing an alternative to the continuous degradation of production forests harvested in the past. Impact indicators are defined in the project´s logical framework matrix.

2.2.2 Specific objective and outcome indicators

The specific objective of this project, by the end of the project, is that the actors involved in the tropical timber supply chain are aware that second cycle production forests, especially the ones harvested under sound practices in the first cycle, are viable to be logged, offering timber stocks and species composition of interest to the markets. Outcome indicators are defined in the project´s logical framework matrix.

PART 3: DESCRIPTION OF PROJECT INTERVENTIONS
3.1 Outputs and activities

3.1.1 Outputs

Six major outputs are predicted as results from this project, as described below.

Output 1: The results from the experiments conducted are analyzed and under publishing routines through dissertations, articles and other academic products.

Output 2: A technical manual directed to forest practitioners and other relevant actors of the timber industry is published and disseminated **through a platform still to be created.**

Output 3: A proposition for specific regulations on harvesting of second cycle production forests is drafted and submitted to environmental agencies and experts for consultation and further improvement.

Output 4: A list of second cycle timber species, including their physical, mechanical and chemical characteristics, is published and discussed with the logging industry key actors.

Output 5: At least 200 engineers, architects, timber specifiers and buyers were reached by capacity building initiatives regarding the use of second cycle/**LKS**.

Output 6: At least one prototype of an innovative lumber product using a second cycle**/LKS** is developed and offered to forest investors.

3.1.2 Activities

Output 1. The results from the experiments conducted are analyzed and under publishing routines through dissertations, articles and other academic products.

Activity 1.1. Conduction of pre-harvesting activities and field measurements in the experimental sites. Pre-harvesting activities in "**Fazenda 2000" and "Fazenda Agrosete" farm were, by the time that this proposal was submitted, ongoing, with financial support acquired from the Precious Forest Foundation (PFF). Additional support from ITTO aims to execute RIL in "Fazenda Agrosete", as well as to conduct field measurements in "Fazenda 2000" and three other sites harvested in the past to understand forest dynamics and timber stocks in second cycle production forests. Harvesting in "Fazenda Agrosete" is forecasted to take place in the dry season of 2026 (July-September).**

Specific activities to be conducted are described below.

- Measurement of all individuals with DBH >10 cm before logging in 24.5 ha plots, for the study of forest dynamics. Plots will be implemented in the two sites to be **harvested (Fazenda 2000 and Fazenda Agrosete), and also in three other sites harvested commercially in the past (Fazenda Rio Capim, Fazenda Sinopema and Fazenda Vale Verde).** Prospections to find suitable sites for these measurements were initiated by the time this proposal was drafted, in a way that it was possible to locate a few sites appropriate for these purposes.

- Plan for the execution of field work: logistics, rent machines, and hire local field labor. Logistics to execute the measurements and data **field collection will be started in the second half of 2025.** Field personnel and the monitoring of field activities will be performed by IFT, while Lastrop/Esalq will have the role of supervising activities and collecting economic data.

Activity 1.2. Conduction of logging activities and data collection on the experimental sites. In this phase of the project, it will be conducted the timber harvesting and data collection in the **"Fazenda Agrosete". Both in the "Fazenda 2000" and "Fazenda Agrosete",** we will also collect forestry productivity and yield data, as well as measuring the costs from harvesting activities. The feasibility of conducting second cycle logging in the Amazon will also be assessed based on the current market prices for these timbers and the expected premium prices that could be reached if these timbers originate from improved legality production forests, such as certified and concession enterprises.

Activity 1.3. Assessment, analyses and post-logging activities. Final post-harvesting activities will be conducted in **"Fazenda 2000" and "Fazenda Agrosete**", which includes the destination of the timber harvested and the submission of post-harvesting reports to the control agencies. While timber destination at **"Fazenda 2000" will be performed by Mil Madeiras**, the timber harvested in "Fazenda

Agrosete" will be sold by the owner of the forest area. Project staff will perform the systematization, compilation and analysis on the data collected. We also intend to perform meta-analysis of other studies about 2nd cycle harvesting in tropical production forests. Finally, the most promising second cycle timber species will be identified based on ecological criteria, such as biological characteristics and the potential to maintain volumes throughout subsequent logging cycles.

Output 2. A technical manual directed to forest practitioners and other relevant actors of the timber industry is published and disseminated through the Timberflow platform.

Activity 2.1. Conduct workshops and technical meetings with timber sector operators and experts to discuss the main findings of the experiments. **Ecological, operational and economic results and basic directives generated through the field experiments will be discussed with key actors operating in the timber production chain. The idea is to compile practical recommendations for second cycle logging in the Amazon to be systematized in a manual directed to forest practitioners and producers.**

Activity 2.2. Draft the manual and adapt language for wider operational audiences. The manual will be constructed from the results of the field experiments and practical recommendations generated in the workshops and technical meetings. This product will be drafted in simple language and illustrated in a way to reach producers of different sizes and forest practitioners, including actors working with communities and smallholders.

Activity 2.3. Dissemination, outreach and communication. A communication strategy will be designed to guarantee wide distribution of the manual, including a printed version for audiences located in places with unstable internet connection. Videos and infographics will be developed in a way to disseminate the results to wider audiences.

Output 3. A proposition for specific regulations on harvesting of second cycle production forests is drafted and submitted to environmental agencies and experts for consultation and further improvement.

Activity 3.1. Discuss technical directives with key personnel and decision-making staff at the environmental agencies. The results and recommendations constructed with key industry representatives and experts will be presented to government forestry staff in the federal and subnational level, including IBAMA, the Brazilian Forest Service, and state agencies from the states of the Amazon (seven states). We expect in this process to find commonalities in terms of regional contexts and regulatory needs from the agencies located in these states. Necessary changes for the current forest management regulations will also be mapped through this process.

Activity 3.2. Drafting policy propositions. By understanding the specific context and changes required regionally in the current forest management regulations, propositions for second cycle timber harvesting will be drafted. It might be necessary to generate more than one draft in a way to accommodate existent differences in the state regulations.

Activity 3.3. Create an advocacy strategy for 2nd cycle policy propositions. A specific strategy directed on alternatives to lead the propositions to be used in second cycle forestry regulations will be generated. It may include presenting the proposals in specific forums and committees created by the government with public participation, media channels dedicated to policy advocacy, meetings with state level environmental secretariats and agencies, etc.

Output 4. A list of second cycle timber species, including their physical, mechanical and chemical characteristics is published and discussed with the logging industry key actors.

Activity 4.1. Generating a list of second cycle timber species. From the results of the field experiments and the meta-analysis performed, a first list of second cycle species will be generated (up to 50 species). However, to narrow the list towards the most promising ones, a few criteria will be established. As examples, the most promising species list needs to consider the timber economic value, the species ecological vulnerability, and their abundance in management areas with improved legality criteria, such as concessions and certified enterprises. Also, it is desirable that the final list contains species with different characteristics, in a way to be able to replace the more harvested timbers in

different market niches and uses. In this phase, the existence of technical studies and laboratory examinations describing their physical and chemical characteristics will be mapped.

Activity 4.2. Validate the list with key industry and lumber market representatives. Gatherings with the timber industry and market operators will help to generate a final list (15-20 species). Beyond exploring the criteria mentioned in the item above, it is important to understand the preferences of current markets in relation to timber species, such as color and external appearance. The experience of companies and market operators in **currently introducing LKS will also** be valuable for the incoming activities.

Activity 4.3. Launch a tool to disseminate species and potential uses in timber products. The final timber species list will be disseminated through materials and a digital tool available to be created, acknowledging the importance of using these species for the long-term sustainability of forest management, and the equivalence of each of these species with the more harvested timbers available on the markets. An outreach and dissemination strategy for the list and products available will be created.

Output 5. At least 200 engineers, architects, timber specifiers and buyers were reached by capacity building initiatives regarding the use of second cycle/lesser known species.

Activity 5.1. Prepare capacity building and training materials. Materials will be created focused on the characteristics of the species chosen for the list, as well as the environmental and sustainability advantages of using these species. Civil construction projects and products will be created using these species in a way to give practical examples of their application in major markets.

Activity 5.2. Execute training and capacity groups. Training will be preferentially applied in key actors of the civil construction industry in Brazil and in selected international markets. We also intend to carry out capacity building initiatives in architecture and civil engineering universities. Through this strategy, we also expect to find key replicators in the contents of the materials and in the use of the selected second cycle timber species.

Output 6. At least one prototype of an innovative lumber product using a second cycle/lesser known species is developed and offered to forest investors.

Activity 6.1. Locate and contact key investors. **We will locate and contact key investors and industry representatives developing new forest products.** The idea is to convince a few companies to use species from the second cycle in new products and industrial processes. It is of special interest companies working in the development of high-technology products such as wood panels such as CLT (cross-laminated timber).

Activity 6.2. Send samples for testing. Coordinating with key companies (such as Mil Madeiras) and other concessionaires and certified enterprises, samples from second cycle **LKS** will be sent to companies interested in developing new products with these timbers. The results from these testing events will be disseminated to wider audiences, accumulating useful experiences in the use of such species. Ideally, a prototype of a new product using one or more of these species is intended to be generated.

Activity 6.3. Convene discussions about industrial applications. Debates with key actors of the forestry and logging industry will be conducted in a way to create momentum and to attract interest in the development of new products based on second cycle **LKS**.

3.2 Implementation approaches and methods

The **project will work on reducing current uncertainties for the conservation and long-term economic use of Amazonian production forests through participatory methods of direct and indirect stakeholders in the Brazilian forestry sector. The methods will be oriented towards identifying the technical and scientific gaps, as well as the negative and positive operational experiences of timber producers from public concessions or private areas in keeping forests harvested in the past standing. It will also work on changing the perceptions of industry and market stakeholders regarding the use of less known commercial species. The information resulting from the project will be also used in national discussion spaces on the development**

of sustainable management in the Amazon region with managers and decision-makers, such as SFB and IBAMA, and other environmental agencies. The project will carry out all empirical research activities, attempting to maintain gender equity in the participation of researchers and technical staff. In addition, the project will encourage the participation of local populations, with an emphasis on women, in activities such as interventions, training and capacity building. The methods for implementing the project approach include:

(a) Robust technical and scientific methods. Forest production sites harvested 25-30 years ago will be measured using **established methodologies for taxonomic, carbon balance, climate and forest dynamic analyses. These methodologies will be coordinated by different researchers, experts in their fields, and collaborators (young researchers), maintaining gender equity. "Fazenda 2000"** will be harvested on a commercial scale by Mil Madeiras company avoiding the typical excess of rigor that experimental operations usually apply in the field. The costs and yields of harvesting operations will also be collected by an experienced field team and forest economists.

(b) Consultation and participatory processes. Consultation and discussion will be conducted with key actors of the timber industry and market, taking advantage of the network already created by **IMAFLORA** in its forest legality strategy. Years of previous work of the organization on how to engage and reward these actors for effective participation will be used in the project. There is a growing concern in the organization of such working groups in guaranteeing participation of women and, in fact, their participation representing companies, buyers, timber specifiers and producers have been increasing.

(c) Capacity building and awareness. There is an opportunity posed by the increasing concern of architects and independent groups working in the civil construction markets about the need to promote timber as a building material with lower ecological and carbon footprint. Despite the actual political moment in the country, the incorporation of an ESG agenda in the civil construction sector is leading the professionals involved in an increasing interest for alternatives for sound generated inputs. Previous discussions with these groups of professionals have revealed an anxiety on acquiring such products.

(d) Outreach. **A communication and outreach strategy will be developed by IFT, a NGO closely connected to other independent groups in the country working with the promotion of markets for products generated with sound and legal origin. The portal/platform will be developed at IFT's webpage to highlight the main LKS prospected as results of this project. By the time the results from this project are generated, the outputs can benefit from the evolvement of user experiences accumulated by the platform, as well as by the networks created.**

3.3 Work plan

Outputs/Activities	Responsible agencies	Year 1				Year 2				Year 3			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1													
Activity 1.1. Conduction of pre-harvesting activities and field measurements in the experimental sites	ESALQ/IFT	X	X										
Activity 1.2. Conduction of logging activities and data collection on the experimental sites.	IFT/ESALQ			X	X								
Activity 1.3. Assessment, analyses and post-logging activities	ESALQ/IFT					X	X						
Output 2													
Activity 2.1. Conduct workshops and technical meetings with timber sector	ESALQ/IFT							X	X	X	X	x	

Outputs/Activities	Responsible agencies	Year 1				Year 2				Year 3			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
operators and experts to discuss the main findings of the experiments.													
Activity 2.2. Draft the manual and adapt language for wider operational audiences	ESALQ/IFT									X	X		
Activity 2.3. Dissemination, outreach and communication	ESALQ/IFT							X	X	X	X	X	X
Output 3													
Activity 3.1. Discuss technical directives with key personnel and decision-making staff at the environmental agencies	IFT/ESALQ									X	X		
Activity 3.2. Drafting policy propositions	IFT/ESALQ									X	X		
Activity 3.3. Create an advocacy strategy for 2nd cycle policy propositions	IFT									X	X	X	X
Output 4													
Activity 4.1. Generating a list of second cycle timber species	IFT/UFMT					X	X						
Activity 4.2. Validate the list with key industry and lumber market representatives	IFT					X	X	X	X				
Activity 4.3. Launch a tool to disseminate species and products	IFT									X	X	X	X
Output 5													
Activity 5.1. Prepare capacity building and training materials	IFT/ESALQ									X	X		
Activity 5.2. Execute training and capacity groups	IFT/ESALQ											X	X
Output 6													
Activity 6.1. Locate and contact key investors	IFT							X	X				
Activity 6.2. Send samples for testing	IFT/UFMT									X	X		
Activity 6.3. Convene discussions about industrial applications	IFT/UFMT									X	X	X	X

3.4. BUDGET

3.4.1. Master budget schedule

#	Categories	Partner	Units	Year 1	Year 2	Year 3	Cost/ unit	Budget ITTO Y1	Budget ITTO Y2	Budget ITTO Y3	Executing agency
10	**Project personnel**							**147.619,05**	**21.031,75**	**10.714,29**	**76.190,48**
11	**National experts**						-	-	-	-	-
11.1	Project coordinator 1	Lastrop	days	70	70	60	190,48				38.095,24
11.2	Project coordinator 2	IFT	days	70	70	60	190,48				38.095,24
12	**Fellowships**						-	-	-	-	-
12.1	Post-doc 1	Lastrop	days				-	-	-	-	-
12.2	Post-doc 2	Lastrop	days				-	-	-	-	-
13	**National consultants**						-	-	-	-	-
13.1	Market consultant	IFT	days	0	30	30	134,92	-	4.047,62	4.047,62	-
13.2	FM licensing/PMFS consultant	IFT	days	60			134,92	8.095,24	-	-	-
13.3	FM/RIL operations manager	IFT	days	100			134,92	13.492,06	-	-	-
13.4	Economics expert	Lastrop	days	30	30		111,11	3.333,33	3.333,33	-	-
13.5	Lumber testing expert	UFMT	days	0	60	0	134,92	-	8.095,24	-	-
14	**Other personnel**						-	-	-	-	-
14.1	ADM officer - Executing agency	Lastrop	days	25	25	30	71,43	1.785,71	1.785,71	2.142,86	-
14.2	ADM officer - IFT	IFT	days	25	25	30	71,43	1.785,71	1.785,71	2.142,86	-
14.3	Communication officer	IFT	days	25	25	30	79,37	1.984,13	1.984,13	2.380,95	-
14.4	FM/RIL operations technician	IFT	days	120			95,24	11.428,57	-	-	-
14.5	FM/RIL operations technician	IFT	days	120			95,24	11.428,57	-	-	-
14.6	Field workers/ operators (10)	IFT	days	1320			71,43	94.285,71	-	-	-
20	**Subcontracts**							**72.380,95**	**7.936,51**	**3.968,25**	**-**
20.1	Tools and functionalities (portal to be created)	IFT	unit		1		7.936,51	-	7.936,51	-	-
20.2	Mapping for FM/RIL planning and licensing	Lastrop	unit	1			2.380,95	2.380,95	-	-	-
20.3	Diagramming, publishing, generation of final products	IFT	-			1	3.968,25	-	-	3.968,25	-
20.4	Rent of vehicles for field operations	IFT	days	120			134,92	16.190,48	-	-	-
20.5	Rent of machines for forestry operations - D6	IFT	hours	400			55,56	22.222,22	-	-	-

20.6	Rent of machines for forestry operations - Skidder	IFT	hours	170			71,43	12.142,86	-	-	-
20.7	Rent of machines for forestry operations - Loader	IFT	hours	350			55,56	19.444,44	-	-	-
30	**Duty Travel**							**9.047,62**	**9.047,62**	**8.571,43**	**-**
30.1	Daily subsistence (per diem)	all	daily rate	60	60	60	31,75	1.904,76	1.904,76	1.904,76	-
30.2	Airfare	all	unit	7	7	6	476,19	3.333,33	3.333,33	2.857,14	-
30.3	Local transportation	all	daily rate	60	60	60	23,81	1.428,57	1.428,57	1.428,57	-
30.4	Lodging	all	daily rate	60	60	60	39,68	2.380,95	2.380,95	2.380,95	-
40	***Capital items***							**21.730,16**	**7.142,86**	**-**	**3.968,25**
44.1	Computers	all	units	2			952,38	1.904,76	-	-	-
44.2	Agrosete structure for field operations	IFT	units	1			3.507,94	3.507,94	-	-	-
44.3	Research equipment and permanent materials	Lastrop	units	1			3.968,25		-	-	3.968,25
44.3	Camp/lodging in other field sites	IFT	months	3	3		2.380,95	7.142,86	7.142,86	-	-
44.4	**Forestry and harvesting support equipment**	**IFT**	**-**				-	**9.174,60**	-	-	-
	Kitchen/cooking materials	IFT	unit	1			793,65	793,65	-	-	-
	GPS devices	IFT	unit	3			317,46	952,38	-	-	-
	Compasses and clinometers	IFT	unit	3			126,98	380,95	-	-	-
	Measurement devices	IFT	unit	3			63,49	190,48	-	-	-
	First aid kits and related supplies	IFT	unit	2			55,56	111,11	-	-	-
	Uniforms, protection equipment	IFT	unit	10			238,10	2.380,95	-	-	-
	Machetes and other	IFT	unit	10			47,62	476,19	-	-	-
	Flta lime/wedges	IFT	unit	10			15,87	158,73	-	-	-
	Other field materials	IFT	unit	1			396,83	396,83	-	-	-
	Chainsaws and related equipment	IFT	unit	3			1.111,11	3.333,33	-	-	-
50	***Consumable materials***							**25.079,37**	**6.333,33**	**2.857,14**	**-**
50.1	Utilities	all	-	1			793,65	793,65	-	-	-
50.2	Office supplies	all	months	12	12	12	238,10	2.857,14	2.857,14	2.857,14	-
50.3	Fuels - Diesel (heavy machines and rented 4x4 vehicle)	all	litres	8000			1,59	12.698,41	-	-	-
50.4	Fuels - Gasoline	IFT	litres	500			1,59	793,65	-	-	-
50.5	Lubricants	IFT	litres	250			7,94	1.984,13	-	-	-
50.6	Food for forestry operations	IFT	months	2500	1460		2,38	5.952,38	3.476,19	-	-
60	***Miscellaneous***							**10.222,22**	**18.158,73**	**18.158,73**	**-**

60.1	Communication	all	months	12	12	12	190,48	2.285,71	2.285,71	2.285,71	-
60.2	Seminars and workshops	all	event		2	2	3.968,25	-	7.936,51	7.936,51	-
60.3	Annual auditing costs	all	annual costs	1	1	1	7.936,51	7.936,51	7.936,51	7.936,51	-
-	**Subtotal**							**286.079,37**	**69.650,79**	**44.269,84**	**76.190,48**
80	**Project monitoring and evaluation (retained by ITTO)**										**-**
81	ITTO monitoring and review										-
82	ITTO mid-term evaluation										-
83	ITTO ex-post evaluation										-
84	ITTO program support costs (8% of the total above)										-

3.4.2 Consolidated budget by component

#	Categories	Total (USD)	Year 1 (USD)	Year 2 (USD)	Year 3 (USD)
10	***Project personnel***	**179.365,08**	**147.619,05**	**21.031,75**	**10.714,29**
11	***National experts***	-	-	-	-
11.1	Project coordinator 1	-	-	-	-
11.2	Project coordinator 2	-	-	-	-
12	***Fellowships***	-	-	-	-
12.1	Post-doc 1	-	-	-	-
12.2	Post-doc 2	-	-	-	-
13	***National consultants***	-	-	-	-
13.1	Market consultant	8.095,24	-	4.047,62	4.047,62
13.2	FM licensing/PMFS consultant	8.095,24	8.095,24	-	-
13.3	FM/RIL operations manager	13.492,06	13.492,06	-	-
13.4	Economics expert	6.666,67	3.333,33	3.333,33	-
13.5	Lumber testing expert	8.095,24	-	8.095,24	-
14	***Other personnel***	-	-	-	-
14.1	ADM officer - Executing agency	5.714,29	1.785,71	1.785,71	2.142,86
14.2	ADM officer - IFT	5.714,29	1.785,71	1.785,71	2.142,86
14.3	Communication officer	6.349,21	1.984,13	1.984,13	2.380,95
14.4	FM/RIL operations technician	11.428,57	11.428,57	-	-
14.5	FM/RIL operations technician	11.428,57	11.428,57	-	-
14.6	Field workers/machine operators (10)	94.285,71	94.285,71	-	-
20	***Subcontracts***	**84.285,71**	**72.380,95**	**7.936,51**	**3.968,25**
20.1	Tools and functionalities (portal to be created)	7.936,51	-	7.936,51	-
20.2	Mapping for FM/RIL planning and licensing	2.380,95	2.380,95	-	-
20.3	Diagramming, publishing, generation of final products	3.968,25	-	-	3.968,25
20.4	Rent of vehicles for field operations	16.190,48	16.190,48	-	-
20.5	Rent of machines for forestry operations - D6	22.222,22	22.222,22	-	-
20.6	Rent of machines for forestry operations - Skidder	12.142,86	12.142,86	-	-
20.7	Rent of machines for forestry operations - Loader	19.444,44	19.444,44	-	-
30	**Duty Travel**	**26.666,67**	**9.047,62**	**9.047,62**	**8.571,43**
30.1	Daily subsistence (per diem)	5.714,29	1.904,76	1.904,76	1.904,76
30.2	Airfare	9.523,81	3.333,33	3.333,33	2.857,14
30.3	Local transportation	4.285,71	1.428,57	1.428,57	1.428,57
30.4	Lodging	7.142,86	2.380,95	2.380,95	2.380,95
40	***Capital items***	**28.873,02**	**21.730,16**	**7.142,86**	**-**
44.1	Computers	1.904,76	1.904,76	-	-
44.2	Agrosete structure for field operations	3.507,94	3.507,94	-	-
44.3	Research equipment and permanent materials	-	-	-	-
44.3	Camp/lodging in other field sites	14.285,71	7.142,86	7.142,86	-
44.4	**Forestry and harvesting support equipment**	**9.174,60**	**9.174,60**	**-**	**-**
	Kitchen/cooking materials	793,65	793,65	-	-
	GPS devices	952,38	952,38	-	-
	Compasses and clinometers	380,95	380,95	-	-
	Measurement devices	190,48	190,48	-	-

	First aid kits and related supplies	111,11	111,11	-	-
	Uniforms, protection equipment	2.380,95	2.380,95	-	-
	Machetes and other	476,19	476,19	-	-
	Flta lime/wedges	158,73	158,73	-	-
	Other field materials	396,83	396,83	-	-
	Chainsaws and related equipment	3.333,33	3.333,33	-	-
50	***Consumable materials***	**34.269,84**	**25.079,37**	**6.333,33**	**2.857,14**
50.1	Utilities	793,65	793,65	-	-
50.2	Office supplies	8.571,43	2.857,14	2.857,14	2.857,14
50.3	Fuels - Diesel (heavy machines and rented 4x4 vehicle)	12.698,41	12.698,41	-	-
50.4	Fuels - Gasoline	793,65	793,65	-	-
50.5	Lubricants	1.984,13	1.984,13	-	-
50.6	Food for forestry operations	9.428,57	5.952,38	3.476,19	-
60	***Miscellaneous***	**46.539,68**	**10.222,22**	**18.158,73**	**18.158,73**
60.1	Communication	6.857,14	2.285,71	2.285,71	2.285,71
60.2	Seminars and workshops	15.873,02	-	7.936,51	7.936,51
60.3	Annual auditing costs	23.809,52	7.936,51	7.936,51	7.936,51
-	**Subtotal**	**400.000,00**	**286.079,37**	**69.650,79**	**44.269,84**
80	**Project monitoring and evaluation (retained by ITTO)**	**-**	**-**	**-**	**-**
81	ITTO monitoring and review	-	-	-	-
82	ITTO mid-term evaluation	-	-	-	-
83	ITTO ex-post evaluation	-	-	-	-
84	ITTO program support costs (8% of the total above)	-	-	-	-

3.5 Assumptions, risks and sustainability

3.5.1 Assumptions and risks

The major assumption of this project is related to the growing social interest in the conservation of the Amazon rainforest. In our opinion, this is not a strong assumption, while on the supply side of the forestry sector there is a growing alignment with a responsible ESG and/or legality agenda. Although the majority of the timber market produced in the Amazon is not yet concerned about the origin of the products (domestic markets in Brazil), international markets have been moving consistently to strengthen due diligence procedures of market operators. An IMAFLORA study in 2021 found that almost half of timber buyers in Brazil are adopting systems that aim to map their suppliers and assess risks related to legality. On the demand side, the construction and infrastructure sectors are also seeking alternatives that are more friendly to the ESG and climate agenda. It is estimated that Brazil still has a housing deficit of around 11 million families, as well as a deficit in railway infrastructure for passenger transport, so wood is a promising alternative as a construction input to reconcile these challenges, while maintaining the country's climate commitments, as stated in its NDC. Amazon forests, particularly the areas within private rural properties, will not prevail if alternatives to maintain their economic competitiveness in a legal and regulated manner are not available in the next decade.

The risks identified in particular are: (i) that illegal logging in the Brazilian Amazon has proven to be a very persistent problem, encouraged by the easiness of opening forest frontiers for the production of valuable species; and (ii) the apathy of domestic markets in assimilating new species and products for civil or infrastructural construction projects, fed by a continuous supply of illegal timber coming from the new frontiers. Enforcement and Law compliance have a very limited role in mitigating this problem while forestry agencies have lost budget, staff and administrative autonomy in the last five years. However, we understand that the ESG and environmental-friendly agenda is an opportunity that will push for novel solutions, mainly in the old Amazon frontiers, in which options to conserve and use forests harvested in the past will arise. In these regions, public and private investments are being directed towards initiatives aimed on keeping forests standing, while official planning is, more than ever, concerned about a consistent strategy to curb deforestation and forest degradation, given the exposition that Brazil is

achieving at the international level in events such as COP 30 for climate crisis mitigation in 2025.

A lot of those investments are now directed to forest restoration in these regions, often ignoring that the forest products generated from these initiatives in 20+ years will require radical shifts in technology in the local industry to make such investments to be feasible. This context led us to believe that our proposal is deeply connected to the needs of old logging frontiers (such as Paragominas) in which landowners are keen to find solutions for forests already logged and are now impoverished in terms of valuable specie stocks. In addition, our partnerships with institutions in the timber supply chain and markets that are moving towards a responsible ESG, legality and climate agenda, enable the LKS communication and dissemination strategy that will be developed by IFT (technical collaborator of the project). We also understand that academia (EMBRAPA and universities) in partnership with government institutions such as IBAMA and SFB need to encourage the use of LKS as a strategy for conserving the forest and CITES species. Thus, the project will work hard to understand the technology and use of LKS forest products and economic studies on their production.

3.5.2 Sustainability

The sustainability of this project will come from the stakeholders' understanding that in the second production cycle, in areas harvested under good management practices, the species composition will be different from those harvested in the first cycle. And that a group of these species will not be possible to harvest in the second and perhaps in more cycles, but these species can be replaced by species not very well known. In this way, volumetric cycle can be maintained, but species composition cannot. This information will be essential for managers to plan their business because, in addition to the ecological impacts of the absence of individuals of valuable species, there may also be economic impacts with the absence or considered reduction in the volume of valuable species. Information like this is important for both the local manager and investors to plan their production costs and the real value of the wood put on the markets, avoiding losses in this economic activity, which is so important for the maintenance of productive forests in tropical countries. Furthermore, managers will know well in advance cycles that are better structured for some species that naturally present disadvantages to forest management, such as: low density and low growth. At the end of the project, the stakeholders involved in the tropical wood production chain will be aware that the production forests in their subsequent cycles, especially those harvested under good forest management practices in the first cycle, are viable to be exploited in the future by offering wood stocks and species composition of interest to markets.

PART 4: IMPLEMENTATION ARRANGEMENTS

4.1 Organization structure and stakeholder involvement mechanisms

4.1.1 Executing agency and partners

The Executing Agency (EA) of the project is **Luiz de Queiroz College of Agriculture/University of São Paulo (ESALQ/USP)** through the administrative and financial management of the **Luiz de Queiroz Agricultural Studies Foundation (FEALQ).** Founded in 1976, **FEALQ** has made it possible for professors and research groups at the **University of São Paulo**, working mainly in agribusiness, to enter into contracts with any other segments of Brazilian or foreign society. From the point of view of companies, government agencies and other institutions, **FEALQ is the "gateway" to the formal relationship with professors and researchers at USP. FEALQ is a non-profit, private law entity, signatory to the Cooperation Agreement with the University of São Paulo, which regulates the administrative and financial management of projects developed between USP members and public and private institutions, national or foreign.** Its structure also allows it to act as a manager of exclusive projects for the private sector. Continuous investments have enabled the Foundation to work ever closer to its partners. Support can begin with the preparation of contract drafts. Administrative and legal teams are available to participate from the agreement of terms with the external partner (public or private) to the full formalization of the contract with the competent bodies of the University of São Paulo or with a private institution.

The Collaborating Agency (CA) is the "Johan Zweede" Tropical Forest Institute (IFT), founded in 2002, based on the previous work of the Tropical Forest Foundation (TFF) in Brazil since 1996.

IFT is a center of excellence in the improvement of forest management and RIL practices in the Amazon, focused on capacity building, training, extension programs and applied research. From 1996-2018, IFT ran a forest management center in Cauxi farm, which was acknowledged by FAO in 2010 as an exemplary case of forestry in the tropics. As implementing partner of this project, the organization will coordinate the field activities related to harvesting activities in Output 1, and also the market articulation, outreach and capacity building processes in Output 4, 5 and 6.

The partners of EA and CA in implementing the project will include national as well as international consultants, local government agencies, NGOs, universities and other professionals.

ITTO support will be provided to the project staffs as indicated below:

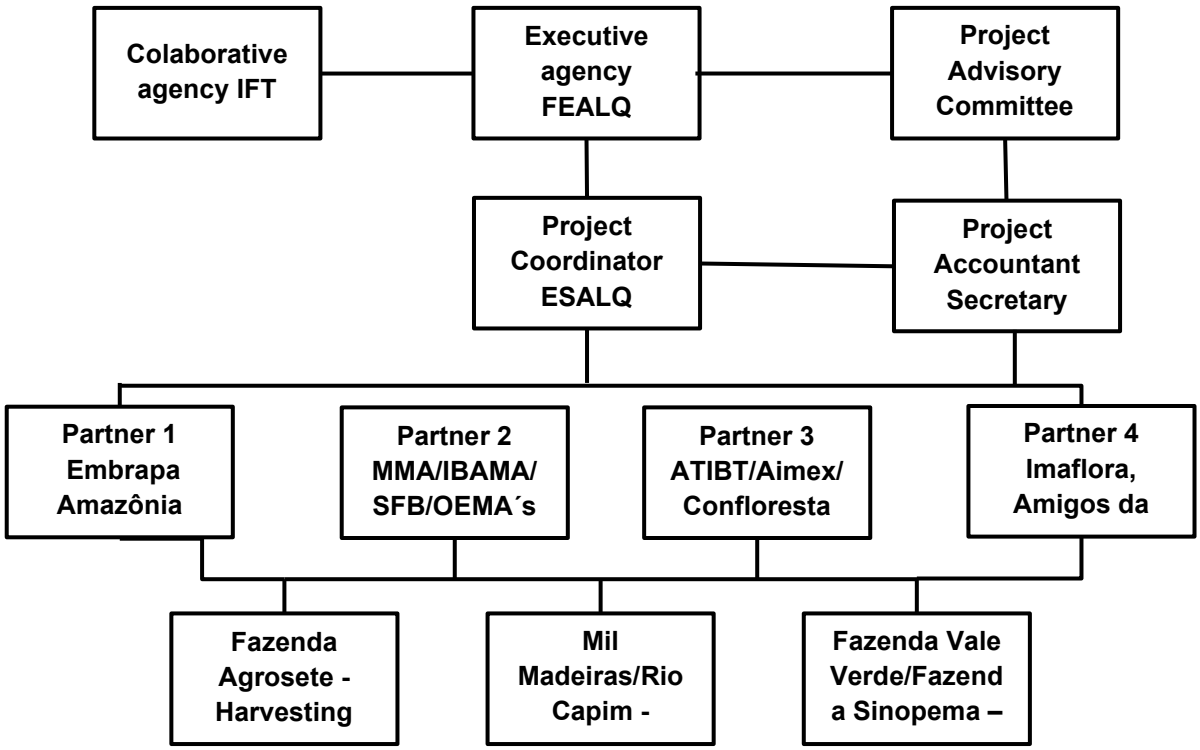
Table 3. Functions of ESALQ-FEALQ, IFT and ITTO

Organization	Roles
FEALQ	● **Administrative and financial management**
ESALQ	● Act as the main contributor to the project; ● Provide researchers, experts to participate in project activities, especially with the improvement of the policy framework; ● Provide support for compiling and analyzing the experience of the second harvest cycle selected in the project ● Act as the executing agency for the project; ● Form the project management team; ● Implement project activities and deliver outputs.
IFT	● **Execute the project's harvesting activities and support to pre-harvesting and post harvesting of research sites;** ● **Support to ESALQ in the construction of the technical manual and directives for 2nd cycle forestry in the Amazon;** ● **Articulation with the main actors involved in the timber supply chain and markets, for the construction of the directives, regulations and outreach/capacity building for the promising timber species selected from this project;** ● **Execute capacity building initiatives;** ● **Create the portal/platform to disseminate the LK species selected from this project**
ITTO	● Provide inputs for project implementation; ● Supervise, monitor and support project implementation; ● Facilitate communication with key stakeholders in target countries.

4.1.2 Project management team

The project management team (PMT) will consist of a project coordinator (PC), project and finance secretary (PS) and local/international consultants. **The research sites are strategically distributed in the Amazon in states with economic importance in the region (Pará, Mato Grosso, Amazonas, Roraima). Key public institutions are involved locally, such as the SEMA of the municipalities. For scientific collaborations, we have the partnership of the UFRA – Paragominas Campus, EMBRAPA, UFOPA and UFMG – Sinop Campus. Also locally, the project has partnerships, in addition to the property owner, with associations of large, medium and small producers. The project also has a strong partnership with representatives of civil society such as IMAFLORA, Amigos da Terra, IMAZON, Rede Mulher Florestal, and IFT. At the regional level, the project will rely on collaborations already established with institutions in the production sector such as AIMEX, the Concessionaires' Associations, CONFLORESTA, and ATIBT. At the federal level, the partnerships already strongly established are with IBAMA, and the Department of Biodiversity and Forestry of SFB. The project's planned activities will be carried out with the assistance of partners as indicated in the previous section**. The curricula vitae of the professional to be appointed by the EA and the related terms of reference are attached to this proposal. The organizational structure of the project is described below.

Figure 3. Project's organizational structure



4.1.3 Project steering committee

The Project Advisory Committee (PAC), will be established to oversee project implementation, approve budget planning, monitor and evaluate project progress against the project logic matrix, and provide prompt instructions on necessary revisions and adjustments, PAC members are:

- A chairperson appointed by the executing agency;
- Representative of ITTO;
- Representatives of EA and CA;
- Representative of donor country;
- Project Coordinator as the secretary of the PAC;
- Representatives of supplier/consumer sides may be invited to join the PAC.

4.1.4 Stakeholder involvement mechanisms

A stakeholder forum with regular online and offline consultations and dialogues will be established in the project to facilitate the participation of loggers and forestry professionals, forestry concessionaires, market operators, engineers and specifiers, forestry agencies, civil society organizations, loggers and logger unions, research groups and other groups interested in sustainable consumption of wood to exchange views and ideas, develop proposals and make recommendations to the executing agency with a view to improving the efficiency of project implementation. While the forum does not have formal responsibility for project implementation, its advice and recommendations are invaluable input to the project and will be incorporated to the extent possible in recommendations to policymakers.

4.2 Reporting, review, monitoring and evaluation

In accordance with ITTO Manual on standard operating procedures for the ITTO project cycle, the following reports will be prepared and submitted to ITTO:

Initial Report. To be presented after the signing of the Agreement between ITTO and the Executing Agency. The initial report will contain confirmation of the availability of office space and facilities, registered bank account, key project personnel and any changes, if any, and the first annual operating plan.

Annual Operation Plan (AOP). Submitted one year from the start of project activities in the following year for approval by the CEP, as appropriate, and by ITTO. The first AOP will be attached to the Commencement Report. Subsequent AOPs will be shipped at least ten weeks before the start of the planned year. ITTO approves AOP based on PSC endorsement.

Project Progress Reports. Must be submitted semi-annually or as requested by ITTO. This report contains information on the execution and progress of the activities during the period covered by the report, the results achieved and the inputs applied.

Project Technical Reports. To be presented on the scheduled date and at the end of the project period. The Technical Report contains data and technical-scientific information, analysis and other results of the project. A technical report can be produced from one or a set of activities in a Product. The report may also contain the current procedure and methodologies adopted, the data generated and the results obtained.

Financial Report. An audited financial report will be submitted to ITTO within three months of the end of the current fiscal year. A final audited report will be submitted within four months of the project completion date. The project will appoint a certified public accountant who will present to ITTO for the approval period to perform the financial audit of the project.

Project Completion Report. A Project Completion Report will be submitted to ITTO within three months of project completion. The report contains a summary of the activities carried out, not carried out (if any), inputs and expenses, results achieved and objectives during the project execution period. The report also highlights the most critical differences between the actual and planned elements of the project, using the original project documents as the main reference, the lessons learned from project implementation.

Monitoring

The internal monitoring system will be led by the PC within the PMT to ensure timely and adequate project implementation and reporting, as well as adaptive management. Internal monitoring is applied monthly or when appropriate, including the following aspects:

- Follow-up commitments derived from the Agreement between ITTO and EA;
- Progress and good execution of the work, using as indicators the supplies provided in the tables of supplies and budget and the Activities in the Work Plan and in the Annual Operating Plan;
- Timely and quality delivery of Outputs, using indicators as presented in the Logical Framework Matrix in the Project document;
- Report the degree of compliance with the Specific Objective, using the indicators presented in the Logical Framework Matrix in the Project document:

External supervision will be provided by ITTO, when so desired, to oversee the implementation of the project. The timing of external monitoring will be determined between ITTO and the Executing Agency. The scope of external monitoring includes:

- Assess whether these Projects are progressing according to the agreed work schedules so that the necessary ITTO actions can be taken (e.g. payments to the Executing Agency);
- Propose and participate in the necessary revisions of the Projects as a result of these evaluations; and
- Inform the Committees and the Council about the status and prospects for the completion of the project.

4.3 Dissemination and mainstreaming of project learning

4.3.1 Dissemination of project results

Learning and the results of the project will be disclosed by several `ways and channels during the phase of implementation and after the conclusion of the project, as described below:

Technical documents/ brochures. It will be widely disseminated through various media, such as websites, in seminars, publications, brochures, etc. **A communication and outreach strategy will be developed by IFT, a portal/platform will be developed at IFT's webpage to highlight the main LKS prospected as results of this project.**

Workshop. Dissemination by academia (forest universities), forestry professionals and the timber industry.

Regulations. The update of regulations related to directives for 2nd cycle logging in the Brazilian Amazon.

List of second cycle species. The list of most abundant wood species in 2nd cycle production forests will be used in initiatives aimed at publicizing their use by market operators, engineers, architects and in the domestic civil construction markets.

Qualification and training. Capacity building and training of the main groups of wood buyers in the civil construction market on the uses and characteristics of these species.

4.3.2 Mainstreaming project learning

Brazil is one of the main producers of wood and products globally. This project will provide an opportunity for Brazil to share lessons learned at the national and international levels. In particular, the project will generate fundamental information for the second cycle of production forests in the Brazilian Amazon, in addition to promoting the regulation of legal guidelines for the second cycle. It is hoped that the experience and lessons learned from promoting sustainable wood consumption in the context of Brazil's dynamic development will be significant for other countries. During project implementation, regular online and offline meetings will be held to review and monitor project activities, update project progress, and share lessons learned.

ANNEXES

ANNEX 1 – PROFILE OF THE FEALQ

Luiz de Queiroz Agricultural Studies Foundation (FEALQ)
Headquarter location: 1080 Centenário Ave, Sao Dimas, Piracicaba, São Paulo
Email: fealq@fealq.org.br; Tel: + 55 19 34176600
Website: https://fealq.org.br/

Logo of FEALQ

Date of establishment: 30 April, 1980, FEALQ is declared a public utility by State Law nº 2663.

1.1 About FEALQ.

Mission: to support teaching, research and extension institutions to make a better world.

Vision: to be the Brazilian reference among foundations in the areas of applied agricultural, environmental and social sciences.

Values: We prioritize the human being; We deliver the best solutions; We act with integrity; We respect ethical and socio-environmental values; We continually improve governance.

1.2 Infrastructure: Curator council as the top governance body, which is, in its turn, hierarchically above a fiscal council and a board of directors.

1.3. Budget

Main activities	2020 (USD)
Funds	21,686
Events	13,228
Research projects	2,879
Total	37,793

1.4 Human resources

Degree	2022
Postgraduate degrees	15
Bachelor	36
Technician	1
Administrative staff	7

ANNEX 2 – CV OF PERSONNEL PROVIDED BY EXECUTING AGENCY
Brief Curriculum Vitae

1. Project Coordinator

Name	Edson José Vidal da Silva
Date of birth	December 07, 1963
Gender	Male
Professional education	PhD in Environmental Engineering Sciences
Position of ESALQ/USP	Professor
Field of specialization	Forest Ecology and Management
Experience relevant to the project	Thirty years of experience in tropical forest management, forest ecology, forest certification, forest legislation, forest restoration and agroforestry systems. 2020 – 2022: Coordinator of the Graduate Program in Forest Resources at the Luiz de Queiroz College of Agriculture. 2016 – Present: Associate Professor at the Luiz de Queiroz College of Agriculture; Activities: Professor and Researcher of the Tropical Forest Management Chair. 2012 – 2016: Doctor Professor at the Luiz de Queiroz College of Agriculture; Activities: Professor and Researcher of the Tropical Forest Management Chair. 2012 – 2016: Coordinator of the Graduate Program in Forest Resources at the Luiz de Queiroz College of Agriculture. 2006 – 2012: Professor at the Luiz de Queiroz College of Agriculture; Activities: Professor and Researcher of the Tropical Forest Management Chair. 2004 – 2005: Senior Researcher, IMAZON, Belém, Pará, Brazil; Activities: Conducting research in ecology and forest management in the Brazilian Amazon. Financial Support: USAID. 2001 – 2004: Vice-Executive Secretary & Senior Researcher, IMAZON, Belém, Pará, Brazil]; Activities: Administrative and financial coordinator, fundraising and communication. Conducting research in ecology and forest management in the Brazilian Amazon. Financial Support: USAID. 1991-2000: Researcher, IMAZON, Brazil]; Activities: Conducting research on forest management and impacts of logging in the Amazon. Financial Support: USAID.

2.Technical coordinators

Name	Marco Lentini
Date of birth	June 23, 1977
Gender	Male
Professional education	Bachelor in Forestry by the University of São Paulo (Esalq/USP), 1999. Master of Science by the University of Florida, 2007, in the field of forest economics.
Position at IFT	Executive Secretary
Field of specialization	Forest certification and conservation, RIL, forest management, forest economics
Experience relevant to the project	Twenty-five years of working experience in natural resource conservation, mainly in the Brazilian Amazon. Expertise in forest management and timber production, timber legality, traceability, monitoring, auditing, transparency, governance and corruption in the forest sector.

Name	Daigard Ricardo Ortega Rodriguez
Date of birth	April 20, 1990.
Gender	Male
Professional education	PhD. in Forest Resources, Luiz de Queiroz College of Agriculture/University of São Paulo.
Position of ESALQ/USP	Postdoctoral researcher, Luiz de Queiroz College of Agriculture/University of São Paulo
Field of specialization	Sustainable Forest Management, Dendrochronology, Forest Economy, Forest Ecology, Climate Change
Experience relevant to the project	2023 – Actual -Postdoctoral researcher, Luiz de Queiroz College of Agriculture/University of São Paulo 2021 – 2022 – Scholarship abroad, Research Intership, Doctoral, Sevila, Spain. Title: Reconstruction of annual tree-ring growth and chemistry of long-lived tree species as a proxy climate record in the Amazonian forest. 2018 - 2023 – PhD in Forest Resources, Title: Climate change in the southern Amazonian Tropical Forest assessed by dendrochronological multiproxy. Luiz de Queiroz College of Agriculture/University of São Paulo. 2016 – 2018 – Ms. In Forest Resources, Title: Wood properties of 17- year-old Pinus taeda L. trees under composted pulp-mill sludge fertilization by tree-ring analysis. Luiz de Queiroz College of Agriculture/University of São Paulo.

Name	Rodrigo Costa Pinto
Date of birth	April 12, 1994
Gender	Male
Professional education	MSc. in Forest Resources, Luiz de Queiroz College of Agriculture/University of São Paulo (2019-2021)
Position of ESALQ/USP	PhD student in Forest Resources, Luiz de Queiroz College of Agriculture/University of São Paulo
Field of specialization	Forest Ecology, Forest Management, Silviculture
Experience relevant to the project	2016 – 2017 - Scholarship from the State Secretariat for the Environment and Sustainability -SEMAS 2017 – 2018 – Scholarship holder of the Brazilian Agricultural Research Corporation - EMBRAPA. 2019 – Current - Postgraduate Student of the Forest Resources Program at the “Luiz de Queiroz” School of Agriculture - ESALQ/USP.

3. Project Secretary

- **Qualification**

As a project secretary, you must be a professional with administrative experience to support the general coordinators of the project for the following activities to be performed:

- **Minimum Requirements**

- To deal with tasks assigned by project coordinator
- To support project coordinator in project management
- Management of project office and keep records

- To organize meetings and field visits, support technical experts
- Support project coordinator to prepare reports

- **Duration:** during the project execution period

- **Location:** Piracicaba, Brazil

4. Project Accountant

- **Qualification**

As a Project Accountant, you must be a professional with accounting experience to support the financial management of the project and perform the following roles below:

- **Minimum Requirements**

- Manage project account
- Update project disbursement and prepare reports to be submitted to ITTO and relevant Brazilian organizations;
- Manage income and expenditure of project, finance arrangement of project;
- Prepare finance reports; work with auditors to conduct auditing;
- Prepare funding to implement operation plan/s of the project.
- Arrange financial formalities (taxation, tax report, personal income tax, etc)

- **Duration:** during the project execution period
- **Location:** Piracicaba, Brazil

Annex 3: Terms of reference of key personnel and consultants to be funded by ITTO

1. Economic assessment coordinator. The project will have a coordinator in the economic area to carry out the economic analysis of production aspects and management costs in the second cycle.

Name	Maisa Isabela Rodrigues
Date of birth	May 21, 1988
Gender	Female
Professional education	PhD. in Forest Sciences - UnB (2016-2020)
Position of UnB	Professor
Field of specialization	Sustainable Forest Management, Forest Economy
Experience relevant to the project	2022 – Actual: Professor and researcher in Department of Agribusiness Management, University of Brasília (UnB) 2022 – 2022: Technical advisor in Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) 2020 – 2021: Independent consultant in Forest Science

2. Field operational coordinator. The project will have a field operational coordinator with extensive experience in forest management in the Brazilian Amazon.

Name	Iran Paz Pires
Date of birth	May 25, 1984.
Gender	Male

Professional education	MSc. in Forest Sciences, Federal Rural of the Amazon — UFRA (2012 – 2014).
Position of freelance consultant	Freelance consultant
Field of specialization	Sustainable Forest management · Forest products · Silviculture
Experience relevant to the project	2020 – Actual - Independent consultant. 2004 – 2020 – Tropical Forest Institute. Positions held: Forestry Engineer, Operational Coordinator, Operational Manager, Deputy Executive Secretary and Executive Secretary.

3. Biological and environmental coordination. The project will have three coordinators from the biological and environmental area with extensive experience in the forest management sector in the Brazilian Amazon.

Name	Lucas Jose Mazzei de Freitas
Date of birth	May 07, 1977
Gender	Male
Professional education	PhD. in Forest Resources at École Nationale du Génie Rural, des Eaux et des Forêts (2010).
Position of EMBRAPA	Researcher
Field of specialization	Sustainable Forest management
Experience relevant to the project	2010 – Actual- Chief Professor, Senior Research: EMBRAPA-Eastern Amazon.

Name	Samuel de P. C. e Carvalho
Date of birth	June 06, 1982.
Gender	Male
Professional education	PhD in Forest Resources at ESALQ-USP (2016)
Position of UFRRJ	Researcher
Field of specialization	Ecology, Management, Tropical Forests, Forest Database
Experience relevant to the project	2023-Actual – Professor of UFRRJ 2021-2022 – Research of SFB 2019-2021 – Coordinator of the Postgraduate Program in Forestry and Environmental Sciences at UFMT

4. Technology and Use of Forest Products coordination. The project will have one/two coordinators from the Forestry products technology area with extensive experience in the forest industrial sector in the Brazilian Amazon.

Name	Bárbara Luísa Corradi Pereira
Date of birth	April 02, 1987

Gender	Female
Professional education	PhD. in Forest Science - UFV (2012-2014)
Position of UFMT	Professor
Field of specialization	Wood Technology, wood anatomy, forest industrialization, forest products
Experience relevant to the project	Ten years of experience studying the properties of tropical wood, with a focus on wood identification, physical and mechanical characteristics, durability, and chemical composition. 2014 - Actual: Professor in Department of Forest Engineering, Federal University of Mato Grosso (UFMT) 2016 - Actual: Professor at Postgraduate Program in Forestry and Environmental Sciences (UFMT) 2018 - Actual - Head of the Wood Technology Laboratory (UFMT)

ANNEX 4: Assessment of environmental and social aspects (ESM) linked to the project implementation.

Output	**ESM**	
	Environmental	**Social**
Output 1. The results from the experiments conducted are analyzed and under publishing routines through dissertations, articles and other academic products.	- How many scientific and technical products were generated by the project? - What is the number and area of 2nd cycle production forests with potential for FM/RIL implementation?	- Number of people with access to project information?
	- Number and area in hectares using better RIL techniques associated with maintaining species diversity to reduce impacts on the forest ecosystem?	- Number of local workers involved in the project, covering ethical and gender diversity and other aspects of inclusion and belonging?
	- Number of species with premium prices	- Number of people with access to premium prices.
	- number of timber harvests carried out and monitored taking into account ecological criteria, such as biological characteristics and the potential to maintain volumes throughout subsequent exploitation cycles?	- Number of people with access to project information?
Output 2. A technical manual directed to forest practitioners and other relevant actors of the timber industry is		- Quantity participation related to ethical, gender and other actors' diversity in contact with the manual and in events about the project's findings?

published and disseminated through the Timberflow platform.	- Quantity of publications on lesser-known species and second cycle?	- number of people with access to publications on lesser-known species and second cycle?
	- Quantity of downloads in the portal to be created on lesser-known species and second cycle?	- Number of downloads on the portal to be created on lesser known species and second cycle accessed by primary, secondary and tertiary stakeholders?
Output 3. A proposition for specific regulations on harvesting of second cycle production forests is drafted and submitted to environmental agencies and experts for consultation and further improvement.	- Number of national and subnational regulations on 2nd cycle production forests?	Number discussion meeting with each of the key stakeholders (IBAMA/SFB/OEMAs) on lesser-known species?
	- Number of directives created for 2nd cycle timber harvesting?	Number discussion meeting with each of the key stakeholders (IBAMA/SFB/OEMAs) on Drafting policy propositions?
		Create an advocacy strategy for 2nd cycle policy propositions?
Output 4. A list of second cycle timber species, including their physical, mechanical and chemical characteristics is published and discussed with the logging industry key actors	- Number of 2nd cycle/LK species and volumes harvested?	
	List of the species validate with key industry and lumber marketer presentative?	
		- Number of tool to publicize species and potential uses in cast wood products?
Output 5. At least 200 engineers, architects, timber specifiers and buyers were reached by capacity building initiatives regarding the use of second cycle/lesser known species.		- Number of materials developed for capacity building initiatives?
		- Number of people from the main stakeholder groups covered by awareness-raising and capacity-building initiatives originated by this project?
Output 6. At least one prototype of an innovative lumber product using a second cycle/lesser known species is developed and offered to forest investors.		- Number of meetings and encounters with timber sector representatives? - Number of prototypes developed with timber from LKS from 2nd cycle forests? - Number of meetings with forest investors?
	- Number of LKS species tested?	
	- Number and volumes of timber products with higher added value using 2nd cycle/LK species?	

Annex 5: Recommendation and modifications

PD 939/24 (F) **Generation of Fundamental Information for the Second Cutting Cycle in the Amazon Rainforest** (Brazil)

Assessment by the Fifty-ninth Panel

A) Overall Assessment

The Panel acknowledged that the project aims at generating and disseminating essential information on available timber stocks and production from forests undergoing the second harvest cycle. However, the Panel
there was a need for improvement of the project proposal in the following sections and sub-sections:

(1) Cover page with the project duration not consistent with relevant sections of the project proposal;

Changes were made to pages 1 and 17.

(2) List of abbreviations not containing all of them used in the project proposal document;

Changes were made to page 3.

(3) The section on project origin is lacking information on the current status of the experimental sites and it is assumed that the second cut recycle is feasible on the project target site;

Changes were made to page 5.

(4) Reference to ITTO Strategic Action Plan 2013-2018 in Sub-section 1.2.1 (conformity with ITTO's objectives and priorities) instead of 2022-2026;

Changes were made to page 6.

(5) Map for the target project area is missing;

Map was included to page 8.

(6) Environmental aspects are missing while more emphasis could be placed on how the project will address social and cultural challenges, particularly in engaging local communities and stakeholders with different backgrounds and economic interests;

Changes were made to page 8.

(7) No information on specific partners which could be relevant for an empirical research in specific regions in relation to the institutional arrangements because the success of the project will depend on its ability to navigate these complex institutional dynamics and foster a more supportive environment for sustainable forest management;

Changes were made to page 11.

(8) Problem analysis weakly performed with the direct and indirect causes not clearly described, and the Problem Tree (PT) and Objective Tree (OT) not following the format required in the ITTO manual for project formulation, while there is a lack of consistency between PT and OT;

Changes were made to page 14.

(9) No SMART indicators in the logical framework matrix as required in the in the ITTO manual for project formulation;

Changes were made to page 15.

(10) Development Objective and Specific Objective not formulated in compliance with the requirements of the ITTO manual for project formulation;

Changes were made to page 16.

(11) There is a need to have consistency between the project outputs defined in Sub-section 3.1.1 and the causes of the key problem in the Problem Tree;

Changes were made to page 16.

(12) There is a need to have consistency between the project activities defined in Sub-section 3.1.2 and both Problem Tree and Objective Tree;

Changes were made to page 17.

(13) Implementation approaches and methods not clearly described while it is unclear how to recruit participants, including women, to be involved in the project implementation;

Changes were made to page 19.

(14) Work plan developed with the timing is semesters instead of quarters as required in the ITTO manual for project formulation;

Changes were made to page 20.

(15) Contribution of the executing agency (EA) is missing in the master budget table, and the tables of budget by components for ITTO and EA are missing while the categories for funds to be retained by ITTO are missing in the table of consolidated budget;

Changes were made to page 22.

(16) Section 3.5 not clearly describing how some specific risks could impede the achievement of project outputs or objectives, while there is a lack of consistency with the key assumptions as indicated the logical framework matrix and there is no description of risk mitigation measures to be used during the project implementation;

Changes were made to page 26.

(17) The Sub-section 4.1.1 could be improved for clarity, readability, and emphasis on the specific roles and qualifications of each entity.

Changes were made to page 27.

(18) There is no clear description on how to use/disseminate the prototype of the lumber product, as well as on how the project's results will be mainstreamed into national policies and plans, while it is essential to develop an overarching monitoring and evaluation framework.

Changes were made to page 31.

B) Specific Recommendations

The proposal should be revised taking into account the overall assessment **and** the following specific recommendations:

1. Use the right the project duration on the cover page of the project proposal document.

Changes were made to pages 1 and 17.

2. Improve the list of abbreviations and acronyms by adding all those used in the sections and sub-sections.

Changes were made to page 3.

3. Improve the Section 1.1 (Origin) with appropriate information on the current status of the experimental sites in relation to the assumed feasibility regarding the second cut recycle.

Changes were made to page 5.

4. Improve the Sub-section 1.2.1 (conformity with ITTO's objectives and priorities) by referring to the ITTO Strategic Action Plan 2022-2026 instead of 2013-2018.

Changes were made to page 6.

5. Add a map of the project target area which is missing.

Map was included to page 8.

6. Improve the Sub-section 1.3.2 by adding the environmental aspects in compliance with the ITTO environmental and social management (ESM) guidelines, while placing more emphasis on how the project will address social and cultural challenges, particularly in engaging local communities and stakeholders with different backgrounds and economic interests.

Changes were made to page 8.

7. Further elaborate the institutional set-up and organizational issues in compliance with the requirements of the ITTO manual for project formulation, while making sure to add appropriate information on specific partners which could be relevant for being involved in the project implementation considering the complex institutional dynamics and fostering a more supportive environment for sustainable forest management.

Changes were made to page 11.

8. Improve the Sub-section 2.1.3 with an appropriate problem analysis associated with mutually consistent Problem Tree (PT) and Objective Tree (OT) following the format required by the ITTO manual for project formulation.

Changes were made to page 14.

9. Improve the logical framework matrix in correlation with the improved Problem Tree and associated Objective Tree, while making sure to use SMART indicators for the Specific Objective and appropriate measurable indicators for the Development Objective and Outputs in compliance with the requirements of the ITTO manual for project formulation.

Changes were made to page 15.

10. Subsequent to the 8th and 9th specific recommendations, here above, redefine appropriately the development objective with its associated impacts indicators and the specific objective with its outcome indicators.

Changes were made to page 16.

11. Revise the project outputs in correlation with the revised Objective Tree and improved logical framework matrix.

Changes were made to page 16.

12. Readjust the list of activities associated to each revised project output in consistency with the revised Objective Tree.

Changes were made to page 17.

13. Improve the project implementation approaches and methods by clearly describing how to recruit participants, including women, to be involved in the project implementation;

Changes were made to page 19.

14. Improve the work plan in correlation with the revised Objective Tree and readjusted list of activities associated with each project output, while using the timing for the implementation of project activities in semesters instead of quarters as required in the ITTO manual for project formulation;

Changes were made to page 20.

15. Improve the Section 3.5 by clearly describing how some specific risks could impede the achievement of project outputs or objectives, in consistency with the key assumptions as indicated the logical framework matrix, while also describing main risk mitigation measures to be used during the project implementation;

Changes were made to page 26.

16. Improve the Sub-section 4.1.1 (Executing Agency and Partners) could be improved for clarity, readability, and emphasis on the specific roles and qualifications of each entity;

Changes were made to page 27.

17. Use in the Sub-section 4.1.3 Project Steering Committee instead of Project Advisory Committee as indicated in the ITTO manual for project formulation;

Changes were made to page 29.

18. Improve the Section 4.3 by adding an appropriate description on how to use/disseminate the prototype of the lumber products, as well as on how the project's results will be mainstreamed into national policies and plans; while developing an overarching monitoring and evaluation framework.

Changes were made to page 31.

19. Add the environmental and social management (ESM) screening check list questionnaire, as annex, for the assessment of environmental and social aspects linked to the project implementation.

Annex was included in page 37.

20. Amend the ITTO budget in line with the above overall assessment and specific recommendations, and also in the following way:

Changes were made to page 22.

a. Revise the master budget table (by activity) in correlation with the improved work plan and its associated activities, while complying with the requirements of the ITTO manual for project formulation,
b. Add the budget tables by component for ITTO and for the Executing Agency in correlation with the revised master budget,
c. Add the budget item 81 by using the standard rate of US$10,000.00 per year for the monitoring and review costs (US$30,000 for 3 years) and the budget item 82 to the standard rate of US$15,000 for ex-post evaluation costs,
d. Calculate the ITTO Programme Support Costs (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

21. Include an Annex that shows the overall assessment and specific recommendations of the 59th Expert Panel and respective modifications in tabular form. Modifications should also be highlighted (**bold and underline**) in the text.

Annex was included in page 39.