



Does certification make a difference?

Impact assessment study on FSC/SAN certification in Brazil

3 cases

Planted Forests in the South

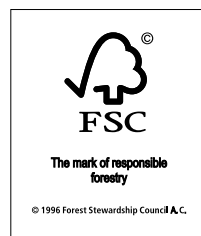
Extractive Communities in Acre

Coffee in the Cerrado and in Southern Minas Gerais



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Yes, certifying does make a difference. That's the answer to the question in the title of this publication, and the conclusion of the study that evaluated three socio-environmental certification cases: two related to FSC forest certification (planted forests in southern Brazil and extractive communities in Acre) and one related to agricultural certification by the Sustainable Agriculture Network (SAN) in coffee enterprises in the Cerrado region and southern Minas Gerais. The analysis covered several regions of Brazil (Santa Catarina and Rio Grande do Sul, Acre, the Cerrado, and southern Minas Gerais) and different certification environments (communities, forestry companies and farms).

The scientific effort to establish a method that could certify the impacts (both positive and negative) of socio-environmental certification was concluded successfully. From a methodological point of view, this is a step forward with regard to what was being done in this area. The credit for this effort goes to the researchers of Entropix Engenharia and Esalq/USP who signed the final report of the **Study on the Evaluation of Impacts of Socio-environmental Certification FSC/SAN**. The complete version is available at www.imaflora.org.br.

With regard to the planted forests in the south of Brazil, the study shows that the FSC forest certification resulted in positive impacts on all socio-environmental aspects evaluated: workers' health and safety, professional training, pesticide handling and reduction, natural resources conservation, forest management, and relationship with the community.

It also concludes that FSC certification fulfills its role as a market tool by triggering changes towards sustainable forest management, as well as contributing to conserving the fauna, flora and water resources of natural ecosystems, respecting workers' health, safety, and quality of life.

The evaluation also revealed that the decision to certify is primarily motivated by the possibility of gaining access to markets that give preference to certified products. Price fluctuations and market crises may be indicative of a weakness in the certification system, according to the study.

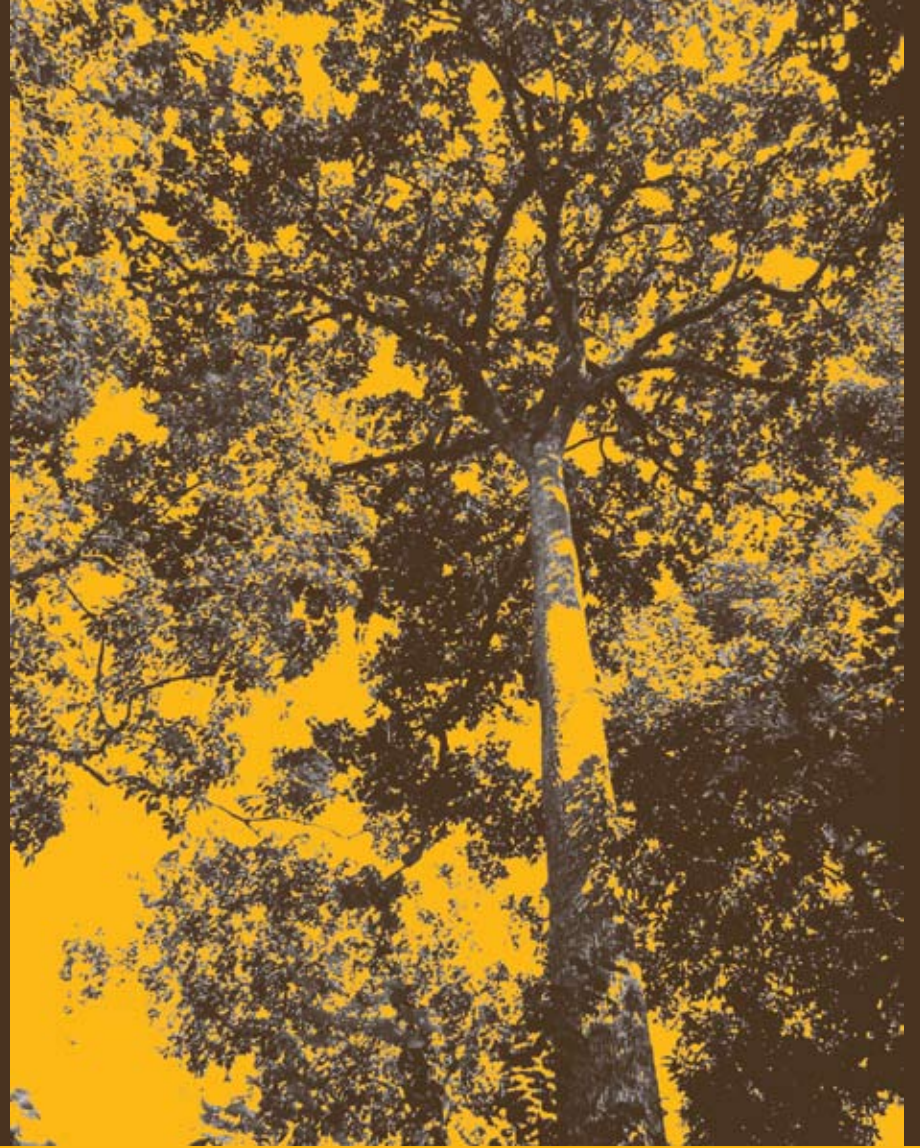
The evaluation of certification in the extractive communities of Acre that engage in forest management points to positive impacts generated by the FSC certification initiatives. However, such impacts are limited, which is probably not due to certification itself, but rather to the fact that institutions and public policies that play a role in Community Forest Management are conducting several activities that already produce results similar to those of certification. Added to this is the fact that the study coincided with a critical moment in the organization of some of the evaluated associations.

Although the direct effects of certification have not proven to be significant, especially considering the hypotheses related to the FSC principles and criteria mentioned in the study, some environmental changes have been observed among the certified groups in Acre. These include the degree of instruction pertaining to the Management Plan and the Plan for Use of the Agro-Extractive Settlement Project (PAE), the conclusion of the activities foreseen in the Annual Operational Plan, waste disposal (garbage and sewage), awareness of the use of fire, measures to protect the fauna from hunting, and the degree of involvement in reports of environmental crimes.

Agricultural certification also resulted in positive impacts on the coffee companies evaluated by the study. The results confirmed the importance of Socio-Environmental Certification in promoting the conservation of biodiversity and natural resources and human development in both the short and long term, fulfilling the expectations of consumers who choose to buy SAN-certified products.

The results revealed that the SAN Certification generated positive impacts in relation to training and qualification; protection of Permanent Protection Areas; reforestation with native species; registration of Legal Reserves; use of less toxic pesticides and fertilizers; storage of pesticides and fertilizers; proper use of individual protection equipment; proper disposal of water, sewage and garbage; and workers' health, among others.

In general, the results achieved by the study validated the impact evaluation method as an important instrument for the broader understanding of certification and for its evolution. The study also concluded that socio-environmental certification works and should be supported, and that the enterprises and the regions should always be seen in context.



| chapter 1 |

Certification: a differentiated message

Certification is a mechanism that helps to identify the origin and the quality of a product or a production process. Considered an important tool in current market relations, certification conveys a message to the consumer regarding the differentiated quality of a product. Preferably voluntary, Socio-Environmental Certification guarantees that a certain productive process will not degrade the environment, that it complies with labor laws, and that it promotes dignified working conditions. In a context of conscious consumption, these characteristics add more value to the products.

The message generated by certification must be confirmed by an independent entity: the certifier. The certifier is responsible for verifying the quality established in the certification standards and guaranteed by the producer. The audits carried out by the certifiers should be completely independent, avoiding conflicts of interest that can raise doubts about the decision to certify a given enterprise. The certification should also provide trackability, that is, it should contain information on the product starting from its origin until the final consumer.

Understood as an evolving process, certification is not an end in itself. It is a practice that requires constant improvement. Even an enterprise or a product that is considered a "model" can be improved. Developments take place both in the enterprise's performance and in the updating of the certification standards or rules. The rules should keep abreast of scientific and technological advances, as well as the new demands of the segments involved with certification.

In the case studies presented in this publication, two certification modalities are addressed: forest (FSC) and agricultural (SAN).

Forest certification

Forest management has been a major achievement for society in facing today's challenges regarding the conservation of natural resources, including large-scale deforestation, ecosystem degradation, disrespect for the rights of traditional populations and, more recently, climate change. These factors place at risk the survival of environments that are essential for the balance of the planet.

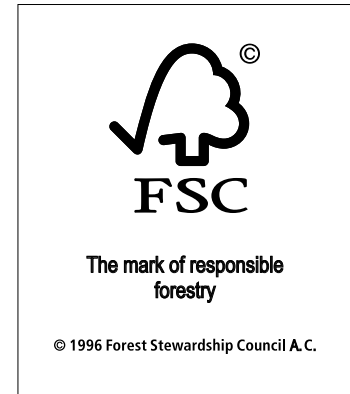
The movement for forest certification first emerged in the late 1980s in response to European and North American consumers' worries about timber exploitation from illegal deforestation in tropical countries. Large-scale buyers in developed countries understood that merely banning imports of forest products could increase pressure on native forests in developing nations, since it would encourage practices that are even more conducive to soil degradation than forest exploitation, such as cattle-raising and mining.

In order to establish a mechanism to ensure the adequate origin of the forest products, a group of entrepreneurs and civil organizations decided to create the Woodworkers Alliance for Rainforest Protection (WARP). One of the first initiatives of this alliance was the publication of a "good wood list", aiming at protecting suppliers whose material came from "good management". It was a way to recognize and value the consumption of forest products produced using techniques with less environmental impact and of known origin.

In 1993, as a result of the work of WARP and other initiatives, representatives of NGOs, suppliers and wood buyers gathered in Toronto, Canada to initiate a process of multi-sectoral negotiation that led to the creation of the Forest Stewardship Council (FSC). The FSC is an independent, non-profit international organization formed by environmentalists, researchers, wood producers, trade-unionists, forest product traders and representatives of traditional populations.

In order to guarantee equity in decision making, the members of the FSC were divided into three chambers, representing the economic, social and environmental interests of the organization. These chambers were then subdivided into members of developed countries and members of developing countries. The initiative resulted in a series of ten "good forest management" principles. The principles define environmentally appropriate, economically feasible and socially equitable management (see box on opposite page).

In addition to these 10 principles, the FSC established a broad set of criteria to be observed during the certification process. They are public rules, and their full version is available at www.fsc.org.br



Principles

FSC forest certification was consolidated as a voluntary process of evaluation of forest enterprises in less than two decades. The Council currently certifies forest areas and products in over 79 countries. Until 2008, the area certified by the FSC corresponded to about 103 million hectares of forests and 6,000 chain-of-custody certifications throughout the world. The certified territory represents about 8% of the world's total forest area, according to the FSC. The gradual increase of FSC certification indicates that is becoming a major benchmark in the forestry trade sector.

Source:FSC/Brasil

Institutions accredited by the FSC adopt 10 principles to be applied in the evaluation of forest management operations. They are:

1 - Compliance with Laws and FSC Principles

Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.

2 - Tenure and use rights and responsibilities

Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.

3 - Indigenous peoples' rights

The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected.

4 - Community relations and worker's rights

Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities.

5 - Benefits from the forest

Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.

6 - Environmental impact

Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.

7 - Management plan

A management plan – appropriate to the scale and intensity of the operations – shall be written, implemented, and kept up to date. The long term objectives of management, and the means of achieving them, shall be clearly stated.

8 - Monitoring and assessment

Monitoring shall be conducted – appropriate to the scale and intensity of forest management – to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

9 - Maintenance of high conservation value forests

Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

10 - Plantations

Plantations shall be planned and managed in accordance with Principles and Criteria 1 - 9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.

Green seal

The agencies accredited by the FSC work with two modalities of certification: forest management, which certifies forest management operations that comply with FSC principles and rules, and the chain of custody, which certifies industries that process and sell forest products. In this case, the product is tracked throughout its productive chain, from the forest to the consumer. The certified enterprises or products receive three types of seal:

- ✓ **FSC Pure:** certifies that the material was produced with pure raw materials, that is, coming from well-managed, 100% certified forests;
- ✓ **FSC Mixed Sources:** guarantees that the material was produced with certified raw materials from controlled sources and/or materials that were recovered after consumption, according to the composition required by the FSC;
- ✓ **FSC Recycled:** Material manufactured exclusively with recovered inputs (Recycled FSC, pre- and post-consumption), according to the composition required by the FSC, encouraging the responsible use of forest resources.

In addition to the individual certification of a company or an individual, the FSC certification can also be granted to an association or a cooperative of forest producers, or to communities that manage timber and non-timber forest resources (vines, leaves, resins, fruits, among others). This is called Group Certification.

In community forest management, the aim of certification is to improve quality of life through the generation of direct and indirect benefits, among which are: adding value to managed forest resources, and encouraging social organization, safety at work and production efficiency. Meeting such criteria is a requirement for FSC certification.

Community Forest Management (CFM)

Community Forest Management is different from conventional forest management because it is a process that takes place in a specific social context, involving a group that has developed a traditional way of life, establishing a pact with the environment. In this case, aspects related to the group and its natural environment are considered. Unlike Entrepreneurial Forest Management, Community Forest Management takes into consideration the community's livelihood, its traditional knowledge and its relationship with the forest.

FSC Certification in Brazil

The experience of the creation and implementation of FSC certification in Brazil began in 1994. Two years later, in 1996, the first FSC working group was formed, following the rationale of parity between the three sectors: six NGOs that work in the social area, six that work in the environmental area and six representatives from the business sector. The group's initial aim was to create standards adapted to the situation in Brazil, and to steer the market's two most important activities: exploitation of timber from the Amazon and the establishment of forest plantations in the south and southeast of the country.

The establishment of FSC performance standards in Brazil required a consultation process that took two years to conclude. After this, the standards were compared to those already in place in other countries and approved by the FSC. In 2001, the FSC-Brazil became operational, with its rules adapted to the national state of affairs.

With its own governance structure, the organization is formed by a Board of Directors made up of three representatives from each chamber (social, environmental, and economic). In addition to the Board of Directors, there is the Dispute Resolution Committee and the Audit Committee. All the actions of FSC-Brazil are discussed by the members of the chambers in meetings of the Board of Directors, working groups and public consultations.

FSC-Brazil data from 2008 reveal that there are 5.3 million hectares certified by the FSC seal, located in 12 Brazilian states and in the five regions of the country. It is the highest rate of certification in Latin America and among tropical countries, covering 2.5 million hectares of natural forests and 2.8 million hectares of planted forests. The certified forest plantations amount to 48% (2.8 million hectares) of Brazil's total forested area (5.8 million hectares).

About 37% of the forest plantations are dedicated to conservation (Permanent Protection Areas – PPA or Legal Reserves – LR), totaling about one million hectares of native vegetation. FSC-Brazil data show that 207 companies have certification for the chain of production and marketing of wood items (chain of custody).

In the Amazon, approximately 1.2 million hectares of forest were certified until 2005. This figure is still small if we consider the size of the region and the urgent need to expand the areas of native vegetation dedicated to forest exploitation under the sustainable management regime. However, the growth trend of certified areas in the Amazon is expected to continue with regard to both entrepreneurial and community management.

Interest in certification is growing among entrepreneurs due to the increasing demand for certified products, particularly by the international markets. With regard to the communities, the growth in the number of certified units is due to the consolidation and establishment of the process of community forest management, among other factors.

Forest certification also provides a range of opportunities and challenges for researchers, including the establishment of increasingly precise procedures and methods for evaluating to what extent the certification effort has a positive impact on the environment, the economy and the populations involved with forest management.

Agricultural certification

Agricultural certification preceded the forest certification movement. About 30 years ago, European farmers felt the need to distinguish the origin of their products for consumers. The aim was to differentiate goods produced without pesticides from those produced with the use of chemicals that are damaging to human health and the environment.

The certification entailed the creation of origin seals that would certify the region of origin of the products. The first seal was the Blue Angel, introduced in Germany in the late 1970s. In the aftermath of the German experience, Canada created its own seal (Environmental Option) for the same purpose. Other countries, such as the United States, Japan, Norway, France, India, Korea, and Singapore also practiced agricultural certification.

In the 1990s, soon after the establishment of organic certification, a certification system emerged that sought to encourage socio-environmental changes in large-scale agriculture in tropical regions. It started with banana and coffee crops in Latin America, with an initial focus on biodiversity conservation and working conditions.

The initiative resulted in the creation of the Sustainable Agriculture Network (SAN), a network of NGOs that work independently with certification and use the Rainforest Alliance Certified (RAC) seal. The SAN is currently made up of eight members, with Imaflora being the pioneer in this certification and its official representative in Brazil. In Brazil the network is called RAS – Rede de Agricultura Sustentável.

This system of certification applies basic principles of the SAN, adapting them to the Brazilian context. Thus, there are already specific indicators for coffee, banana, citrus fruit, flowers, foliage, sugar cane, and cacao.

The products certified by Imaflora/SAN receive the RAC seal, which guarantees the product a differentiation that is recognized by important consumer markets, both in Brazil and abroad.



The principles of the Sustainable Agriculture Network (SAN)

- 1 - Social and environmental management system:** The social and environmental management system is a set of policies and procedures managed by the farm management or group administrator for planning and executing operations in a manner that fosters the implementation of the best management practices indicated in this standard. The social and environmental management system is dynamic and adapts to changes that occur. It also incorporates the results of internal and external evaluations to encourage and support continued improvement on the farm. The scale and complexity of the social and environmental management system depends on the level of risk and the size and complexity of the operation, the type of crop, as well as the farm's external and internal environmental and social factors.
- 2 - Ecosystem conservation:** Natural ecosystems are integral components of the agricultural and rural countryside. Carbon capture, crops pollination, pest control, biodiversity and soil and water conservation are just some of the services provided by natural ecosystems on farms. Certified farms protect these natural ecosystems and conduct activities to restore degraded ecosystems. Emphasis is placed on restoring natural ecosystems in areas unsuitable for agriculture, for example by reestablishing the riparian forests that are critical to the protection of water channels. The Sustainable Agriculture Network recognizes that forests and farms are potential sources of timber and non-timber forest products that help to diversify farm income when they are managed in a sustainable manner.
- 3 - Wildlife protection:** The farms certified under this standard are refuges for resident and migratory wildlife, especially species that are threatened or endangered. Certified farms protect natural areas that contain food for wild animals or habitats for reproduction and raising offspring. These farms also carry out special programs and activities for regenerating and restoring ecosystems important to wildlife. At the same time, the farms, their owners and employees take measures to reduce and eventually eliminate the number of animals in captivity, despite traditional practices of keeping wildlife as pets in many regions of the world.
- 4 - Water conservation:** Water is vital for agriculture and human existence. Certified farms conduct activities to conserve water and avoid wasting this resource. Farms prevent contamination of surface and underground water by treating and monitoring wastewater. The Sustainable Agriculture Standard includes measures for preventing surface water contamination caused by the run-off of chemicals or sediments. Farms that do not have such measures guarantee that they are not degrading water resources through the implementation of a surface water monitoring and analysis program, until they have complied with the stipulated preventative actions.
- 5 - Fair treatment and good working conditions for workers:** All employees working on certified farms, and the families that live on these farms, benefit from the rights and conditions established in the United Nations' Universal Declaration of Human Rights and the Convention on the Rights of the Child, and in the International Labor Organization's (ILO) conventions and recommendations. Farms pay salaries and benefits equal or more than the legal minimum, and the workweek and working hours must not exceed the legal maximums or those established by the ILO. Workers may organize and associate freely, especially for negotiating working conditions. Certified farms do not discriminate and do not use forced or child labor; to the contrary, these farms work to offer employment opportunities and education to people in neighboring communities. Housing provided by certified farms is in good condition, and has potable water, sanitary facilities and domestic waste collection. Families living on certified farms have access to medical services and the children have access to education.
- 6 - Occupational health and safety:** All certified farms have an occupational health and safety program to reduce or prevent the risk of accidents in the workplace. All workers receive training on how to do their work safely, especially regarding the application of agrochemicals. Certified farms provide the necessary equipment to protect workers and guarantee that the tools, infrastructure, machinery and all equipment used on the farms is in good condition and does not pose a danger to human health or the environment. Measures are taken on these farms to avoid the effects of agrochemicals on workers, neighbors and visitors. Certified farms identify potential emergencies and are prepared with plans and equipment to respond to any event or incident, as well as to minimize the possible impacts on workers and the environment.
- 7- Community relations:** Certified farms are good neighbors. They relate in positive ways with neighbors, surrounding communities and local interest groups. The farms periodically inform the surrounding communities, neighbors and interest groups about their activities and plans, and they consult with interested parties about changes on farms that could have potential impacts on the social and environmental well-being of surrounding communities. Certified farms contribute to local economic development through training and employment and try to prevent negative impacts on the areas, activities or services that are important for local populations.
- 8 - Integrated crop management:** The Sustainable Agriculture Network encourages the elimination of chemical products known internationally, regionally and nationally for their negative impacts on human health and natural resources. Certified farms contribute to the elimination of these products through integrated crop management to reduce the risk of pest infestations. They also record the use of agrochemicals to register the amounts consumed, and work to reduce and eliminate these products, especially the most toxic ones. To minimize the excessive application and waste of agrochemicals, certified farms have the procedures and equipment for mixing these products and for maintaining and calibrating application equipment. Certified farms do not use products that are not registered for use in their country, nor do they use transgenic organisms or other products prohibited by different entities or national and international agreements.
- 9 - Soil management and conservation:** One of the objectives of sustainable agriculture is the long-term improvement of the soils that support agricultural production. Certified farms carry out activities that prevent or control erosion, and thus reduce the loss of nutrients and the negative impacts on water bodies. The farms have fertilization programs based on the crop requirements and soil characteristics. The use of vegetative ground cover and crop rotation reduces dependency on agrochemicals for the control of pests and weeds. Certified farms only establish new production areas on land that is suitable for agriculture and the new crops, and never by cutting forests.
- 10 - Integrated waste management:** Certified farms are clean and orderly. Farm workers and residents cooperate with maintaining the farm clean and are proud of the farm's image. There are programs for managing waste according to its type and quantity, through recycling and waste reduction and reuse. The final destination of waste on the farm is administered and designed to minimize possible environmental and human health impacts. Certified farms have evaluated the transportation and treatment services supplied by contractors and know the final destination of the waste generated on the farm.

Expansion

Agricultural Certification is currently in full expansion worldwide. It encompasses diverse interests and generates seals with different messages, involving certifiers linked to organized civil society, the environmental movement, governments and the private sector.

The agricultural certificates certify product quality, hygiene safety, and the presence of transgenic components or pesticides, while also indicating any environmental and social impacts inherent to the activity.

Agricultural Certification seeks to contribute to the conservation of natural resources and the social well-being of workers, farmers and their families, encouraging responsible farming, in accordance with specific environmental, social, and economic criteria.

And does certifying make a difference?

When a consumer chooses a certified product, he or she understands that that product is different from a non-certified product because it is guaranteed to be socially more equitable, to cause less environmental impact, and is generally healthier. Otherwise, there would be no need for the distinguishing seal.

The certifier, however, does not evaluate this difference because that is not the nature of his/her work, which is to verify whether the production process is in compliance with the standards that have been established.

Compliance with the standards results in varying degrees of differentiation between certified and non-certified products. A simple example is compliance with labor legislation. This is a basic certification criterion. But it may well be that the labor legislation is already strictly followed in certain regions or production sectors as a result of the work of trade unions, public prosecutors, etc. Thus, the fact that compliance with labor legislation is (or is not) envisaged in the standard would not make any difference, and would therefore not generate any impact. In this case, the message to the consumer that that seal guarantees a difference in relation to compliance with labor legislation would ultimately be false.

The impact evaluation is faithful to the message of certification. In this study, the main interest is to analyze certified groups or enterprises, so as to allow the results achieved to be associated to certification and to exclude alternative or conjunctural explanations.

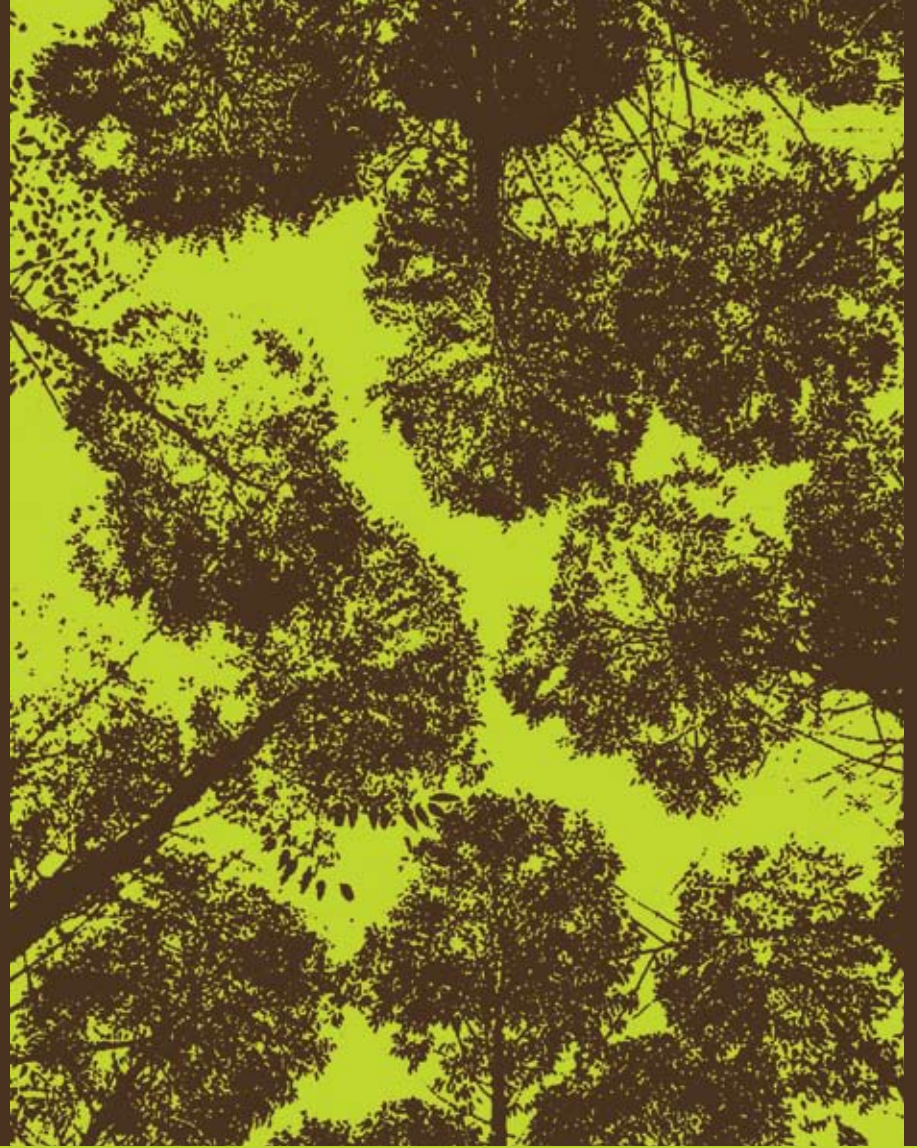
For example, if workers' wages were reduced in certified enterprises as a result of the economic conjuncture, a simple diagnosis could indicate the reduction as a "negative" result of the certification. But if a comparison is made with a non-certified control group that has suffered the same conjunctural effects that affected the certified enterprises, with an even greater salary reduction, the certification would have had an important impact in favor of the workers: it would have cushioned the weight of the unfavorable economic conjuncture.

Until 2007, there was a gap in the methodology and in the attempts to verify whether certification effectively generates positive impacts for the company, the workers, the community, and the environment. In the studies undertaken thus far in Brazil and in almost all the international surveys, the methodological design was closer to a diagnosis than to an impact evaluation per se, that is, there was no control group. Since the beginning of the implementation of the certification tool in Brazil, practitioners, and scientists alike have been questioning its effectiveness. After all, does certifying make a difference for the enterprise or for the community that is the target of certification?

The need to create a methodology that can answer this question is what motivated the group of researchers from Esalq/USP and Entropix to take a step further in the evaluation of the impacts of certification. To guarantee the consistency and the scope of the methodology, the analysis of the three cases that comprise this study was done in a comprehensive manner, covering the different regions of Brazil, numerous certification environments (community, forestry ventures, farms) and the certification schemes (forestry and agriculture).

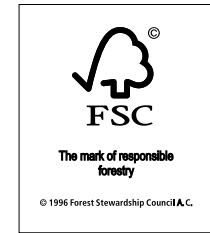
In short: the essence of the Impact Evaluation Study is to assess to what extent a certified enterprise is more beneficial to the economy, to the social group involved, and to the environment, compared to a non-certified enterprise. The study is divided into three different cases: the Impact of FSC Certification in Planted Forests in the South of Brazil, the Impact of FSC Forest Certification in Agro-extractive Communities of Acre, and the Impact of the Sustainable Agriculture Network (SAN) Certification in Coffee Farms in the Cerrado and Southern Minas Gerais. The full reports of the studies, along with the methodological details, are available at the Imaflora website:

www.imaflora.org.br



| chapter 2 |





Planted Forests in Southern Brazil

Planted forest management in the region

Until the early '60s, native forests were the main source of wood for the forest sector in southern Brazil, often being exploited in an environmentally inappropriate way and beyond their regeneration capacity. Deforestation, which was also intended to expand large-scale agriculture and livestock raising, created a critical situation of environmental degradation. According to the Floristic-Forest Inventory of Santa Catarina, forest timber represented over 50% of the total amount of the state's exports between 1950 and 1960.

Araucaria angustifolia – known as Paraná pine or Brazilian pine – was the main species exploited in the southern region. The peak of extraction took place between the 1940s and the 1960s. In the 1970s, the exhaustion of this resource resulted in the region's economic stagnation, which lasted until the 1980s.

As in other countries with economies centered on the production of natural resource-based commodities, Brazilian forests have been intensely exploited throughout history and continue to offer new opportunities for economic expansion. However, economic as well as environmental and social factors should be taken into account in order for it to be sustainable. Certifying forests in the southern region has, therefore, become an important indicator of sustainability.

Controversy

The impact of the socio-environmental certification of planted forests has become a rather controversial issue over the past few decades. The topic has been debated and examined throughout the world. On one hand, the benefits of certification were lauded, such as the conservation of natural ecosystems, increase of biodiversity,

guarantee of labor rights, community participation, reduction of rural poverty, greater administrative control, and economic feasibility, among others. On the other hand, various analyses and academic studies criticize certification, highlighting the negative impacts and flaws in the process, going as far as suggesting that certified operations be cancelled in some cases.

The Impact Evaluation of FSC Certification in Planted Forests in Southern Brazil contributes to advancing this debate by establishing a methodology for evaluating the impacts of certification. The case study analyzed the impact of FSC forest certification on operations located in the states of Santa Catarina and Rio Grande do Sul. These two states have the highest number of reforestation companies certified by Imaflores/Smartwood. The study also evaluated the difference between certified operations and a similar and comparable control group of non-certified operations.

These operations work mainly with exotic Pinus and Eucalyptus forests. The activity is highly productive and is still considered a key strategy for minimizing the impacts of timber extraction from native tropical forests.

However, as in any other rural business – and due to its background of large-scale land occupation – reforestation is being questioned by different social sectors. The request for FSC certification for these firms is a recent initiative that aims to ensure their economic feasibility and acknowledgement by the marketplace. Measuring the impacts (positive or negative) of socio-environmental certification is therefore essential.

The socio-environmental changes generated by FSC certification are valuable for all players involved in the planted forest sector, whether they are reforestation companies, timber users, support or financing institutions, governments, or local communities.

The method

The methodology of the study on planted forests in the southern region was the same as the one used to assess the impacts of certification in coffee enterprises in the Cerrado and in southern Minas Gerais. Data on both FSC-certified and control operations (non-certified) were analyzed, enabling the socio-environmental impacts generated by FSC certification to be identified.

Environmental preservation, safety in the workplace, professional training, working conditions, hiring, access to education and health services, social organization, and relationship with the community were the main themes addressed by the Impact Evaluation of Certification in Planted Forests in Southern Brazil. The team sought a causal relationship between the possession of an FSC seal and changes in result variables.

The case study covers a sample of seven firms with FSC certification issued by Imaflores, in partnership with the Rainforest Alliance Smartwood Program, obtained from a universe of 12 operations and seven non-certified firms, selected from a list of 38.

The creation of the sampling universe followed criteria such as the fact that the firms are located in the same

region and have similar activity characteristics, among which are the size of the planted area and the number of hired employees and outsourced workers. The selection also took into account the existence of control operations, similar to the certified ones, in the same region. Random selection was used for statistical validation within the selected universe. The characteristics of the firms are presented below:

Operation	State	Total area (ha)	Planted area (ha)	Number of employees*	Certified
Certified firms					
A	SC	12000	7000	89	FSC
B	SC	14000	5400	131	FSC
C	SC	16000	10000	171	FSC
D	SC	22272	8615	376	FSC
E	SC	22845	13869	147	FSC
F	RS	3116	1408	79	FSC
G	RS	3109	1591	84	FSC
Control firms					
H	SC	14740	8000	113	
I	SC	18500	10500	81	
J	SC	3000	1800	69	
K	SC	2666	1750	30	
L	SC	6994	3317	87	
M	RS	12600	7500	190	
N	RS	6200	3300	110	

Non-certified firms (control) were randomly selected from a list of 38 that had characteristics that were similar to the certified firms, but without any contact with FSC certification. The similarity criteria adopted were geographic location (Santa Catarina and Rio Grande do Sul), the size of the planted forest area, and the number of hired employees and outsourced workers. Out of the randomly selected control firms, eight refused to participate in the study and were replaced through a new random selection.

Data sources used included field observations and interviews using structured questionnaires. Observations were made during a visit to the Permanent Preservation Areas, the Legal Reserve, and the firms' production areas and overall infrastructure (housing, lodging, means of transportation, roads, among others).

Interviews were conducted with the owner or person responsible for the operation, employees, and outsourced workers (including residents and lodgers, pesticide applicators, forest machinery and chainsaw operators, and workers under the age of 18), contractors, and customers. The main socio-environmental data collected refer to the preservation of native vegetation, water resources conservation, waste management, safety, working conditions, and professional training.

Trade unions and community associations connected to the operations also participated. Qualitative information on the operations' socio-environmental impacts on the community was collected from them as well.

Questionnaires used in the study

1. **Company profile:** submitted to the administrator, manager or person responsible for the operation. Sought information on infrastructure, forest management, waste management, legal status, benefits granted to workers, etc.;
2. **Worker profile:** submitted to the firm's employees and outsourced workers. Recorded the characteristics of working conditions, hiring procedures, professional training, family income, access to health services, conservation of natural resources, environmental preservation, etc.;
3. **Profile of pesticide applicators:** used with the firm's employees and outsourced workers responsible for the application of pesticides (including anticid). Sought data on protection from and the use of pesticides, handling, knowledge and use of Individual Protection Equipment, products used in their application, waste destination, etc.;
4. **Housing profile:** submitted to workers living in houses and lodgings located on the premises of the operations to assess information on: infrastructure, destination of the waste generated (garbage and sewage), comfort and sanitary conditions, displacement of inhabitants in emergency situations, etc.;
5. **Young worker profile:** submitted to workers under 18, it examined the way they are hired, as well as education-related incentives;
6. **Profile of the contractor:** used with the contractors of the operations, it examined information on worker safety, compliance with legal requirements, and monitoring carried out by the operation;
7. **Relationship with stakeholders:** used with the stakeholders' representatives (rural workers' unions, associations, and councils) to analyze the companies' relationship with the surrounding community and their fulfillment of social and environmental obligations.

Data collection

The design of data collection material was based on similar studies. Professionals who work with forest certification at Imaflores/Smartwood collaborated as well. The questionnaires were distributed without distinction between certified and non-certified operations.

Data entry, evaluation and analysis

The data on the certified and control firms were analyzed by means of statistical tests in the SAS System. The data analysis and critique were carried out both individually and jointly.

For the individual analysis, variables from only one of the questionnaires or field observations were used. In the combined analysis, variables on the same theme, but from different sources, were grouped together in order to strengthen the positive aspects and minimize the negative aspects of their prerogatives. The prerogatives considered were uncertainty of determination, existence of bias in the answers and reliability of the answers. The prerogatives of the combined analysis were:

- ✓ In the field observations, the researcher confirmed the existence of a certain situation. However, it was not possible to observe all situations during the collection period, so this information has only partial reach;
- ✓ In the operation and contractor profiles, there may be a tendency to highlight favorable characteristics and/or to omit information on inappropriate situations or those that could characterize a failure to comply with the legislation or FSC certification rules;
- ✓ In the profile of the worker, the pesticide applicator, the young worker and the housing profile, a broad universe of personal biases and judgments regarding situations that take place at the operation were taken into account. However, the large number of interviews reduces the influence of biased information in the aggregated data, reflecting situations that can be considered as real or as perceived by the majority.

Thus, in the combined analysis, the impact of certification was assessed mainly through field observations. In their absence, interviews with the owner or manager, as well as with contractors and workers, were considered according to the criteria described for each analysis.

All analyses indicated the direction of the impact using the symbols below:

Symbols	Direction of impact
😊	Positive
😐	No impact (no difference between the certified group and the non-certified group)
😞	Negative

In addition to the direction of the impact, the quality attributed to the operations was classified using a scale of stars based on the percentage of positive results for the items analyzed. Five stars (★★★★★) represent the best situation and one star (★) represents the worst situation, according to the following table:

Ranking of quality attributed to the operations	
Symbols	Percentage of positive results
★★★★★	81 to 100%
★★★★	61 to 80%
★★★	41 to 60%
★★	21 to 40%
★	0 to 20%

For some items, the best and worst conditions in certified and control operations were ranked based on field observations and registered in diagrams and tables presented in the study. The items analyzed in the study to evaluate the impacts of the socio-environmental certification are identified by a letter, each one corresponding to the type of analysis carried out. The analysis can be either individual (single source) or combined with different sources. The respective meanings of the identifications are presented below:

Identification of the analyses	
Identification	Type of analysis
a	Individual analysis of nominal or ordinal variable drawn from statements given by the people in charge of the firms.
b	Individual analysis of nominal or ordinal variable drawn from statements given by forest workers in the firms.
c	Individual analysis of nominal or ordinal variable drawn from field observations.
d	Individual analysis of nominal or ordinal variable drawn from statements given by representatives of contractors of the firms.
e	Individual analysis of nominal or ordinal variable drawn from statements given by representatives of local trade unions.
f*	Combined analysis with different sources: interview with person in charge of the firm, interview with forest workers and field observations.
g*	Combined analysis with different sources: interview with person in charge of the firm and interview with forest workers.
h*	Combined analysis with different sources: field observations and interview with forest workers.
i*	Combined analysis with different sources: field observations and interview with person in charge of the firm.
j*	Combined analysis with different sources: interview with the contractor's manager and interview with the operation's manager or person in charge.
k*	Quality ranking attributed to the firm.
l*	Quality ranking attributed to the firm for the salary variable.
m*	Quality ranking attributed to the firm for the working hours variable.
n*	Ranking of best and worst conditions in certified and control firms, based on field observations and registered in the diagrams and tables presented in the study.

* The study's annexes and detailed methodology are available on the Imaflora website: www.imaflora.org.br.

Results

Profile of the operations

Pinus was the main species planted, which was to be sold mostly as wood, for furniture, firewood, energy, cellulose, and paper. All forests had multi-annual characteristics, were cultivated as forests of different ages, and required some management planning (pruning) or wood cutting, depending on the time of the year or the forest yield, among other factors.

The number of workers at the time of the study varied due to the flexibility of forest activities. These variations were dependent on the size and number of operations taking place at the time. There was no relationship between the size of the planted area and the number of active forest workers for the same reason.

Most forestry ventures were small and medium-sized, family-run and private. The smallest planted area was 1.4 thousand hectares, and the largest 14,000 hectares, including private areas, partnerships, and leases.

Relationship with stakeholders

Outsourcing was another common feature of the operations studied. This often leads to precarious working conditions due to the difficulties in complying with labor and environmental laws. However, the study did not only take into account the forest workers hired directly by the operation in question, but also the outsourced workers, provided they were working in the forest area under the firm's responsibility. The inclusion of outsourced companies and customers in the research allowed topics related to the outsourcing of work to be analyzed (see Relationship with Outsourced Companies).

Most of the operations observed implemented manual harvesting, but this was more common among the control operations. Exclusively mechanical harvesting was found only in the certified operations (28%), while both types were found in the majority of the certified operations (50%), and in only one of the control operations of the sample (14%). This difference suggests that the certified operations make a wider use of mechanized harvesting.

Profile of the workers

The study took into account the total number of workers who carried out activities only in the forest area. Some responsibilities were highlighted due to their importance for forest production and as they required specific training and care in the operation of the activities. The following workers were interviewed:

- ✓ Crop control and nursery workers: responsible for planting, pruning, grubbing (also using a manual grubber), and the production of forest cuttings;
- ✓ Chainsaw operators: responsible for cutting the trees manually;
- ✓ Forest machinery operators: operating from simple tractors to specialized forest machines such as harvesters and skidders;
- ✓ Pesticide applicators: workers who apply anticide and/or other pesticides used in forests;
- ✓ Transporters: truck drivers who transport the harvested wood.

About 30% of the interviewees from certified and control operations have migrated over the last 10 years, mostly from the state of Paraná or more distant regions within the state they were living in (Santa Catarina or Rio Grande do Sul). About 70% were from the region where they were hired.

The majority of forest workers were between 21 and 55 years old. However, there was a statistical difference between the ages of forest workers in certified operations and those in control operations, indicating that forest workers were younger in certified operations.

Less than 3% of forest workers were women. They worked in forest nurseries (certified and control) or applying anticidant (control). Despite the different social settings and the complexity of the gender issue in wage-earning work, the researchers found that there was a lack of opportunities for women.

Most of the workers from the certified and control operations interviewed by the study had not completed their primary education, revealing the lack of impact of certification in this respect. However, certified operations had more workers with a higher level of education (complete or incomplete high school level), which may indicate a trend generated by certification.



Correct use of IPE by chainsaw operator at certified forestry venture



Incorrect use of IPE by chainsaw operator at control enterprise

Education of workers in certified and control operations		
	Certified group	Control group
No schooling ^b	1%	6%
Incomplete primary school ^b	67%	72%
Complete primary school ^b	12%	13%
Incomplete high school ^b	7%	2%
Complete high school ^b	13%	7%

Socio-environmental impacts

Health and safety at work

The parameters used to evaluate the health and safety of employees of forest companies were based on government regulations (NR31 and NR9). Some of the parameters were divided into Preventive Health, Environmental Risk Prevention Program (ERPP), and Individual Protection Equipment (IPE), use of pesticides, professional training, written materials for consultation, meals and support structure, and transportation and conditions of forest machines. Most of the data associated with health and safety at the workplace were gathered from statements provided by workers or by people in charge of the operations.

The following aspects were analyzed for the evaluation of preventive health: presence of a health professional in the company, provision of health examinations upon admission and regularly thereafter, and work accidents. Socio-environmental certification did not have a positive impact on one of the items analyzed (Damage to health

caused by work). However, one reason why there was no significant difference in this item was the high quality found in the control operations, thus reducing the impact of certification, as shown in the table below.

Summary of preventive health items					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Medical care by professional hired by the company ^b	72%	45%	★★★★★ ^k	😊	
Health examination for admission ^b	98%	87%	★★★★★★ ^k	😊	✓
Regular medical examinations ^b	94%	64%	★★★★★★ ^k	😊	✓
Absence of work-related health injuries ^b	91%	83%	★★★★★★ ^k	😐	✓
Medical care in case of work-related health injuries ^b	100%	23%	★★★★★★ ^k	😊	

The Environmental Risk Prevention Program (ERPP) did not show any positive impact on the operations or the outsourced companies. Nevertheless, several certified firms had such a program in place.

A positive impact from socio-environmental certification was observed in the evaluation of the use of individual protection equipment by workers, revealing its effect on the workers' safety in forest activities, as shown in the table below.

Impacts of FSC certification in the presence of ERPP and use of IPE by forest workers					
	Certified group	Control group	Quality certified	Impact	FSC requirement
General use of IPE ^b	74%	44%	★★★★★ ^k	😊	✓
ERPP operations ^a	86%	72%	★★★★★★ ^k	😐	✓
ERPP contractors ^d	71%	36%	★★★★★ ^k	😐*	✓

* Note: Some of the firms (mainly the non-certified ones) did not work with contractors and the number of non-certified contractors was too small to statistically validate the difference. For this reason, despite the big difference in the percentage, there were not enough data to validate it.

There was a positive impact regarding one of the questions submitted specifically to pesticide applicators: knowledge about the pesticides' grace period. There was no impact on the knowledge of the color of the label of the product with the highest toxicity. A little over half of the interviewees from certified firms answered correctly when asked about this topic.

With regard to appropriate practices, all the interviewees from certified companies claimed that they wash and store their IPEs correctly. However, statements on materials available in the field during application demonstrated that there was no impact on this item, revealing a weakness in this regard.

Hung trees: when trees are cut manually, they often fall on top of another tree that is nearby and still standing. Whenever that is the case, workers have to move away from the tree and let a crane remove it. However, some workers remain close to the tree and perform high-risk procedures, such as cutting other trees that are "caging" the tree, or cutting the "caged" tree into smaller logs, which is not recommended either.

Knowledge and practices in the use of pesticides					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Knowledge about grace period ^b	67%	0	★★★★★ ^k	😊	
Knowledge about the color of the label of the most dangerous product ^b	56%	33%	★★★★ ^k	😐	
Proper washing of IPE ^b	100%	40%	★★★★★★ ^k	😊	✓
Proper storage of IPE ^b	100%	80%	★★★★★★ ^k	😐	✓
On-site availability of materials during application (water, soap, and paper towel) ^b	15%	8%	★ ^k	😐	✓

The workers' qualifications were evaluated, to verify the hypothesis that trained workers carry out their activities more safely and are less likely to have accidents.

Positive impacts of certification on the training of forest workers were confirmed by the claims of participation in training – for all jobs – and by the initial instructions provided by the firms. For chainsaw operators, the appropriate use of oil in the chainsaw (not using burnt oil) was proof of the certification's positive impact. However, this was not the case with regard to procedures for hung trees.

Qualification of forest workers					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Initial instructions ^a	87%	47%	★★★★★★ ^k	😊	✓
Training for all workers ^b	74%	54%	★★★★★ ^k	😊	✓
Use of burnt oil in the chainsaw ^b	13%	65%	★★★★★★ ^k	😊	✓
Correct procedure in case of "hung trees" ^b	64%	41%	★★★★★ ^k	😐	✓

Instruction materials were considered important sources of reference for the workers, and the positive impact of certification in this respect was clear. The importance of these materials was also recognized by the workers in their statements, as can be observed in the table below.

The subjects addressed in these materials were (in order of frequency): health and safety at work; education and environment; forest machines and mechanics; pesticide application; information on the firm and its rules; chainsaw operation; crop handling; certification; and others, such as time off, nutritional guidance, and wood processing.

Impacts of socio-environmental certification on written materials provided to the workers					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Provision of written materials to the workers ^f	100%	14%	★★★★★ ^k	😊	✓
Perception of the importance of the written materials provided ^b	100%	94%	★★★★★ ^k	😊	

Meals and support

The positive impacts of socio-environmental certification on the meals and the overall infrastructure made available at the field were evident. All statements related to meals (provision of meals in the field, perception of the quality of meals, and provision of basic food baskets and nutritional guidance), and to the overall infrastructure available in the field (water availability, vehicle permanently on call for emergencies, person trained for emergencies, and means of communication available in the field) revealed a positive impact.

Similarly, although not fully in compliance with the legislation, field observations and statements made by workers regarding the presence of first-aid materials, toilets and areas for meals at the workplace showed that certification did indeed contribute to the well-being, health, and safety of workers engaged in forest activities, as shown in the following table:

Meals and overall infrastructure in the field					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Provision of meals in the field ^b	58%	37%	★★★★ ^k	😊	✓
Quality of the meals ^b	82%	76%	★★★★★ ^k	😊	✓
Nutritional guidance (for those not receiving meals in the field) ^b	36%	5%	★★ ^k	😊	
Basic food basket (for those not receiving meals in the field) ^b	49%	2%	★★★★ ^k	😊	
Availability of water in the field ^b	99%	89%	★★★★★ ^k	😊	✓
Person trained for emergencies ^b	63%	16%	★★★★★ ^k	😊	✓
Vehicle permanently on call ^b	86%	75%	★★★★★ ^k	😊	✓
Means of communication in the field ^b	83%	59%	★★★★★ ^k	😊	✓
First aid materials in the field ^f	43%	0	★★★★ ^k	😊	✓
Place for meals in the field (deficient) ^f	43%*	0	★ ^k	😊	✓
Sanitary facilities in the field ^f	57%	0	★★★★ ^k	😊	✓

*None of the certified or control operations had a place for meals in full compliance with the legislation. The quality classification did not apply to 43%, but to zero.



Place for meals in a certified firm



The best place for meals in control firms



The worst place for meals in control firms

Transportation

The positive impact of certification was also observed with regard to the appropriateness of the transportation provided to forest workers. The table below presents data collected on the provision of transportation by the company, the appropriateness of the means of transportation (types of transportation considered inappropriate were: riding on a tractor or in the dumpcart of large trucks and pickup trucks, in a derelict cab, and in a cab where fuel is being transported together with the passengers), and an appropriate place for transporting tools (in closed compartment, separate from passengers).

Appropriateness of transportation provided to workers and transport of tools in the same compartment					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Provision of transportation by the company ^b	65%	39%	★★★★★ ^k	😊	✓
Appropriate transportation by the company ^b	98%	87%	★★★★★★ ^k	😊	✓
Tools transported in separate compartment ^b	96%	61%	★★★★★★ ^k	😊	✓

Equipment

The conditions of forest machinery (plain farming tractors, track loaders, bulldozers, and skidders) and of chainsaws were assessed through field observations. The safety structures observed were: safety belt, roll-over protective structure and protection against power transmissions. Items checked were: headlights, lights and reverse gear warning signal, horn, and rear-view mirror.

The following table shows the contrast in the data collected and the obvious impact of socio-environmental certification on the safety of workers as regards the conditions of forest machines. There was no difference in terms of chainsaw devices (manual chain break, right hand protector, left hand protector, accelerator safety lock, and chain catcher), since both the certified and the control firms had some chainsaws without chain catchers.

Safety structures and elements of forest machines and chainsaw safety devices					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Machines with all safety structures ^c	100%	0	★★★★★★ ^k	😊	✓
Machines with all safety elements ^c	80%	0	★★★★★★ ^k	😊	✓
Chainsaw safety devices ^c	60%	71%	★★★★ ^k	😐	✓

Income

Indicators used in the evaluation of the workers' income were: wages, perception of compatibility of this wage in the region and other benefits received from the hiring company (medical and dental care and basic food basket).

The data revealed that forest workers employed by certified firms received better salaries than workers employed by the control firms. The next table shows that the wages of forest workers in certified firms are concentrated in the categories higher than a minimum wage and lower or equal to three minimum wages (93%). In the control firms, these categories represent only 67% of the workers' statements.

Wages of all the forest workers interviewed in certified and control firms		
	Certified	Control
Equal to 1 minimum wage ^b	3%	27%
Between 1 and 2 (and equal to 2) minimum wages ^b	62%	60%
Between 2 and 3 (and equal to 3) minimum wages ^b	31%	7%
Between 3 and 4 (and equal to 4) minimum wages ^b	3%	5%

The wage variable was analyzed only for outsourced workers, in order to investigate whether the positive impact was not restricted to the direct employees. In the table below, a significant difference can be observed between the wages paid to outsourced workers in certified and control operations in proportions very similar to those found for all workers.

Positive impact on the wages of outsourced workers in certified firms		
	Certified	Control
Equal to 1 minimum wage ^b	6%	36%
Between 1 and 2 (and equal to 2) minimum wages ^b	71%	53%
Between 2 and 3 (and equal to 3) minimum wages ^b	21%	6%
Between 3 and 4 (and equal to 4) minimum wages ^b	3%	4%

The hypothesis that outsourcing leads to more precarious working conditions was not proven, especially with regard to reduction of wages in certified forest operations. Socio-environmental certification had the same impact for hired employees and outsourced workers.

As to the other benefits – in addition to wages – socio-environmental certification also had a positive impact in the following areas: medical and dental care and basic food basket. Two certified companies offered in-house medical care and one of them had a dentist's office.



Dentist's office at certified firm



Clinic at certified firm

The perception of wage compatibility in the region did not differ between workers from certified and control operations. In both cases, the majority of workers considered their wages compatible.

Income of the forest workers interviewed					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Registered wage of hired employees ^b	96%	72%	★★★★★ ⁱ	😊	✓
Wage paid to outsourced workers ^b	98%	59%	★★★★★ ⁱ	😊	✓
Perception of wage compatibility ^b	82%	77%	★★★★★ ⁱ	😊	✓

Hiring

Hiring was evaluated mainly in relation to the workers having their work card signed by the employer, which guarantees some of the main labor rights, including unemployment insurance, regular wages, vacation, 13th salary, weekly paid leave, retirement, and severance pay. Other indicators analyzed in the light of the labor legislation were the maximum number of hours worked in regular shifts and income received and registered in the payroll.

Considering that all workers from certified operations had signed work cards, it was clear that certification did not allow any flexibility on this point.

There was also a positive impact of socio-environmental certification for the workers with regard to receiving payments off the books, but not in relation to the working hours in the regular shift (maximum allowed by the legislation). These practices were observed in certified firms, but were less frequent than in control firms. Again, the hypothesis of precarious working conditions due to outsourcing was not confirmed in the certified companies, since the positive impact on the registration of resources in the payroll was observed for both hired employees and outsourced workers.

Summary of items related to hiring					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Registration in work card of hired employees ^a	100%	95%	★★★★★ ^k	😊	✓
Weekly work load in regular shift ^b	92%	82%	★★★★★ ^k	😊	✓
Receipt of resources only with registration in payroll ^b	91%	54%	★★★★★ ^k	😊	✓

Relationship with outsourced companies

Outsourcing is a common practice in most forest sector operations. This can potentially lead to precarious working conditions, since, as they are small and less structured, outsourced companies may find it hard to comply with the

legislation. Socio-environmental certification requires the monitoring of activities of outsourced companies so as to guarantee not only the rights of employees, but also the rights of outsourced workers.

Some analyses carried out in the preceding areas – such as training, capacity building and wages – confirm the hypothesis that outsourcing in certified operations did not engender precarious working conditions, and that the monitoring of activities of outsourced companies is very important.

In this evaluation, the monitoring of outsourced companies was also carried out qualitatively with the people in charge of the operations and those in charge of the outsourced companies. The frequency and type of monitoring reported by the certified operations was more robust than those carried out by control operations, as shown in the table below:

Positive Impacts	Negative Impacts
Enforcement and inspection of aspects related to workers' health and safety (use of IPE, infrastructure, and meals in the field and lodgings)	Sizeable investment to meet requirements that are not linked to compatible financial return
Compliance with environmental legislation	Very high standards for workers' meals
Compliance with labor laws	Unnecessary documentation
Greater discipline, organization, and honesty	
Greater communication and care for contractors and workers	
Better remuneration and no delayed payments	
Monitoring through daily, weekly or monthly control of the outsourced companies	

The evidence provided by the qualitative analysis of socio-environmental certification served as input for considerations on the positive impact that was not shown by the quantitative analysis (probably due to the size of the sample). The conclusion is that socio-environmental certification has a positive impact on the monitoring of outsourced companies, based on the qualitative analysis as well. Comparing:

Summary of items related to outsourced companies		
	Certified group	Control group
Monitors outsourced companies ^f	85%	57%
Monitors outsourced companies, but with weaknesses ^f	14%	14%
Does not monitor outsourced companies ^f	0	29%

The period of time that contractors worked for the firms was also evaluated, considering that they would be more stable in terms of time spent working for firms that offered the best conditions in the forest area. However, there was no impact in this case.

Participation in trade unions and time worked at the operations

Historically, trade unions have been socially significant and played a decisive role in representing rural workers and guaranteeing their rights. However, despite the importance of trade union organizations, there was no difference between statements given by the certified group and the control group regarding the participation of forestry workers in trade unions. Also, there were no reports about companies restricting the workers’ participation in trade unions. These variables are usually linked to local issues and should be evaluated in view of the regional context and collective agreements. Length of employment at the same company was considered a relevant bond and an acknowledgement of benefits. No positive impact was found on this point for employees or outsourced workers.

Formal Education

Resident employees who had not completed high school were interviewed to find out whether they attended school. Certification had no impact in this regard, although there are employees of certified operations who do attend school. There was a positive impact in relation to the workers’ children, although not all of the residents’ school-age children were enrolled in school.



Best situation found in lodgings in certified enterprises



Worst situation found in lodgings in certified enterprises

Schooling among workers and school-age children living on company premises					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Workers who attend school ^b	16%	0		☹️	
School-age children of resident workers who attend school ^b	85%	15%	★★★★★ ^k	☺️	

Housing

The comparison between housing-related variables for certified and control operations was jeopardized by differences in the number of residents. Housing and lodging conditions were quite different among the firms studied during data collection. In most cases, the number of residents and lodgers was very small, making it impossible to evaluate eventual impacts through a statistical analysis. Due to the size of the sample, the tables were filled with the frequencies of the data rather than the percentages, as in the preceding items (next table).

Housing conditions

Workers living in company houses were questioned about the treatment and quality of the water they consume, payments for housing, access to and payment for electricity, and availability of hot water for bathing. The only variable that showed a positive impact was water treatment for human consumption.

Lodging

Again, little positive impact of certification on lodging conditions was detected due to the size of the sample. Nevertheless, positive impacts of socio-environmental certification were found with respect to the hiring of a professional to clean the lodgings and water treatment for human consumption.

Lodging conditions on certified and control enterprises					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Cleanliness at lodgings considered appropriate ^b	*10/14	*14/18	★★★★★ ^k	☹️	✓
Company hires professional to clean lodgings ^b	*3/14	*10/18	★★★★★ ^k	😊	
Water treated for human consumption ^b	*9/14	*4/22	★★★★★ ^k	😊	
Perception of drinking water without contamination ^b	*14/14	*22/22	★★★★★★ ^k	☹️	✓
Lodging with appropriate area to keep personal belongings ^b	*9/14	*14/22	★★★★★ ^k	☹️	
Sleeping quarters without food storage ^b	*9/14	*16/22	★★★★★ ^k	☹️	✓
Workers have electrical lighting in the lodgings ^b	*9/14	*5/22	★★★★★ ^k	😊	
Workers have hot water for bathing in the lodgings ^b	*9/14	*11/22	★★★★★ ^k	☹️	

Sanitation

This item investigated garbage and sewage disposal for the houses and lodgings of forestry workers. Answers regarding sewage were ranked according to environmental degradation potential and sanitation conditions at the destination: good (septic tank and public sewage system); medium (rudimentary cesspit); and bad (discharges in open ditches or into rivers, lakes, and springs). Certification had no impact on sewage disposal from the houses and lodgings, since rudimentary cesspits were commonly found in both certified and control operations.

Garbage disposal was ranked as: correct (garbage collection by the company or public garbage collection) and incorrect (garbage disposed of in rivers, streams or open ditches, burnt or buried). In this case, certification contributed significantly, since all workers from certified companies indicated that there was correct garbage disposal.

Lodging conditions on certified and control enterprises					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Sewage destination (good and medium) in houses ^b	*12/12	*8/9	★★★★★★ ^k	☹️	✓
Appropriate disposal of garbage from the houses ^b	*14/14	*6/9	★★★★★★ ^k	😊	✓
Sewage destination (good and medium) in lodgings ^b	*10/12	*15/18	★★★★★★ ^k	☹️	✓
Appropriate disposal of garbage from the lodgings ^b	*14/14	*15/22	★★★★★★ ^k	😊	✓



Garbage disposal: Worst situation found in certified firms (burning in the open)



Garbage disposal: Worst situation found in control firms (garbage left in the open in a forest fragment near the lodging)

Field observations highlighted certification’s impact in relation to garbage disposal, considering the significant difference identified in the field: six out of seven control companies had inappropriate garbage disposal procedures, against only one of the certified companies.

Conservation of the native vegetation

The conservation of natural resources by the sampled companies was evaluated through the analysis of the following actions: environmental licensing, formal establishment of a Legal Reserve, monitoring of environmental legislation, control of the species invading Permanent Preservation Areas, reforestation with native species, and studies on fauna and flora. In addition, signs of forest conversion (substitution of forest segments for agriculture, livestock raising, forest uses, etc.) were investigated, as well as the proportion of native vegetation on company property.

The impacts of FSC certification on the conservation of natural resources were evident among the companies studied. The certified companies controlled plants invading APPs, carried out studies on fauna and flora, and did not demonstrate any indication of forest conversion – contrary to what was observed in control companies.

Due to constant changes in the legislation, certified companies developed environmental legislation monitoring mechanisms, or had obtained – or were in the process of obtaining – environmental licensing and formally established a Legal Reserve. All these characteristics substantiate the positive impact of certification. Reforestation with native species was the only item for which no positive impact was demonstrated. However, there are other native vegetation recomposition techniques that were not considered in the evaluation. See table below:

Conservation of natural resources in the firms					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Invading species control plan ^a	100%	33%	★★★★★ ^k	😊	✓
Studies on fauna and flora ^a	71%	29%	★★★★★ ^k	😊	✓
Planting with native species ⁱ	71%	50%	★★★★★ ^k	😐	
Monitoring of environmental legislation ^a	100%	29%	★★★★★ ^k	😊	✓
Environmental licensing of properties ^a	86%	14%	★★★★★ ^k	😊	✓
Legal reserve property established or being established ^a	100%	57%	★★★★★ ^k	😊	✓
Average percentage of native forest owned by company ^a	42%	34%			
No evidence of conversion of native forest ^f	100%	57%	★★★★★ ^k	😊	

The research team considered this effect upon the conservation of natural areas to be extremely important, since the areas studied are located in areas of Atlantic Rain Forest. The Atlantic Rain Forest is considered a priority biome

for biodiversity conservation, given the high number of endogenous species and the fact that it has been reduced to 7% of its original area.

According to data from the Remaining Atlantic Rainforest Atlas prepared by the SOS Mata Atlântica Foundation and the National Aerospace Research Institute (INPE), in 2008 the average conservation area in expanses held by the companies studied (42% located in certified operations) was much greater than the average conservation areas in their respective states (7.4% for Rio Grande do Sul and 23.8% for Santa Catarina).

Protection of APPs

The field team gathered evidence on the use of APPs, as well as on forest management in the proximity of these areas. According to testimonies by company representatives, certification had an impact on the management of areas in the proximity of the APPs: the demarcation of sensitive natural areas, pre and post-harvest evaluations in buffer zones, direction of harvest logging (opposite direction from the APP), and the identification of trees for the conservation of avifauna.

With regard to machinery removal and the storing of timber in APPs, there was no statistical difference in the analysis when comparing the testimonies of workers and company representatives. This may also be due to the small number of companies sampled.

Protection of natural resources by companies					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Special treatment for buffer zones ^a	100%	43%	★★★★★ ^k	😊	✓
No timber stocks at APPs ^s	86%	57%	★★★★★ ^k	😊	✓

Forest Management

The Management Plan is a document that provides a description of forest resources and the environmental limitations of forest extraction systems, forest growth monitoring mechanisms, and environmental safeguards.

For the evaluation of forest management, the following variables were used: Management Plan with public summary, wood wasted in the field, existence of a Fire Fighting and Prevention Plan, and fire outbreak reports.

The following table outlines the quality of the certified companies, not only with regard to the Management Plan, but also with regard to all the items surveyed, and the consequent positive impacts of social and environmental certification upon forest management.

Practices associated to forest management by companies					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Fire fighting and prevention plan ^g	100%	28%	★★★★★ ^k	😊	✓
Fire outbreak reporting ^a	100%	86%	★★★★★ ^k	😊	✓
Forest management plan ^a	100%	57%	★★★★★ ^k	😊	✓
Public summaries of the Management Plan ^a	100%	0	★★★★★ ^k	😊	✓
Wood wasted during production ^h	0	29%	★★★★★ ^k	😐	✓

Certain fire-fighting instruments and structures were observed in the field, such as fire dousters, water trucks, coastal pumps, observation towers, and motor pumps, as well as fire fighting teams and brush clearance units.

Threats to biodiversity

Hunting, use of fire, and oil spills in the field were considered threats to the biodiversity of the operations’ natural areas. The hunting of wild animals is a cultural practice in southern Brazil and was mentioned by workers from both certified and control companies.

Moreover, all company representatives stated having taken measures to avoid the aforesaid practice to a greater or lesser extent by reporting illegal activities to environmental agencies, through the use of educational and warning signs, notification/penalties, patrolling and surveillance, as well as the establishment of gates in strategic areas. However, no positive impact on the decrease or eradication of wildlife hunting on company grounds was detected as the result of certification.

The eradication of the use of fire in forest plantations and the containment of oil spills in the field featured different results, as per collected statements. A positive impact of certification was noted regarding these two issues, indicating the use of conservationist practices. Field observations provided no evidence regarding the use of fire or the occurrence of oil spill in certified operations, which differed from control operations. See table below:

Threats to biodiversity in certified and control operations					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Use of fire ⁱ	0	43%	★★★★★ ^k	😊	✓
Occurrence of hunting ^f	57%	71%	★★★★ ^k	😊	✓
Measures taken by the operation to control hunting ^f	100%	100%	★★★★★ ^k	😊	✓
Avoidance of oil spills in the field ^a	100%	28%	★★★★★ ^k	😊	✓

Pesticide control

Pesticides are divided into four different classes according to their toxicity, from the most toxic (Class I) to the least toxic (Class IV). The number of companies (both certified and control) in possession of Class I to IV products was observed, as well as the number of products in each toxicological class.

Regarding the control of pesticides used in the operations, the study observed the toxicological classes of the pesticides, the permission granted by FSC for their use, the storage and safekeeping of toxic products, and the disposal of empty containers.

Although the sample consisted of only 14 companies, it was evident that control companies use more products with higher toxicity, a characteristic observed from the number of companies using the products, as well as the quantity of products used. However, pesticides found on the 2007 FSC Prohibited Pesticides List were found both at certified (atrazine+simazine, fipronil, and chlorpirifos) and control companies (fipronil, lambdacialotrine, and deltametrine).

Toxicological classes ^c	Certified group		Control group	
	Nº companies	Nº products	Nº companies	Nº products
Class I ^c	0	0	2	2
Class II ^c	1	2	2	2
Class III ^c	2	5	3	9
Class IV ^c	6	7	6	10

The storage of pesticides was considered correct when products were stored in specific and exclusive locations, with no contact with other material, equipment or utensils; and incorrect when stored in inappropriate locations (barns, sheds, garages, repair shops) and together with tools, machines, foodstuffs, and fuel. Certification had an impact on this item, as confirmed by field observations, which indicate that greater care was taken regarding storage conditions at certified companies.

Regarding the removal of empty containers, correct practices included disposing of them at collection stations or returning them to vendors. Incorrect practices entailed reusing or recycling those left in the field; or burning, burying, or disposing of them via the public garbage collection service. The difference in data was not significant. One of the reasons in this case may have been the small sample size, as no impact of certification was detected. See below:

Threats to biodiversity at certified and control operations					
	Certified group	Control group	Quality certified	Impact	FSC requirement
Correct disposal of empty pesticide containers ^f	83%	50%	★★★★★ ^k	☹️	✓
Correct storage and safeguarding of pesticides ^c	71%	14%	★★★★★ ^k	☺️	✓



Worst situation of pesticide storage in certified companies (little space and boxes of anticide in direct contact with the floor).



Worst situation of pesticide storage in control operations (low ceiling and no ventilation).

Relationship with stakeholders

The stakeholders in the region of each of the companies surveyed were consulted to determine the relationship of the companies with the surrounding communities with regard to both social and environmental aspects. Questions were also posed as to whether they were aware of FSC socio-environmental certification and the impacts this would have on the region. The stakeholders consulted were: the Rural Workers’ Union, municipal environment councils, research institutes, and associations.

The qualitative analysis revealed conflicts between the community and the certified and control operations: absence of individual protection equipment (IPE) for forest workers, inadequate collective transportation, informal hiring of workers, and lack of medical care and health insurance for employees.

The stakeholders’ evaluation of the operations’ activities in the region indicated a positive impact of certification, considering that none of the certified operations were classified as bad, as shown in the table below:

	Certified group			Control group		
Problem/conflict with stakeholder ^e	22%			17%		
Action of the company in the region ^e	Good 78%	Average 22%	Bad 0	Good 66%	Average 17%	Bad 17%

The last item analyzed was the stakeholders’ level of awareness regarding FSC socio-environmental certification. Most of them (70%) declared being aware of the certification, indicating that it had a positive impact on society. The main impacts mentioned were: better labor conditions for employees of certified operations, increased professionalism, improved safety in the workplace (more frequent use of IPE), formal hiring of workers (formal contract and registration in the work card), and greater compliance with environmental legislation.

Qualitative data

Positive impacts of socio-environmental certification on forestry operations were found for most of the items studied. No negative impacts were found based on quantitative data. However, the qualitative analysis identified certain negative impacts, mainly by those in charge of the operations; namely, compliance with radical federal legislation that diverges from the reality of the forest production system, the high direct cost of certification (aggravated by the current crisis) with a subsequent reduction in the tool’s cost/benefit ratio, more paperwork, and the need to repeat registrations and publications, as well as the difficulty encountered by service providers to adapt to the norms.

Nevertheless, the positive impacts exceeded the negative impacts in both frequency and complexity, including in the qualitative analyses. The issues raised by workers, those responsible for the operations, and stakeholders confirm the impacts assessed by the quantitative analysis. See table below:

Positive and negative impacts of FSC certification based on qualitative data	
Positive impact of FSC certification	Negative impact of FSC certification
Quality of life of employees	Compliance with rigid federal legislation
Compliance with labor laws	High direct cost of certification
Worker health and safety	Paperwork and need to repeat registries and publications
Sustainable forest management	Difficulty of service providers to adapt to norms
Change of mentality regarding preservation of natural resources	
Relationship with the community	
Improved trade conditions on the foreign market	
Greater proximity to clients	

Economic aspects

The qualitative analysis addressed the reasons why FSC certification was sought by the firms surveyed, as well as the economic advantages and disadvantages of certification. Only one gave managerial advantages as the main reason for adopting FSC certification. The reasons mentioned in favor of certification were all associated with the consumer market, as it is a requirement or alternative for participating in differentiated markets.

At the same time, sources from two of the firms declared that the main reason had to do with the company's image (FSC certification provided a way to overcome the "villain" or "forest destroyer" image), demonstrating environmental and social responsibility. Lastly, one of the firms stated that certification was a way to reduce risks for foreign investors, who consider the tool a guarantee of procedural quality and of respect for socio-environmental principles.

Only one of the representatives from the control companies stated that certification had been requested by consumers. However, that company was not interested in obtaining certification due to the high cost of compliance and because it was also able to maintain buyer fidelity by ensuring a continuous supply of quality timber. Other control firms supplied markets that made no demands regarding FSC certification – usually the domestic market. Some said they would be motivated to obtain certification in the future, in case there was increased pressure from the market in this regard.

Scenario

It is important to mention that this case study was carried out during a financial crisis in the export market. Due to the devaluation of the US dollar, some companies declared that the cost/benefit ratio of FSC certification was questionable during a period of crisis. Concerns were expressed over the operations' feasibility and the drastic changes in market strategies, which usually implied the reduction of exports (hence, the relevance of FSC certification), shifting to the processing of raw material for the domestic market.

Three firms did not participate in the study due to bankruptcy, and eight others refused to participate, alleging administrative difficulties or lack of interest.

The market plays an essential role regarding the positive effects of certification. In a scenario such as this, strategies must be outlined to ensure that consumers are aware of the results of their actions and of the positive impacts on the environment and the quality of life of individuals involved in the process.

Proposed strategies include maintaining correct proportions between the direct cost of certification and the volumes of wood being sold with the certification seal, or offering differentiated certification norms for smaller firms, without compromising on the essential criteria.

Conclusions

The study demonstrated that FSC forest certification made important socio-environmental contributions in forest operations in the states of Rio Grande do Sul and Santa Catarina. The positive impacts were related to all of the socio-environmental aspects surveyed: worker health and security, capacity building, use of pesticides, natural resources conservation, forest management, and community relations.

Thus, FSC certification fulfills its role as a market tool for improving sustainable forest management, helping to preserve the fauna, flora, and water resources of the natural ecosystems, while respecting the health, safety, and quality of life of the workers.

Increased access to markets was revealed by the study to be the main reason for seeking FSC certification. Higher financial returns from certified timber were a secondary consideration. Usually certified timber is not sold for higher prices. However, there is a preference for this product vis-à-vis non-certified timber.

At the time this study was conducted, certified operations were going through a period of crisis due to fluctuations in foreign exchange rates, as FSC certification is mainly recognized by the foreign market. Many operations were marketing certified products at prices that were no higher than their non-certified equivalents.

Unannounced visits are suggested. This may make certification even more effective. None of the certified operations received such a visit, although it is recommended under FSC norms. Many described the difficulties associated with this type of visit. However, some irregularities were detected in certified companies that could have been identified and corrected during unscheduled visits.

An important issue raised by the study is the low number of smaller operations with FSC certification. The reasons for this must be determined, since it would make the tool more democratic and would expand its socio-environmental benefits. Some of the changes suggested by the players involved include cost reductions for small-scale producers, better explanation of the rules and the paperwork involved, and the formulation of specific norms for these cases.

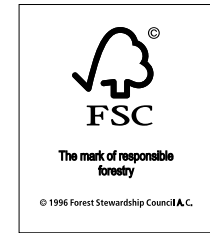
The positive impacts of certification identified in the firms studied corroborate the expectation that certification promotes the conservation of natural resources and the quality of life of forest workers. It is believed that in developed countries, where more players and agents are operating in conformity with certification standards, the impacts of forest certification are lower.

The present case study therefore highlights the importance of the end consumer's awareness regarding the need to expand FSC certification in developing countries, so that it may expand its role as a driving force on behalf of sustainability.



| chapter 3 |





Extractive Communities in Acre

Community-Based Timber Forest Management

Community-based organizations that implement forest management in the state of Acre were first started in the 1990s, as a result of the rubber tappers' movement. They became pioneers in Community-Based Forest Management (CBFM), establishing themselves in Agricultural and Extractive Settlements (Assentamentos Agroextrativistas – PAEs). Later on they were joined by families migrating from the south and southeast of the country, who also became engaged in forest management, although in smaller numbers.

Timber forest management in extractive communities in Acre is followed closely by both national and international NGOs who, together with federal and state governments, support the activity by providing technical and financial resources, as well as by establishing specific public policies for the sector. Thus, all segments engaged in sustainable forest management in the country have played a key role in structuring this activity in the state of Acre.

In 2007, the state government declared it a public policy to support timber and non-timber forest activities, and a goal was set to certify one million hectares of forests in the state. Acre currently has five FSC-certified community-based forest management cases with a total of 23,259 hectares as of 2007.

However, despite the progress made with regard to community-based forest management, scientific evidence on certification's economic and environmental success is still limited, as every community has its own history and social context, with very specific economic foundations.

Treatment

Socio-environmental certification was the treatment for the Impact Assessment of Socio-environmental Certification of community-based timber forest management in Acre. The beneficiaries were the certified community members. The control sample was selected from a group of community members who practiced timber forest management without certification, but whose characteristics were comparable to certified members. The main outcome variables analyzed were environmental preservation, the association's management quality, the use of Individual Protection Equipment (IPE), and the income derived from timber production.

The goal of the Impact Evaluation of FSC Certification in Agricultural and Extractive Communities in Acre was to contribute to this important debate. Among other issues, the study focused on the concern about the fate of rainforests, investments in the conservation of forest resources, the well-being of forest workers, and (timber and non-timber) management as a operation strategy for traditional populations. Due to a lack of similar academic work, this became a pilot study for assessing the social, economic, and environmental impacts generated by socio-environmental forest certification.

The information generated by the study may broaden the knowledge on community-based forest certification for governments (for the design of public policies and promoting sustainable forest management), NGOs (for adapting intervention methodologies and practices for community-based forest management), and consumers (in their reflections about the social function associated with the purchase of timber) alike.

The study also provides key elements so that financing institutions may improve their understanding of the impacts of the investments made. Finally, the FSC system will also be able to assess the impact of the activities being undertaken by certification vis-à-vis agricultural and extractive communities.

Sampling universe and method

Even though there were five FSC-accredited certifiers in Brazil by 2007, only two of them certified community-based forest operations – the main one being the Institute for Forest and Agricultural Management and Certification (Imaflora) – as a part of the SmartWood program.

The similarities between certified community-based forest operations and the existence of non-certified community-based forestry operations with similar characteristics played a key role in ensuring the quality of the impact assessment.

The similarity criteria between the two were:

- ✓ The performance of community-based forest management;
- ✓ The exploitation of timber as the main forest management product;
- ✓ Land tenure organized as an Agricultural and Extractive Settlement Project (PAE);
- ✓ The certification standard used: FSC Standard for Dryland Natural Forest Management in the Amazon Region.

Data were collected by means of questionnaires that were distributed to both community members and technical staff. No field checking was performed for the majority of issues addressed by the questionnaire, which means that the results from the study come from information gathered from interviewees, and reflect – in addition to the situation in the field – their personal opinions.

Signs of degradation – such as accidental fire, deforestation, capture of wildlife, garbage, excessive amounts of cattle, and illegal logging – have been identified within the PAEs and the occurrence of the same impacts within

certified management units was investigated. Hence, the results of the environmental impacts generated refer to areas inside management units, as well as external areas.

Characteristics of certified community-based forest operations in the Legal Amazon					
Name of operation	Type of product	Exploited products	State	Land-tenure organization	Certifier
Association of Rural Producers in Forest and Agriculture Management - APRUMA	Timber	Native Amazon species	AC	Settlement Project (SP)	Imaflora/ SmartWood
Association of Residents and Producers from the Chico Mendes Agricultural and Extractive Project – AMPPACM	Timber	Logs and sawed timber for processing	AC	Agricultural and Extractive Project (PAE)	Imaflora/ SmartWood
Agricultural Community Association of Forest Product Extractors / Menino Deus do Curuçá Community	Timber	Native Amazon species	AM	State Concession Area	SCS
Association of Residents and Rural and Extractive Producers of Urucureá – ASMOPREURA	Non-timber	Tucumã-palm basket-weaving	PA	Agricultural and Extractive Project being designed	Imaflora/ SmartWood
Producer Association of the Seringal Equador Agricultural and Extractive Settlement Project	Timber	Logs from different tropical wood species	AC	Agricultural and Extractive Project	Imaflora/ SmartWood
Rubber-tapper Association of the São Luiz do Remanso Extractive Reserve – ASSER	Timber /Non-timber	Copaiba palm oil, jarina seeds, logs/bark from exploited logs	AC	Agricultural and Extractive Project	Imaflora/ SmartWood
Rubber tapper Association of Porto Dias	Timber/Non-timber	Logs and sawn timber upon request, copaiba palm oil	AC	Agricultural and Extractive Project	Imaflora/ SmartWood
Kayapó community established on the Baú Indigenous Land	Non-timber	Raw Brazil nuts and Brazil nut oil	MT	Permanent ownership rights – indigenous land	Imaflora/ SmartWood
Mixed Extractive Cooperative of the Iratapuru River – COMARU	Non-timber	Brazil nut seed, copaiba palm oil and tall-oil resins	AP	Sustainable Operation Reserve	Imaflora/ SmartWood
Cooperative of Agricultural and Extractive Producers of the Cajari River Extractive Reserve – "COOPER-CA"	Non-timber	Raw açai heart-of-palm	AP	Extractive Reserve	Imaflora/ SmartWood

To understand the control operations, extensive research was carried out by consultants and community members in the region in order to identify associations with characteristics similar to those selected for the groups of certified initiatives. The same criteria were used for both the control group and the certified operations, except for the FSC Certification Standard. Only two associations listed in the table below matched the criteria.

The sample data refer to the year 2007 and the sample size was calculated based on the number of community members practicing forest management for timber production (*manejadores*) in each association. Sample size was calculated for a 10 percent error estimate, with a 90 percent confidence interval.

Sample universe and size			
Questionnaires	Association	Community members/Manejadores	
		Universe	Sample
Certified Associations			
A	1	18	10
B	1	10	6
C	1	7	5
D	1	15	10
Total certified	4	50	31
Control Associations			
E	1	9	7
F	1	4	3
Total control	2	13	10

Characteristics of non-certified community-based forest operations in the Legal Amazon				
Name of operation	Type of product	Products exploited	State	Land tenure organization
E	Timber/ Non-timber	Logs, Brazil nuts, açai and patuá seeds	AC	Agricultural and Extractive Settlement Project (PAE)
F	Timber/ Non-timber	Logs, Brazil nuts, andiroba and açai seeds	AC	Agricultural and Extractive Settlement Project (PAE)

Collected material

The material collected was based on the analysis of documents, which was done with the collaboration of community-based forest management consultants. Included in this group were staff member from Imaflora, the Center of Amazon Workers (CTA), and from the State Secretariat of Forests (SEF).

Taking into account the peculiarities of Acre's community-based forest operations, the original data collected was submitted to adaptations in the field, generating five types of questionnaires:

- ✓ For certified associations: questionnaire submitted to the president of the association (or director), to record the association's history, its management, the products exploited, and its perception of certification;
- ✓ For certified community members: questionnaire submitted to certified association members (*manejadores*), to record characteristics before and after certification, in addition to aspects associated with environmental preservation, wildlife, capacity building for forest management and income;

- ✓ For control associations: questionnaire submitted to the president (or director) of the non-certified association, to record the association's history, its management, products exploited, and labor conditions;
- ✓ For control community members: questionnaire submitted to the *manejadores* of non-certified associations, to record the characteristics of environmental conservation, wildlife, capacity building in forest management, and income;
- ✓ For technical assistance staff: questionnaire submitted to technical staff working in forest management, with at least one year of experience in working with that specific community.

The aim was to record their perceptions of the social, environmental, and economic changes that have taken place in these communities. Data were collected between April 16th and May 28th, 2007 by a team consisting of two researchers with majors in forest and agricultural engineering and prior experience in working with questionnaires and the realization of impact assessment studies.

In an attempt to reduce the seasonal effects that are so common in rural activities, the analyses for impact assessments should be carried out in stages, i.e., field sampling should be repeated over subsequent years to reduce the influence of temporary effects (such as climate restrictions and/or abnormal price fluctuations) that may jeopardize data interpretation. The present study did not allow for the repetition of data collection, however, and its results must be considered a conjunctural snapshot of the communities. No inference should be made with regard to seasonal variations.

Transportation to the communities – where the data were collected – was rather precarious and aggravated by the long distances between housing facilities. Internal locomotion was therefore often on foot, or with ox carts, bicycles, or motorcycles, with the help of the communities. That allowed for a qualitative assessment of the communities' routines, of community-based forest management, and other extractive activities that are typical to the local culture.

Other data were collected with the support of institutions involved with these communities. The selected institutions had a record of at least one year of joint work. Interviews were conducted in writing and then typed into a specific software used for the questionnaires. Using that as a basis, procedures to ensure consistency, critical thinking, and data transformation for variables used in the statistical analyses were adopted.

Results and discussion

The impact assessment results are divided into three parts. The first presents the characteristics of the operations, such as their origin and their relationship with community members, forest use activities practiced before the establishment of the PAE, and participation in social movements and government programs. The second part presents the social and environmental impacts identified by social players as the direct consequence of certification actions. The third addresses issues for which the certified group presented characteristics that were very similar to those of the control group

Overall profile of certified and control community members

Origin of community members

Almost all certified community members, as well as those of the control group, were born and continued to live and work in Acre. Only three of them migrated from other regions and settled down in the state: two control group members had migrated from Ibirapitã (RS) and Icó (CE) and a third one, from the certified group, was from Jaci Paraná (RO).

Certified community members and those of the control group were asked to describe their relationship prior to the establishment of the PAEs. Qualitative responses were classified according to the following categories: kinship (community members and/or family members already living there), friendship (among residents), shorter association (relationship between residents between 4 and 10 years), longer association (relationship between residents between 10 and 40 years), residents (only residents from the same place), organized residents (those organized for the establishment of the PAE), and none (did not maintain any type of relationship because they did not live in that region).

Statement on type of relationship between community members prior to the establishment of the PAE							
Categories of relationship between community members							
	Kinship	Friendship	Longer period of time	Shorter period of time	Residents	Organized	None
Certified group	22%	19%	8%	11%	24%	11%	5%



Community rubber tapper

Data show that the certified group had a more consistent relationship, as they had been in contact with each other and had organized themselves for a longer period of time than the control group.

Activities prior to Community-Based Forest Management (CBFM)

The main traditional activities carried out were the collection of Brazil nuts, rubber tapping, and subsistence farming. Other activities – such as the extraction of açai and bacaba – have been observed as well, but were not economically relevant. The activities that community members were engaged in prior to CBFM include traditional practices, as well as those that have to do with the communities' history of survival. A greater number of certified community members were engaged in traditional regional forest activities, such as the extraction of Brazil nuts and rubber tapping. No difference among the groups has been identified with regard to subsistence farming.

Activities carried out by community members prior to CBFM			
	Brazil nuts	Rubber tapping	Agriculture
Certified group	93%	93%	79%
Control group	70%	40%	80%

The fact that the certified group had been historically engaged in extractive practices may have influenced their certification, as they have historically nurtured greater concern over the conservation of natural resources, thus ensuring a much easier assimilation of certification principles by community members. Such characteristics may either emerge from, or be strengthened by the certification.

Environmental impact assessment results generated by socio-environmental forest certification have shown greater awareness regarding waste disposal, the use of fire, wildlife protection measures, and a more frequent reporting of environmental crimes.

Forest use activities

Forest management for timber is a complex activity and requires specialized labor, which often hampers the engagement of community members in its execution. Most of them do not have any experience in activities that require greater technical skills. Despite all efforts made by support institutions to train forest agents how to perform forest inventories (GPS operators, botanical identifiers, among others) and in administration, they still face constraints in terms of appropriate methodology, the agenda of community activities, transportation, and overall logistics.

Forest management takes place only a few months per year, hence it is a complementary activity to other traditional activities, such as Brazil nut collecting, rubber-tapping, and subsistence farming. Revenues derived from CBFM are therefore an additional source of income. Some differences with regard to forest use among the certified and the control groups have been identified, as shown in the table below:

Main traditional forest use activities declared		
Activities	Certified (%)	Control (%)
Brazil nut extraction	90	91
Rubber tapping	26	0
Seed collection	10	9
Açaí extraction	13	27
Bacaba extraction	3	0

Data show that Brazil nuts are a major source of income and subsistence for the groups studied. Rubber extraction is carried out only by members of the certified group, a consequence of their rubber tapping tradition.

Participation in federal government programs

National Program for the Strengthening of Family Farming (PRONAF)

In 2007, Acre had one of the lowest numbers of contracts and financial amounts received from PRONAF, second only to Amapá, the Federal District, and Roraima, according to data from the Ministry of Agrarian Development (MDA). Out of the total 41 community members interviewed, only four declared to have received PRONAF benefits. Among the members of the control group, three out of a total of 10 received PRONAF funds, in the amounts of R\$ 1.800,00 to R\$ 3.500,00. Among certified community members, only one benefitted from such funds, in the amount of R\$ 1.500,00.

Participation in the federal Family Grant program among certified community and control group members has similar levels: around 10% of certified and control group members received funds from the conditioned income transfer program aimed at low income families.

The statistics of the Ministry for Social Development and Fight Against Hunger (MDS) for Acre, for the year 2007, point out that all families considered poor (with a per capita monthly household income below R\$ 120,00) were covered by the program. Considering that in a universe of 41 families interviewed, only 10% benefited from the program, inconsistencies in these data may be attributed to: difficulties of program agents in accessing families due to their geographic isolation, the families' lack of information about the program, and non-compliance to per capita income requirements or other requirements. The reason why eligible families have had limited access to the program has not been identified by this study.

Group specificities

CERTIFIED GROUP

Differences between the association's activities and the certified group's activities

Activities carried out by a particular association may differ from those conducted by the group implementing community-based forest management. The establishment of a specific group within the association to take care of CBFM is not inherent to forest management itself, since some groups do not see any difference at all between the certified group and the association, even though some association members do not participate in the management, but only in discussions about the activity. In this study, certified *manejadores* are called 'certified groups'.

Half of all certified community members argued that there is no difference between the activities of the certified group and association members, which is the case mainly in those associations where CBFM is carried out separately inside areas assigned to each one of the *manejadores*. The other half declared there is a difference between the association and the certified group. That was stated mainly by community members that have joined collective forest management arrangements, to whom a common area of exploitation has been assigned, and who share both costs and profits.

Independent of the advantages and disadvantages of collective or individual forest management, its collective version calls for a higher degree of organization among those involved, since it requires meetings and the specification of activities among *manejadores*.

Hence, those communities that implement collective timber management needed to make an additional effort to facilitate communication and the organization of the group.

On the other hand, whenever meetings were held with all community members – *manejadores* or not – this practice sparked interest and promoted the engagement of other members of the community that had not been in direct contact with CBFM. Therefore, both practices may serve community interests, and the community itself must evaluate which is best.

Expenditures with certification

Payments for certification expenditures were mostly made by support institutions. But some associations paid for part of the costs. When questioned about such expenditures, 76% of certified community members declared they did not incur any expenditures related to certification. The other 24% paid part of the expenditures. Half of them did not know the amount paid..

CONTROL GROUP

Perceptions on certification

With regard to the qualitative analysis, control group community members were invited to think about their interest in certifying their association. Half of the members expressed interest and stated the following reasons: adding value to the product, preserving the environment, enhanced trade opportunities, and increasing their income by selling certified wood. The other members were divided into two groups: those who said they needed to think about certification and assess the pros and cons, and those who criticized certification because "it does not add any value to the wood".

Impacts of certification

The study considered a series of hypotheses regarding the eventual impacts of certification on the communities' numerous activities. Proven hypotheses that highlighted the differences between certified and control communities were called impacts, whereas the hypotheses that did not identify any differences between certified and control associations were considered as not having had any impact.

In cases where a negative difference was identified, that is, when control associations scored higher than the certified ones in any particular aspect, the study considered it a negative impact, but no such impact was identified in the case of Acre.

ENVIRONMENTAL IMPACTS (DIFFERENCES IDENTIFIED)

In order to understand to what extent the FSC socio-environmental certification had a positive impact upon the environment in the communities studied, the survey raised some hypothetical questions: whether certified members were more knowledgeable about the Management Plan, whether there was greater awareness among certified community members about the Annual Operation Plan (AOP), the plans for the Agricultural-Extractive Settlement Projects (PAEs), the appropriate destination of waste at PAEs (garbage and sewage), the appropriate use of fire, wildlife protection measures, and whether they featured higher numbers of denunciations against environmental crimes taking place at the PAEs. The results are presented below:

Management Plan

At the associations surveyed the majority of certified (77%) and control (78%) community members recognized that the Management Plan had been prepared and complied with during the execution of the CBFM. Nevertheless, a higher percentage of certified members was aware of the fact that the Management Plan is a collective plan, compared to the control group.

AOP

When questioned about the management units' compliance with the activities of the Annual Operational Plan (AOP) – which must contain the specific activities planned for the execution of the Management Plan – 77% of certified members stated that they followed the plan, compared to 44% of the control group. Such a difference was statistically significant. Greater compliance with obligations foreseen under the AOP by certified community members highlights the importance of certification for public policy purposes.

PAEs

The study identified a major difference with regard to certified and control group members' knowledge about the plan's nature – either collective or individual. Most certified members responded that the Utilization Plan is collective (84%), whereas 50% of control group members said "collective" and 50% said "I don't know".

When questioned about their awareness of the Utilization Plan, the majority of certified members declared "they knew it and complied with it" (61%), whereas half of the control group said "I don't know it, therefore I don't follow it" and the other half said "I know it and comply with it".

These data show that certified community members are more aware of the Utilization Plan and, hence, of its environmental and social rules. Another datum is that 27% of certified community members indicated improvements in forest preservation conditions after the certification (qualitative question).

Waste

With regard to the destination of waste, it was noticed that open air waste discharges were considerably reduced in certified areas, being substituted by landfills and composting. About 30% of all certified community members have said they became much more careful with regard to waste destination after the certification. There has also been a

reduction in the release of effluents into the open and a significant increase in the number of rudimentary cesspits built after certification started.

Fire

The survey has shown that the use of fire for clearing farm land is a common practice among all members of the PAE communities studied. Nevertheless, results show that it is less harmful in certified than in control communities, due to more careful forest management.

While the majority of these communities declared that they use primary forests (mata bruta) as well as secondary forests (capoeira) for clearing purposes (50/50), certified members declared that they gave preference to the use of secondary forest land (71%).

Interviewees did not identify the use of fire at management units as a common practice. They said its occurrence was restricted to small areas within the PAE. That indicates a differentiated degree of awareness among certified community members with regard to the importance of preserving forests that are still in a better stage of conservation.

Wildlife

Hunting is a widespread practice as well as a part of the local culture in the Amazon, in both certified and non-certified communities. Nevertheless, statistically significant differences have been found between the certified and the control group with regard to hunting: 87% of all certified members declared that they used wildlife protection measures compared to only 44% of control group members.

The measures mentioned by control members were: hunting only what they consume and not hunting with dogs, whereas certified community members added more elaborate measures, such as the use of a hunting calendar, refusal to kill animals with offspring, and preserving trees that provide food to these animals.

Environmental crimes

Certified community members declared that they report environmental crimes much more frequently than control members. Such a statistically significant difference can be interpreted as the certified members' greater concern and interest in preserving the forest. About 88% of those certified said that they regularly report incidences to inspection authorities, compared to only 55% of non-certified members.

Summary chart of environmental impacts			
Environmental impacts	% of positive statements in certified associations	% of positive statements in control associations	Positive statement
1 - Management Plan	80%	55%	Awareness about the preparation and execution of a collective management plan
2 - Annual Operational Plan (AOP)	77%	44%	Compliance with obligations anticipated under the AOP
3 - PAE Utilization Plan	84%	50%	Acknowledgement that it is a collective plan
4 (a) - Waste destination at PAE: garbage*	80%	20%	Landfill and composting x in the open
4 (b) - Waste destination at PAE: sewage*	55%	30%	Rudimentary cesspit x in the open
5 - Use of fire	71%	50%	Preferably in secondary forest areas
6 - Wildlife protection measures	84%	47%	Hunting with restrictions (hunting without dogs and use of hunting calendar)
7 - Reporting of environmental crimes	88%	55%	Reporting of environmental crimes

* Statements do not refer to certified x control group, but only the certified group, before and after certification.

All environmental improvement hypotheses for certified associations listed in the table above were confirmed by the data collected, thus proving that FSC certification had a positive effect on some aspects related to the preservation of natural resources.

Social impacts

Hypotheses regarding social aspects sought to confirm whether certified community members participated more and had more negotiating power in group decision-making in CBFM activities and in social movements; whether they had greater control over production (through record-keeping); whether there was improved use of IPE, lower incidence of land-tenure conflicts, more courses and training; and whether there had been an increase in the number of courses given in the community after certification.

The only area where certification had a positive social impact was the participation in courses and training seminars. Community members were asked about their participation in any courses related to CBFM, the organizing institution, the number of training hours and when the course took place (before or after the beginning of certification procedures). There was a significant difference between the number of control and certified members that had taken part in any course or training on safety in the workplace: 35% of certified members, compared to only 9% of control group members.

When questioned about exactly when the courses were taken, 16% replied that they had participated before the beginning of certification, 13% after certification, and the remaining 6% stated that the courses had been given both before and after certification.

Such a striking difference between the number of certified and control communities may be due to the fact that certification supports actions that motivate the organization of courses and training seminars due to FSC requirements. Additional data related to the other social aspects evaluated will be addressed under "Similarities between certified and control groups".

Summary chart on environmental impacts			
Social impacts	% of positive statements in certified associations	% of positive statements in control associations	Positive statement
1 - Capacity building and training on safety in the workplace	35%	9%	Participation in courses and training seminars

Similarities between certified and control groups

The environmental and social data below refer to questions for which the certified group presented characteristics similar to those of the control group and for which the hypotheses on the positive results of certification were neither confirmed nor rejected. The main reason for such similarities may be the strong support provided by government, NGOs, and international institutions to the CBFM practiced in Acre and, in some cases, to the rubber tappers' long history of efforts to improve their livelihoods, often culminating in highly representative and very active community-based movements and organizations. Certification concepts have also experienced a certain degree of 'contamination' due to the activities of these NGOs and governments.

Environmental aspects: where there was no impact

With regard to environmental issues, the degree of awareness about the importance of forest resources, the occurrence of degradation factors (deforestation, fire, garbage, riparian areas left without trees, and illegal logging), number of heads of cattle at PAEs, level of information about legally protected areas, and technical assistance for CBFM are items that have not shown statistical differences between certified and control groups.

Degradation

The reduced occurrence of degradation factors at PAEs led by certified associations was one of the hypotheses raised by the study. Although most community members from the certified group (90%) and the control group (87%) declared that they did not want to substitute the forest for any other activity, degradation factors have been observed in forests inside PAEs, both within and outside of areas belonging to associations.

When questioned about the occurrence of degradation factors – such as deforestation, fire, absence of trees in riparian areas, and illegal logging – both certified and control group members confirmed their existence in the PAE. However, they also emphasized that these factors do not occur inside the Forest Management Units. In qualitative terms, only 3% of the certified community members declared that there had been a reduction in burning after the certification. See below:

Statements about the occurrence of some degradation factors within PAEs*										
	Deforestation		Fire		Garbage		Riparian areas without trees		Illegal logging	
	C	NC	C	NC	C	NC	C	NC	C	NC
%										
Yes	77	90	77	100	76	100	65	90	75	70
No	16	0	23	0	21	0	28	10	4	0
Don't know	7	10			3	0	7	0	21	30

*C: Certified community member - ** NC: Control community member

Although the majority of certified and control members stated that degradation factors do exist inside the PAE, negative responses were only given by certified community members (except for "riparian areas without trees"), which may indicate that they simply provided the "correct answer", i.e., certified community members presented the most appropriate answer according to the requirements or environmental restrictions associated to the question.

Such behavior is indicative of greater knowledge about environmental legislation and the PAE Utilization Plan among certified community members compared to the control group. Another hypothesis for such answers is that certified community members were aware of the environmental standards established by FSC for the consolidation of the certification process which, to some extent, helped coach them. In this case, certification may have had a positive influence by promoting the awareness of community members with regard to environmental issues.

Cattle

No relevant difference was found between the number of cattle belonging to certified community members and control groups. However, this does not indicate a reduction or increase in livestock-raising as a consequence of certification.

An expressive number of community members keeping over 30 heads of cattle was observed (31% among certified members and 25% among members of the control group), indicating that livestock is a consolidated activity in the PAEs that may cause a loss of natural resources in these areas.

Hunting

Wildlife hunting is a widespread practice in the PAEs, both inside and outside the Management Units. Almost all certified members (92.6%) and control group members (100%) declared that they hunt wild animals.

Protection areas

The majority of certified community members (58%) and control group members (60%) declared that they were aware of the existence of areas protected by law inside the PAE. No significant statistical difference was found between groups regarding their knowledge about Legal Reserves (RL) and Permanent Protection Areas (APP). When questioned about the names given to such areas, certified and control group members mentioned a large variety of names, including: APP, management area, salt lick, stream bed, and springheads.

Technical assistance for the CBFM

All of the certified and control community members declared that they receive technical assistance for the CBFM. Nevertheless, with regard to the exploitation of a larger number of forest products, 90% of all certified members declared that they were encouraged in this regard by technical advisors, compared to only 60% of control group members, which is statistically significant.

Despite the fact that incentives to diversify the use of forest products have not been perceived as a significant economic gain, it may add to the workers' income in the future. About that same question, 94% of all certified community members declared that technical assistance staff had encouraged the exploitation of a larger number of forest products before certification. After certification, the response rose to 100% of interviewees.

In their answers about the quality of technical assistance (good, average, or bad), the majority of certified members stated that they received good quality technical assistance both before (82%) and after (69%) certification. There was no statistical difference in the quality of technical assistance between the certified and the control group.

SOCIAL ASPECTS: WHERE THERE WAS NO IMPACT

With regard to social aspects, similar results were obtained by both certified and control communities regarding: participation in the association's meetings, work in management units, participation in social movements, production records, training and capacity building, use of Individual Protection Equipment (IPE), occurrence of land tenure conflicts, and number of courses held after certification.

The study revealed that there was no significant statistical difference regarding negotiations on the division of labor within the association, the division of functions, and the procurement of materials and equipment. See table below:

Statement on agreement with association activities among certified and control community members				
	Agree with 0 items	Agree with 1 item	Agree with 2 items	Agree with 3 items
Certified group	6%	7%	29%	58%
Control group	10%	20%	40%	30%

Participation

Results show that both certified and control group community members agreed with the majority of decisions regarding the association's activities. Equally noteworthy is the quite expressive participation of members in decision-making for all activities, among both certified and control group members. The percentage of certified community members who declared that the majority of affiliated members participates in such decision-making was 100% for two items and 70% for the third item, whereas control group members scored 100% for one of the items and 83% for the other two.

The table below shows the percentage of certified members that agreed with decisions made by the association on certification-related activities. The table also presents the participation of community members who stated that the majority of members participated in each decision.

The observation of the rates of agreement/disagreement and of the community members' participation in decision-making and in the actions proposed during association meetings was meant not only to analyze their level of participation, but also the participatory nature of the association's decisions.

Statement on agreement with and participation in activities associated to certification

Activities associated to certification	Agreement among members			Participation in decision-making	
	Agree	Disagree	Don't know		Board or representative
Proposals from outside institutions	71%	26%	3%	100%	0
Entrance of members into the certified group	71%	3%	26%	95%	5%
Exit of members from the certified group	55%	3%	42%	94%	6%
Trading of certified products	77%	13%	10%	93%	7%
Penalties for non-compliance to rules of certification	84%	0	16%	96%	4%
How to comply with corrective actions for certification	84%	0	16%	96%	4%
Division of labor in the certified group	77%	13%	10%	96%	4%

Data show that there has been some discussion on certification-related topics; more than half of all community members agreed with the decisions taken, but sometimes they were not able to say whether or not they agreed with some decisions.

With regard to decision-making, the numbers show that participation is quite significant for certification-related issues, with a smaller percentage when it involves the exit of members from the certified group: for this item, 94.12% of members said that the decision was taken by the majority of community members. Both certified and control group members participated in association meetings, at a rate of 97% and 90%, respectively.

Management

Both certified and control group community members had a 100% participation in management activities. Nevertheless, the degree of specialization in the activity has not been assessed. Tasks associated to botanic identification, GPS reading, and directed felling were considered specialized, whereas the opening of tracks in the forest for inventory purposes is not. Hence, no relevant difference between certified and control groups was identified and in both groups half of the labor force was classified as specialized and the other half as not specialized.

CBFM requires the performance of several other specialized tasks that are carried out by outside agents on an ongoing basis, such as the preparation of the Annual Operational Plan (AOP) and the recording of productivity, costs, and trackability. Brazilian law has determined that some of these tasks must be carried out under the supervision of a forestry specialist.

Social movements

The study questioned whether there was more participation and involvement in social movements on the part of certified communities. Community members were asked about their participation in social movements during the implementation of PAE and at present, aiming to compare the degree of involvement of certified and control group community members and to assess to what extent such impact is the result of certification. Another purpose for this was to analyze the communities' background with regard to participation to verify whether there is any relationship between their interest in certification and the degree of mobilization and participation in social movements.

Even though certified community members participated more in social movements before the establishment of the PAE, it was found to be a minor and statistically irrelevant difference.

Recording Production

The engagement of community members in the recording of productivity, production costs and trackability (numbering of trees in forest sections) was very insignificant. Even though 100% of all community members were aware of the fact that these activities were taking place, they did not organize them or record them. That was the case for both certified and control group members.

Statement on the organization and recording of production by community members				
	Organization and recording performed by the community member himself		Organization and recording performed by other agents	
	Certified	Control	Certified	Control
Harvest productivity (%)	11%	0%	89%	100%
Production costs (%)	12%	25%	88%	75%
Trackability (%)	12%	0	88%	100%

Training and Capacity Building

No statistical difference in terms of participation in courses and training before (56%) and after (44%) certification among certified members has been identified. The survey concluded that the fact that there was no difference between the number of courses offered before and after certification is proof of governmental and NGO activity in training and capacity building prior to the certification process.

Data have shown that 45% of all certified community members were not trained either before or after certification. Of the remaining 55%, 16% reported an increase in the number of courses and some of them already had taken some courses earlier, whereas 39% reported a decrease in the number of courses taken.

IPEs

The study analyzed two aspects of labor safety by collecting data on capacity building and training on safety in the workplace and the use of IPE. The item "Capacity building and training on safety in the workplace" is included in the results for Certification Impacts, since this modality presented statistically significant differences between certified and control community members.

All certified and control group members (100%) stated that they used IPEs in forest management-related activities. The majority of certified members (71%) said that they had started using the equipment prior to the certification period. Only 3% of certified community members said that there had been a qualitative increase in worker safety in forest management areas after certification. Once again these data highlight the importance of outside agents in promoting the adoption of management practices and of appropriate conduct by community members.

Land tenure conflicts

Land tenure conflicts exist in both certified and control associations. The existence of such problems was acknowledged by 51.6% of certified community members, compared to 60% of control group members. Conflicts were mostly related to misunderstandings between families or neighbors and to the sale of plots of land.

The table below shows the results of social, environmental and economic changes deriving from socio-environmental forest certification and the items that remained unchanged after the associations' certification.

Statement about changes and similarities		
	What changed	What did not change
Environmental	Knowledge about the Management Plan	Awareness of the forest's importance
	Knowledge about the Utilization Plan	Occurrence of degradation factors
	AOP compliance	Number of cattle on PAEs
	Greater care regarding the destination of garbage and sewage	Knowledge about legally protected areas
	Awareness of the use of fire	Technical assistance at the CBFM
	Wildlife protection measures (hunting)	
	Reporting on environmental crimes	
Social	Negotiation and participation in the association	Participation in social movements
		Participation in association meetings
		Work at the management unit
		Recording production
		Training and capacity building
		Use of IPE
		Existence of land tenure conflicts
Economic		

* Obs.: This table features the opinions of players collected during field surveys. The absence of answers for some of these items reflects that respondents either did not identify the topic or were not aware of it.

Neither impacts, nor similarities

Economic aspects

Economic aspects and the CBFM bottleneck in Acre

The hypotheses put forth that related to economic aspects attempted to confirm whether certified members had added value to the wood being traded and whether their product had been better accepted by more selective markets. Other issues analyzed were: the activities where CBFM resources were employed and the perception of community members regarding the financial results of certification.

Nevertheless, there have been several obstacles to assessing all the hypotheses related to the economic aspects due to trade and management difficulties faced by the surveyed operations. The two control group associations faced serious problems regarding the trading of the CBFM timber: in the first one, members were able to report the volumes produced and the amount received for the wood, but at the interview they did not know the costs; at the second, the company buying timber did not comply with the contract and only a few community members received part of the resources, despite all the governmental support provided during the process. Community members and government technicians were discussing these bottlenecks at the time of data collection.

Timber marketing problems were not limited to the control groups. Among certified associations, only one had not joined the trading cooperative set up by the community members themselves for the selling of exploited timber. The majority of association members interviewed reported that part of the funds obtained had been invested in the cooperative, but could not say the exact amount.

The certified association that had not joined the trading cooperative – but did so in 2007 – managed to sell only the less valuable timber (also known as "white wood"), due to contract problems with a local lumber company. Hence, once more, community members were not able to say the exact amount to be received for the extracted timber.

During the interviews, certified community members expressed their dissatisfaction with the marketing of timber and the financial return through CBFM. Half of all certified members said they were unhappy with the difficulties in accessing certified wood markets and 33% said certified wood provided for no added value. Despite the low spirits of some of the interviewees, another 36% said that, even though there had been no difference in prices, certified wood had been more accepted by the consumer market.

Comparing the certified group and the control group becomes even more difficult because of the processing – or not – of wood. Some associations managed to sell the sawn wood for a better price than the logs. The NGOs and government institutions involved only provided limited economic data. The table below shows the average data for the 2005/2006 harvest for the certified associations involved in the cooperative.

Amounts for the 2005/2006 harvest for logs produced by the members of the trading cooperative	
Total volume extracted	1.789,9 m ³
Average volume extracted/ <i>manejador</i>	57 m ³
Cost subsidized by the government/m ³	R\$ 34,59
Cost paid by <i>manejadores</i> /m ³	R\$ 5,00
Losses	16,1%
Average price/ m ³	R\$ 168,68
Average resources/ <i>manejador</i>	R\$ 7.827,67

The table above did not take into account costs incurred with licensing. The cooperative did not have access to these data on the occasion of data collecting, according to its president, and reported that the 2006/2007 harvest had been jeopardized by operational and management failures during the zoning, inventory, and AOP activities. Another cooperative, made up of forest workers, was not able to meet the contracts established with the trading cooperative due to serious structural and technical problems.

According to the trading cooperative, in addition to problems with the work commissioned from the workers' cooperative, the 2006/2007 harvest had other difficulties. The average yield for sawn timber, as performed by the Acre State Technology Foundation (Funtac) was much less than expected, whereas the real cost of saw mill services was 100% higher than expected. Likewise, the administrative costs were planned for a much greater output. The data provided by the trading cooperative for the 2006/2007 harvest are shown below:

Amounts for the 2006/2007 harvest of wood logs and sawn timber obtained by trading cooperative members		
Total volume extracted	1158,1 m ³	
	Wood logs	Sawn timber
Freight cost/m ³	R\$ 25,00	R\$ 61,50
Saw mill costs/m ³		R\$ 122,50
Taxes/m ³	R\$ 42,17	R\$ 68,21
Administrative costs/m ³	R\$ 295,49	R\$ 295,49
Total cost/m ³	R\$ 362,66	R\$ 547,70
Price-yield/m ³	R\$ 168,68	R\$ 341,06
Result-yield/m ³	R\$ (193,98)	R\$ (206,64)

The table shows that the average result obtained per cubic meter caused losses of R\$ 193,98 for the wood logs and R\$ 206,64 for the sawn timber. Nevertheless, 100% of all administrative costs and 75% of saw mill costs received subsidies through a contract signed with a non-governmental organization. As a result of this contract, the average amount received by each community member was R\$ 101,51/m³ (wood logs) and R\$ 180,72/m³ (sawn timber). These data once again highlight the strong presence and support – including financial – from outside organizations (in this case, only for certified associations that were members of the trading cooperative).

Use of resources obtained from the sale of wood extracted by the CBFM

As a consequence of the difficulties faced by the control group, as mentioned above, very few data were available on the activities in which community members used the resources obtained through the sale of wood. Only three members of the control group communities provided data. The resources obtained from the sale of wood were used to feed the family (40%) improve their housing (20%), pay debts (20%), and build dams (20%).

Despite the fact that the data collected from certified associations regarding the use of resources obtained from the sales of timber was limited (one of the associations, for example, sold only the less valuable wood), they showed that the uses were very diverse.

The main activities in which the resources obtained from the sale of wood were invested were: buying food for the family; the payment of earlier debts; and meeting basic needs, such as the purchase of clothing, footwear and medication, as per the table below. The investment of resources in the acquisition of basic consumer goods and meeting basic needs is the result of the low economic return offered by the forest management activity to the communities studied.

Employment of resources generated by wood sales, as stated by certified community members	
Activities in which the resources obtained from wood sales were used	Percentage of certified community members
Food	31%
Debt payments	24%
Basic needs	13%
Construction	9%
Home appliances	7%
Cattle	5%
Others	7%
Housing	4%

Only a small percentage of community members stated they had invested their resources in livestock (5%), contrary to the theory that CBFM would indirectly encourage the acquisition of cattle and the clearing of new areas for grazing, which would lead to increased deforestation.

Conclusions

Even though we have not been able to detect any strong economic impact caused by forest certification in community operations in Acre, the study provided a good picture of the sector. The economic impacts assessed were relatively small, but the information obtained indicates a positive trend, as the government acknowledges the existence of marketing bottlenecks and is designing strategies for dealing with them. Such a trend may be confirmed by future studies that, from now on, will have an efficient methodological trail to follow in future assessments.

In any case, timber forest management has proven to be quite costly from the financial and operational point of view, in addition to demanding that those involved develop advanced technical skills in areas such as forest inventory, felling techniques, harvest planning and removal, and botanical identification. Associations did not have an appropriate technical structure and operational capacity for supporting management activities in an autonomous manner, independent of the actions of support institutions and those that promote forest management.

Results indicated that FSC certification actions in agricultural-extractive communities in the State of Acre have had limited impact. One interpretation is that the public institutions and policies that are active in CBFM arrangements in the state often produce similar results as those targeted by certification.

It is nevertheless likely that certification may have had a positive effect upon the multiplication of initiatives and support and forest management-promoting institutions. Their actions were not restricted to local certified communities; they also had an indirect chain reaction that paved the way for discussions and for the development of new guidelines for the sustainability of community-based forest management in several other locations.

Even though the direct effects of certification were limited, the hypotheses related to FSC principles and criteria mentioned in the study show that there were some environmental changes, such as the level of information on management plans and the PAE Utilization Plan, compliance with activities anticipated in the Annual Operational Plan, waste disposal (garbage and sewage), awareness of the use of fire, wildlife protection measures (hunting), and reporting on environmental crimes.

As far as economic impacts are concerned, the quantitative analysis of the income obtained from the trading of wood was jeopardized by the associations' lack of data on sales and forest management costs. Certified community members expressed a high degree of dissatisfaction regarding the marketing of timber and the financial return provided by CBFM.

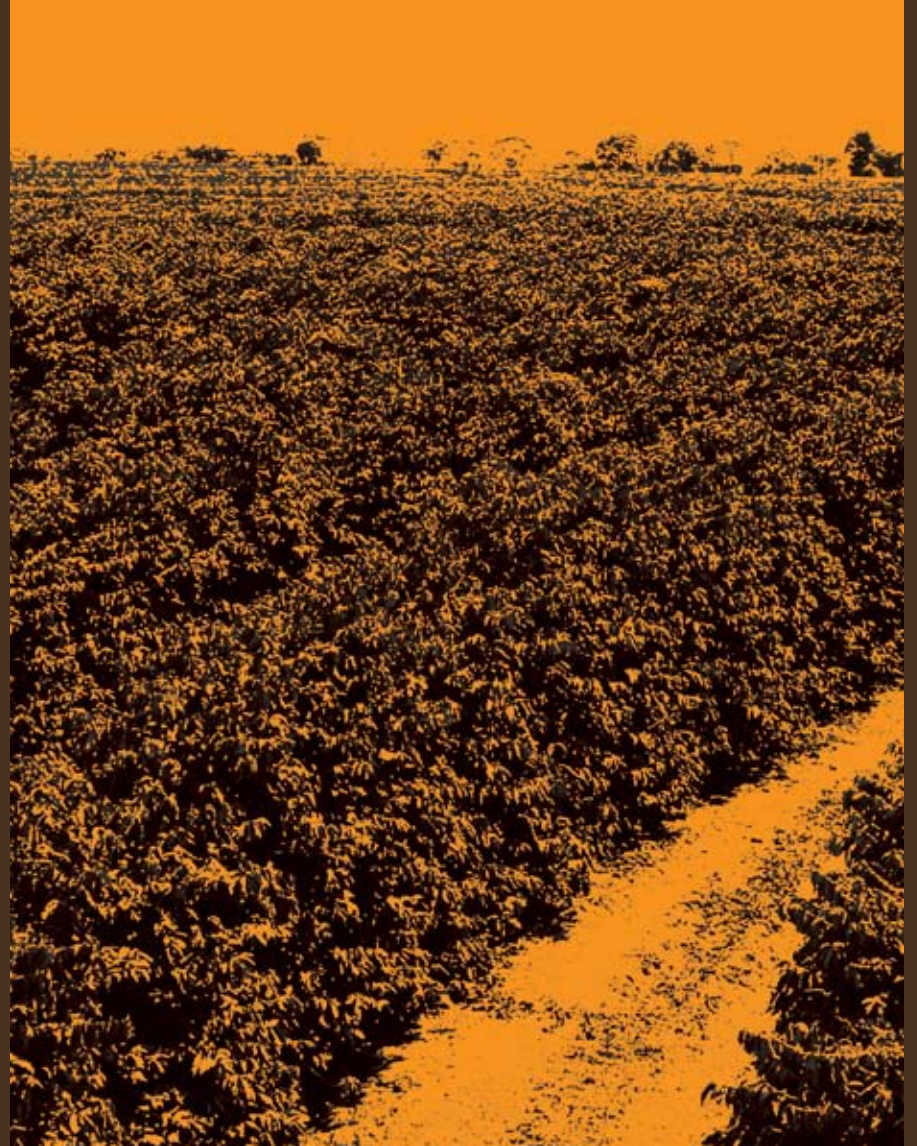
The main reason for such dissatisfaction was difficult access to certified timber markets and the lack of added value for certified wood. Nevertheless, a significant number of community members declared that, even though there was no price difference, certified wood was more accepted by the consumer market.

When the survey was carried out, certified communities were still adapting to new procedures as they were in the process of changing wood trading procedures by centralizing such processes in a trading cooperative.

The dissatisfaction of community members with regard to forest management for timber can probably be attributed to this specific period of time, which was characterized by operational and management failures in CBFM-related

work, in addition to additional expenditures incurred in an attempt to create a new structure for the trading of certified wood.

The study also considered the possibility of seasonal effects, since data were collected only once. In order to minimize eventual transitory effects in impact evaluation studies, field data is often collected on three different occasions, with the adoption of panels. Therefore, it is recommended that data collection be repeated so as to minimize seasonal effects as far as possible.



| chapter 4 |





SAN Certified Coffee Farms in the Cerrado and in Southern Minas Gerais

Context

Coffee is an agricultural product of historical importance for the Brazilian economy. In 2007, Brazil was the largest coffee producer and exporter in the world, harvesting 36.73 million bags, according to estimates from the Brazilian Institute for Geography and Statistics (IBGE). Most of the coffee-growing areas in Brazil are concentrated in southern Minas Gerais and in the Cerrado region of Minas Gerais.

Coffee growing has been present in southern Minas Gerais since the 19th century, on small and medium-sized properties as well as large estates. Production is less intensive in this region, while in the Cerrado of Minas Gerais its cultivation, which was introduced in the mid-1970s, is characterized by large irrigated and mechanized areas.

Evaluations carried out within the framework of this study focused on these two regions due to their geographic representation, their economic importance within the context of coffee production in Brazil, and the fact that they have adopted certified production systems relatively extensively.

Sustainable Agriculture Network Certification (SAN)

The first chapter of this publication provides information on the agricultural certification system, which is spreading rapidly throughout the world. In Brazil, the SAN certification is growing at a rapid pace. Between 2007 and 2008, there was an 87% increase in the number of areas cultivated with certification, with coffee being the main crop,

representing 85.6% of the certified areas in the country. Coffee with the Rainforest Alliance Certified (RAC) seal indicates to the consumer that the product was obtained through environmentally sound, socially beneficial, and economically feasible agricultural management.

In an economic scenario that values sustainability, it is crucial for consumers, certifying institutions, NGOs, rural workers, trade unions, financing institutions, producers, and governments to be aware of the impact of SAN certification.

Impact Evaluation

During the productive process, certified enterprises adopt a range of techniques and procedures required by the rules of certification. However, these certification requirements are also influenced by conjunctural factors that affect non-certified enterprises. Impact evaluation allows this conjunctural effect to be isolated and enables the certification's effects to be more precisely identified.

In this study, impact evaluation was used to measure the effect of SAN certification. To this end, we compared certified and non-certified coffee enterprises with similar general characteristics. The differences between such enterprises were considered impacts of SAN certification. The environmental and social aspects of the enterprises were also evaluated.

Sample universe and method

Impact evaluation involved conducting surveys in a total of 16 randomly selected enterprises, 10 of which were located in the Cerrado region and six in southern Minas Gerais. In the latter location, three SAN certified enterprises and three non-certified enterprises were analyzed, while in the Cerrado region, five SAN-certified and five non-certified enterprises were analyzed. The non-certified enterprises were randomly selected from a much larger set of similar farms, according to recommendations made by cooperatives and technical experts in the regions surveyed. Each enterprise was comprised of one or more farms under a single administration.

Data sources on the certified and non-certified enterprises were the same, consisting of field observations, satellite images, and interviews with structured questionnaires.

Field observations involved visits to Permanent Preservation Areas, Legal Reserves, and the infrastructure of the operations, as well as assembling a collection of geographic coordinates using a GPS for the georeferencing of maps and satellite images. Geoprocessing resources were used to identify the extent of the environmental preservation areas in the enterprises, and to compare their situation with that of the river basins in which they are located.

Interviews were conducted with the owner or person in charge of the operation, regular employees (including those living on the property, pesticide applicators, and workers under the age of 18) and temporary workers (including

those living on the property and those under the age of 18).

The main socio-environmental data collected refer to the preservation of native vegetation, conservation of water resources, waste management, workers' training, working conditions, and pesticide handling and application.

Profile of the operations studied in the Cerrado and Southern Minas Gerais						
	Total area (ha)	Coffee area (ha)	Amount produced (60 kg bag)	Regular employees	Temporary workers	Certifications
Certified enterprises in the Cerrado region of Minas Gerais						
A	600	200	3500	9	57	SAN, Utzkapeh and Café do Cerrado
B	6609	NI	NI	231	469	SAN
C	980	178	11000	41	25	SAN and Café do Cerrado
D	576	410	18000	139	11	SAN, Utzkapeh and Café do Cerrado
E	3583	1135	53640	50	72	SAN
Non-certified enterprises in the Cerrado region of Minas Gerais						
F	380	205	10000	32	102	
G	207	140	4000	18	53	
H	132	400	4900	7	29	
I	600	180	16000	5	90	
J	245	130	3000	5	25	
Certified enterprises in southern Minas Gerais						
K	1074	608	NI	177	178	SAN, Utzkapeh and BSCA
L	609	283	3125	77	56	SAN, Orgânico, Utzkapeh and BSCA
M	419	137	4279	40	35	SAN
Non-certified enterprises in southern Minas Gerais						
N	1100	300	9000	40	40	
O	507	220	13000	34	8	
P	230	100	4700	19	7	

NI: Not informed

Data Analysis

Data from field observations and interviews were analyzed by means of the SAS System's statistical tests, with a view to identifying differences between certified and non-certified enterprises, which were considered to be the result of certification.

Both individual and combined data analysis and evaluation were conducted. In the individual analysis, variables were divided between southern Minas Gerais and the Cerrado of Minas Gerais and analyzed separately. For the nominal and ordinal variables, chi-square statistics were calculated (90% confidence interval), and the impact was indicated by the difference between the certified and non-certified enterprises. For the interval and rational variables, the impact of certification was indicated based on the average standard deviation and confidence interval thresholds obtained from the certified and non-certified enterprises.

In the combined analysis, the data were not divided between regions due to restrictions imposed by the available number of repetitions. In this analysis, similar variables from different data sources were grouped in order to strengthen the positive aspects and minimize the negative aspects of their prerogatives. The prerogatives of the combined analysis were:

- ✓ In the field observations, the researcher confirmed the existence of a certain situation. However, it was not possible to observe all situations during the collection period, so this information became a highly credible datum, but with partial scope;
- ✓ In the interview with the owner or person in charge of the enterprise there may have been a tendency to highlight favorable characteristics and/or to omit information on inappropriate situations that could characterize failure to comply with the legislation or SAN certification rules;
- ✓ In the interviews with the permanent and temporary workers, a broad universe of personal trends and judgments regarding situations that take place at the enterprise were taken into account. However, the high number of interviews reduces the influence of biased information that differs from reality on the final result, thus reflecting situations that can be considered as real or as perceived by the majority;
- ✓ In the combined analysis, the impact of certification was indicated mainly by the field observations. In the absence of field observations, interviews with the owner or person in charge were considered according to the criteria described in the annexes of the original study, available at www.imaflora.org.br.
- ✓ In order to synthesize the evaluation, in addition to indicating the direction of the impact, the enterprises were ranked for quality on a scale of stars based on the percentage of positive results for the items analyzed. The quality indicated by five stars (★★★★★) represents the best situation and one star (★), the worst situation, as shown in the table below:

Quality ranking attributed to the enterprises	
Symbols	Percentage of positive results
★★★★★	81 to 100%
★★★★	61 to 80%
★★★	41 to 60%
★★	21 to 40%
★	0 to 20%

All the analyses indicated the direction of the impact using the symbols below:

Symbols	Direction of the Impact
☺	Positive (certified group featured better conditions compared to the non-certified group)
☹	No impact (no difference between the certified and non-certified groups)
☹	Negative (certified group featured worse conditions compared to the non-certified group)

Identification of the analyses	
Identification	Type of analysis
a	Individual analysis of nominal or ordinal variable drawn from statements given by workers from the enterprise.
b	Quality of the certified enterprises, based on percentage of positive statements given by the workers, according to the scale of the Quality Ranking attributed to the enterprises. Note: For items where more than one variable is involved (basic furniture: refrigerator, stove, and television), the quality considered was the "worst" ranking among the variables.
c	In the geoprocessing analysis, the only PPAs considered were margins of rivers and lakes. Each enterprise is characterized by one or more farms. Two certified enterprises were excluded from the analysis, one due to a lack of sufficient geographic coordinates and another due to its location.
d	Combined analysis between sources: interview with the owner or manager, interview with workers, and field observations. The criteria used to determine the use of PPAs for agriculture, the use of PPAs for livestock, occurrence of fires in the PPAs, occurrence of fire (accidental or intentional) in pastures and plantations, and consumption of timber forest products are presented in Table 8 *.
e	Combined analysis between sources: interview with the owner or manager, interview with workers, and field observations. The criteria used, reforestation with native species, contour farming, construction of terraces, etc., are presented in Table 2 *.
f	Combined analysis between the sources: interview with the owner or manager and interview with workers. No data on hunting and capturing of wild animals were collected during field observations. The criteria used to define whether there was hunting and capturing in the enterprises are presented in Table 10 *.
g	Individual analysis of nominal or ordinal variable drawn from statements given by the owner or person in charge of the business.
h	Quality of the certified enterprises, based on percentage of positive results attributed to the enterprises in combined analyses, according to the scale of Quality ranking attributed to the enterprises.
i	Quality of the certified enterprises, based on percentage of positive statements given by the owner or person in charge of the enterprise, according to the scale of the Quality ranking attributed to the enterprises.
j	Individual analysis of nominal or ordinal variable, drawn from field observations.
k	Combined analysis between the sources: interview with the owner or manager and interview with workers. No data on the hunting and capturing of wild animals were collected in the field observations. The criteria used to define whether there was hunting and capturing in the enterprises are presented in Table 4*.
l	Quality of the certified enterprises, based on the percentage of positive results attributed to the enterprises in combined analyses (excluding indications of the occurrences), according to the scale of Quality ranking attributed to the enterprises. Note: The worst ranked garbage destinations were: burnt, open ditch, and buried.
m	Quality ranking attributed to the enterprises for the "length of employment" variable.
n	Quality of the certified enterprises based on percentage of positive results from field observations, according to the scale of Quality ranking attributed to the enterprises.
o	The analysis of lodgings in southern Minas Gerais was not conducted because the number of lodgings was insufficient for statistical comparison between the certified and non-certified enterprises.

p	Individual analysis of interval or rational variables drawn from statements given by workers of the enterprises.
q	Quality of the certified enterprises based on average values declared by the workers. A positive statement was a normal shift of 44 hours a week or less (maximum allowed by law without being considered overtime), that is, values equal to or under 44 hours a week were considered excellent; for values above that, the ranking dropped at every 2% increase. ★★★★★ 44 hours or less ★★★★★ 44,1 to 44,9 ★★★★ 45,0 to 45,9 ★★★ 46,0 to 46,9 ★ 47,0 or more
r	Quality of the certified enterprises based on average values declared by workers. A positive statement was the earning of one minimum wage (equal to R\$ 370,00 in July/2007). Values equal to R\$ 370,00 were considered good; below this, the ranking dropped for every 2% reduction. ★★★★★ More than R\$ 370,00 ★★★★★ Equal to R\$ 370,00 ★★★★ R\$ 369,99 to R\$ 362,60 ★★★ R\$ 362,59 to R\$ 355,40 ★ R\$ 355,39 or less
s	Ranking done by the workers at the time of the interview.
t	Quality of the certified enterprises, based on average number of safety procedures adopted, based on the workers' statements, according to the following scale: ★★★★★ 2,2 to 3,0 ★★★★★ 1,8 to 2,1 ★★★★ 1,2 to 1,7 ★★★ 0,6 to 1,1 ★ 0,0 to 0,5

* Tables available in the comprehensive version of the study available at: www.imaflora.org.br

Results

Worker knowledge

The table below demonstrates the greater impact of the SAN certification in the Cerrado region of Minas Gerais compared to southern Minas Gerais, mainly regarding knowledge on pesticides. Better qualification was identified in the certified enterprises, as they provide more information and professional training to their workers.

The quality of the training and capacity building offered in both regions was excellent, which eliminates the possibility that this difference reflects a particular approach to training. One of the possible explanations for this is that the strong tradition of coffee cultivation in southern Minas Gerais limits assimilation and the incorporation of new knowledge in daily activities.

Worker knowledge					
Worker knowledge	Cerrado region of Minas Gerais		Southern Minas Gerais		SAN Requirement
	Impact	Quality	Impact	Quality	
Knowledge regarding the ideal situation for banks of springs, rivers and water bodies ^a	😊	★★★★★ ^b	😐	★★★★ ^b	
Environmental damage from pesticide use ^a	😊	★★★★★ ^b	😐	★★★ ^b	
Risk of touching plants after pesticide application ^a	😊	★★★★★ ^b	😐	★★★★★ ^b	
Meaning of pesticide grace period ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	✓
Identification of pesticide grace period ^a	😊	★★★★★ ^b	😐	★★ ^b	✓
Identification of color of higher toxicity label ^a	😐	★★★★★ ^b	😐	★★ ^b	✓
Professional training and qualification ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	✓

Preservation of native vegetation and conservation of water resources

SAN certification had a positive score regarding the preservation of native vegetation and conservation of water resources. The conservation of native forest areas and PPAs, formal registration of the Legal Reserve, and reforestation with native species were the most obvious outcomes. Results are compared in the table below.

In southern Minas Gerais, however, enterprises tended to follow the percentage of Atlantic Rainforest of their river basin. It should be noted that the certified enterprises are generally located in river basins with a higher proportion of Atlantic Rainforest.

In the Cerrado region of Minas Gerais, while the certified enterprises followed the proportion of native forest of their water basin, the non-certified enterprises showed a reduction in the proportion of native vegetation, which indicates that there was more land conversion for farming use in the non-certified areas.

Geoprocessing data suggest that the impacts on the PPAs could be linked to long-term recovery planning. Positive impact on areas containing PPAs was confirmed by combined analyses (for agricultural use) and also by the absence of threats to biodiversity and soil conservation. Conditions for certified enterprises regarding this aspect were classified as good or excellent. This suggests that, in the long run, SAN impacts may be even more positive.

The only aspect observed where certification had no impact and where the situation was classified as regular is related to the use of timber forest resources, considering the signs found in certified operations.

Preservation of native vegetation and conservation of water resources					
Preservation of native vegetation and conservation of water resources	Impact		Quality		SAN requirement
	Use of PPAs for agriculture ^d	☺		★★★★★ ^h	
Use of PPAs for cattle raising ^d	☹		★★★★★ ^h		✓
Reforestation with native species ^e	☺		★★★★★ ^h		✓
Occurrence of fires in 2007 ^d	☹		★★★★★ ^h		✓
Use of timber forest products ^d	☹		★★★ ^h		✓
Hunting of wild animals ^f	☹		★★★★★ ^h		✓
Capturing of wild animals ^f	☹		★★★★★ ^h		✓
Contour farming ^e	☺		★★★★★ ^h		✓
Construction of terraces ^e	☹		★★★★★ ^h		✓
Construction of containment boxes ^a	☹		★★★★★ ^b		✓
Land-use planning	Cerrado region of Minas Gerais		Southern Minas Gerais		SAN requirement
	Impact	Quality	Impact	Quality	
Legal reserve registration statement ^g	☺	GOOD ⁱ	☺	★★★★★ ⁱ	✓



Example of PPA with native vegetation and without cattle access



Example of PPA with native vegetation, but with cattle access to water courses



Example of PPA with intensive use of cattle and access to water

Impacts of SAN certification

Waste management

SAN certification was positive in all aspects of waste management, including management of waste from coffee processing and from agricultural machinery, and domestic waste from lodgings and houses, as shown in the table below.

Regarding the processing of waste, certification contributed to environmentally appropriate management of waste water from coffee washing, either with decantation ponds or other treatment and recycling methods.

Waste from washing and fueling of agricultural machinery is controlled through an outflow containment system in the paved areas where these operations are conducted, thus preventing soil and water contamination.

Regarding domestic waste management, despite some inadequate practices in certified enterprises – such as burning of garbage and disposal in open ditches – certification has had a positive impact, albeit insufficient. Garbage is still burned in all the non-certified enterprises studied and in half of the certified enterprises.^k

As for sewage disposal, the positive impact identified was the existence of septic tanks in the certified enterprises, while none were found in non-certified enterprises.

Data show that SAN-certified enterprises invest more than control enterprises in the improvement of environmentally appropriate solutions for waste.



Construction of septic tank on certified property



Waste on non-certified property

Waste management					
Waste management	Impact		Quality		SAN requirement
Disposal of waste water from coffee washing ^j	☺		★★★★★ ⁿ		✓
Management of waste from agricultural machinery fueling ^j	☺		★★★★★ ⁿ		✓
Management of waste from the washing of agricultural machinery ^j	☺		★★★★★ ⁿ		✓
Waste disposal ^l	☺		★★★ ^m		✓
Domestic waste	Cerrado region of Minas Gerais		Southern Minas Gerais		SAN requirement
	Impact	Quality	Impact	Quality	
Sewage disposal from lodgings ^a	☺		XXXX ^o	XXXX ^o	✓
Sewage disposal from houses ^a	☺	★★★ ^b	☺	EXCELLENT ^b	✓

XXXX = Insufficient data

Length of employment

Longer time of employment in the enterprises was considered a positive aspect, because it allows continuity of training and a closer relationship between the employer, the employee, and the community. The data showed a positive impact in this regard in the Cerrado region for both permanent and temporary workers, who acknowledged the existence of better working conditions, even if only during the harvest period.

There was no impact regarding this aspect in southern Minas Gerais. This difference can be understood as a characteristic of this coffee-growing region, with small enterprises where workers consider trust and a closer relationship with the owner as the main criterion for establishing themselves. It should be noted that in this region certification is attributed to larger farms with a greater degree of entrepreneurship, as demonstrated in the table below.

In the certified enterprises of southern Minas Gerais, 96% of temporary workers did not live on the farm; out of these, 70% had worked in the certified enterprise only during the year of the survey. In non-certified enterprises, 54% of the temporary workers lived on the farm (they are often relatives of permanent workers), and all of them had worked for over a year in the non-certified enterprise.

Summary: Worker profile					
Worker profile	Cerrado region of Minas Gerais		Southern Minas Gerais		SAN Requirement
	Impact	Quality	Impact	Quality	
Length of employment in enterprise for permanent workers ^a	😊	★★★★ ^b	😐	★★★★★ ^b	



Lodgings on certified property

Working conditions

SAN certification has had very positive and important impacts on working conditions in coffee enterprises, not only because it has ensured workers' rights as envisaged by the legislation, but because it has provided for better housing and safety conditions at the workplace. Regarding the working conditions analyzed, the impact in the two regions where the study was conducted was quite similar.

Formal hiring of permanent and temporary workers in the two regions studied and the use of complete Individual Protection Equipment (IPE) are examples of the positive impacts of certification.

With regard to the conditions of the lodgings and houses, certification had positive impacts on water treatment for human consumption, and on appropriate isolation and distance from plantations where pesticides are sprayed. However, in this regard the conditions met were still inappropriate. Certification had a positive impact just the same, as a greater commitment to this aspect was identified.

In the lodgings, a positive impact of certification was also observed regarding the cleanliness of the rooms and space for workers to keep their belongings. However, the expected impact on availability of basic appliances (refrigerator, stove, and television) for workers in the lodgings was not observed, since conditions were less than ideal in the certified enterprises as well.



Lodgings on non-certified property

Working conditions	Cerrado region of Minas Gerais		Southern Minas Gerais		SAN Requirement
	Impact	Quality	Impact	Quality	
Hiring of permanent workers ^s	😊	★★★★★ ⁱ	😊	★★★★★ ⁱ	✓
Hiring of temporary workers ^s	😊	★★★★★ ⁱ	😊	★★★★★ ⁱ	✓
Working hours for permanent workers ^p	😊	★★★★★ ^q	😊	★★★★★ ^q	✓
Working hours for temporary workers ^p	😊	★★★★★ ^q	😊	★★★★★ ^q	✓
Wage of permanent workers ^p	😊	★★★★★ ^r	😊	★★★★★ ^r	✓
Wage of temporary workers ^p	😊	★★★★★ ^r	😊	★★★★★ ^r	✓
Lighting in houses ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	
Basic furniture in houses ^a	😊	★★ ^b	😊	★★★ ^b	✓
Hot water for bathing ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	✓
Water treatment for human consumption ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	✓
Waste water ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	
Distance and isolation of plantations ^a	😊	★★ ^b	😊	★★★★★ ^b	✓
Payment for housing and electricity ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	
Contact with the city ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	✓
Place to keep belongings ^a	😊	★★★★★ ^b	XXXX	XXXX	✓
Cleanliness of bathrooms ^a	😊	★★★★★ ^s	XXXX	XXXX	
Lighting in lodgings ^a	😊	★★★★★ ^b	XXXX	XXXX	
Furniture in lodgings ^a	😊	★ ^b	XXXX	XXXX	✓
Sufficient number of available toilets in lodgings ^a	😊	★★★★★ ^b	XXXX	XXXX	✓
Hot water for bathing in lodgings	😊	★★★★★ ^b	XXXX	XXXX	✓
Water treatment for human consumption in lodgings ^a	😊	★★★★★ ^b	XXXX	XXXX	✓
Waste of water in lodgings	😊	★★★★★ ^b	XXXX	XXXX	
Distance and isolation of plantations from lodgings ^a	😊	★ ^b	XXXX	XXXX	✓
Payment for housing and use of electricity in lodgings ^a	😊	★★★★★ ^b	XXXX	XXXX	
Contact with the city ^a	😊	★★★★★ ^b	XXXX	XXXX	✓
Use of complete IPE ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	✓

XXXX = Insufficient data



Pesticide storage on certified property



Pesticide storage on non-certified property

Pesticide handling and application

The impact of SAN certification on care and safety in pesticide handling, use and application was significant. The study detected that there was a positive impact on IPE use, appropriate washing and storage activities in the two regions evaluated. However, no impact was observed on the washing and disposal of empty containers. According to statements made by most interviewees, these procedures were adequately conducted in both certified and non-certified enterprises.

It should be noted that, as regards correct pesticide use and handling, the Cerrado region and southern Minas Gerais were very similar, except for a single item that related to care during application.

Pesticide handling and application					
Pesticide use and handling	Cerrado region of Minas Gerais		Southern Minas Gerais		SAN Requirement
	Impact	Quality	Impact	Quality	
Pesticide storage ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	
IPE washing ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	
IPE storage ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	
Washing of empty pesticide containers ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	✓
Disposal of empty containers ^a	😊	★★★★★ ^b	😊	★★★ ^b	✓
Care to avoid contamination during application ^o	😊	★★★★★ ^b	😊	★★★ ^b	✓

Meals and access to health services

Regarding meals for workers and their families, the data collected show that certification did not have any significant impact. Both certified and non-certified enterprises comply with the minimum requirements in providing meals to the families (three meals a day).

Certification had no impact on access to health services or the presence of vehicle permanently on call for medical emergencies and care. However, a positive impact of SAN certification was the reduced need for medical care in the two regions studied.

Meals and access to health services					
Meals and access to health services	Cerrado region of Minas Gerais		Southern Minas Gerais		SAN Requirement
	Impact	Quality	Impact	Quality	
Number of meals for under-11 year olds ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	
Number of meals for over-11 year olds ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	
Satisfaction with meals and nutrition ^a	😊	★★★★★ ^s	😊	★★★★★ ^s	
Medical appointments ^a	😊	★★★★★ ^b	😊	★★★★★ ^b	

Hiring of young workers

The analyses proposed by the study regarding the employment of workers under the age of 18 were undermined by the insufficient number of interviews, which did not allow for a statistical analysis. However, it was observed, particularly based on statements issued by some interviewees, that contractual restrictions provided for in the legislation possibly discourage enterprises from hiring young workers.

Financial aspects

It was not possible to identify the impacts of SAN certification on finances due to the very wide range of coffee types and qualities. Moreover, it was difficult to have access to production and processing costs and to systematize the corresponding data.

However, the comparison between the collected average sale values suggests that certification can make a difference in terms of market value, mainly for higher-priced types of coffee. The impact on financial results signals this trend, which requires detailed studies on cost and income generated in certified and non-certified enterprises in order to be confirmed.

Conclusions

This study was important for validating the impact assessment method used for certified and control enterprises and for identifying the effect generated by socio-environmental certification in coffee-producing hubs in southern Minas Gerais and the Cerrado region of Minas Gerais. The assessment method was successful enough to recommend it for evaluating the impacts of certification in other SAN-certified coffee enterprises in Brazil and in other countries.

A more robust method can be developed through the use of a panel, that is, through data collection from the treated group and the control group on different periods of time so as to eliminate the consequences of seasonal effects and changes to be monitored over time in both types of enterprises. To this end, it would be necessary to repeat data collection and analyses, confirming the effects of certification.

One of the obstacles to measuring the impacts of SAN certification was the presence of certified enterprises with more than one seal, as the impacts found could also be the result of the actions of other certifications.

The main gap in this study is the impossibility of providing indications regarding the financial impact of certification on coffee sales. This gap can be addressed by future studies, if enterprises contribute by providing more detailed information on costs and revenues. Moreover, this analysis also needs to take into account the economic complexity of coffee production.

Some differences between the certified and non-certified enterprises may have been concealed by the high standard deviation and small sample of enterprises. Nevertheless, the results revealed that socio-environmental certification generated positive impacts for coffee enterprises in relation to the following aspects:

- ✓ Worker knowledge regarding the meaning of the grace period of pesticides;
- ✓ Professional training and qualification;
- ✓ PPA protection;
- ✓ Reforestation with native species;
- ✓ Registration of the Legal Reserve;
- ✓ Use of less toxic pesticides;
- ✓ Pesticide storage;
- ✓ Pesticide disposal conditions;

- ✓ IPE use for pesticide application;
- ✓ Washing of IPE used in pesticide application;
- ✓ Disposal of water used to wash coffee;
- ✓ Disposal of domestic garbage;
- ✓ Disposal of domestic sewage;
- ✓ Hiring of permanent and temporary workers;
- ✓ Treatment of water for human consumption;
- ✓ Protection of houses against pesticide drifting;
- ✓ IPE use by operators of agricultural machinery;
- ✓ Routine medical examinations.

Positive impacts identified only in the Cerrado region of Minas Gerais regarding the following items:

- ✓ Worker knowledge regarding activities allowed by law on the margins of springs, rivers, and water bodies;
- ✓ Worker knowledge regarding the dangers of pesticide use for the environment;
- ✓ Worker knowledge regarding the dangers of touching plants after pesticide application;
- ✓ Identification of the pesticide grace period by the workers;
- ✓ Care taken during pesticide application;
- ✓ Stability of permanent and temporary workers;
- ✓ Working hours of permanent workers.

Only data from the Cerrado region were collected with regard to lodgings. Positive impacts were detected in the following aspects: sewage disposal, place for workers to keep their belongings, cleanliness of the bathrooms in the lodgings, treatment of water for human consumption and protection of lodgings against pesticide drift.

No impact was found in either region for the following items. This is due to the fact that certified and non-certified enterprises are in equally regular, good, or excellent condition, according to the study's ranking:

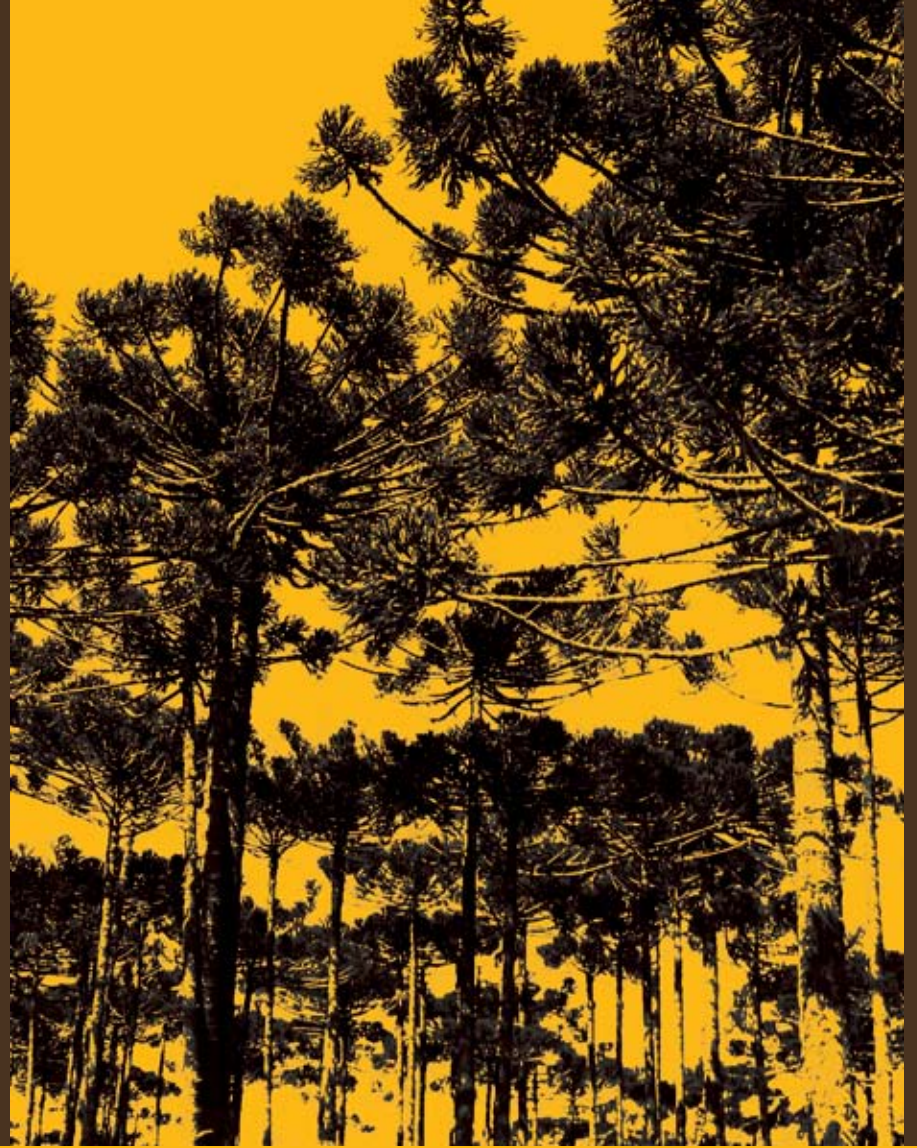
- ✓ Workers' knowledge regarding pesticide toxicity;
- ✓ Washing and disposal of empty pesticide containers;
- ✓ Occurrence of fire in 2007 (period of the study);
- ✓ Use of timber forest resources;
- ✓ Hunting and capturing of wildlife on the property;
- ✓ Soil conservation;
- ✓ Working hours of temporary workers;
- ✓ Wages of permanent and temporary workers;
- ✓ Conditions of worker housing: lighting, furniture, hot water for bathing, payment for housing and electricity;
- ✓ Meals for workers and their families;
- ✓ Procedure and transport in case of emergency.

In the case of the Cerrado, there was no difference between certified and non-certified enterprises regarding

furniture in the lodgings: both types of enterprise were either in a bad or appalling state. In southern Minas Gerais, no difference was found regarding workers' knowledge about the dangers of pesticide use for the environment, identification of pesticide grace period by the workers, and procedures to prevent contamination during pesticide application. A negative impact was observed in southern Minas Gerais in relation to the stability of temporary workers.

It can be assumed that, in the long run, there will be impacts that have not been identified yet, considering that some actions are related to the achievement of future results. This is probably the case of aspects such as PPA protection and reforestation with native species in the PPAs. These are activities in which certified enterprises are in a better position than non-certified enterprises, therefore contributing to increasing the area of native vegetation in the PPAs.

Some impacts identified can contribute to maintaining other long term impacts. That is the case of more stability for workers in the certified enterprises in the Cerrado, coupled with more knowledge on pesticides, thereby contributing to maintaining or improving worker knowledge, whereas less employment stability in non-certified establishments reduces the long-term return on investments made in their capacity building.



| chapter 5 |

Closing remarks

To measure the differences in the certification process inevitably means to make comparisons. For methodological reasons, the routine and the apparatus that regulate certification do not allow differences and impacts to be either measured or evaluated. In this study, the establishment of control groups provided the method with a new benchmark that can be applied to all the cases evaluated.

There are restrictions and limits to the methodological procedures used during the survey, and the way they were adapted to the timeframe and resources available. Despite these limits, the knowledge generated has revealed important information that cannot be detected through diagnoses or through the certification's routine work. It allowed for the validation of the basic message of certification with regard to some aspects - and the questioning of others.

Among reforestation companies in southern Brazil, the differences brought about by certification were more significant in terms of socio-environmental issues: the preservation of natural resources, forest management, relationship with the community, health and safety in the workplace, wages, hiring, and capacity building.

One of the issues raised by the survey was the fact that FSC certification still only barely reaches small-scale enterprises. A fee reduction for small producers, additional clarifications about the norms of certification, and the formulation of specific rules for such cases could help increase access to certification.

Nevertheless, the positive responses regarding the impacts of certification on natural resources and the quality of life of forest workers reinforce the expectations of the use of this tool.

With regard to the evaluation of coffee operations, even though impacts or differences were much greater with regard to environmental aspects (waste disposal, care taken for the Permanent Protection Areas and Legal Reserves), the certification of these enterprises also had positive effects on the social aspects (training and capacity building, the use of Individual Protection Equipment, and formal contracting).

It was also noticed that the greater the presence of the State and the more frequent the inspections (labor inspections

in this case), the smaller the effect of certification. It is worth highlighting that the operations analyzed are located in parts of Brazil where labor inspections are quite rigorous. Should a similar evaluation be carried out in countries with less rigid legislation, certification would be likely to have an even greater effect. Anyway, the analysis confirms that certification is important in regions with reduced governance, even if advanced legislation is in place.

Some of the main lessons learned from the evaluation of the coffee operations were the different results provided by certification in the two regions evaluated (Cerrado and southern Minas Gerais): the positive impact, i.e., the favorable differences brought about by certification, were greater in the Cerrado. That may be due to the more recent establishment of coffee plantations in the region, leading to greater openness towards the adoption of alternative technologies.

It was also noticed that the same product, coming from the same region, may have some degrees of differentiation. The general rule (certification norms and requirements) has different effects. Considering that it is essential to preserve the concept of difference as such, and to pass it on to consumers, a regional adaptation of the norms may be considered.

Nevertheless, the differences between operations in the same region, as well as between regions, indicate that there is no standard for the impacts generated by the socio-environmental certification system. If we consider that both regions studied are located in the same state and are certified by the same institution, it can be expected that – should the study be expanded to other regions and even other countries, irrespective of the product being exploited – differences between regions and operations would tend to be even greater.

Such a variation can be partially explained by the fact that the norm for Socio-environmental Agricultural Certification involved a plan for ongoing improvement, requiring that non-conformities be corrected during the certification cycle. That is the case of the SAN norms that allow enterprises to be certified starting with a minimum score of 80%, as long as they comply with 50% of the essential criteria for each principle and the critical criteria. Hence, an operation to which 90 criteria are applied may not comply with 18 of them.

Such differences could also be related to regional cultural peculiarities and not to certification per se. Hence, the identification of impacts may guide the work of certifiers regarding the aspects to be highlighted in different regions.

In the case of the extractive communities of Acre, differences were smaller, rather conjunctural and almost punctilious. That may be attributed to the different actions with results similar to those of certification that were implemented by NGOs and by the state government, to the market's limited response to certified products, and to difficulties in adapting family farmer associations to routines of control, documentation and other certification requirements.

However, the study carried out at the Acre communities, was a very important lesson: certification does not always work properly and may, therefore, not be fully understood. This reflects the need to adapt certification to this specific type of audience.

On the other hand, the message was better understood by reforestation firms in southern Brazil and coffee enterprises in the Cerrado and southern Minas Gerais, which are much more familiar with industrial-scale farming. Certification did make a greater difference in these contexts.

Case studies have produced evidence that reinforces the role of certification as an important mechanism for generating large-scale alternatives and with strength enough to counteract the negative effects of industrial farming and forestry.

In general terms, we may conclude that socio-environmental certification does indeed work and must be supported, but the context of the enterprises and regions must always be properly acknowledged to ensure a differentiated impact evaluation.

When it comes to rural communities, an important recommendation is that impact assessments should be carried out in a panel format, that is, data collection must be repeated during subsequent years. Such actions would reduce the seasonal effects that are common to field activities. This guideline became evident in the study cases in Acre communities and in coffee enterprises.

Knowledge about the regions where the enterprises are located, detailed information on criteria and the establishment of a framework for ongoing improvements may be key contributions to producing a more objective benchmark, helping to enhance the positive impacts generated by socio-environmental certification and adapted to each region.

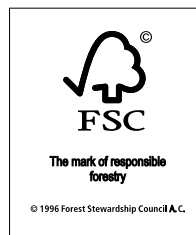
The main bottleneck – which was common to the three case studies – is that the objective assessment of economic feasibility may be affected by difficulties in the collection of economic data due to their availability, release, and standardization, or even due to product variation and market oscillations.

It was also noticed that price fluctuations and market crises can weaken the effects and the range of certification. The inclusion of certification in environmental and social policies aimed at generating changes with a broader scope and with greater market independence are mechanisms that may strengthen certification.

Another action that could favor certification would be to increase overall market awareness regarding the mainly positive impacts of this tool – for example, publicizing certification on the domestic market and raising awareness among consumers about the positive impacts of certified wood production in Brazil. However, there are several obstacles to such alternatives, including a lack of coordination with government. On the other hand, the results achieved have allowed the impact evaluation methodology to be confirmed as an important instrument for a broader understanding of certification and its evolution.

The study also highlighted important aspects for improved certification – such as establishing the context of the firms, the practice of unscheduled audits, and greater inclusion of small-scale producers – while validating the importance of socio-environmental certification for promoting short and long-term conservation of biodiversity and natural resources, and human development, thus meeting the expectations of consumers who chose certified products.

Does certification make a difference? The Impact Assessment Study on FSC/SAN Certification is a major contribution by Imaflora to the debate about socio-environmental certification in Brazil. The study shares the main findings of the assessment carried out by Esalq/USP and Entropix Engenharia researchers by means of three case studies: two related to FSC forest certification (planted forests in southern Brazil and extractive communities in Acre) and one related to agricultural certification by the Sustainable Agriculture Network/SAN (coffee enterprises in the Cerrado region and southern Minas Gerais).



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