



## The role of FSC certification to maintain sustainability: the case of Precious Woods Amazon Company

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### Abstract

The objective of this study is to analyze the role of the Forest Stewardship Council (FSC) for the maintenance of sustainability in the Amazon, considering the specific case of the timber *Precious Woods Amazon* (PWA), trying to understand the fundamental aspects of this certification program, the environmental benefits generated and the challenges for the conservation and promotion of sustainable development of the Amazon. As base of information, essentially was used the sources of data of the Forest Stewardship Council data (FSC), the *Institute of Agricultural and Forest Management and Certification* (IMAFLORA) and Precious Woods Amazon (PWA). The FSC certification has been considered an important instrument for the conservation of global sustainability, through their strict principles and criteria that enable forest management occurs in an environmentally appropriate, socially beneficial and economically viable. In this perspective, the PWA has contributed significantly to the conservation of the Amazon, making it a world reference in sustainable use of forests. Despite the harsh criticism existing on the veracity of their practices, the available data revealed to be unquestionable the importance of PWA promoting sustainable development in the region, because since its inception the protected areas have been expanded, in addition, the company generates decent jobs, clean energy and income for these isolated areas in the interior of Amazon, also fostering productive traditional practices in the communities that surround them. Many are the challenges to market expansion certificate in the Amazon, requiring efficient actions to foster it, promoting the spread of information, supervision and implementation of beneficial policies directed to local conditions, so that forest certification become a reality in the market, not only internationally, but also location. Environmental certification is a green and responsible development, becoming a worldwide trend at recent times.

**Keywords:** FSC certification. Environmental conservation. Sustainable forest management. PWA.

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## Introduction

The market has great importance for the growth and development of nations and can be very efficient in the allocation of scarce resources, but on the other hand it has flaws that essentially affect the natural resources, which are limited, without such goods economic system can not work and much less develop, requiring state intervention to minimize the so-called "market failures".

Market failures are more aggressive in poor countries, significantly damaging their growth process and committing all the quality of the environment. They are in many cases the lack of information on the ecological, technical and economic, used in the choice of policy instruments, requiring a thorough understanding of political economy to the formulation and use of management tools in specific contexts (ESTERNER E CORIA, 2012).

Environmental management aims at management of natural resources aimed at their conservation and preservation for future generations. For that, managers should use an effective public policy, efficient and equitable, to set goals that are consistent with reality and appropriate instruments to confront the primary issues (CARLOWITZ, 1973 cited GROBER, 2002).

The environmental management instruments correspond to the mechanisms used by the government in order to achieve the objectives of environmental policy, thus enabling resolve gaps, mainly related to inappropriate management of forests, that commits the maintenance of biodiversity, causing serious environmental consequences, not only at local levels, but also global. Since the forest sector is among the largest emitters of greenhouse gases, resulting from the loss of forest cover, which makes the carbon dioxide ceases to be absorbed, in addition to forest residues (cut trees, rotting and burning) which emit gases stored in their leaves and bole (UNEP, 2012).

In this perspective, certification is considered a potential management tool of forests, through the participation of certified companies wishing to demonstrate safety and transparency to their customers, producing products with sustainable sources, confronting the market failures such as information asymmetries which committed to maintaining environmental sustainability.

The cooperation of agents with insider information contributes to environmentally friendly economic activities become more productive, since the state does not have reliable information of pollution damage and cost reduction (CORIA AND ESTERNER, 2012). Therefore, certification provides knowledge about the environmental sustainability of various forestry practices to consumers and may modify the consumption and production of a society, inserting new socially responsible and sustainable standards. In the long term, the market will adapt as a result of the demands and choices of its consumers (VAN DER MEER, 2006).

Sustainable forest management was pioneered marked by the Forest Stewardship Council (FSC), created in 1993, as the only forest certification system that incorporates equally the interests of social, environmental and economic groups, allowing consumers and companies to take conscious decisions to purchase, generating social, economic and environmental benefits, corresponding to forest certification system with larger international credibility. In Brazil, the FSC was formalized in 2001 as the

Brazilian Forest Stewardship Council (FSC Brazil), the result of forest certification advancement in the country. The creation of Brazilian standards for plantations, the Amazon forest land and other forest types found in the country, facilitate and homogenize the performance of certification, ensuring the competitiveness of Brazilian enterprises (FSC, 2014).

In the case of Amazon, it is worth noting that even admittedly being the largest biome in the world with rich biodiversity in forests, wildlife, waterways and countless natural resources, there is a great need for targeted policies to its reality, which reconcile goals of conservation and sustainable development, keeping the forest standing and encouraging non-predatory practices. In this sense, the FSC is presenting an important environmental policy instrument for the promotion of sustainable management and conservation of their forests. Because forest management is the only activity that makes it possible to reconcile the productive practice for economic purposes in a responsible manner, ensuring the sustainability of the forest, promoting beneficial and permanent effects, at social, environmental and economic ways. (WWF, 2012).

The company Precious Woods Amazon (PWA) was the first to receive the Green Seal FSC in the Amazon, through rigorous standards applied by the Institute of Agricultural and Forest Management and Certification (IMAFLORA). The PWA operates in the Amazon since 1994, with the aim of developing sustainable forest management activities, with low environmental impact, operating in a socially fair, economically viable and with due responsibility to the environment, contributing with the promotion of development sustainable in the region.

The purpose of this article is to analyze the role of certification for maintenance of sustainability in the Amazon, considering the case of the company Precious Woods Amazon (PWA), trying to understand its main features, fundamental aspects of its certification program, social and environmental benefits generated. Also checking some existing criticism about its effectiveness in balancing economic goals with social and environmental, as well as the challenges for the maintenance of sustainability and promoting sustainable development of the region.

For this study was used as background information data sources of Forest Stewardship Council (FSC), the Institute of Management and Forest and Agricultural Certification (IMAFLORA), Precious Woods Amazon (PWA), as well as their respective annual reports and public summaries were also used theoretical information of important bibliographical sources on the subject to support the analysis.

The paper is organized as follows: The first chapter is devoted to a theoretical approach on the main aspects of forest management, historical background and existing instruments by introducing the importance of environmental certification. The second chapter turns to the analysis of environmental certification, with emphasis on FSC, characteristics, differences and prospects, considering the global, national and regional aspects. The third chapter is dedicated to present the case of the PWA as a company certified in the Amazon, exposing the fundamental aspects of its certification program (FSC), benefits, and challenges faced criticism for maintaining the sustainability and promoting sustainable development in the region. Finally, there were the closing remarks obtained in this study.

## Some theoretical considerations about the forest management process

### *Historical background*

Forests are essential for the maintenance of biodiversity and human life, presenting a lot of essential functions for the environmental balance. Above all, the last decades have been marked by the intensification of deforestation at nations, generating large losses at ecosystem and compromising the future of the planet.

According to Sterner and Coria (2012) deforestation can cause huge environmental damage such as soil erosion, destruction of the downstream ecosystem, dams, rivers, among many others, impacting directly the poorest local populations, who are totally dependent on natural resources, moreover, its effects reach global levels, leading to climate change and increased of carbon dioxide emissions.

The international crisis in the forests intensified in the 1980s, attracting the attention of the general public, media and political authorities, due to the advance of deforestation, constantly threatening the maintenance of forest biodiversity and ecological functions, also affecting land rights of communities and indigenous people (Elliot, 2000). Such troubling questions were aimed, in general, to consider a potential forest management strategy that would ensure the existence and maintenance of forests.

According to Gupta et. al. (2013) to deal with conflicts between economic and environmental concerns, in 1983 the United Nations appointed an international commission to propose development strategies that consider environmental issues it's chaired by Norwegian Prime Minister Gro Harlem Brundtland, resulted in the report "Our Common Future", known as the Brundtland report (1987).

This report helped to popularize the term sustainable development, defining it as the one that meets the needs of the present without compromising the ability of future generations to meet their needs, and is therefore a milestone that led to a series of actions. In 1985 began the Tropical Forestry Action Plan (TFAP) and in 1986 the establishment of the International Tropical Timber Organization (ITTO), corresponding to mechanisms for funding, and technical assistance projects in developing countries.

However, the increases in funding and political support, derived from TFAP and ITTO, have not reduced the deforestation in the early 1990s, resulting in appeals of environmental NGOs, the United Nations Development Program and the World Bank to reform the international collaboration of forests.

In 1992, the United Nations Conference on Environment and Development (UNCED), or so-called "Earth Summit" in Rio de Janeiro, rightly highlighted the need of a reform, resulting in a set of forestry principles, which served as the basis for several other international conventions on biodiversity, climate change, desertification and later for international forest policy.

According to Elliot (2000) after the 1992 conference, the United Nations Commission on Sustainable Development (CSD) was established to monitor the progress of Agenda 21, also a result of such a conference, providing the basis for sustainable development strategies. A year later in Montreal many industrialized nations of the world,

have developed a set of criteria and indicators for the conservation and sustainable management of forests, the called The Montreal Process. In 1995 the CSD established the Intergovernmental Forests Panel (IFP) as an action to review the national and international decisions relating to forests and in 1997 the International Forest Forum (IFF) was created to continue this work.

It was observed, even though insufficiently, a series of actions aimed at forest protection, all aimed at promoting international cooperation for the conservation of the forest. The creation of environmental certification in 1989, NGOs and other initiatives, led the ITTO to examine the issue of labeling.

Sterner and Coria (2012) emphasize this increased interest in forestry issues, highlighting the partnership between the World Bank and the World Wide Fund for Nature (WWF) called "Alliance for forests", created in 1998 in response to the continuing decline of biodiversity global forest, aiming at the protection of forests and the adoption of better international practices in forest management. Counting decisively with the participation of governments, private sector and civil society.

According to information from the WWF (2005) since the alliance by forests was created, it had contributed to the establishment of 50 million hectares of new protected areas, improving the management of 70 million hectares of conservation areas and responsible management of about 22 million hectares of forests exploited for trade. Being an important element to in order to facilitate regional initiatives in developing countries.

## **Sustainable Forest Management (SFM) and tools for forest management**

The Sustainable Forest Management (SFM) is presented as a based concept that concerns as regards the practice of modern forestry, recognizing the necessity to balance the social, ecological and economic issues related to forests (MCPFE, 2003). That was described by the International Organization Tropical timber (IOT) as the forest management process to achieve the objectives relating to the production of a continuous flow of forest goods and services, without undue reduction of the values inherent in future productivity and without undue effects on the physical and social environment (ITTO, 2008).

This means that forestry should not undermine the ability of forests to provide environmental goods inherent to them, such as wood, water, among many others, thereby maintaining its biodiversity. Thus, the SFM is a series of guided principles developed by international community, adapted and adopted by countries in order to stand out in terms of its forestry at international level, being an inherent certification objective (Gupta, 2013).

Many political authorities, or citizens associate the definition of sustainability to SFM, and the sustainability longer refers to a set of ideas than something more concrete and measurable, so many forest certification approaches require the SFM but is vague and in some cases even misleading, as this principle (VOGT, et. al. 1999).

Many instruments are used in forest management, including subsidies, taxes and regulations of forestry practices. Above all, according to Sterner and Coria (2012) in recent years, three of them had special mention:

- a) **The certification:** seen as an initiative of a country to ensure the existence of forest products from sustainable forests
- b) **The international carbon offsets:** it's international payments to protect the carbon already captured in mature forests to help mitigate climate change;
- c) **Changes in property rights:** The government presents itself as the largest owner of forestland in most countries, transferring ownership of degraded forest rights to local communities facing a number of challenges for a more effective use of land.

Also according to Sterner and Coria (2012) certification, the international carbon offsets and changes in property rights correspond actually a potential opportunity for the formulation of policies of a country, in the preservation of biodiversity and climate change mitigation.

The certification is an instrument of economic policy with environmental and business objectives. According to OECD (1991), economic policy instruments for environmental protection are defined as those that affect the costs and benefits of alternative actions open to economic agents, with effects that influence positively the environment.

Environmental certification is a group of mechanisms involving the collaboration and dialogue between the protection of the environment, the public and the polluters, through voluntary agreements, along with labeling and environmental auditing. However, it cannot replace instruments such as regulation or supervision (CORIA AND STERNER, 2011). The ultimate goal, which certified forests should aim, can only be achieved when management standards, are better prepared (VOGT, ET. AL. 1999). The subsequent chapter will discuss in more detail the role of certification in this process.

## **The role of certification for maintaining environmental sustainability**

### **Origin and certification goals**

Environmental certification stemmed from the need to promote sustainable management of tropical forests, through labeling, indicating that the products come from forests that are managed responsibly, with greater support from environmentally oriented consumers.

In the late 1980s, it intensified the interest in the use of economic incentives to improve the management of forest resources and environmental labeling (OECD, 1989). The relationship between trade and the environment was inserted in international political agendas, however, the lack of feasibility studies for this purpose by governments and organizations, motivated NGOs to move forward in creating their own labeling systems. The certification was gaining space in this quarrelsome scenario, emerging in the 1990s as a political instrument, in order to mitigate and solve problems of deforestation and forest degradation.

According to Gupta (2013), certification was recommended in 1991 in Caring for the Earth, published jointly by the World Conservation Union (IUCN), United

Nations Environment Program (UNEP) and the World Wide Fund for Nature (WWF). Moreover, in 1993 in a publication called *Surviving the Cut, the World Resources Institute*, a positive assessment relevant to certification was performed, revealing its importance for sustainable forestry. Since then, forest certification has been proposed as a tool to improve the management of natural resources.

Forest certification was just introduced in response to the forest crisis, with regard to deforestation, forest degradation and maintaining biodiversity, and facing initial concept to address the problems in the tropics, expanding later to all types of climatic forests (VOG et. al.), corresponding therefore to a potential tool to promote sustainable forest management.

Certification therefore corresponds to a relatively recent phenomenon that has had growing impact on the market, having aroused interest among economic agents involved in the production of wood and concerned with the sustainable management, representing an effective tool to demonstrate, through a green label, that their forests are sustainably managed and voluntarily. The certification is considered by national and international agencies, the real solution for many other environmental problems such as global warming, carbon sequestration in forests, and contribute to achieving sustainable development objectives.

The literature shows primary and secondary objectives of forest certification, and the second side tend to vary widely, depending on the program (Gupta, 2013).

The primary objectives are: 1) improve the environmental, social and economic quality and management; 2) ensure access to the market for certified products, particularly those with high environmental awareness. As for the secondary objectives correspond to better control working operations and reduction of that illegal and greater recovery of royalties and taxes. As the criteria and indicators used in environmental certification, these were chosen taking into account aspects such as respect for the law and human rights, the importance of nature and the promotion of alternatives to the consumption of forest products, generating socio-economic benefits. Thus, all initiatives to develop criteria and indicators for forest certification should provide a common framework allowing describe, monitor and evaluate in long-term, contributing to sustainable forest management (WIJEWARDENA, 1998).

## **The Forest Stewardship Council (FSC)**

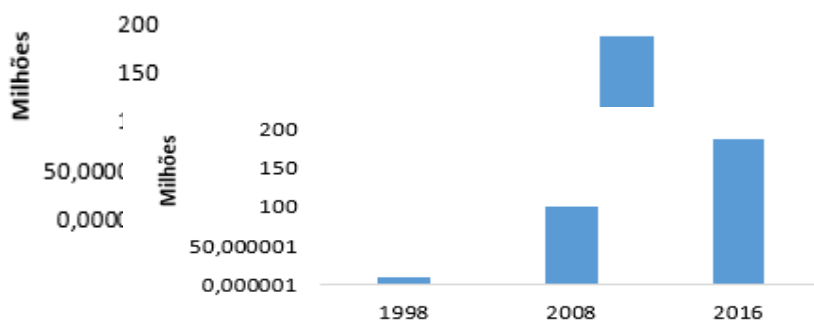
The Forest Stewardship Council (FSC) is an international non-governmental organization, founded in 1993 by the association of environmental groups timber trade, forestry, indigenous peoples' organizations, community forestry groups and worldwide certification organizations of forest products whose office is located in Oaxaca / Mexico (STERNER AND CORIA, 2012).

The creation of the FSC resulted from the concern with the rapid deforestation, environmental degradation and social exclusion, when a group of loggers, traders, representatives of environmental organizations and human rights met in California in 1990, addressing the need for a system that could reliably identify well-managed forests, as responsible productive sources. Only three years later, was held in Toronto, Canada, the Assembly of the FSC Foundation, as a follow up of the United Nations Con-

ference about environment in 1992, to promote the management of forests in environmentally sound world, socially beneficial and economically viable (FSC, 2014).

Environmentally appropriate forest management ensures that the production of timber, non-timber products and ecosystem services occur in order to maintain forest biodiversity, productivity and ecological processes. Already socially beneficial forest management enables local people and society to enjoy long-term benefits, also providing strong incentives for local people to sustain their forest resources, adhering to long-term plans management. Finally, economically viable forest management means that forest operations are structured and managed to be sufficiently profitable, without generating financial profit at the expense of resources of forest ecosystems, or the affected communities (FSC, 2011).

The FSC therefore corresponds to an international organization that provides a voluntary and independent certification system, allowing certificate holders to market their products and services with green label. Currently, the FSC presents itself as the strongest certification system, internationally, with robust certification criteria and a significant number of companies (FSC, 2012). The Graph 1 show the evolution of FSC



**Graph 1** - Evolution of the FSC certified area (ha) globally, 1998-2016  
Source: FSC (1998-2016)

In 1998, the FSC encompassed around 1 million hectares of land, to around 100 million in 2008 and in 2016 already comprises more than 180 million certified hectares, distributed in 80 countries, with approximately 1,365 certificates. This information show the strong potential for growth of the FSC, given the new market demands and conscious consumption, which proved to be rising in recent decades. Among the countries that currently leads the world rankings with the major hectares of land with FSC certificate, are Canada and Russia, which alone account for almost 50% of the global total. In third and fourth place are the United States and Poland, together totaling more than 20 million ha, accounting for about 11% of the world total (Graph 2).

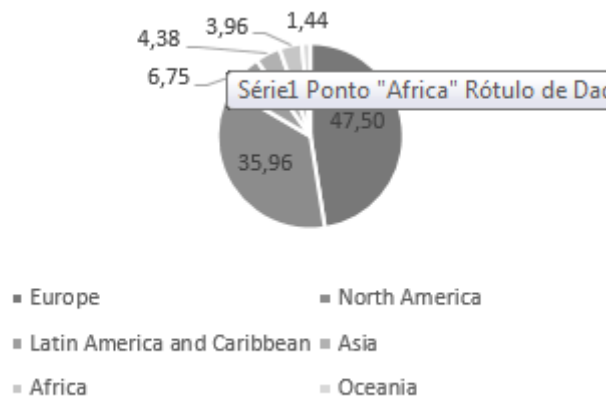




**Graph 2** - Countries with more hectares certified by FSC, 2016

Source: FSC (2016)

It is worth noting that all these countries cited in Graph 2, are located in areas of champions continents FSC certified, in Europe and North America, so that they together comprise more than 155 million hectares, about 83% of all global certified areas (Graph 3).



**Graph 3** - Global Division of FSC certification.

Source: FSC (2016)

In contrast, Oceania, Africa and Asia together do not even 10% of hectares certified. In Latin America and the Caribbean, this reaches only about 7% of global ha (Figure 3). This information confirms the fact that more developed regions are more likely to be certified, the least developed, since certification is a response of voluntary initiatives towards intensification of conscious and sustainable consumption, resulting from new market dynamics that occur primarily in wealthier regions.

## FSC Principles and Criteria

The principles and criteria of FSC describe the essential elements or environmentally appropriate rules, socially beneficial and economically viable forest management. There are ten principles that define that vision, and each is backed by criteria that provide a way to assess their compliance and should be applied in any forest management unit before it can receive FSC certification. Table 1 shows the ten

principles and criteria of FSC.

**Table 1 - Principles and criteria of the FSC**

| Principles |  | Description   |
|------------|--|---|
| 1          | Compliance with Laws and FSC Principles                | Forest management complies with all applicable laws in the country where it operates, regulations, international treaties, conventions and agreements. Obeying all FSC principles and criteria.   |
| 2          | Responsibility and rights of ownership and use of land | Ownership rights and long-term land use must be clearly defined, documented and legally established.  |
| 3          | Rights of indigenous peoples                           | Identify and defend the legal rights of indigenous peoples to ownership, management of land, territories and resources affected by management activities.   |
| 4          | Community relations and workers' rights                | Contribute to maintaining the social and economic well-being of workers and local communities.  |
| 5          | Benefits from the Forest                               | Efficiently manage the many resources and services of the management units, to maintain or improve the long term economic viability and a wide range of environmental and social benefits;  |
| 6          | Values and environmental impacts                       | Maintain, preserve and / or restore ecosystem services and environmental values of the Management Unit, should prevent, repair or mitigate negative environmental impacts.  |
| 7          | Management Planning                                    | Have a coherent management plan with their policies and objectives, commensurate with the scale, intensity and risk of its management activities, should be implemented and maintained based on monitoring information, need to be sufficient to guide and inform the interested and affected parties, justifying management decisions. |
| 8          | Monitoring and Evaluation                              | Demonstrate progress towards achieving the objectives of management, impacts of management activities and conditions of the managed units, which are monitored and assessed in proportion to the intensity or scale risk management activities.   |
| 9          | High conservation values                               | Must maintain and enhance the conservation in Management Unit, through the application of the precautionary approach  |
| 10         | Management implementation activities                   | management activities should be selected according to the economic, environmental and social and objectives and compliance with the principles and criteria.  |

Source: FSC (2015), IMAFLORA (2015)

These principles and criteria are not specific nationally, but are applicable to all types of forests and management unit, so that to occur applicability across countries, has been developed international indicators, a recent review of the principles and criteria, compliance with particular national situation.

Thus, the FSC does not insist on perfection of compliance with such principles as cultural, environmental, economic and social changes are unpredictable and can cause failures in performance. Certification decisions are conducted to measure which management activities satisfy each FSC criteria and the absence to satisfy, and these failures detected by the certification bodies, which may result in smaller or larger corrective actions (CAR) depending on the severity of non-compliance (FSC, 2014).

### Certificate Types

The FSC emits three different types of certificates (FSC, 2014):

- a) **Forest Management:** Granted to managers and owners whose management practices will meet the requirements, principles and criteria of FSC
- b) **Chain of Custody:** Applied to manufacturers, processors and traders of forest

products certified by FSC, checking their materials and products throughout the supply chain.

c) **Controlled Wood:** Avoiding unacceptable wood categories. There can be only a mixture of wood certified FSC labeled in mix products, applies to the case of minor forest productions, such as the Community.

This differentiation relates to the various types of forest products, stages of production and progress, so that the verification of all FSC requirements ensures that materials and products with green label come from clean and responsible sources.

## Steps to obtain FSC certification

The certification process is carried out by independent organizations, called "certification bodies" and is accredited by FSC and authorized to issue certificates, as the FSC itself does not do it. Zanetti (2011) emphasizes that certification can only be a consumer reporting mechanism on the quality of products, if the stamps are issued by legal bodies and institutions, which may occur if the production is really in the national mold of what is defined as sustained production. According to the FSC information (2015) there are five steps to obtain certification:

- a) **Find bodies certification accredited by FSC:** getting the first estimate of costs and time together to certification bodies, which will need basic information about its operation.
- b) **Choose the certification body:** Decide which certification body will work and sign an agreement with the chosen.
- c) **Certification Assessment:** The certification audit is conducted to assess the qualifications of your company for certification, checking their compliance with certain standard, through inspections, processes, public consultations, etc.
- d) **Certification report:** The information obtained in the audit are the basis for the report, decisively contributing to obtaining certification.
- e) **Certification decision:** If positive, the certificate can be received, but if the audit revealed a non-compliance, proof and corrective actions will be required, without which incur the loss of the seal. The certificates are valid for five years.

## FSC in Brazil and the specific case of the Amazon

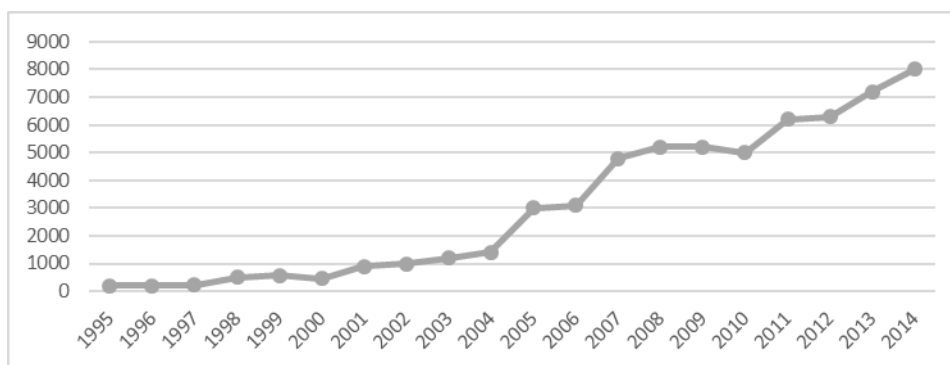
Brazil holds an extensive biological diversity, corresponding to a forest country, as about 60.7% of its territory is composed of natural and planted forests, representing the world's second largest forest area. Above all, the country has steadily lost its bio capacity resulting from predatory exploration of decades. From 2005 to 2010, Brazil had the highest rate of forest loss, corresponding to 39% of the global total deforestation (UNICEF, 2009).

The consequences of these predatory activities in the country are countless, reducing the vegetation, emitting millions of tons of carbon into the atmosphere and destroying forest biodiversity (ADEODATO et al, 2011). Moreover, the illegality of timber production creates effects that extend to the environment and social issues, placing the country a bad image and disadvantages in the global market (May 2006). The Brazilian Forest Code, modified in 2012, perpetuates this situation, since it has

such a complex structure of conformity, leaving holes that make it difficult to verify the compliance of a property, leaving room for deforestation advance (SOARES-FILHO et. al. 2014).

In this perspective, the FSC certification emerged in the country as a potential mechanism for the conservation and sustainable forest management, as a legality assurance, found fertile ground for its establishment, given the major challenges regarding the sustainable management of its natural and planted forests. The FSC in Brazil, was created in 1996, to articulate the decisions around that certification model. Formalized in 2001 through the creation of the Brazilian Forest Stewardship Council, having the main objectives to represent FSC globally, to become reference of good forest management, ensure consistency and credibility of the system and promote the responsible consumption of certified products, enhancing their impact on the market (FSC BRAZIL, 2014).

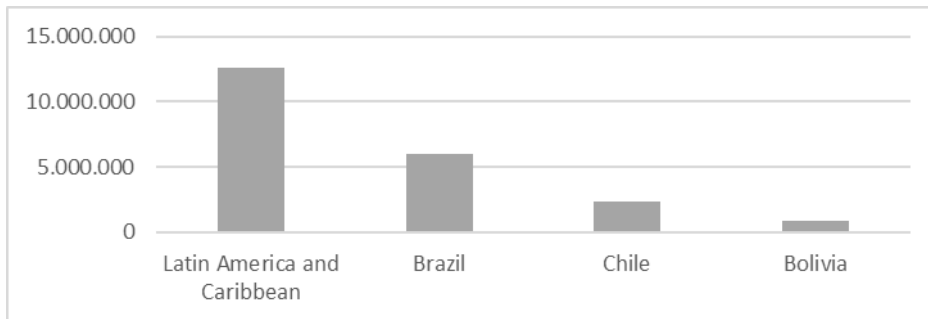
The great advantage of the FSC is its voluntary nature, because if law required it, maybe it may not be as efficient, since many environmental laws do not work in practice. In this case, is needed for State only to support and recognize the certification, since FSC statutes do not allow the involvement of government agencies as partners (IMAFLOA, 2005). It should be highlighted the important role that the Office of Management and Forest and Agricultural Certification (IMAFLOA) plays in this process. Presenting itself as a branch in the country of FSC certification bodies, working since 1995 to promote the conservation and sustainable use of natural resources, responsible for conducting the annual certification and verification procedures of the Sustainable Agriculture Network<sup>1</sup> of Brazil. However, the final decision on the certification is up to Sustainable Farm Certification (SFC), the entity responsible for certifying legal decision in all countries of operation of the Sustainable Agriculture Network, based in Costa Rica (IMAFLOA, 2008). FSC certification in Brazil has shown over the decades, growth trend from the first certificate to the present day. The increase in their areas was more accentuated in 2005, and from 2006 to 2007, the number of hectares certified nearly doubled, with slight decrease in 2010, continuing its growth trend in recent years (Graph 4).



**Graph 4** - FSC evolution in Brazil (ha).  
Source: FSC 2014

<sup>1</sup> The Sustainable Agriculture Network (SAN) consists of eight conservation organizations, independent and non-profit, promoting through certification, environmental conservation, improving the living conditions of rural workers and regional development.

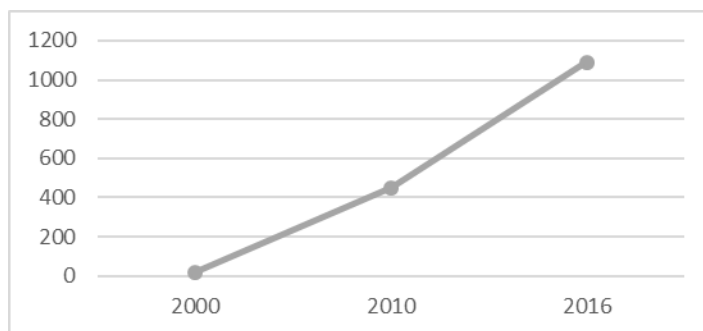
The country currently ranks sixth in terms of ha FSC certified, owning more than 6 million hectares and about 106 certification titles, especially among the countries of Latin America and Caribbean for possessing alone almost half of the total areas certified (Graph 5). Secondly, there is Chile, with just over 2 million ha, followed by Bolivia with only 890 000 ha.



**Graph 5** - Countries of Latin America and the Caribbean with greater ha certified (FSC)

Source: FSC 2016

Regarding the type of certification, chain of custody (CoC) is the one that predominates in the country, corresponding to 1092 certificates, second is the forest management with only 106 certified (FSC, 2016). It is observed in Graph 6 the strong rise of the chain of custody certification, especially since 2010, from just over 400 certificates to over 1000 in just 5 years. This growing trend of FSC certification in the country has contributed significantly to increasing the productivity of Brazilian forest sector, which is increasingly modernized, incorporating new production technologies, genetic seeds, cloning of forest species, following the global trend, modernizing it quickly to ensure competitiveness (MENDES et al., 2003).

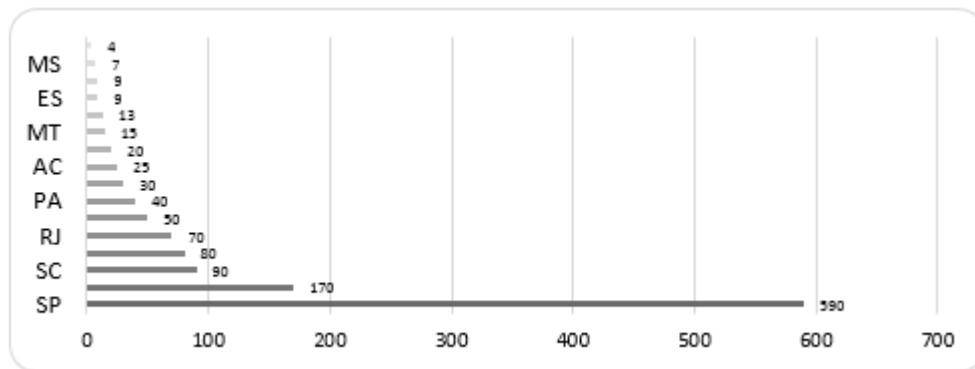


**Graph 6** - CoC evolution in Brazil.

FSC (2000-2016)

Above all, such growth occurs unevenly, and at the more developed regions, such as Southeast and South, concentrate the largest number of certified organizations. Graph 7 shows this phenomenon, revealing the sovereignty of the State of São Paulo, which alone has approximately 600 certified institutions, followed by Paraná with about 180. The other states follow with much lower numbers. Among the states of the

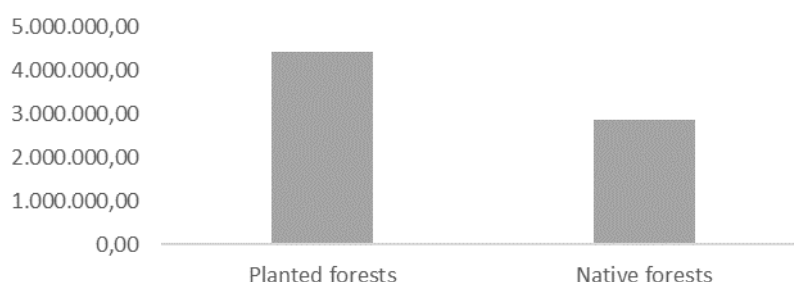
North Region, Pará stands out occupying the seventh place nationally, while the Amazon is among those with the lowest number.



**Graph 7** - United second certificate in Brazilian institutions, 2016

Source: FSC (2016)

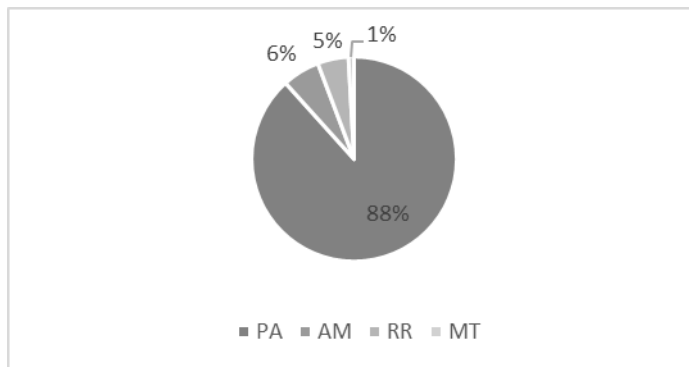
As the division of the Brazilian forest sector, with regard planted forests and native, it was observed that planted comprise the largest number of ha with FSC certification in the country, representing in 2012, about 61% of the national total, which corresponds to just over 4 million ha, while the native forests, comprising around 2.873 million ha certificates (Graph 8). It is worth noting that these planted forests are located in São Paulo, the largest holder of ha with country FSC certification (FSC, 2012).



**Graph 8** - Natural and planted forests (ha) certified by FSC, Brazil, 2012

Source: FSC (2012)

Regarding native forests, these are concentrated mainly in the Amazon (Graph 9), largely in the state of Pará (87%), while the Amazon comprises only 6% of these areas, relatively low levels, given their large native forest areas. Even smaller percentage are found in Roraima (5%) and Mato Grosso (1%).



**Graph 9** - Native Forests FSC Certification: Legal Amazon

Source: FSC (2012)

Despite the slow progress of FSC certification in the Amazon, there are new prospects for the expansion of forest management in the region, mainly related to the implementation of the policy of forest concessions and incentives for community and family forest management. Until 1994, the practice of forest management barely existed in the Amazon, but advances in forest management techniques, pressures for legal and sustainable products in the international market, improvements in monitoring, legislation, among many other measures, made the management forest to expand in this region, even in relatively low proportions. Forest management in Amazon is provided by Law 4.771 / 1965, Article 15, but the decree which regulated only was issued in 1995. Above all, Article 3, Item VI of Law 11.284 / 2006 provides the increase of managed area in the Amazon through public forests for sustainable production management:

Article 3º For the purposes of this Act, considers: "VI -Sustainable forest management. Management of the forest to achieve economic, social and environmental benefits, respecting the support mechanisms of the ecosystem object of management and considering, cumulatively or alternatively, the use of multiple timber species, multi-product and by-products non-timber as well as the use of other goods and services of nature forest;

Even with legal support, there are many challenges to the expansion of certification in the Amazon, especially for the growth of your market. Given the importance of logging in the region and are among the main economic activities, along with mining and agriculture (VERÍSSIMO, et. al., 2006). According to Schulze et al., (2008) the great difficulty in expanding its certificated timber market derives from its high prices, embedded in social and environmental values that make it uncompetitive.

The foreign market is demanding more and more certified products, often to avoid the risk of illegal imports. The same trend has been observed nationally, through the creation of Certified Forest Products Buyers Group in 2000. An initiative of the NGO Friends of the Earth, bringing together companies and public organizations that have committed to buy only products with green seal, resulting in the expansion of conscious consumption, with the support of governments and companies such as Tramontina, Tok & Stok, Faber-Castell, etc (CARNEIRO 2011). In

the case of the State of Amazonas, the challenges to expand the certificate market are very expressive. It needs efficient actions to promote sustainable consumption, such as the expansion of information, supervision and control of illegal activities, so that the forest certification become a consumer reality not only international but also local.

Four were the first companies that obtained the FSC label in the Amazon (Table 2), the PWA being the pioneer, followed by Gethal, Juruá Florestal and Cikel. However, only the PWA and Cikel remain certified. The cancellation of the others stems from problems such as land tenure insecurity and difficulties of legalizing logging with the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA). Gethal Amazon was the only pioneer company that ceased to exist due to problems faced in maintaining their forest operations, losing in 2005 certification, and sold the following year, when it was suspended forest management activity (CARNEIRO, 2007).

**Table 2 - Pioneer Companies with FSC Amazon**

| Pioneer Companies (FSC) | County           | Certification year | Current Certification Situation |
|-------------------------|------------------|--------------------|---------------------------------|
| Precious Woods Amazon   | Itacoatiara (AM) | 1996               | active                          |
| Gethal Amazon           | Manipur (AM)     | 2000               | canceled                        |
| Juruá Florestal         | Mojú (PA)        | 2001               | canceled                        |
| Cikel Brasil Verde      | Paragominas (PA) | 2001               | active                          |

Source: FSC (2010), IMAFLORA, (2010).

This phenomenon points to the fragility of these companies, which are still relatively low. The expansion of the green market, interested in certified products, is essential for the expansion of native wood from the Amazon market, ensuring legality, reducing environmental damage while promoting social benefits, but for this to happen, its activities need to be encouraged with targeted policies beneficial, generating new investments in clean technologies and new production prospects.

## **PWA contribution to the sustainable development of the Amazon**

### **Trajectory of Precious Woods Amazon (PWA)**

The group *Precious Woods (PW)* was created with the objective of investing in sustainable projects with economic viability, while environmentally responsible. It is therefore an investment company, business corporation publicly traded, listed on the stock exchange in Zurich-Switzerland values, aimed at creating sustainable production models (CLAY & AMARAL, 2002).

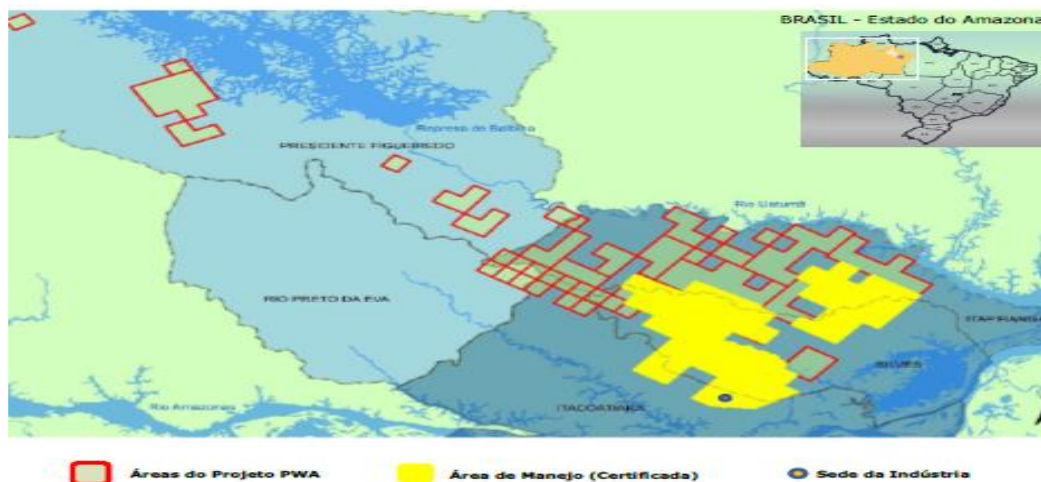
The group's first project was the reforestation of native and exotic species in Costa Rica in 1990, using a plantation management system, funded by contracts with Swiss private investors. Three years later began its activities in Brazil, conducting a study on the feasibility of a sustainable forest management project in the Amazon, beginning in 1994, the first actions facing the company Mil Madeira at Itacoatiara,



which was already operating in the region since 1970 with logging activities (PRECIOUS WOODS, 2016).

Thus, the PWA was established as a pioneer project management of forest resources with low-impact, aiming to become a world reference in economic and environmentally sustainable use of native tropical forests. According to Carneiro (2007), the PWA bought about 80 hectares of land in this region of Itacoatiara, known as the main timber production at Amazonas, guarded by Law No. 4.771 of 1965. In 1994, the PWA conducted forest inventory activities and experimental crop and in 1997 had its first operational year, becoming a pioneer in the country's certification to strict FSC principles and criteria, and was audited and monitored by IMAFLORA (PWA, 2014).

Only in 1999 the company had its first year of positive balance, the value of production could match their costs. In this perspective Benchimol (1998) emphasizes the impossibility of forest management activities of the PWA, arguing their difficulties in reconciling logging to protect the environment, arguing that this development was in fact subsidized by Swiss pension funds and not intended profit, since he had no satisfactory economic returns. Above all, the company has expanded its areas of operation, in 2001 acquired about 42,000 hectares and in 2003 over 75,000, continuing its growth trend in the following years. In 2014, their fields already amounted to 506,698.60 ha, of which 202,104.76 ha correspond to management areas (certified), distributed between the municipalities of Itacoatiara, Silves and Itapiranga (Figure 1).



**Figure 1** - Company Areas PWA, Amazonas State / Brazil.

Source: PWA 2014

The company's headquarters is located on Highway AM-363, Rural Zone of Itacoatiara city and its business focus is on sustainable forestry, sawmill and manufacturing of small parts, made of tropical wood and FSC certified, essentially directed to the external market, Europe, USA, Asia (PW 2016), given the high added value of products, make it uncompetitive internally. Currently, the PWA has FSC chain of custody type (val. 08/2014 to 10/2019) and Forestry type (12/2012 to 11/2017).

## Management plan of forest PWA

The PWA is globally recognized for conducting forest management activities of low impact. Your Management Plan is based on CELOS system (Agricultural University of Wageningen), polycyclic system which is characterized by the reduction of environmental impacts, based on the natural regeneration of forests, adapted to the Amazon through research done by EMBRAPA and INPA. The forest harvesting is carried out periodically in smaller annual production units (UPA). The company will not return to harvest wooden in the UPA explored 35 years after the first harvest cycle. The management is carried out in three stages: before, during and after harvest (Table 3).

**Table 3** - Stages of forest management, PWA.

| Steps |                   | Management activities   |
|-------|-------------------|---|
| 1     | Before harvest    | <ul style="list-style-type: none"> <li>- <b>Careful inventory of 100% of species:</b> identifying trees by plates and collecting important information such as the name of the species, quality, location, etc.</li> <li>- <b>Using a software (Geographic Information System):</b> In 2014 already stored about 3 million trees records.</li> </ul> <p><i><b>Can not be managed:</b> Trees located in areas of permanent preservation, containing nests of birds, or harboring any animal, tree species protected by law and mother trees.</i></p>   |
| 2     | During harvesting | <ul style="list-style-type: none"> <li>- <b>Try to direct the falling trees,</b> so they do not damage the trees around it.</li> <li>- <b>Tree log is surrounded by a steel cable :</b> then carried by a bulldozer to the skid trail, minimizing the entry of heavy machinery and decreasing the opening of forests.</li> <li>- <b>Log is accompanied by numbering the tree that it originated:</b> identifying the exact origin of the logs, the so-called "chain of custody".</li> <li>- <b>Transportation of the forest logs to the industry :</b> before being loaded into the truck, the log goes through a conference. The information is recorded in the form of chain of custody, which is registered all history.</li> <li>- <b>Arriving in industries, the logs enter the mill in custody:</b> where the inventory control is done and may well prove the legal origin of certified raw material.</li> <li>- <b>Forestry waste collection:</b> the company takes advantage of forest waste, using them for power generation and mitigate environmental impacts.</li> </ul> |
| 3     | After             | <ul style="list-style-type: none"> <li>- <b>Emission of IBAMA Activity Report:</b> Comprising the amount of harvested logs, as well as infrastructure UPA</li> </ul>  |

Source: PWA 2014.

The company also conducts monitoring activities, through a specialized team, which are fundamental to identify the source of the environmental impacts. This direct contact with forestry activities enables the promotion of preventive, mitigating and compensating actions that are consistent with the reality of forests (PWA, 2014).

The sustainable use of timber resources raises environmental benefits in order to preserve forests while generating income for the local population, which also contributes to the protection of forests. The following section will focus on just the benefits generated by the PWA in the Amazon.

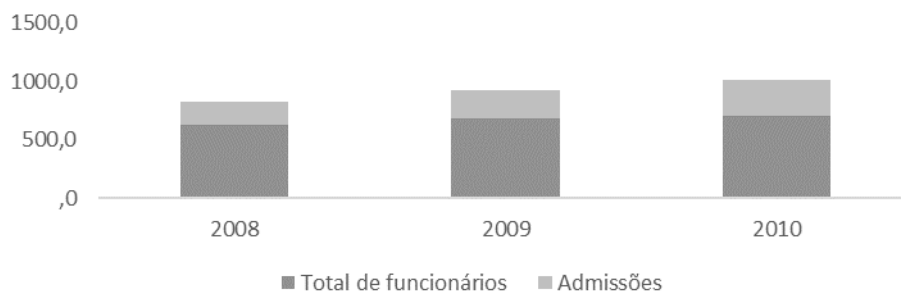
## Socioeconomic and environmental benefits generated by PWA

The PWA takes a social and environmental commitment in the region, seeking to promote sustainable development and consolidating the responsibility on the dynamics of forest management in the Amazon to reach the various social sectors. Among the main benefits generated by the company include:

## Generation of formal employment and income for the Local population

The company generates formal jobs to local communities and municipalities that surround them, characterized by the principles of decent work, compliance with labor laws, taking into account its absorption capacity. Through the ombudsman, the PWA has facilitated the direct and transparent communication with its employees. In addition, it promotes safety, preserving the welfare of their workers.

Graph 10 shows the growth trend in the number of employees and consequently admissions in PWA in the 2008-2010 period, showing that in recent years the company has increased the number of employees, which rose from 630 in 2008 to 707 in 2010. In the case of hiring, they increased around 60%, from 194 in 2008 to 311 in 2010.



**Graph 10** - Evolution of the number of employees and admissions - PWA 2008-2010.  
Source: PWA (2011)

These data show the potential to generate jobs that the company has, causing multiplier effects for the local population. To absorb local labor, the company also provides training of local residents, along with other entities, encouraging the sustainable use of forests and providing new options of income sources. Examples of these initiatives:

- a) Timber slot Course (partnership with Amazon Technological Education Centre - CETAM);
- b) Training course on sustainable use of natural resources (partnership with CETAM and the Agricultural and Forestry Development Institute of the State of Amazonas - IDAM);
- c) Vocational training and skills courses to the production of handicrafts (partnership between CETAM and SENAI).

Other actions taken by the PWA to generate income and endogenous development of municipalities and local communities that surround them are (PWA, 2015):

- a) Purchase of local products supplied by nearby municipalities, such as cassava flour, fruit pulp, tucumã, cassava, rambutã and vegetables used in the company's restaurants.
- b) The Partnership with Viva Verde Association of Amazonia (AVIVE) subsidizes non-wood products extraction activities: oils (copaiba), resins (rosin), seeds, among others, aiming to generate income for local communities with sustainable practices.

In addition, the socioeconomic survey conducted in local communities in 2012 pointed out that the PWA has a good relationship with traditional communities around them, and is considered a good company for the majority of respondents in the survey, which cited a number of benefits received. As the construction of roads, supply of materials for the construction of residential houses, building flour mills (promoting family farming), community centers, etc. (SANTIAGO ET. AL. 2012).

### **Power generation for the region**

As previously mentioned, the PWA uses forest waste resulting from their forest management process for power generation, in partnership with BK Energia. These wastes are burned in a steam turbine thermoelectric system, in an environmentally friendly way, as it prevents them from entering in a state of decomposition and emit methane into the atmosphere, which is highly polluting. Thus, it generates clean electricity for about 50% of the population of Itacoatiara, where energy is traditionally diesel (highly degrading fossil fuel).

The CO<sub>2</sub> emitted is again absorbed by forest growth, completing the cycle of sustainable management. The PWA is a pioneer in providing this clean, renewable energy. With this, the company gained worldwide recognition as the first project that received carbon credits for the use of biomass 100% certified.

### **Support for scientific research**

The company promotes research projects, keeping your area of forest management as a great laboratory, through agreements with research institutions: Federal University of Amazonas (UFAM), National Institute of Amazonian Research (INPA), Brazilian Research Company agriculture (EMBRAPA). Enabling the exchange of experiences, training on handling and safety, contributing to the sustainable development of forests, generating benefits not only environmental, but social and economic.

Some examples of these partnerships, evidenced by the PWA (2015), is the project with EMBRAPA, measuring tree growth and productive capacity of the forest and also the research project "Carbon Dynamics in the Amazon Forest". A partnership with the National Institute for Amazonian Research (INPA), National Institute for Space Research (INPE) and the University of Tokyo, aiming to monitor carbon sequestration in managed forests in the Amazon, using technologies such as DRONE for monitoring.

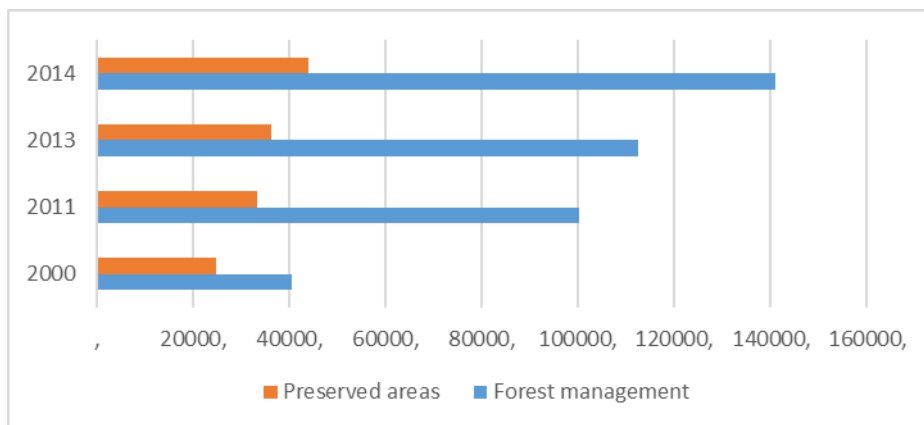
### **It contributes to the reduction of illegal logging and maintenance of preserved areas**

The forest management activities whose principles and certification criteria are met, tends to inhibit and mitigate illegal activities of deforestation in the region. In this perspective, Carneiro (2007) emphasizes the importance of the management activities of the PWA for the conservation of the Amazon forests, so that, according to him, the higher the performance and growth of the company, more

forest will be purchased and saved from destruction and the sooner the better. But for expansion of the company, it should endeavor to present its business model to the capital market convincingly through advertising work for your brand with the green seal, revealing their mission in maintain forest integrity.

The dynamics of unmanaged exploitation favors the disordered occupation, invasion of conservation and indigenous lands. On the other hand, the adoption of responsible management enables the maintenance of forest species and at the same time generates social and economic benefits. In the case of PWA, since the beginning of its management activities, the amount of inventoried trees has grown (CABETE, 2009). This phenomenon does not occur in conventional operation, whose species die even before they are known, because there is not the slightest responsibility for forests.

Graph 11 shows the evolution of the areas explored and preserved by the PWA, revealing that the strong growth in the areas of forest management, from 2000 to 2014, did not result in a decline in preserved areas. Rather, these also grew, even on slower pace, indicating that the management activities of the PWA have contributed to the maintenance of conservation areas in the region.



**Graph 11** - Evolution of the areas explored and preserved by the PWA  
Source: PWA (2000-2012)

At environmental analysis, data from the PW (2010-2014) show reductions in CO<sub>2</sub> emissions, from 3700 tonnes to 2700, the same was observed for power consumption, which increased from 66,700 in 2010 to 50,200 giga joules. Above all, even with the considerable contribution of the PWA, environmental certification will only fulfill its mission to ensure the sustainability of the Amazonian forests of effective and continuous basis if actions as supervision, monitoring, research, dissemination of knowledge, among others, are adopted on a permanent basis. However, for this need the State support, institutions, as well as the various social spheres.

### **Some review of management activities of the PWA**

The study of Laschefski and Ferris (2001) presents a series of criticisms of the forest management activities of PWA, as certified company, asking that their criteria

and FSC standards are not sufficient to protect forests. Among them are:

1. Exposes the trees located in their management areas to infections and diseases: To test whether a tree is feasible for commercial production, verify if it is hollow, using chainsaws, from trunk to chest height. If the tree is hollow, it is left standing, but this practice increases the exposure of trees to infection and disease. In addition, during the cutting of the trees, is the opening of 20% of the canopy.
2. Progressive destruction of non-commercial trees: the company's management practices, include measures to stimulate and control the growth of tree species that have commercial value. But this process has just progressively destroying the non-commercial, which are girdled (a ring bark is taken from his torso) doing the same die standing because its leaves and fallen branches generate nutrients to the soil, benefiting commercial trees.
3. The company's management activities increase the risk of fire: the amount of light entering the forest through the new openings of clearings in combination with forest drying, derived from management practices, increase the risk of forest fires.
4. The opening of roads allows the entry of poachers: which are difficult to control by the company and if for some reason the PWA decide to abandon the activities in the area, the roads would be open to predatory exploitation.
5. Profound change in species composition: in the long term, this type of management fundamentally change the composition of species and can transform a traditional ecosystem in an artificial forest with commercial species whose age is determined by the operating cycles of 25 to 30 years. Ringed trees do not enter the management plan and are not included in calculations, being ignored by IBAMA.
6. The purchase of wood with FSC certification encourages exploration of rare raw materials: consumers when purchasing certified wood foster the exploitation of rare raw material from a developing country by a multinational company.

## Considerations about review

In response to these criticisms, Azevedo (2001) argues that certification is not a “panacea” that will solve all the problems of the region, but is based on the assumption that forests can and should be managed proactively, enabling conservation of environment. Since, unlike the conventional management in that species are doomed to degradation and extinction, certified forestry operations do not represent a threat to the survival of forests, since all management is practiced responsibly, in order to sustainability and conservation of forests, ensuring their maintenance for future generations.

Fearnside and Lawrence (2002) emphasize that initiatives to oppose the destruction, using plans for the creation and preservation of forests, are always welcome, as the unsustainable nature of all conventional use of land prevents new opportunities arising from forest maintenance, are exploited significantly at long term.

Moreover, Homma (2002) contradicts the argument given by Lischefski and Ferris (2001) that the alternative development for the Amazon is to invest only in local practices, which are less striking than the timber, by emphasizing which has already more than proven that there is no sustainable development in the Amazon

only through traditional activities, such as extraction. Should invest in science and technology for that forest resources can be seen as opportunities for sustainable development. FSC certification with its rigorous criteria and principles of environmental conservation and local development, just search this tripod, promote the responsible management, environmentally appropriate, socially beneficial and economically viable.

So if certification standards are expanded, expanding and incorporating the wealth of knowledge about forest conservation, which scholars, biologists and experts have acquired, including the effects of logging on biodiversity of forests, FSC certification will fulfill expansively its mission to protect biodiversity effectively. However, low profit margins, derived mainly from the rigorous standards of FSC certification, in addition to the weaknesses in the legislation, put certified products at a disadvantage in the forestry market, which makes the increase of these non-viable sustainable standards for many managers. According to Bennet (2001) the financial situation corresponds perhaps, the most discouraging aspect of viability of sustainable management practices in the long-term tropical forests, such as the PWA (BENNETT, 2001).

According to FSC information (2014), the output for this gap, it would be the release of the green seal as the main strategy. Followed by policies to promote and encourage certified wood in the domestic market by increasing inspection and combating illegal logging and reducing in certification costs, as certified products require a premium price, which internalize the social and environmental costs, which does not.

## Final considerations

FSC certification has been considered, since its inception, an important instrument for the conservation of global sustainability by promoting sustainable forest management practices, fighting the information asymmetry, giving consumers information about the environmental sustainability of various forestry practices, and thus such as increased incentives for growth-oriented consumers environmentally. The results of this study revealed the global growth trend of FSC certification, which is irreversible, given the new demands of sustainable consumption and product requirements from clean sources in the world market. As a result, the certification levels of global growth has occurred primarily in the richest countries, as these areas tend to have more sophisticated demands with environmental requirements, encouraging voluntary actions beneficial to the environment.

The same occurs in Brazil, the State of São Paulo considerably higher certification securities holder, regarding the planted areas, while for native areas, the state of Pará stands out as the most certified. However, the State of Amazonas has certification lower numbers, even holding abundant extensions areas of native forests. In this perspective, the PWA has contributed significantly to sustainable forest management in the Amazon, making it a world reference with its low impact practices, for all its management activities following the rigorous standards and FSC certification criteria. On the other hand, this makes relatively more costly production process, leading many critics to question its effectiveness in reconciling the

sustainable exploitation of forests as economic goals.

Above all, the company has significantly expanded its business areas, presented at the same time, a number of social, environmental and economic benefits for the region, contributing to its sustainable development. Despite the harsh criticism existing on the PWA, the available data show its significant importance in the valuation of benefits from the forest standing, which are much higher and long-term, the opposite of predatory exploitation.

The certified timber market still faces a number of challenges grow. The FSC needs to improve and expand its principles and criteria, making them more specific to each local forests and biodiversity. So that it complies effectively their goals, but to do so it, needs a greater volume of research, not only ecological, but also economic, to strengthen this certified wood market, to grow and become more profitable, locally and globally, which is a big challenge.

Cannot expect that only certified companies are the "saviors of the homeland" and end up alone with socioeconomic problems and environmental at Amazon. Its need the cooperation of all stakeholders, the business community, public agencies, local businesses, as well as civil society, through greater awareness and incentives to green label, more combat to lawlessness, and a fair legislation that benefits products whose environmental costs are embedded in its production process.

There are many challenges to maintaining the sustainability of the Amazon, but to beat them we need to look forward, encouraging cleanest productive activities in the region, fostering S&T, given its comparative advantage in natural capital, which if used properly can contribute significantly in the development of the country. Turning it into a potential exporter of clean technologies in the world market. According to Homma (2002), preaching a return to the past, denying the problems of the present and forgetting the future is a great danger, leading to maintenance of proposals of traditional extractive activities as a basis for sustainable development of the Amazon, which increases pressure for more resources, a phenomenon evidenced throughout history on the region, based on extractive cycles. The trend of the world economy turns to biodiversity as the center, whose products with Green Seal, traditional lore, start to gain more space in the global market. The Amazon is a source of natural wealth that needs to be used sustainably and certification corresponds to green and sustainable development and the global trend at recent times.

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