

Sustainable Forest Management



PRECIOUS WOODS
AMAZON

Public Overview

Mil Madeiras Preciosas Ltda.



Myclimate Archives – PWA Forest Management Area



A marca da
gestão florestal
responsável

TERMS AND DEFINITIONS

PWA: Precious Woods Amazon. A branch of the PW (Precious Woods) group, where the enterprises are located in Brazil, Amazonas State, contemplating Mil Madeiras Preciosas Ltda. Including stockholdings with BK Energia Itacoatiara Ltda.

Forest Management Area (AMF): Set of forestry management units composed in the forest management plan.

FSC® [Forest Stewardship Council] Certification: Certification that aims to promote responsible forest management, safeguarding the economic, environmental and social functions of forested areas.

FSC/COC Certification: Chain of Custody Certification, which certifies the correct origin of the product through its traceability, in the case of wood, since the log was harvested until the final product gets to the consumer.

Permanent Preservation Area (APP): Areas where the forest and other forms of existing natural vegetation cannot suffer any degradation, such as on the banks of rivers and streams, and areas with a slope greater than 45°.

Absolute Protection Area (APA): Area corresponding to 5% of the forestry management area, besides the PPA, spared of any impacting activity.

DOF: Forestry Origin Document: is the document that accompanies the transportation of the product and forestry by-product, which proves the legal origin of the wood.

Annual Operating Plan (POA): Document submitted by the holder of the forest management plan to the competent environmental agency, containing the information set out in its technical guidelines, with the specifications of activities to be carried out within a 12-month period.

Annual Production Unit (UPA): The area resulting from the subdivision of the forest management area intended to be exploited in a year. The size of the UPA varies according to production planning and geographical boundaries.

Field Unit (UC): Subdivision of the UPA (Annual Production Unit), in an area of 10 hectares, which has the geographical location for the guidance and mapping of trees, allowing the planning and implementation of forestry activities.





MISSION AND VALUES

PWA has its mission based on one of the main challenges nowadays: the harmony between environmental conservation through forestry management in the Amazon and improving the people's quality of life.

The group believes in raising awareness through education, to promote the knowledge of society in general as regards valuing the responsible consumption of forestry products, originated by certified forestry management.

This public overview, besides being a way to start and/or implement the shift in attitude of consumption of forestry products, aims to strengthen an effective channel of communication with people in general, such as: traditional communities, civil society, governmental and non-governmental institutions, as well as our own employees.

Thus, we shall present, in a succinct and transparent manner, how certified forestry management works at Precious Woods Amazon/Mil Madeiras Preciosas and our social and environmental development.



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HISTORY OF ACTIVITIES

The Precious Woods (PW) Group was established in order to prove that it is possible to invest in sustainable projects, with economic viability and environmental responsibility.

The group's first challenge was the implementation, in 1989, of a reforestation project of native and exotic species in the Guanacaste region of Costa Rica.

With the same purpose, in 1994, the group started its activities in Brazil, through PWA - Precious Woods Amazon, with a pioneering project for the extraction of forestry products from timber, from the use of low-impact forestry management techniques, seeking, thereby, to become a global benchmark in the environmentally sustainable and economic use of native tropical forests.

PWA was a pioneer in the implementation of modern activities that enable timber harvesting in an environmentally sustainable manner. Because of these principles, the company has always worked as a field of research for the emergence of new methods required by the forestry legislation in the Amazon region. In 1997, PWA became the first company in Forestry Management, operating in Brazil, to be certified according to the strict principles and criteria of the FSC® (Forest Stewardship Council®) certification. The audit for the certification and annual monitoring is carried out by the *Instituto de Manejo e Certificação Florestal e Agrícola - IMAFLORA* [the Institute for Forestry and Agricultural Management and Certification], which is one of the FSC® representative institutions in Brazil. The FSC certificate, also called the “Green Seal”, is of significant importance to any Forestry Management enterprise that seeks to work correctly and satisfactorily, as it independently testifies that the forest is well managed and is in accordance with various ecological, social and economic criteria.



PWA's activities range from harvesting timber, through forestry management, to the processing thereof in their own industrial area.

All timber originating from its forest management is 100% FSC certified.

The sawn timber is transformed into finished and semi-finished products, of which, currently, about 90% is for the international market.



RENEWABLE ENERGY

The wood biomass generated in processing at the sawmill is used as “fuel”, to move the steam turbines in the BK Energia power plant, with a capacity of 9 MWh. With this PWA/BK partnership, electricity is generated for 50% of the population in the city of Itacoatiara-AM.

The burning of this residue is **environmentally friendly**, because it avoids it entering into a state of decomposition in the open air, and emitting methane (Greenhouse Gas, 12 times more potent than CO₂) into the atmosphere. As well as avoiding that the supply of electricity to the city of Itacoatiara uses diesel oil (highly polluting fossil fuel), in the consumption of its Thermoelectric Power.

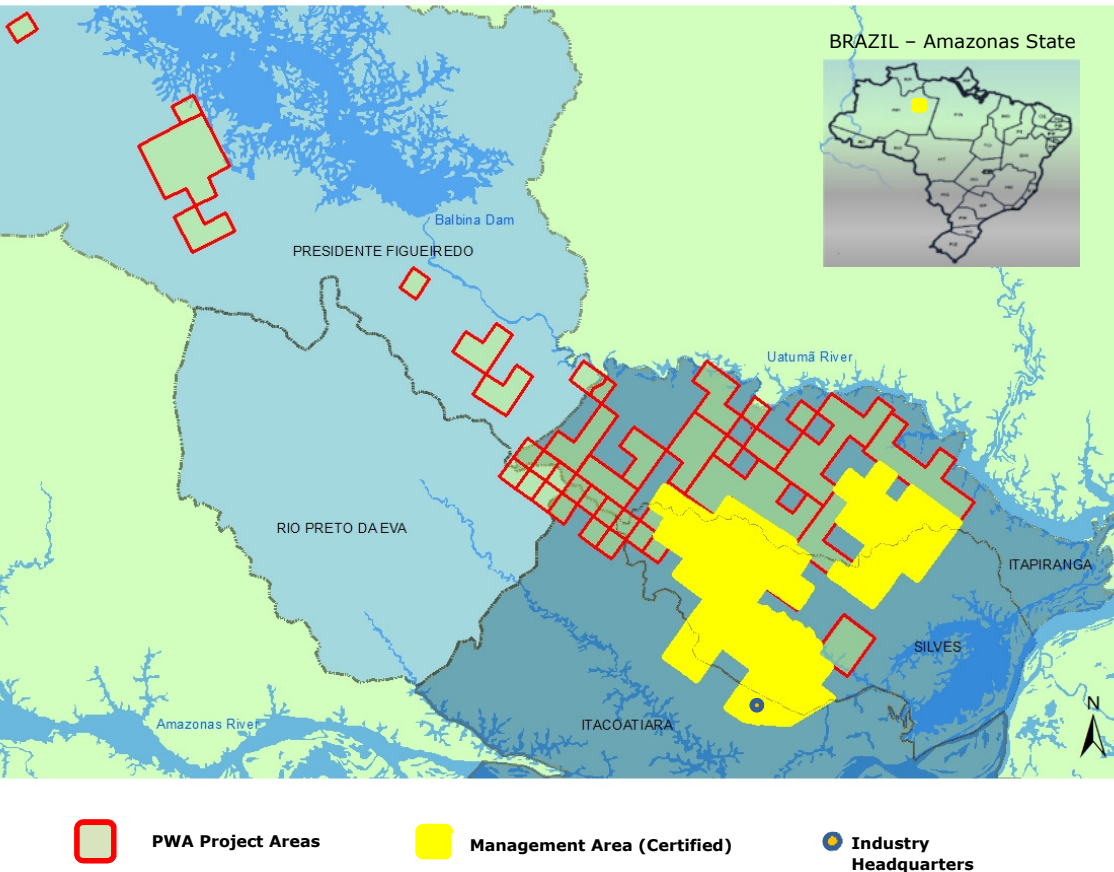
The electricity generated by biomass processed at the sawmill is considered a **Renewable Energy**, as the carbon emitted (CO₂) is absorbed once again by the **growing forest** under a management regime. In the future this carbon will be consumed again, thereby complementing **the sustainable cycles** in Forestry Management.



DESCRIPTION OF THE ENTERPRISE

The areas that comprise the Precious Woods Amazon project currently amount to **506,698.60** hectares, all in the [State of Amazonas](#).

The estates where the company's activities are concentrated, all under certified Forestry Management regime (scope of certification), total an area of **202,104.76** hectares, among the municipalities of Itacoatiara, Silves and Itapiranga.





SUSTAINABILITY POLICY

The company has guidelines within the rigor of the principles of FSC forest certification:

Comply with the country's legislation and international treaties that seek to benefit the environment.

Maintain its duly legalized areas to protect its forests and recognize the rights of ownership, and use of the land, from residents that live in adjacent communities.

Expand the perspective of personal and professional growth of its employees and promote welfare in local communities.

Efficiently use the multiple forestry products and services to ensure environmental benefits to society.

Maintain the ecological functions and the integrity of the forest, causing minimal environmental impact during the implementation of its activities.

Maintain up-to-date, at all times, its management plan with new technologies and scientific results, seeking to be in harmony with the cycles of nature.

Monitor and evaluate the conditions of the forest and the relevant environmental and social impacts.

Maintain the forests with high conservation value, following proper identification procedures and monitoring of such attributes.

Forestry Management

PWA is recognized by environmental organizations around the world, for having achieved innovative and appropriate forestry management with a reduced impact on the environment.

One of the company's principles is the search for sustainable alternatives, thus, it currently manages more than 50 species of tree in the Amazon rain forest, the company therefore encourages the entry of new species to the market, decreasing the pressure and removing the risk of extinction from the most valuable and rare species.

PWA Forestry Management Guidelines:

- Conservation of natural resources
- Preservation of the forest structure and its functions
- Maintenance of biological diversity
- Socioeconomic development of the region



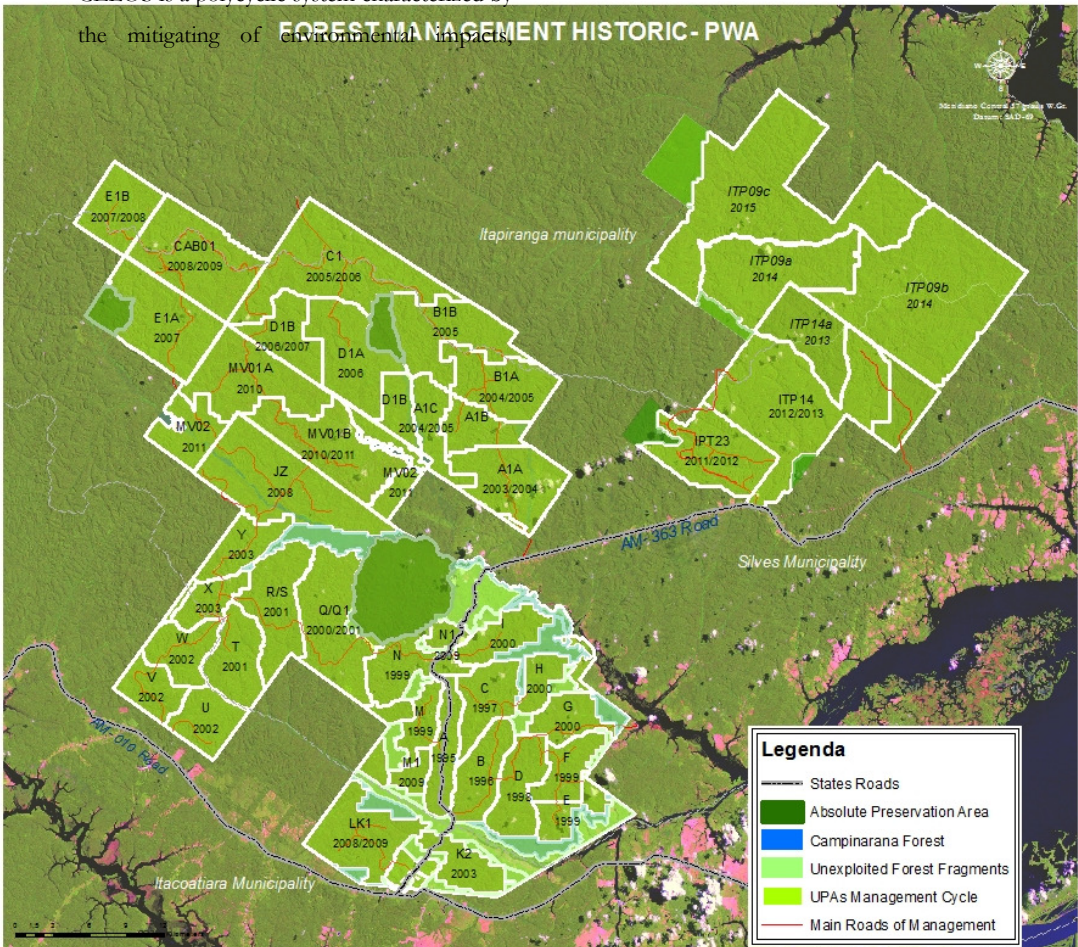
Forestry Management Characterization

The scientific basis of PWA's Management Plan comes from the CELOS System, it is developed in Suriname, by the University of Wageningen in the Netherlands, and it is suitable for the local conditions of the Amazon, through research conducted by *EMBRAPA* (Brazilian Corporation of Agricultural Research) and *INPA* (National Institute of Amazonian Research).

CELOS is a polycyclic system characterized by the mitigating of environmental impacts,

based on **natural regeneration**, which ensures **future harvests** and the supply of raw materials, in this case, timber, for the long-term.

Forestry harvesting is done by periods, in smaller units called UPAs (Annual Production Units). The company will only return to harvest in UPA A, explored in 1995, in the year 2030.





Forestry Management Phase 1- Prior to Harvest



Forest Inventory

During the planning phase of Forestry Management, the inventory of commercial species, and those that may become commercial in the future, is carefully carried out by the prospecting team.

The team identifies the trees using cards and by collecting important information, such as: diameter at breast height (DBH), the name of the species, the quality and its location on the map, as well as a detailed mapping of waterways and the relief of the area.

All trees acquire coordinates with a global reference, through Geographic Information System software (GIS). These coordinates, and other data, are scanned and organized in a rich database for the company to have total control and security of this information, in the further management phases.

“PWA/Mil Madeiras retains one of the largest Forestry Management databases in the world, there are currently more than 3 million records of trees”.

With a good forest inventory, the implementation of the company's forest harvesting planning phase becomes possible. At this stage, criteria for the selection of trees are respected, which are essential for environmental conservation.

EXAMPLE OF TREES THAT CANNOT BE HARVESTED:

✓ TREES LOCATED IN THE APP (PERMANENT PRESERVATION AREA).

✓ TREE CONTAINING BIRD'S NEST OR SHELTER FOR OTHER ANIMALS.

✓ TREE SPECIES PROTECTED BY LAW.

✓ MOTHER TREES (SOWING).

Forestry Management

Phase 2 - During the Harvest

The forest harvesting operation is the stage where interventions are needed in the forest. So that the changes in relation to the **natural state of the forest** are minimal, the company adopts a **differentiated management system**, in which its activities are designed to **mitigate the impacts** on the environment. This system is known as reduced-impact forestry management.

DIRECTIONAL CUT OPERATION



The biggest responsibility of the cut team is to direct the fall of the trees to avoid damaging the surrounding trees, and thus reduce the impact on the forest. This type of cut is called directional cut, where the tree is felled exactly at the desired place.

On average, in an area of one hectare (approximately a football field), only four trees are harvested.

LOG WINCHING OPERATION (PRE-DRAG)

Subsequent to the cut, the log is surrounded by a steel cable and then winched by a tractor to the drag track, this activity is known as **pre-drag**. This procedure is a PWA differential. The objective is to **minimize the entry of heavy machinery** in the effective handling area, and, consequently, reduce openings in the forest and soil compaction, thereby protecting the **natural regeneration** and the seed bank, essential for future afforestation.



Log winching activity PWA Management Area



LOG DRAGGING OPERATION

The logs, laid in the drag track, are dragged to the temporary yards by a special tractor (skidder), which only transits on these tracks, thus not requiring the entry of these machines into the forest area.

All the logs are stacked in yards, arranged to facilitate the handling and identification thereof. All forest teams are well trained to do their jobs properly, **avoiding waste** and, consequently, the increase of environmental impacts.



The numbering accompanying the log is linked to the number of the tree it came from. This way it can be found within the handling area, **in the exact place of origin of the logs**.

This system is called the **chain of custody**, thus the Forestry Management Certificate demonstrates to society the legal origin of the product.



LOG TRANSPORTATION OPERATION

Within the forestry sector of the company, the log transportation activity, from the forest to the industrial area, is characterized as the final stage of the system responsible for the custody of the wood.

“Before being loaded into the truck, the logs go through a check and their information are registered on the chain of custody form, with its entire history being recorded on this”.

Upon arrival at the industrial area, the logs enter the custody of the sawmill, where the systematic stock control is carried out. Thus, the company proves the legal origin of all certified raw materials.

The logs are transported in trucks suitable for the activity, always seeking safety and shipping within standard traffic laws. After loading, the trucks continue on to the mobile office located within the handling area, where the control of the logs is carried out along with the issue, via the Internet, of the DOF (Forest Origin Document).



FORESTRY WASTE COLLECTION

After finishing the log harvesting activities, due to the existing demand, the company performs the **reuse of forest residues**. This deals with the **biomass resulting from the crown of the trees** harvested nearby roads and the trees removed for conversion in the infrastructure area, necessary for management.



PVA Management Area

WITH THE REUSE OF THIS BIOMASS, THE COMPANY SEARCHES FOR GOOD FOREST MANAGEMENT:



- ✓ **Mitigating the impacts in the forest, resulting from the generation of waste in management activities.**
- ✓ **Promoting the sustainable use of forest resources.**
- ✓ **Providing raw materials for the generation of renewable energy.**



Forestry Management Phase 3 - After the Harvest

At the end of the forest harvesting, the company issues the **activity report** to IBAMA (Brazilian Institute for the Environment and Renewable Natural Resources). In this report , we show the amount of harvested logs and all the infrastructure installed at the UPA.

This is a channel through which the company demonstrates to society all their **commitment and responsibility** to the environment and especially with the important Amazon Rainforest.

Specifications regarding the use of Forestry Management

Breakdown	Area (ha)	Percentage
Effective Forestry Management Area	140,975.82	69.8%
Permanent Preservation Area (APP)	33,207.93	16.4%
Absolute Preservation Area	10,661.72	5.3%
Productive forest without exploration	6,289.43	3.1%
Campinarana Forest	4,605.49	2.3%
Non Productive Forest	3,744.03	1.9%
Area reserved for Communities	2,620.34	1.3%
TOTAL	202,104.76	100.0%

Monitoring of the Forest

PW/Mil Madeiras maintains a dedicated team responsible for the **inventory monitoring** of the forest. This team installs permanent plots, where the trees measurements are taken before the exploration and systematically in the years following the exploration.

The objective is to monitor **the reaction of the forest** after the harvest and to estimate the amount of existing wood in the next cycle.



Current framework for implementation of the monitoring

Period	Measured Plots	Remeasured Plots
2003 to 2014	402	172
Area (ha)	201	93



The company also simultaneously monitors its **forestry activities**. As the activities are developed, a team shall check whether the infrastructure and implementation methods are in accordance with the **environmental criteria** described in its procedures.

As non-compliances are identified, those responsible act on the focus of the problem in a timely manner, promoting corrective actions.



“MONITORING PROVIDES THE IDENTIFICATION OF THE ORIGIN OF ENVIRONMENTAL IMPACTS, HEREBY THE COMPANY PROMOTES MITIGATING AND COMPENSATORY PREVENTIVE ACTIONS, CONSISTENT WITH THE MANAGEMENT REALITY”.



HIGH CONSERVATION VALUE ATTRIBUTES - HCVA



PWA Management Area

In the case of upland forests in the Brazilian Amazon, HCVA's are considered as areas with great values of cultural, ecological and scenic significance, for threatened ecosystems, areas of production, basic services and the livelihood of local populations (Pro Forest, 2003).

The company defines the HCVA's through environmental and social surveys. Their prospecting team is trained to identify and map these forest sites.

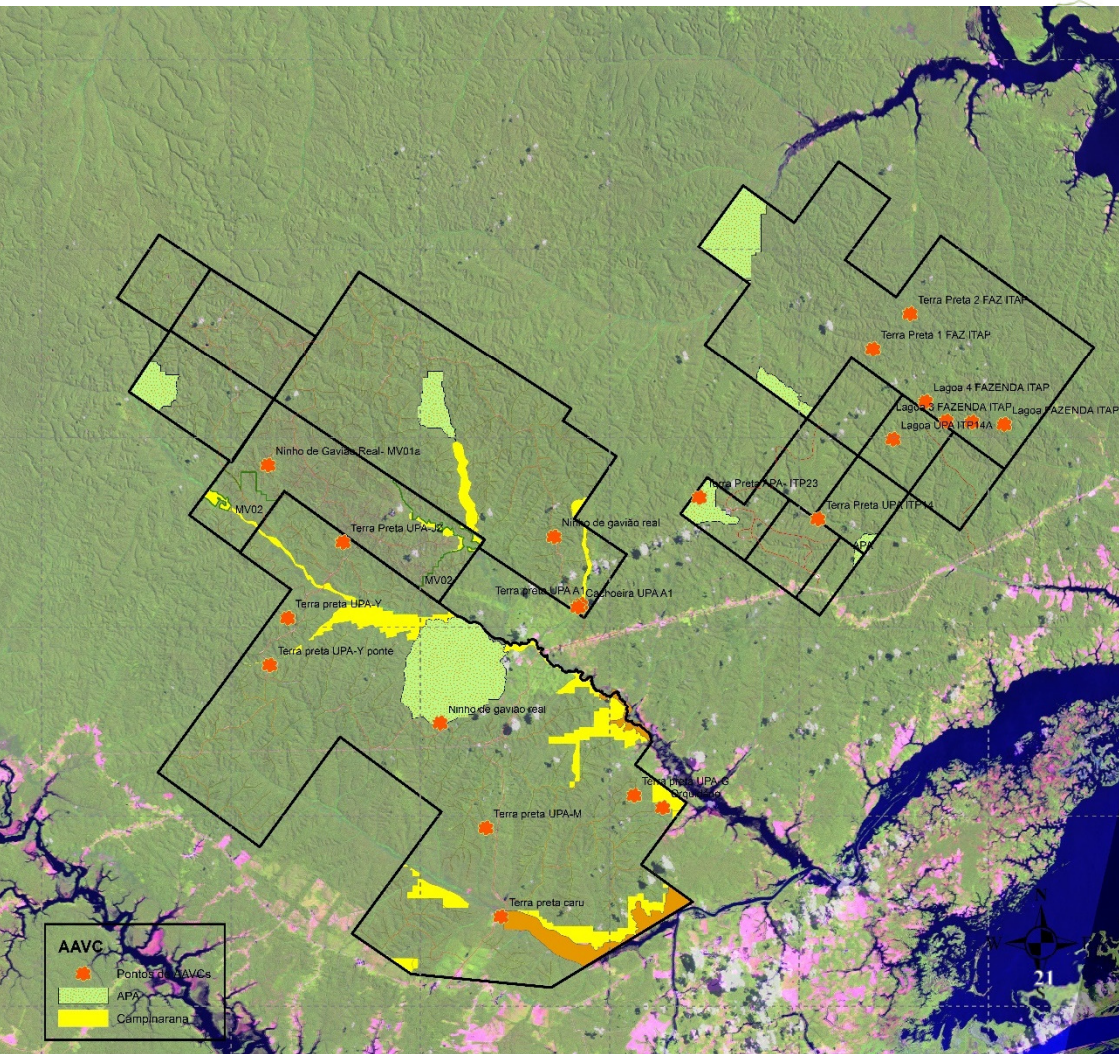


The HCVA's can be defined as, for example: area with waterfall, rare bird's nest, orchidarium, Indian's black earth. All of these, already identified in the area of the company. The company carries out an annual plan of

monitoring for HCVA's. The goal is to identify and report the condition thereof with respect to any activity impacting either the company or third parties.



MAP OF HIGH CONSERVATION VALUE ATTRIBUTES



SOCIAL AND ENVIRONMENTAL RESPONSIBILITY

PWA assumes a commitment to society in general, always participating in local development, promoting and supporting scientific, cultural and socio-environmental projects in the region.



“Novo Paraíso” Community, Itacoatiara-AM

The company has an social and environmental policy directed at the social mission of the employees, and in the **relationship with local society**.

The company's social team's mission is: to promote and articulate the social and environmental development of Precious Woods Amazon and the various segments of society, to consolidate **responsibility** on the dynamics of the Amazon Region, via forestry management.

The actions taken by social and environmental programs of the company have their public defined as:

Civil Society, Employees, **Scientific Institutions and Communities** with traditional inhabitants.



COMMITMENT TO EMPLOYEES

There are ombudsman programs to facilitate communication between employees and the company's board. This communication provides a strategic plan to meet the demands of the staff.

The goal is to make PWA's shares more efficient and participatory in **compliance with labor laws**. The targets are, above all, competency in **occupational safety** and in the welfare of its employees.



PWA ALWAYS SEEKS AN ONGOING AND TRANSPARENT RELATIONSHIP WITH THEIR EMPLOYEES' TRADE UNION REPRESENTATIVES.

Myclimate Archives – PWA (Precious Woods Amazon)

SUPPORT FOR SCIENTIFIC RESEARCH

PWA has signed agreements with research institutions succeeding in carrying out **scientific projects**, such as the UFAM (Federal University of Amazonas) and INPA (National Institute for Amazonian Research). With these agreements, the company **consolidates one of its principles**, which is to maintain its Forestry Management area like a large laboratory.

The big payoff is the **exchange of experiences**, mutual assistance and exchange between the company and the institutions, where the top prize is to promote knowledge and education for society.

The company is also open to visits from various organizations in the world, always seeking access for all to the techniques of **reduced impact management**.

INPA Archives – PWA Forestry Management Area

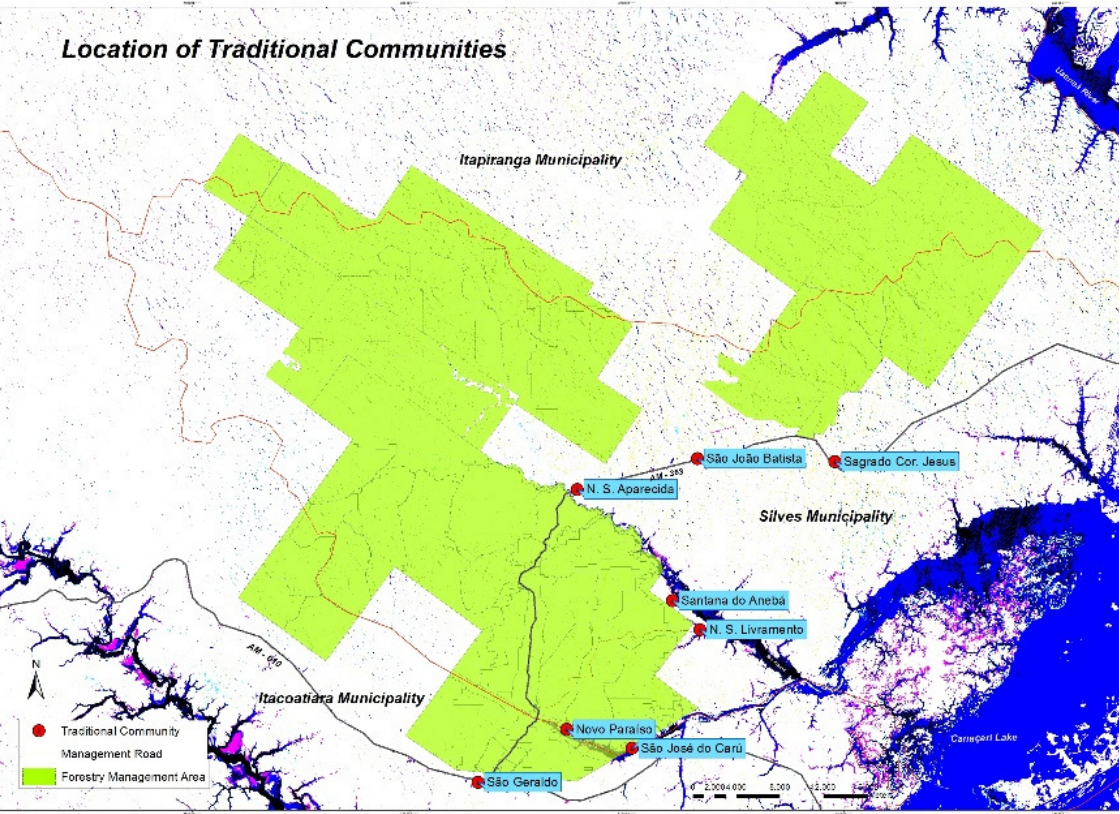


The PWA Management Area was one of the research fields chosen by the CADAF (Carbon Dynamics of the Amazonian Forest) Project. This project is the result of a partnership between Brazil and Japan to monitor the dynamics of carbon in managed and unmanaged forests in the Amazon. Participants Institutes were: National Institute for Amazonian Research (INPA) and the National Institute for Space Research (INPE) in Brazil, and the institutes of Forests and Forestry Research (FFPRI) and the University of Tokyo, in Japan.

In the image we see a **DRONE** (unmanned aerial vehicle), equipped with cameras and laser sensors. The **DRONE** is a modern tool used by the CADAF project for forest monitoring.

TRADITIONAL COMMUNITIES

There are several social and environmental programs geared towards traditional communities installed in areas adjacent to the company's forestry management, always with open communication and mutual relationships between the company and the community.



- *Ombudsman programs in the communities*

The objective of this program is to have a fluent **communication channel** between the community and the company's board.

Thus, so that there are satisfactory results, the mechanisms of the “community ombudsman” work in stages:



“N.S. do Livramento” Community, Silves-AM

The main steps of the ombudsman program are:

- Step 1-** Listen to the residents
- Step 2-** Pass on the demands
- Step 3-** Answer the questions
- Step 4-** Carry out whatever is possible



- *Work opportunities*

The company has a job creation program for the community members, which are filled up both in the forestry sector, and in the industrial area.

- *Income generating programs*

With this program, the company promotes the **purchase of food products** directly from the community to be intended for the supply of its cafeterias.

The company also promotes, in partnership with other organizations, the **training of local residents**, always looking for sustainable alternatives. Thus, in addition to encouraging the **sustainable use of forest resources**, the company also helps in the development of local communities, providing new options for a source of income for residents.



The **Wood Carving** course promoted in partnership with the CETAM (Center for Technological Education in the Amazon), is an example of success in the training of residents from local communities.

- *Environmental education programs*

By means of this program, the company holds events that clarify the importance of **environmental conservation** and the responsible use of natural resources by the community, as well as knowledge of **forestry management** activities conducted by the company.



“Santiana do Anelbá”, Community, Silves-AM

The training course on the **Sustainable Use of Natural Resources** offered to local residents, in a company partnership with CETAM and IDAM (Amazonas State Institute for Agricultural Development and Sustainable Forestry), is an example of social action that values education and good interaction between human beings and the environment.

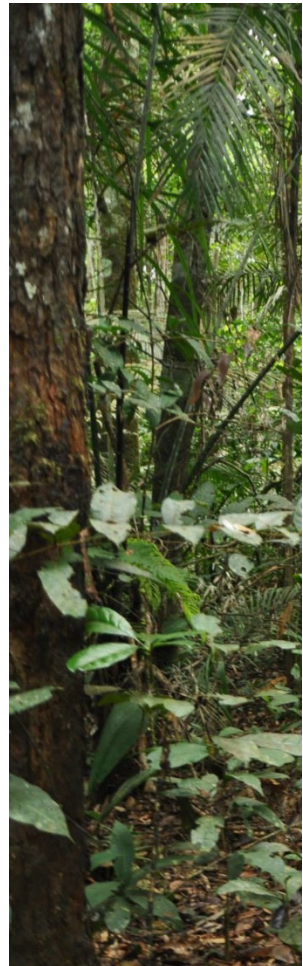


- **Management of Non-Timber**

The company always seeks to promote the realization of new development alternatives, from an environmental point of view, so much so that, since 2008, it maintains a partnership with *Associação Vida Verde da Amazônia-AVIVE* [Green Life Association of the Amazon], in the municipality of Silves, Amazonas State. Through this agreement, the company subsidizes activities in the extraction of **Non-Timber Forest Products**, in its Forestry Management area, in order to generate income for local communities through sustainable activities.

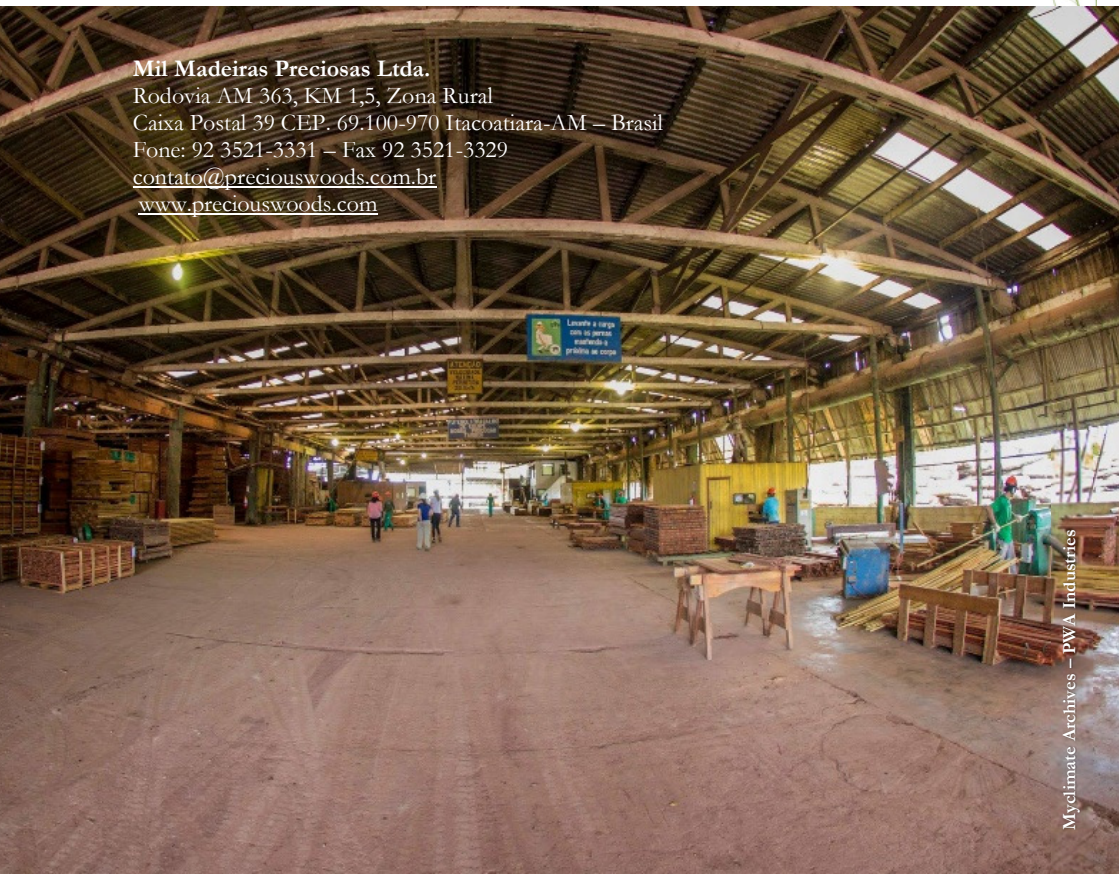
Today the company manages, along with AVIVE, products such as: Copaiba oil (*Copaifera sp*), Tonka seeds (*Dipteryx odorata*) and Breu resin (*Protium spp*).

More information about these products from sustainable sources, at: www.avive.org.br



“Find out more about the group and our certified products.”

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