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Perception of Brazilian Companies on the Potential and Concrete Benefits Resulting from the FSC Certification

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Abstract: Concern with the adequate use of natural resources has increased the relevance of products certifications in the wood supply chain, especially in companies established in Brazil, the cradle of one of the largest forest reserves. This study investigates the perception of companies on the potential and concrete benefits resulting from the Forest Stewardship Council (FSC) certification. To achieve this, a multiple case study was carried out with data triangulation through semi-structured interviews, documentary research and non-participant observation. Four FSC certified industries established in Brazil were analyzed. The results showed that of the four companies participating in the study, only one did not achieve the desired economic benefits, whereas all organizations accomplished the advantages of the other areas of sustainability, both the social and environmental.

Keywords: certification; benefits; challenges; sustainability; organizational processes



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1. Introduction

Organizations around the world have voluntarily adopted private control systems, whose criteria and requirements often go beyond what is required by local legislation. These mechanisms have stood out for being able to guarantee compliance with the social, environmental and economic dimensions of sustainability, affirmed by external independent auditing agencies [1]. Those mechanisms are particularly important for sustainable forest management, as they can enhance the achievement of several benefits through the integration of the three sustainability dimensions, i.e., economic, social and environmental [2–4]. These benefits can be affirmed through a forest certification that is carried out by third parties that evaluate and attest the fulfillment of ecological, economic and environmental criteria of a specific organization [5]. It is a recognition mechanism that is non-governmental, but voluntary, by an organization [6]. In addition, through an identification label, forest certification provides consumers with a guarantee that a specific product comes from responsibly managed forests [7,8].

According to [9], there are more than 50 certification schemes related to forest management. Forest Stewardship Council (FSC) and Program for the Endorsement of Forest Certification Schemes (PEFC) are the two dominant schemes in global markets [5,10]. In the national context, designed for domestic use, Canadian Standards Association (CSA), China Forest Certification Scheme (CFCS), Sustainable Green Ecosystem Council (SGEC) in Japan, Indonesian Ecolabelling Institute (LEI), Malaysian Timber Certification Council (MTCC) and the Brazilian Forest Certification Program (CERFLOR) are some of the certification's schemes that stand out [9].

For this study, it was opted to choose FSC certification as the object of research, as it is considered the most credible in forest certification inspection worldwide [11,12]. Although 330 million hectares of forest globally are PEFC-certified, the FSC is considered as the most respected and influential scheme that exists, with 229 million hectares certified around

the world. According to [10], other certification schemes seem limited when compared to FSC, because they incorporate only forest management plans while FSC additionally incorporates economic, social and environmental groups interests. In addition, it is a non-profit, non-governmental and independent organization with a growing presence over the years [13,14]. FSC reliability, guaranteed through accredited auditors that implement third-party audits, is necessary to verify continual compliance with the standards, thus contributing to satisfying the current needs of society without compromising forests for the use of future generations. FSC certification is, consequently, a powerful tool to move toward the United Nations Sustainable Development Goals for 2030, and present in the 2021 United Nations Annual Global Report.

Nevertheless, according to [15], certified forests are better managed in environmental terms, when compared to conventional ones, but there is no evidence that this can be said to be the case in the social and economic fields. Furthermore, the performance and impact of forest certification is different among countries due to the differences in forestry development and social awareness levels in different economies, which prevents the generalization of the results [5,16]. Therefore, the objective of this study is to analyze the perception of Brazilian companies on the potential and concrete benefits resulting from the FSC certification and thus verify whether there is a predominance of evidence in any of the three specific dimensions of sustainability. Despite the acknowledged relevance of the FSC certification scheme, studies on FSC are still relatively scarce, and it is not clear whether the certified organizations can actually achieve satisfactory results in relation to the three dimensions of sustainability [17].

2. The Potential Benefits and Difficulties of FSC Certification

FSC is an independent, non-profit, non-governmental organization dedicated to promoting socially fair, environmentally adequate and economically viable forest management around the world. Currently, the FSC label is present in 84 countries, with more than 220 million hectares certified worldwide [11].

The certification process for organizations interested in acquiring the sustainable forest management label can be summarized in five stages: (a) initial contact; (b) evaluation; (c) adequation; (d) certification; and (e) monitoring. The FSC label is valid for five years, and monitoring takes place every year during the validity of the certificate, and if serious deficiencies are found, the validity of the certificate is suspended and the holder must stop using the logo and protected trademark [11]. The assessment is carried out by auditors considered experts on the topic, who use FSC defined principles, criteria and indicators as guidance [12,18]. This structure was built in a transparent and multilateral process that allows it to be considered as a legitimate example of a non-state international agreement for sustainable forestry.

This certification can be implemented in any company, regardless of its type, size and product it provides. The main reasons for organizations to adopt FSC certification are: customer demand; corporate responsibility demonstration; access to different markets; show commitment to forests; have a competitive advantage; and face the environmental pressure that has arisen in recent years [6,19].

From the moment that the standard is implemented, according to [11], the certification guarantees benefits at all levels of the production chain, from the forest to the final consumer. These benefits are divided into three spheres: (i) For forest producers, which guarantee better prices, productivity increase and improvements in company's image; (ii) For beneficiaries and resellers, who have a guarantee of origin, market recognition and social responsibility; and finally, (iii) For consumers, who also have the guarantee of origin and the possibility to contribute to the environmental cause.

Economic, social and environmental benefits are also expected in view of the involvement that certification has in the three dimensions of sustainability. In the economic sphere, certified companies export 184% more than non-certified ones and, on average, they export to around 10 countries, while the others only to around four countries. Besides, they

have 150% more penetration in international markets [6,19]. This can be explained by the products' green label, which attests their sustainability, enhancing the export competitive in eco-sensitive markets [5] that has increased in recent years. Some other benefits in the economic sphere also are highlight: generation of jobs and income; hiring local workforce; tax collection increase; contracting services; facilitated access to financing; improvement in corporate image, among others [3,16].

During the required adaptation process by the FSC, initial investments are important to achieve benefits that do not involve a forecast of financial return but that involve the generation of other benefits in the socio-environmental sphere of sustainability [3]. These investments is classifies as a "trade barrier effect" [5]. Organizations certified with external control mechanisms have higher operational costs [7,19]. In particular, the largest portion of costs involved in certification are represented by the payment to certify, train, document, store, package, label, audit and hire qualified personnel [8]. For the particular case of Brazil, where forest certification is still in an early stage, there is a gap between national forest conditions and the certification schemes, which represent high costs to reach the standards [5].

Social benefits are also mentioned in the revised literature. According to [3,7,8,18,20], the FSC can generate empowerment and inclusion of communities and local workers in organizational processes, respecting their customs. According to the same authors, FSC certification also promotes the development of social projects, which directly contribute to increasing wellbeing of the community in general. Moreover, certification contributes to improvements in workers' health and safety reducing work accidents and consequently turnover. Some of the improvements introduced are: the mandatory use of personal protective equipment (PPE's); standardization of processes; life and health insurance, knowledge of first aid procedures among others [3].

In the environmental sphere, well-managed forests have fewer negative impacts on the environment than conventional ones and FSC have particular elements for this [10]. FSC-certified forest manages to increase forest productivity while maintaining biodiversity through planned forest management [21]. Besides, it conserves areas of permanent preservation (PPA) and legal reserve (LR), as well as their water bodies. Reduction in forest deforestation and air pollution are also highlighted by [21]. Girolami and Arts [17] emphasize the ban on hunting and illegal logging, whereas Bahaa-el-din et al. [22] point out the important role in the conservation of wildlife and/or endangered species.

According to [23], PPA is a protected area, covered or not by native vegetation, with the environmental function of preserving water resources, the landscape, geological stability and biodiversity, facilitating the gene flow of fauna and flora, protecting the soil and ensuring the well-being of human beings. Conversely, LR is an area located within a property or rural possession, with the function of ensuring the sustainable economic use of the rural property's natural resources, assisting in the conservation and rehabilitation of ecological processes and promoting the conservation of biodiversity, as well as the shelter and protection of wild fauna and native flora [23].

However, in order to achieve the aforementioned benefits, associated with the implementation of the FSC principles and criteria, several organizational changes are necessary, especially in developing countries [5]. Some FSC barriers are pointed out by [3,24]: high investment value; high costs; bureaucracy; difficulty in adapting legislation; complexity inherent in the interpretation of principles, criteria and indicators; lack of strategies for the conservation of rare and/or endangered species; absence of environmental education programs and care for workers' health and safety [25]. Additionally, the literature also mentions as barriers to FSC certification, the low demand in the Brazilian market; consumer's unawareness of certification; absence of premium price and government incentive, and the lack of evidence on the reduction in deforestation or emissions of greenhouse gases [2,8,25–28]. According to [24], taking into consideration all those challenges, it should not be assumed that certified plantations are always the most sustainable ones.

3. Research Methods

To contribute to the literature in the area, with additional data about the perception of companies on the potential and concrete benefits resulting from the FSC certification, a two-stage research methodology was used in the current paper. First, a literature review was carried out to understand the main benefits and challenges of FSC certification already identified in the literature. Then, the chosen references were used to help in the construction of the questionnaire applied during the interviews (Appendix A) as well as to support the non-participant observation script prepared to use with the organizations participating in the study.

For the collection of empirical data, the second phase of the study, the authors chose to carry out a multiple case study in four organizations called companies A, B, C and D for anonymity reasons. Confidentiality helps to obtain more concrete and truthful answers from organizations.

The organizations were selected in a non-probabilistic, intentional and convenience manner. However, the authors took an impartial stance in data collection seeking to achieve the objective proposed in this study. Having similar characteristics was the criteria used to choose the companies to include in the study to allow comparison of the data obtained. Namely, all companies employed more than 500 employees; had FSC certification for more than 10 years; had natural and plantation forest management; operated in the international market; and were located in the south of Brazil. Other individual characteristics of organizations can be consulted in Table 1.

Table 1. Main characteristics of the organizations participating in the study.

Company	Economic Activity	Market	Certified Hectares	Certification Type
A	Paper and Cellulose	National (10%) and International (90%)	170 thousand (productive area); 154 thousand (PPA and LR)	Forest Management and Chain of Custody
B	Vegetable Tannin and Wood Chips	National (40%) and International (60%)	1.500 (productive area); 2.300 (PPA and LR)	Forest Management
C	Wood panels	National (75%) and International (25%)	150 thousand (productive area); 50 thousand (PPA and LR);	Forest Management and Chain of Custody
D	Tannin and Wood Chips	National (10%) and International (60%)	23 thousand (productive area); 30 thousand (PPA and LR)	Forest Management and Chain of Custody

The sampling restriction in four organizations occurred by the criterion of theoretical saturation. The information provided thus far was considered by the researchers to be sufficient for the proposed analysis, based on the perception that new participants would add little to the material already collected. In other words, the data collected would present, in the researchers' evaluation, a certain redundancy and repetition, and therefore, it was felt better not to persist in collecting more information.

Data collection in organizations took place through data triangulation (semi-structured interview, documentary research, non-participant observation) [29,30]. As collecting data from different sources makes the study more robust and reliable, both for the interviews and for the non-participant observation, a script of open questions was elaborated through the bibliographic review carried out with the objective of directing the researchers at the time of its application. These scripts were previously validated by two experts on the theme of this research and contained questions such as: reason for adopting the certification, main benefits generated, main difficulties, among other issues. Due to the worldwide coronavirus pandemic, the interviews were applied online, using voice and video calling apps, such as Skype and WhatsApp. All interviews, a total of 4, were recorded and transcribed within six hours of application. After that, they were submitted to the person interviewed for their check. Respondents were selected by the snowball method.

In all the organizations surveyed, the interviewee was a professional with a forest engineering background, in charge of activities related to certification, and in the organiza-

tion for at least 5 years. In companies A and C, these engineers have been involved with FSC for over 10 years. In addition, all (four) respondents had already participated in some certification or recertification process in the past, therefore being considered able to answer the questions raised. This was precisely the reason why they were chosen to be part of the study.

Non-participant observation was possible only in one company (Company A), and that occurred in December 2019. During the technical visit at Company A, researchers were accompanied by the forestry engineer and at all times she explained the rules involved in each process related to certification.

For the documentary research, physical and digital internal documents were analyzed, with emphasis on strategic planning; sustainability report; codes of conduct and ethics; public summary of monitoring of the management plan; prevention manual; technical reports; meeting minutes; among others. Such records were made available by the organizations, but researchers also consulted the companies' own website. Another document consulted to understand the FSC principles, criteria and indicators was the so-called "International Standard FSC", available for consultation on the institution's website. All data (semi-structured interview, documentary research, non-participant observation) were collected in the period from December 2019 to June 2020.

The results were analyzed through content analysis [29,30]. The empirical evidence was organized into categories according to the inductive technique. The categories represented the 10 principles of the FSC, that are: (1) compliance with laws and FSC principles; (2) tenure and use rights and responsibilities; (3) Indigenous peoples' rights; (4) community relations and worker's rights; (5) benefits from the forest; (6) environmental impact; (7) management plan; (8) monitoring and assessment; (9) maintenance of high conservation value forests; (10) plantations. As highlighted on Table 2, data for the different categories were collected through different methods. For example, for the specific case of "workers' law and conditions of employment" non-participant observation was used, while semi structured interviews and documentary research were used for the other categories.

Table 2. Data Analysis Process.

Data Collection Technique	Analysis Categories	Authors
Semi structured interview	Workers' Law and Conditions of Employment; Relations with the Community; Indigenous Peoples' Law; Forest Benefits; Monitoring and Evaluation	[2,12,18,19,28].
Non-participant observation	Workers' Law and Conditions of Employment;	[7,18].
Documentary Research	Compliance with legislation; Environmental Values and Impacts; Management Planning; High Conservation Values; Implementation of Management Activities	[3,4,21,22].

For a better understanding and interpretation of the results obtained, data were organized as follows: (i) presentation of the potential and concrete benefits of the certification in the three dimensions of sustainability; and (ii) the main difficulties of FSC certification.

4. Results

4.1. FSC Potential and Concrete Benefits

For the classification of empirical evidence, the "International FSC Standard", which comprises a list of Principles and Criteria, was used. Table 3 presents the principles and main changes made in all organizations to achieve the certification, as reported by each organization.

Table 3. Main organizational adaptations.

Principles	Empirical Evidences—Companies A, B, C and D
1—Compliance with laws and FSC Principles	They need to be legalized and comply with local, regional and international legislation.
2—Tenure and use rights and responsibilities	They must promote the well-being and safety of employees.
3—Indigenous peoples' rights	They identify Indigenous peoples and respect cultural manners.
4—Community relations and worker's rights	They identify local communities and promote their well-being.
5—Benefits from the forest	They control forest products and services to maintain and make the forest economically viable.
6—Environmental impact	Identify and conserve PPA and LR. They protect species of flora and fauna and water resources. They conserve the soil and sequester carbon.
7—Management plan	They define a forest management plan based on several variables: risks; natural resources; roads; soil and climate conditions, among others.
8—Monitoring and assessment	They monitor and define strategies to prevent, mitigate and compensate for social and environmental impacts.
9—Maintenance of HCV forests	They identify and define strategies to prevent, conserve, mitigate and compensate for environmental impacts.
10—Plantations	They use techniques that avoid and reduce negative impacts on forests.

Through business adherence to the FSC principles and criteria as shown in Table 3, some benefits are expected. However, not all of them are achieved. In Table 4, potential and concrete benefits cited by companies participating in the current study are listed and organized in the three dimensions of sustainability (economic, social and environmental). This organization of data was chosen precisely because it fits in one of the main differentials of the FSC, the incorporation of different interest groups.

Table 4. Potential and Concrete Benefits Results from the Empirical Evidence.

Benefits	Economics	Social	Environmental
Potential	New Markets; Planned Harvest; Price Premium.	Workers' Health and Safety; Professional Qualifications and Training; Near Contact with Communities.	Preservation and Conservation of Biodiversity; PPA and Legal Reserve; Identification of Negative Environmental Impacts; Actions for the Prevention, Mitigation and Correction of Environmental Impacts; Fire Prevention and Control; Road Planning.
Concrete	New Markets; Planned Harvest.	Workers' Health and Safety; Inclusion of Workers; Professional Qualifications and Training; Social Projects.	Preservation and Conservation of Biodiversity; PPA and Legal Reserve; Actions for the Prevention, Mitigation and Correction of Environmental Impacts; Wildlife and/or Endangered Species; Road Planning.

4.1.1. Potential and Concrete Economic Benefits

Through an interview with companies' employees, the first objective was to identify the reasons why companies sought FSC certification, i.e., the potential benefits foreseen when adopting the FSC label (questionnaire used in Appendix A). All interviewees pointed to the demand from international markets, mainly located in Europe, but companies C and D also cited the demand from Asian customers, such as Japan. The interviewees highlighted the possibility of operating in new markets sensitive to environmental issues, as well as the prospect of a price premium, thus increasing economic gains through the use of the FSC identification label.

Currently, all the companies surveyed operate both in the domestic and foreign markets, although with a greater share of operations abroad. However, company C points out a greater presence in Brazil. Unlike company C, through the FSC certification, companies A, B and D, managed to access new consumer markets in Europe and North

America which had not been consolidated yet. Prior to certification, the companies had greater participation in the internal market. The interviewee of company C also mentions that FSC certification, contrary to what was expected, has resulted in improvements in forest management as a whole but does not exhibit economic gains.

Concerning principle 5, listed in Table 3, despite not having new market access, the companies reported having an annual budget forecasting the environmental and social costs and the expected revenue for the forestry activity in the long term. “Financial records allow us to verify the sustainability or not of the forestry activity in the long term, after all it is one of the FSC requirements and it is a form of internal organization as well” (Interviewee A).

The financial records are based on the forest inventory present in all companies, which guarantees the planning of the years of cut for each lot delimited by the organizations, as well as the number of trees that will be harvested. “When calculating the cut rate, the existing volume is considered, and the estimated volume available for the coming years is shown. For this, the current year’s planting areas are considered and the availability of forests that are in the process of regeneration is foreseen” (Interviewee B).

4.1.2. Potential and Concrete Social Benefits

The answers of the four interviewees, showed, in a second moment, the expectation of providing a safe and healthy work environment for their employees, as presented in principle 2 of Table 3. To achieve this, organizations must develop occupational health and safety programs. Interviewees A and C reported that they have been training their employees since the beginning of the certification process to follow stipulated norms and standards.

At company C, for example, when switching from sugarcane to eucalyptus cultivation in a forest area, many cultivation techniques were improved. This migration of culture was not easy, especially concerning the mandatory use of PPE highlighted by the interviewee, more specifically, the use of masks and gaiters. Currently, all employees of company C use the necessary PPE. “And then, it was really nice to see the evolution and understand staff’s change of behavior” (Interviewee C). This result directly impacted the rate of occupational accidents that registered a reduction of approximately 50%. This reduction was also perceived by company D.

The importance of wearing PPEs is also mentioned by interviewee A. For example, for the application of chemical products with less toxicity, thus less harmful to the environment, it is necessary to use waterproof clothing, uncomfortable with intense heat. Nevertheless, all these measures guarantee the safety and individual protection of each employee, ensuring worker’s health and safety.

All interviewees reported that the companies’ employees involved in forestry activities are residents in the same region as the companies’ forest areas, have a formal contract and receive the base salary of its own category, which follows the related conventions. Interviewee A reports that its employees’ salaries are above average salary in the market. Interviewee C mentioned the contracting of workers who previously carried out seasonal work in the sugar cane fields under inhumane working conditions. It was also pointed out the monthly monitoring employees’ conditions at the company, in a structured manner, to allow filling in of the necessary documentation to guarantee the credibility of the system to an external audit. In addition to changes in the behavior of its employees, the respondents also mentioned, as a requirement of FSC, the close contact with local communities, Principles 3 and 4 on Table 3. Interviewees A and C reported that they have employees who act as agents of engagement within the communities. These employees participate in training on traditional communities such as Quilombolas, Indigenous and Guarani peoples, as well as training on social listening methodologies. Such an action, according to the companies, should favor the dialogue between the parties and with this the possibility of identifying social impacts and local needs, thus avoiding possible conflicts.

Of the four companies studied, only companies A and B have Indigenous people living in the forest management units. Both companies, currently, have already the identification and mapping of all communities. All the training carried out and already mentioned (social listening methodologies) has enabled company A to better understand these communities, thus avoiding possible conflicts. No conflicts between companies A, B and Indigenous people have been mentioned at the time of the interviews. On the contrary, it was stated that certification contributed to the dissemination of social projects promoted by the companies, such as: distribution of basic baskets, sharing of candies on commemorative dates, distribution of blankets in winter, actions to support cultural traditions, maintenance of municipal roads, training, distribution of seedlings to producers, community garden, young entrepreneurs project, availability of organic waste, donation of construction materials, relaxation and stretching workshops, environmental education activities, lectures at schools, among others. According to interviewee B, some social actions are promoted by the requirement of the FSC. Interviewee C estimated that its company investment in social actions was around USD 357 thousand, in 2018, and consisted mainly in gifts of food baskets, road maintenance, availability of organic fertilizers or forestry promotion programs.

4.1.3. Potential and Concrete Environmental Benefits

Finally, the importance of following strict FSC procedures in the environmental dimension of sustainability is supported by principles 6, 7, 8, 9 and 10, highlighted in Table 3. For all interviewees, FSC guarantees the protection of forests through the preservation and conservation of biodiversity, because according to the interviewees, the certification is more demanding than local legislation. All companies allocate a good part of their forests to the LR areas and PPAs as can be seen in Table 1. The areas of PPA according to interviewee C “have the objective of conserving waters and biodiversity”, as they are formed by native vegetation on the banks of water courses, springs and steep slopes and by other areas maintained complementarily. In view of its environmental importance, there are several unauthorized actions in this environment, such as: not causing damage to trees and plants; not cutting native trees; not collecting native plants; not parking or building tents; not throwing or abandoning any waste; not lighting fires and cigarettes, among others.

Regarding areas of HCV, according to the interviewee from company A, these are areas that have relevant and unique characteristics and therefore need specific guidelines for their conservation, “which naturally generates more costs” (Interviewee A). For Company D, HCV area has a significant concentration of biodiversity and “these areas are usually better managed than in non-certified companies” (Interviewee D).

Company A, through the mapping and monitoring of flora and fauna, was able to identify the impacts of silviculture on biodiversity. According to the interviewee, birds, for example, “are the first to leave any sign of imbalance”. Currently, company A has 200 species of birds identified in its forest areas, which are used as bioindicators. Interviewee C also cites birds as environmental indicators of forest management.

Company B, for instance, registered the discovery of two species of flora: *Butia odorata* and *Gleditsia amorphoides*. As examples of fauna, there was the register of the *Tamandua tetradactyla*, *Alouatta guariba* and *Nasua nasua*, all threatened with extinction. Through the “adoption of appropriate forestry practices, the company fulfills the role of protecting these species” (Interviewee B). Company C recorded the presence of 1152 species of flora and 836 species of fauna. In addition, “the nests found are not damaged, and the detection of sick or dead wild animals is communicated to the Environment area that evaluates the routing” (Interviewee C).

In Company D, the following species were found both in cultivation areas and in the environment with native vegetation: *Pyroderus scutatus*, *Leopardus geoffroyi*, *Leopardus wieddi*, *Nasua nasua*, *Cabassous tatouay*, *Dasyprocta hybridus*, *Cuniculus paca* and *Dasyprocta azarae*. Several species of flora were also registered by this company. In view of this situation, the organization in question has been to adopt strategic environmental conservation measures,

such as: transformation of all native areas into conservation areas; protection of flora and fauna threatened with extinction and development of environmental education programs for employees and the local community.

The interviewees also reported on actions previously taken to identify, characterize and analyze the environmental impacts involved in all forest areas. For each possible impact, actions are defined to prevent, mitigate or correct. In this way, companies are able to ensure the maintenance of current biodiversity and the quality of the physical environment.

In addition, there are still processes for maintaining the internal and external roads to the forest areas which is characterized as a complex process to be carried out according to company B. These activities are planned, as they need to contain the necessary dimensions to fulfil the requirements established. Besides, they cannot be built in PPAs, and must favor the natural tendency of runoff and avoid the concentration of water. Additionally, the conditions of coverage and infiltration capacity of adjacent areas must be kept (Interviewee B). That is, despite being considered by interviewee B as a complex project, it contributed mainly to maintain the characteristics of the forest.

Company A reported the capture of 12.1 million tons of carbon dioxide in the atmosphere. This result represents 13 times more than the organization's own emissions, which means a positive externality is provided to the region where the company is located. Company C captured 956 thousand tons of carbon dioxide through forests, but interviewee C stated that this did not arise from the FSC, only from an organizational focus toward sustainability objectives. Company C also reported a 22% drop in wastewater generation, as well as a 6% drop in waste generation. This finding is brought up as a way of contributing to "environmental preservation and achieving more competitiveness by reducing costs and risks" (Interviewee C). It is noticed that the first and main expectation of organizations was related to economic issues, such as: market gains and increased revenue. However, throughout the process of implementing the requirements of the FSC, the interviewees mentioned that companies saw the opportunity to improve their social and environmental processes.

4.2. Main Difficulties of FSC Certification

Throughout the collection of empirical evidence, in addition to the benefits mentioned, it was also possible to identify some difficulties and barriers in the implementation of FSC certification. Contrary to what was expected, having this certification does not add value to the companies' final product, and this is reported as one of the "main problems of the certification" (Interviewee C). However, the four organizations know that the FSC label has been ensuring markets that value certification, such as those in European countries.

The companies also emphasized that there is no appreciation of certification in Brazil, as reported by interviewee C that "sells the same with or without certification internally". Company C, for acting more in the Brazilian market, recognizes that the certification guarantees social and environmental benefits, but that it does not achieve economic benefits.

Other economic aspects are also pointed out by the interviewees. According to interviewee C, the initial investment in adaptation was extremely high, but the respondent did not state the value itself. Besides, he informed that he started to have a return on investment after 7 years, when he began the harvesting process in the forests due to the better quality of the wood. That is, during the entire period prior to the harvest, company C had only costs and expenses and not revenue. In this sense, it is necessary to "exercise a showcase creativity in the certification process, to always seek super simple and super cheap solutions, to make the adaptations" (Interviewee C).

The high initial investment is also commented by interviewee A, "I do not have an accurate number of how much the certification comes to costs, because you have adaptation costs and everything, there are indirect costs that are always absurdly difficult to control". As an example, interviewee A mentioned the investment of USD 1.60 million in just one PPA, not commenting on the amount invested in other adaptations. In addition,

interviewees A and B also reported investments in the Road Adequacy Plan, both externally and internally to forest areas. According to the interviewee, “such an investment does not translate into gains for the company but offers agility and quality in the transportation of wood” (Interviewee A).

When questioning organizations about the annual budgetary value for FSC certification, none of them had authorization for disclosure. Interviewees A, B and C reinforced that they do not have a specific budget for the FSC, but for the environmental area as a whole, as it is complicated to measure the standards individually, in view of the impact they generate in various activities. Interviewees A, B and C commented that they are only able to ascertain the direct costs related to the FSC, citing specific audits and fees, as an example.

During the auditing period, the costs come from airline tickets, accommodation, meals and transportation for, usually, six auditors, every year. Interviewee B reported that, on average, it spends USD 8 thousand on each monitoring audit process. The other organizations did not disclose values. This finding is commented on by Interviewee D, “This is a very serious problem with the system, because you prevent the entry of smaller companies”.

Another point highlighted by the interviewees is the various fees charged by the FSC that are dependent on the American dollar, that is, exchange rate instability. As an example, when carrying out the budget for the year 2020 in 2019, Company B calculated the American dollar at BRL 3.90 (USD 1 = BRL 3.90). At the beginning of 2020, the American dollar was quoted at BRL 5.57 (USD 1 = BRL 5.57), directly impacting Company B’s budget. This finding was also commented on by interviewees C and D.

The implementation of FSC standards requires that employees are trained to manage internal processes and procedures. Interviewee C reports a certain frequency of training, such as: fighting fires, environmental care, use of radio, among others. However, one of the challenges reported by respondent C is precisely the “adequacy of the workforce and labor relations”. Interviewee B also cites the difficulty in raising employee awareness. However, interviewees C and D report that FSC has improved organizational awareness, which is cited by interviewee D as one of the main benefits of FSC.

Respondents A, C and D have already had conflicts with local communities for several reasons. As an example, interviewees A and C highlight the breakdown of fences due to the fall of logs and the dust caused by the trucks that transport the logs. All complaints are registered, monitored and need to be resolved according to the interviewees, as it is an FSC standard. In the case of the broken fences, the companies have replaced them, and for the trucks dust, a maximum speed limit for the trucks was imposed, as well as the installation of a road humidifier installed on trucks.

Interviewee D reported cases of fires and traces of hunting and tractors in the plantation areas. As a way of minimizing such impacts, the company brought the community closer together through the development of environmental education projects in schools and the dissemination of the importance of environmental conservation. In the case of company B, which does not report conflicts, it highlights that forestry emerged as a promising activity for economic growth for the region, thus favoring the local community.

Some other negative impacts are also cited by organizations, such as: traffic accidents, traffic changes, running over pets, road damage, damage to neighboring properties, noise and vibration generation, oil spills and black smoke emissions. All companies develop preventive measures, but when this is not possible, organizations mentioned the importance of mitigation or compensation measures. This finding is reported by interviewee D as one of the advantages of FSC, that the certification “forces you to create ways to compensate nature or society”.

“Of course, monitoring is a complex business, it is expensive, but it is also obvious that if you do not monitor it, you cannot handle it. You cannot manage it if you do not see the information; thus, monitoring is essential. However, currently, it is one of the Achilles heels of FSC” (Interviewee C). For Company B, monitoring can generate several benefits.

“I may have, I do not know, thirty erosions on a farm, but at least I know that I have thirty erosions on that farm, and I know that I will direct later to the planning, I will direct water management techniques to end the erosion. So, I may be in trouble there, but just the fact that I have identified and managed it, is already a tremendous difference compared to a company that is not certified, that will leave the erosion there, until the road is damaged, as an example” (Interviewee B).

5. Discussion and Final Considerations

When trying to manage their forests in a sustainable way, companies internalize a new business format, which in many cases creates expectations regarding a series of benefits. The main potential benefits of FSC certification cited by the interviewees were linked to the economic issues of sustainability, as also highlighted in the literature [3,6, 16,19]. Access to new markets is one of these economic motivations usually expected, and from the four companies studied, only one did not meet this expectation.

Contrary to what was expected, economic issues became the main difficulties of certification in this specific case. None of the companies studied reached a price premium for their certified products contradicting one of the benefits cited by the FSC itself. This can be explained by consumers’ lack of awareness about FSC label, which, consequently, hampers them to be willing to pay a higher price for the certified product. Additionally, Chen [5] considers this might be due to consumers’ lack of knowledge about the extensive changes in social and environmental issues made by the companies to get certification. In addition, FSC is not widely recognized in South America in general, and Brazil in particular, which is an additional barrier to the payment of a price premium for these certified products [2]. In line with the results of the current paper, Galati et al. [7] and Klaric et al. [25] found that several companies do not see a return in terms of a better price for certified products, although they have access to new markets.

One of the barriers found throughout the research was the resistance of companies to reveal financial data, both for investments and expenses for maintaining certification. Even though, the companies emphasized that was not little the amount of money spend with the FSC certification quoting direct and indirect cost related to principles adaptation and also with FSC taxes. Thus, the importance of initial investments in adapting organizational processes, particularly in some companies, mainly located in developing countries, whose investment may be higher [24]. These investments do not always result in financial returns [3].

Despite not achieving some of the expected economic benefits, as mentioned above, the FSC has been helping companies to do their planning of the annual and future harvest, which allows them to verify the sustainability or not of the forestry activity in the long term and also improve their productivity, one of the benefits cited by the certification and [21]. According to [18], principle 5, presented in Table 3, is the only one related with the economic dimension of sustainability. This principle refers to the efficiency of managing the range of forests products and services to maintaining or improving economic viability of the organizations [2,3,19]. This principle was, nevertheless, the one with less empirical evidence collected in the current study. Principles 2, 3 and 4 are specific topics of the social dimension of sustainability [18]. FSC’s strong international presence requires certified organizations to meet high standards related to the social well-being of workers and communities around forests, including Indigenous people [2,3,18,21]. Several social benefits, more than economic benefits, were pointed out by the interviewees as a result of the FSC certification. This finding can be explained by the greater number of principles in the sustainability dimension [10].

In general, the benefits related to the well-being of employees were evidenced in the current study. One of the examples cited was the reduction of occupational accidents through the mandatory use of PPE, which guarantee the safety and individual protection of each employee, ensuring worker’s health and safety. These FSC benefits are also cited in the literature [7,18]. However, companies need to be aware that adequacy of the workforce

and labor relations is not an easy task [3], even more in Brazil, where forest certification is still at its initial stages [5]. To reverse this situation, it is required internal training which, however, automatically increases operating costs [7,8].

It is also important to mention that employees involved in forestry activities are residents in the same region as the companies' forest areas, have a formal contract and receive the base salary of its own category. Generating jobs and income and fixing local labor are also some benefits identified in the current study and previously highlighted in the literature [3,16,21].

The activities companies mentioned that carrying out the promotion of engagement with the communities demonstrates their concern with them. Despite this, some complaints were still registered as those were considered and solved, as it was compulsory to accomplish with the standard. Fostering dialogue with the communities favors the generation of benefits and conflict reduction according to [20]. Additionally, results showed that certification contributed to the dissemination of social projects promoted by the companies, corroborating previous studies [21]. All those actions help the companies to achieved market recognition and social responsibility which automatically benefits companies' image, another FSC certification benefit cited by FSC itself and also by [3,16].

According to [18], principles 6 and 9 are related to environmental sustainability issues. For management to be environmentally adequate, it needs to contribute to the protection of local biodiversity, to reduce the rate of deforestation and still retain carbon dioxide [4]. For these principles, a high number of empirical evidences was also found in the current study, which is a reflex of the demands of FSC and companies' efforts to comply with them. FSC forests are well managed in environmental terms, when compared to other aspects and also with other certifications according to [10,15].

In the environmental dimension, the FSC proved its importance in view of the high number of actions carried out by companies, which was more demanding than local legislation. Although some barriers exist, the FSC requires organizations to take action to address them, and this fact is considered by several interviewees to be one of the major advantages of certification. All companies participating in the study have been certified from FSC for over ten years, which may justify the considerable number of benefits and the high perceived environmental awareness.

The companies managed to preserve and conserve the biodiversity through the mapping and monitoring of flora and fauna and also by the delimitation of LR, PPA and HCV areas, which were the main environmental benefits pointed out by [4,17,22].

As already mentioned, for a sustainable forest management, activities in the forest must be socially fair, environmentally appropriate and economically viable. With this definition in mind, companies develop actions in the social and environmental dimension, which are clearly advantageous, according to the companies of the current study. However, with respect to the economic dimension, there is no such clarity. It is up to the FSC itself to improve the economic indicators, demonstrating to the organizations the possibilities of financial return with the certification. Thus, to face to these results, no direct link between forest certification and sustainability, in its "triple bottom line" perspective, may be drawn, a result also found by [24].

Thus, the current study directly contributes to the debate about potential and concrete benefits from the FSC certification, and highlights some of the main difficulties' companies report to implement this certification scheme. Although having achieved the objective of the paper, there are some limitations, which can be addressed in future studies. The small sample size of the study, including companies exclusively located in the southern region of Brazil, does not allow the generalization of results. Therefore, further research with other companies and from different regions is suggested to enable data comparison and a broader perspective. Complementing the qualitative data and results with a quantitative study on the subject will bring that insight.

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Appendix A. Questionnaire Applied with Companies

General Questions

1. Start of activity: _____
2. Main economic activity: _____
3. Main products: _____
4. Productive capacity: _____
5. Market performance: () Internal Market () External Market () Both
6. Percentage of each performance: _____
7. Number of employees: () Up to 19 () From 20 to 99 () From 100 to 499 () Up to 500

Specific Questions

1. Certified hectares: () Up to 5.000 ha () From 5.001 up to 50.000 ha () Up to 50.001 to 150.000 ha () Up to 150.001 ha
2. Certification type: () Forest Management () Chain of Custody () Controlled Wood
3. Certification Time: _____
4. Why the company adopted the FSC Certification?
5. Who is responsible for managing the FSC issue?
6. What were the economic goals of FSC Certification? And which ones were achieved?
7. What were the environmental objectives with the FSC Certification? And which ones were achieved?
8. What were the social objectives with the FSC Certification? And which ones were achieved?
9. What were the main challenges and difficulties with FSC Certification?
10. How has the company been overcoming these challenges and difficulties with the FSC Certification?
11. How the monitoring of FSC issues is carried out?
12. What are the main benefits with the FSC Certification?
13. What were the main unwanted impacts with the FSC Certification?

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