
FOREST CERTIFICATION IMPLICATIONS FOR SMALL AGRO-EXTRACTIVIST COMMUNITIES: INSIGHTS FROM ACRE STATE IN THE BRAZILIAN AMAZON

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Abstract

In this article, we examine and discuss the effects and legitimacy of Forest Stewardship Council (FSC) certification for the agroextractive communities in the forestry reserve zone in Acre state, Brazil. We combine an analysis of the socioeconomic effects with an approach that takes into account the social dynamics underlying the establishment of this new private environmental regulation. Our surveys' findings show that the introduction of certification, with its requirements for control and traceability reports, has not had any major effects to change the rationality that determines community practices. However, when certification is adopted exclusively for marketing reasons, it does not seem to act as a real incentive for producers to make a long-term commitment to certified timber extraction.

Key words: *rationality, socioeconomic impact, FSC standard, communities, Brazilian Amazon*

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1 Introduction

In a context of major state deregulation, different non-state market-driven governance systems (Cashore, 2002) have emerged in the form of voluntary standards and ecolabels to supervise sustainable natural resource management. This development has occurred thanks to the growing consumer concern about how the goods that they consume are produced and distributed. These sustainable standard schemes arise from joint action undertaken by different stakeholders – with different market connections – who consider this private regulatory tool to be legitimate.

The proliferation of voluntary sustainable standards and ecolabels on international agricultural markets has attracted the attention of many researchers in the last few years. In development economics, numerous research studies seek to evaluate their impact on farmers who adopt the schemes. However, results of the evaluations are ambiguous and controversial, depending on the indicators and methods used (Blackman and Rivera, 2010). Recently, literature on development economics has been full of randomised experimental methods, which are considered more robust in terms of causalities. They are used to conduct empirical tests on the validity or efficiency of development instruments (Bolwig et al., 2009; Maertens and Swinnen, 2009; Banerjee and Duflo, 2011; Ruben and Fort, 2012). The research work often seems satisfied with simply reporting the significance and scale of the positive or negative impacts of the standards studied for various economic aspects (incomes, production, investments). Over and above an evaluation of the efficiency specific to these schemes, they take little account of the instruments' indirect effects, nor of the context in which the impacts are measured (Carimentrand and Ballet, 2008; Lemeilleur, 2011). In fact, classic approaches, with their epistemological construction, fail to take account of the social dynamics and the institutional environment in which they measure the effects. Similarly, they fail to question the legitimacy of the schemes as a function of the diversity of the existing situations.

In this paper, we suggest that if the impact indicators are considered in isolation, it is difficult to grasp the effects of sustainable standards and interpret their positive or negative consequences for sustainable development. In order to improve the understanding of impact assessment results, it seems essential to take into account how the new experimental environmental governance systems are linked to social dynamics (Elie et al., 2012). For example, Carimentrand and Ballet (2008) were able to show the extent of the very mixed and unexpected impact that the development of Fair Trade standard in the Andean quinoa sector had early on. In fact, while farmers' incomes increased and the communities' living standards did improve, the standard made some of the existing farmer organisations more vulnerable and encouraged the spread of quinoa as a monoculture, exacerbating the detrimental effect on the environment. Approaches that take account of social and institutional dynamics are particularly well justified by regulatory theories (Elie et al., 2012).

This article uses a case study to propose an analysis of the effects and the justification for diffusing the international Forest Stewardship Council (FSC) standard for forest communities in the Amazon. This voluntary sustainable standard, created in 1993, is one of the most important certification schemes for sustainable forest management. The analysis is based on results from empirical qualitative research on the community exploitation of

certified timber in zones in the forestry reserve, in Acre state, Brazil. In our case study, we examined how the emergence of the certification scheme is linked to the existing social and institutional dynamics. Thus, we were able to look at the effects generated by certification within the local agroextractive communities and discuss the arguments used to justify the legitimacy of diffusing the standard in this specific context.

In the next section, we justify our choice of a contextual approach in the light of the existing gaps that emerged in a review of the literature on development economics relating to methods of impact analysis. We present the results found in the literature on the diffusion of sustainable standards from related disciplines, which helped us improve the analytical framework for our research work. In the third part of the paper, we explain why we chose our case study and present the method used for the study. The fourth part presents the results of our analysis in different sections as a function of the various aspects considered. Lastly, the fifth part comes back to the findings in the form of a discussion, focusing on the legitimacy of diffusing the sustainable standard in the context studied.

2 Literary review

In the literature on development economics that focuses on the diffusion of voluntary sustainable standards, Blackman and Rivera's literary review (2010) identifies a number of empirical studies, which evaluate the impacts of adopting standards at a farm scale. Seven studies concern the FSC. All of the studies focus on the significance of a number of socio-economic and environmental indicators following the adoption of the FSC standard, such as biodiversity (De Lima et al., 2008; Van Kuijk et al., 2009), tree regeneration (Kukkonen, 2010), strict quality control (Morris and Dunne, 2004), improving forestry management (De Lima et al., 2008) (Molnar et al., 2004), price differential (Molnar et al., 2004; Morris and Dunne, 2004; Nebel et al., 2005) or improving marketing (Molnar et al., 2004; Ebeling and Yasué, 2009). Although, overall the studies tend to conclude that certification has a relatively low impact, there is little discussion about the legitimacy of this private tool for environmental regulation. Discussions are limited to the factors required to improve their effectiveness, or even, as in the case of Blackman and Rivera, on the need to set up reliable assessment methods, that are still seldom used on this topic. In fact, recent literature on development economics focuses exclusively on the significance of impacts. It emphasizes the methods that use credible counterfactuals vis-à-vis the "treatment" groups, such as random experimental techniques (Banerjee and Duflo, 2011) or other quasi-experimental methods using instrumental variables or propensity score matching methods (Bolwig et al., 2009; Maertens and Swinnen, 2009; Ruben and Fort, 2012) in order to conduct empirical tests on the validity or efficiency of development tools. The remarkable enthusiasm for these assessment tools is partly due to the claims that they have some ideological neutrality (Labrousse, 2010). These pragmatic techniques are based on sound proof of their validity and no longer on the major principles assumed by development policies (Durand and Nordmann, 2011). However, this neutrality seems somewhat exaggerated given that, in these models, the motivating factors underlying the choices made by the agents "treated" and the justification of causalities seem to be based on much less explicit evidence. These interpretations are actually often inspired by a neoclassic approach, which has been renewed for the better by the neo-institutional trend and the greater scope of stakeholders' rationality (Elie et al., 2012). Thus, in development economics literature, the actual tools that are evaluated are rarely discussed from the point of view of their legitimacy. Instead, they are considered exclusively in terms of their efficacy in relation to the expected impacts. This approach often ignores the social basis

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underlying stakeholders' choices, as well as the conflicts and compromises linked to the relative power that the stakeholders have to impose their choices (in other words, their interests).

In addition, we suggest that trying to grasp the effects of sustainable standards by simply observing impact indicators is limited. This is because the evaluation is limited by the observed indicators - they are often intermediary indicators - but also in time (evaluation period), and to an area that is restricted to the effects that are expected. When we try to understand the variation of the effects over time, the rationalities governing the regulations or how the governance instruments complement other institutions, the indicator results remain poor and inadequate (Elie et al., 2012). If we are to understand and discuss the frequently ambiguous and mixed effects, as a function of the case studies, it is important to grasp "the existence of diversity, as such, and the link between environmental governance and social dynamics as an epistemological starting point" (Elie et al., 2012). Thus, while we do not refute the usefulness of sophisticated statistical methods for measuring the impacts of regulatory tools, it seems important that the literature on development economics includes discussions about environmental governance and the motives underlying the choices made by the agents "treated" within the existing social dynamics. This step is essential before applying the analyses to the legitimacy of the instruments as a sustainable development tool.

The concept of "legitimacy" is complex and includes two aspects, which Boltanski addressed in his research (Boltanski and Thévenot, 1991). Firstly, the normative aspect selects a number of *a priori* acceptable principles in terms of their validity and according to a "moral justification". Here, based on Godard's work (2003), we chose "sustainability as a source of legitimacy". In operational terms, the legitimacy test is a link "between the local and a well defined generality within a higher principle; this transition occurs when rules are codified and objects standardised in order to conduct the tests" (Godard, 2003). Therefore, in our case, it is the transition between the FSC standard and its certification system – its actual legitimacy has already been discussed elsewhere (Cashore, 2002)¹ - to its adoption and implementation by the forest communities in the Amazon. Secondly, the positive aspect is based on the arguments used by the different stakeholders and their validity, which applies to an objective external reality. In operational terms, the legitimacy test is based on: the relevance of the mechanism, which depends "on scientifically reliable facts, for which the relationships of causality and the representation of potential damage are judged to be sufficiently reliable" (validity of the justifications); and simultaneously, on the representations in the stakeholders' statements. The latter are scientifically uncertain and controversial and focus particularly on the perception of the future. "The principle of precaution is supposed to provide points of reference for the attitude to adopt in this second type of situation" (Godard, 2004).

In order to deal with the analysis of the effects of voluntary sustainable standards, to take account of the rationalities involved in the strategy to diffuse these standards and discuss their legitimacy, we should look at the results from related disciplines – since the issue has not yet to be addressed by current development economics – particularly by looking at research from sociology and political science. Indeed, in the literature from related disciplines, authors underline the gradual shift that has occurred in recent years in terms of the role of the standards. Initially, their role valued so-called "movement-oriented" practices.

¹ Cashore is interested in the legitimacy and privatisation of environmental governance. However, in his article, he keeps within a normative analysis of the legitimacy of these instruments, by using an analytical framework for sociological organisation (pragmatic, moral and cognitive legitimacy).

Now that the standards are being diffused, the role has become one of a driving force to create a “market-oriented” activity (Raynolds, 2004; Gómez Tovar et al., 2005). This seems to have been made possible because of the changes that have occurred within the structures that supervise the instruments, and for which market solutions are becoming the best means to improve practices and internalise negative environmental externalities (Djama et al., 2011). These changes in the rationality involved in the implementation of sustainable standards can, therefore, influence the structure of the effects observed empirically, the types of relationships linking economic activities and the natural environment, as well as the process of diffusing private certification.

Therefore, for a fuller examination of these natural resource management mechanisms, it is important to consider how the tools are integrated socially. This research work aims to discuss the instruments’ legitimacy, by combining the effects observed empirically at a farm level (in the same way that development economics have done until now) and the understanding of rationality logic and the social dynamics governing these regulatory instruments.

3 Motivation for the empirical choice and research methodology

3.1. Choice of case study

Our case study focuses on the community exploitation of FSC (Forest Stewardship Council) certified timber in zones of the forestry reserve in the state of Acre, Brazil.

The certification for the FSC standard’s sustainable forest management appeared in 1993. It was developed on the initiative of timber processors, NGOs, and consumer and producer groups after warnings from the civil society about the massive deforestation in tropical forests and the urgent need to set up effective mechanisms capable of protecting the forests. The standard comprises 10 principles that concern user and property rights, the relationships with local communities, workers’ rights, the environmental impact, the forest management plan, monitoring-evaluation, the protection of forests with a high conservation value, and more recently, plantations. The indicators and criteria for the Brazilian FSC standard for exploiting natural forests were validated in 2002². The certification and label require an annual audit, which is conducted by an independent certification organisation (third party certification). The certification costs money, but does not guarantee a price premium; the price differential is generally induced by market demand as compensation for producers who respect good socio-environmental practices.

In the Brazilian Amazon, which was particularly vulnerable to problems of deforestation until 2005 (the average annual deforestation rate was 2 – 2.5 million hectares before 2005), the certification projects for sustainable forest exploitation started to develop in the mid-nineties. In 2012, the total area of certified land was 7 381 598 hectares, over 40% of which was in Amazonia (Forest Stewardship Council, 2013). The certificates are predominantly held by large private businesses, and were encouraged by the WWF (World Wildlife Fund), which introduced FSC certification in Brazil (Garcia-Drigo et al., 2006). However, there are also a number of community certification projects linked to governmental or NGO initiatives, which receive public funding. Since 2005, there have been several

² This standard was largely developed for private businesses. Certified community exploitation has to follow the same standard, although some indicators are not always adapted to their situations. Since 2010, work has been underway to develop a specific standard for community exploitation (Drigo and Piketty, 2013).

experiences of this type in the state of Acre, in southwest Amazonia (Drigo et al., 2009). This explains the choice of our zone of study.

3.2. Method

The zone of study covers a group of communities that have different legal statutes for forest ownership, namely the PAE (agricultural extractive settlement projects) and RESEX (extractive reserves).

The choice of communities and the number of surveys per community were established as a function of whether or not they were involved in the FSC certification scheme and the date of adopting the standard. Thus, three different interview guides were prepared for already certified producers, producers awaiting certification and uncertified producers, either because they abandoned the scheme or were never certified. The interview guides focus on: (i) the identification of the producer and his farm, (ii) the participation in community life, (iii) the farm's economic results and changes, (iv) marketing methods, (v) social changes.

In each community, the people surveyed were chosen carefully and included at least the president of the community association, the local coordinator in the certified communities responsible for the forest management plan (in order to determine the technical constraints involved in the activity), as well as at least one or several randomly chosen producers from the association. At least three people were surveyed in each community. In total, 37 semi-structured direct interviews were conducted with producers between August 2012 and January 2013 (Table 1).

In our sample, we chose seven producers who extract timber but are no longer or never were part of the FSC certified association. We also chose seven producers (20%) who do not have a timber extraction activity. The community of producers concerned has not yet decided whether to develop this activity. As far as the other activities are concerned, this community closely resembles the other communities in the sample. The intra-community size differences are homogenous between the associations: the average size of the farms surveyed is 347 hectares, with sizes ranging from 90 to 800 hectares of forest per family. The forest land included in the sustainable forestry management plan (forestry management plan units, FMPU) are on average 170 hectares for each family concerned (ranging from 50 to 400 hectares), of which 12.5 hectares are exploited in the annual operational plan (POA) (ranging from 10 to 30 hectares)³.

³ According to more global figures for the entire zone studied, the average area of sustainably managed forest declared by the families surveyed seems rather small. There are two explanations for this: either these areas have been split within families unofficially (which is not legally authorised) or our random sample is too small and, therefore, fails to provide a satisfactory representation of all the forest producers in the zone.

Table 1: Summary of the number of people surveyed as a function of the level of certification of the chosen communities.

Name of group		Communi	FSC	#
		ties	Certification	surveyed
Mendes	PAE Chico	CM	AMPPAE-2002	Certified in 06
Dias	PAE Porto		ASPD-2002	Certified in 03
	PAE Equador	-SE	ASPPAAE-2005	Certified in 03
Mendes	PAE Chico	Deus	Fé em Deus	Awaiting certification 05
Mendes	Resex Chico	X	AMOPRE	Awaiting certification 06
Dias	PAE Porto		Unidos pela Paz (previously ASPD)	No longer certified 03
Dias	PAE Porto		Unidos pela Paz	Uncertified timber extraction 04
Mendes	Resex Chico	BE	AMOPRE	No timber extraction 07
TOTAL				37

The interviews were completed using a series of documents from NGOs working locally (Imaflora, WWF, etc.), as well as documents from Cooperfloreta, a cooperative set up in 2006 that manages all the community forestry management plans in Acre.

4 Results

4.1. The local dynamics identified to protect the forest and stop the expansion of livestock production

Since the first migrations in the zone at the end of the 19th century, the economic activity was traditionally geared towards rubber extraction and harvesting Brazil nuts. While Brazil nuts still generate an activity and substantial income for local populations, rubber harvesting has become rather marginal. In fact, in the late sixties and early seventies, the overproduction in latex in Asian countries caused a collapse in the international price for rubber. During the same period, the migrations intensified, with farmers from the south of Brazil, particularly the state of São Paulo, moving to develop cattle production systems. Many landowners sold their land to the new arrivals, who then converted the forest to establish grassland (Toni, 2003). The ruling military dictatorship (1964-1985) supported the migrations with tax benefits and grants. In a matter of years, the arrival of this profitable new activity encouraged livestock production among the new generations from the local communities (Toni, 2003; Drigo et al., 2009).

In response to the deforestation inherent in the establishment of livestock production and other agricultural activities, and with the international outcry denouncing land grabbing in the Amazon forest (led by Chico Mendes, among others, in the eighties), the Brazilian state ended up creating legal statutes in the nineties (PAE or RESEX), to protect the agroextractive

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communities on land that they occupied traditionally (Keck, 1995; Brown and Rosendo, 2000). According to the new statutes, the inhabitants in the community have no land ownership rights. The land remains federal government property and the right to use land requires a real contract of use with the local association that holds the community plan for forest use. These concession contracts allocate an average area of 300 hectares of forest per family (calculated to cover three tracks for rubber extraction). As far as land use is concerned, the public legislation defining the plans of use in the PAE and RESEX is quite strict, limiting deforestation for agricultural activities to 10% of the area (1 hectare per year). At the time, the agroextractive concessions were largely geared to Brazil nuts and latex. The latter do not appear to be economically viable, as such, without recourse to timber extraction (Benatti et al., 2003), which until then was non-existent in the communities. The low incomes were then used to justify the promotion of a new forestry activity on 90% of the legal reserve, thanks to support from local NGOs (WWF-Brazil, CTA)⁴. The forest management plan units (UPGF) that were then determined by the government, the NGOs and the communities included 100 hectares per family (although they could have included the entire forest reserve), with an annual operational plan (POA) of extraction for 10 hectares. According to these calculations and as a function of the existing regulations for the 10-year period set for forest regeneration, families were able to maintain a sustainable annual timber extraction activity⁵. To generate more profitable incentive income from sustainable forestry exploitation, local NGOs and community leaders encouraged communities to adopt the international FSC standard in 2001. In fact, according to the answers given by the producers surveyed, the latter only really started extracting and selling timber after adopting certification (83% of cases). The standard applied is the same for businesses. Work to develop a certificate for communities only started in 2007. Simultaneously, Cooperfloreta, a marketing cooperative for certified timber, was set up to manage all the community forest management plans in Acre. The cooperative has also managed timber extraction since 2012. Uncertified timber extraction is still sub-contracted and many producers sell standing timber per hectare and not by the cubic metre. Lastly, certification for the sustainable community exploitation of forestry resources tends to override public rules for sustainable resource management. Though the latter have existed for many years in Brazil, they were considered rather ineffective (Piketty et al. 2008). In 2012, four community management projects were certified in the state of Acre (including the associations surveyed AMPPAE-CM, ASPPAAE-SE and ASPD). They have been largely financed by public funds from the local government. Two other projects are awaiting certification (Fé em Deus and AMOPREX, also surveyed). However, since our surveys, the last audits in 2013 revealed that there were numerous nonconformities in two of the certified communities that have lost their certification (AMPPAE-CM, ASPPAAE-SE). The two communities awaiting certification did not obtain certification this year either.

A closer look at the evolution in the economic, social and institutional dynamics in the zone under study reveals that the role of setting up management plans for forest extraction on a community level was primarily designed to limit the expansion of livestock production in

⁴ The community forest management projects started in 1996 with support from WWF-Brazil and the Centro dos Trabalhadores da Amazonia (CTA). However in 2005, only eight members had registered for the project and benefited from income from timber extraction.

⁵ Subsequently, this definition for UPGF was never reviewed, causing problems in 2006, when the regulations on the regeneration of forestry plots changed to 25 years and the 100 hectares defined per family were not nearly sufficient to maintain the activity over time.

the Amazon forest. The implementation of the FSC standard then acted as a catalyst for starting a forestry activity and selling timber. Before the certification, this activity, which was not traditional in the zone studied, was unpopular among families in the agroextractive communities. Therefore, in this case, the role of the FSC standard was to offer a glimpse of the prospect of adding value to timber marketing. This result fits with the observation found in the literature regarding the shift in the standards' role towards a more market-oriented and income-generating logic (Raynolds, 2004; Gómez Tovar et al., 2005). This dynamic also benefits from an apparently firm local belief that certified forestry management is the most effective alternative to combat the expansion of the agricultural front and illegal forest exploitation (Amaral et al., 2005). Thus, the only guarantee for limiting increased deforestation is an alternative that generates equal or greater economic returns than the other activities. Nonetheless, in the literature, there is a debate on whether the problem can be resolved solely by using a marketing tool (Cashore and Stone, 2012).

4.2. The limited effects on changes in rationality after adopting forestry certification

With our surveys, we focused on the producers' underlying motives for adopting the standard and on the change in rationale induced by certification for the traditionally agroextractive producers. We examined, in particular, the hypothesis concerning the rise in the neo-liberal rationale supported by certification system (Prigoué, 2013), via monitoring and control procedures, as well as that concerning the market-oriented rationale and potential commercial risks in an unstable market. The changes in rationality that occur during the establishment of sustainable standards can actually have a structural influence on the effects observed empirically, as we describe later, but also on the types of relationship linking economic activities and the natural environment, and the processes for diffusing private certification.

According to our surveys' findings, when we compare producers who may or may not have a certified timber extraction activity, all of them continue to produce most of their food needs (in the two groups, 80% of the people surveyed claim that their own production covers their family's home consumption, 20% say that they do not produce enough to feed their families and that they still have to buy rice, beans and flour). The new activity does not seem to lead to the disappearance of household subsistence activities nor does it seem to generate ultra-specialisation in a market-oriented activity with high value added, as sometimes occurs in the case of certification (Carimentrand and Ballet, 2008).

In addition, the function linked to the contract for the certification and sale of timber does not seem to generate new rationalities among producers either. In fact, for years, the traditional Brazil nut harvest was sold via a contract with another cooperative, Cooperacre. The Cooperfloresta cooperative's contractual function is, therefore, well accepted. In addition, according to the producers' statements, the introduction of certification and the corresponding monitoring procedures (recording practices, control and traceability report) do not appear to represent a particular difficulty or constraint for them. They are well supported by the technicians from the cooperative. Although some producers do express doubts about the pertinence of several criteria defended by the standard (for instance, the protection of certain protected species, perceived as simply a ban on hunting, or the ban on burning waste, despite waste collection being problematic), the difficulty of verifying these criteria appears to limit the real constraint that they face in their activity. For the three producers who left the certification scheme in the Porto Dias community, the main reasons for leaving were related

to the small price advantage between the sale of certified and uncertified timber and the conflict about sharing the benefits collectively.

Lastly, according to our surveys, the first effect that producers expected from certification was to find lucrative markets and a guaranteed market (80% of statements). Therefore, producers adopted FSC certification above all to pursue a market-oriented rationale. However, the reality failed to meet the expectations for certified producers who find the activity to be unprofitable. In fact, the number of participants has dropped over the years (Drigo et al., 2009). Adding value to forestry resources via certification is difficult to achieve, which calls into question the capacity of certification to reduce the risks of deforestation.

4.3. The socio-economic effects are encouraging for timber extraction though limited over time

In these communities, before timber extraction began in the early 2000s, the economic activity for 87% of the producers surveyed was harvesting Brazil nuts and 65% also harvested latex.

Today, the FSC certified producers surveyed indicate that their harvesting activities are still important: 91% of certified producers (or awaiting certification, 23 families) sell their Brazil nut harvest⁶, compared to 93% for uncertified producers (14 families); 13% collect acai berries⁷, compared to 43% of uncertified producers. Harvesting small fruits has become more profitable in recent years with an increase in demand. However, the latex harvest has declined considerably: only 35% of certified producers and 7% of uncertified producers now harvest latex. Those who carry on tend to be near the condom factory in Chapuri. Let us note that 44% of certified producers and 50% of uncertified producers also raise cattle for the sale of meat⁸ and sometimes milk. The producers also claim to grow crops for home consumption (rice, beans, cassava, even maize for small-scale livestock production): 65% of certified producers occasionally sell their crops, compared to 36% of uncertified producers.

The sample in our surveys is too small to allow us to calculate whether the differences between the certified and uncertified groups are significant. Apart from subsistence farming, which occasionally generates an income for certified producers, the results seem to show similarities: those who have abandoned latex harvesting seem to have replaced it with acai harvesting. In the two groups almost half of the families raise cattle.

For the sample of certified timber producers, 87% of those surveyed claim that the main products that provide their annual income are Brazil nuts, 17% indicate timber and 13% livestock production. According to the small sample of producers who extract timber without certification (7 families), surprisingly 57% of those surveyed state that the main source of their annual income is Brazil nuts⁹ and timber in equal measure, with 14% indicating livestock production. When these data are examined in detail, this result can be explained not by the higher prices obtained for selling timber but by the fact that these producers are no longer limited to exploiting 10 hectares annually, as specified in the current contracts with

⁶ Each household harvests 200 baskets (1 basket = 20 litres) per year, sold for an average price of 23 Brazilian Reals/basket.

⁷ Each household can harvest from 150 to 500 kg of berries per year, sold at an average price of 1.2 BRL/kg.

⁸ The production units have from 5 to 90 animals (34 on average) and producers claim to sell about 6 head per year at 460 BRL/ head on average.

⁹ This does not mean that they earn more income from timber than the certified producers but that this activity, even when uncertified, generates an income that is as high as that obtained from Brazil nuts.

certified associations. Instead they exploit 15 to 30 hectares per year¹⁰. Lastly, in the group that does not extract forest timber, livestock is the main source of income for 42% of the producers (although the size of their production units is no larger than for the other producers) and Brazil nuts provide the main source of income for 57%.

Thus, these survey findings show that the novel timber selling activity generates a new non-negligible source of income¹¹ and requires very little labour time¹². Labour requirements are especially concentrated in August when timber is extracted. Therefore, this new activity is compatible with other traditional activities (Brazil nut harvest from January to March, rice harvest and preparation for the bean rotation in April, bean harvest and preparation for the rotation with rice in September, acai harvesting and livestock production is spread throughout the year). The incomes generated by timber extraction are similar to those provided by livestock production for the families who do not exploit timber.

However, given the rules of sustainable forest management, which have indicated the need to respect a reforestation cycle of 25 years for plots since 2006, most of the producers surveyed (70%) have not yet registered enough forest land in their UPFG to maintain this activity over time¹³. The problem is that when the community land use plans were defined, the management units were set at around 100 hectares. The units should now be reviewed so that all the legal reserves allocated to families (an average of 347 hectares) can be registered. Progress could be achieved if the NGO responsible for the standard intervened and actually wanted all the concessions to be certified. In the meantime, when we conducted our surveys, the producers found it hard to express how they could cope if this activity were to disappear. On the other hand, when they were asked about future projects, they declared that they were considering investing in fish farming (16%), rubber plantations (21.5%), cattle production (16%) or agricultural crop production (13.5%). Therefore, timber extraction does not seem to be considered sustainable over time for many producers. This is particularly true for the uncertified producers, who exploit much larger areas of forest each year and in so doing are exhausting the very limited area that they manage at an even faster rate. There is a leakage effect: profits from selling certified or uncertified timber are reinvested to create more profitable and lasting activities. Piketty et al (2008) have already mentioned this effect.

In addition, the income currently generated by certified timber extraction does not compensate for the cost of certification. In 2005, Piketty et al. (2008) already highlighted the financial dependency of community certification projects. Seven years on, in 2012, the situation does not seem to have shifted. Over 50% of the costs of certification are still covered by aid from the government and the certification organisation, Imaflora's social fund. The

¹⁰ In the last 3 years, the certified households surveyed claim to extract 6 m³ of timber per hectare on average, sold at an average price of 60 BRL/m³. However, some uncertified producers also sell standing timber and negotiate a price per hectare rather than per cubic metre of around 400 BRL/ha. This seems very profitable. The price can be explained by the fact that the rate of extraction exceeds 6 m³ and businesses buy the standing timber and do their own felling.

¹¹ We have roughly calculated that the sale of timber would generate approximately 25-30% on average of the farm income for families in the certification scheme, and almost 50% for those who are not certified and who now sell a greater volume each year.

¹² We have calculated 11 days of work per year for uncertified producers and around 25 days for certified producers, which includes 13 days for meetings and training linked to the certification scheme and 1 day for the annual audit.

¹³ Currently, for the producers surveyed who extract timber from their forest, the area designated for extraction is recorded in the UPFG as 169 hectares on average. This suggests that barely 7 hectares of forest are exploited each year in order to have the right to maintain this **annual forestry activity**.

lack of viability is largely linked to the fact that real markets for certified produce that are easily accessible to producers are non-existent. Our surveys show that there is not necessarily a price differential - prices are quite similar for uncertified produce. Therefore, there is tremendous uncertainty even if demand is growing. This could be explained particularly by the fact that most of the timber from community management in the Amazon is still geared to the domestic market, whereas certified timber from large private businesses is exported on the world market. The positive aspect that stems from the development of this activity seems, above all, to be linked to the creation of the FSC certified timber selling cooperative, Cooperfloresta, set up in 2006. The cooperative has bargaining power in order to find a number of export markets, guarantee the sale of all the timber, and ensure, above all, that buyers respect the contracts: 100% of uncertified producers who do not sell through the cooperative claim to have serious problems ensuring that contracts are respected. By comparison, certified producers only mention a few problems relating to the date of payment in the case of sale with Cooperfloresta.

Lastly, our surveys seem to indicate that the increased development of forestry activities has improved infrastructure for extracting timber from certified plots. The increased number of tracks has also provided the opportunity to improve access to education (mentioned by 90% of those surveyed) and medical care to some extent (mentioned by 58% of those surveyed). This infrastructure is beneficial to the entire community, regardless of certification status.

Timber exploitation, therefore, seems to have some beneficial effects for the local communities, even though they may be relative and more or less sustainable. The findings may suggest that the timber extraction activity may have played a role in limiting the development of livestock production for some producers. How long this impact will last over time, if the community land use plans are not reviewed, remains to be seen. Drigo et al. (2009) mention that livestock production is not only perceived as a future economic opportunity for the new generations, but also as a way of gaining greater social recognition. Furthermore, we also noticed that since the research conducted by Drigo et al (2009) on the surveys of these communities in 2005, the share of household income provided by the agroextractive activities remains high. It would be very interesting to develop tools that could improve the added value and marketing for the products of extraction, thus generating more stable incomes over time.

4.4. Measuring the environmental aspect of the effects of forestry certification is problematic

As far as the environmental aspect is concerned, our work does not include indicators to measure the environmental impact as such. However, it is clear that, in relation to the knowledge acquired via the certification schemes (on average, certified producers have 5 days of training each year, while the other producers have no training whatsoever), the producers surveyed claim to have a better understanding of the forest and how to protect it. They refer to the proscription of fires in the forest, waste management, the protection of certain tree species, such as the sweet chestnut and natural rubber, respecting animal and plant biodiversity, and permanent protected areas near sensitive zones.

In addition, while certification may not reduce local deforestation, it has reduced deforestation in all the areas certified since 2002. Thus, certified land now forms a bulwark

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around growing islands of forest that are protected indefinitely. In fact, it seems that the relative gains (in particular, the guarantee to sell all the felled timber) have certainly helped strengthen the application of the Brazilian public legislation. The latter – little respected until now – obliges farmers or extractive producers in the Amazon to keep 80% of their land as forest. A sustainable management unit can then be set up for forest species. Thus, as Djama (2011) points out, private standards via certification schemes seem to have effectively helped strengthen public regulations.

Nonetheless, these positive results should be put in perspective given the leakage effects listed during our surveys and mentioned above. Gains from the sale of certified products are invested in more profitable activities, such as crop or livestock production, which can, in turn, ultimately increase deforestation. These effects were already observed when the state of Acre set up price support policies for non-woody forest products, such as rubber or Brazil nuts. The profits from these policies were often invested in cattle production (Toni, 2003; Piketty and Garcia Drigo, 2008). If there is no control over this type of effect, the reduction in deforestation is questionable (Piketty and Garcia Drigo, 2008). However, these effects are difficult to measure and we did not measure them specifically in our study. It is noteworthy that of the future investments mentioned, fish farming projects and replanting rubber above all, seem to be prevalent in the participants' responses, rather than livestock and crop production, mentioned in less than 20% of cases.

5 Discussion and Conclusion

With this case study, our findings show that since the diffusion of FSC certification, the agroextractive communities benefit from effects that can be perceived as rather positive (income, new tracks to improve access to services). From a pragmatic point of view, these empirical observations on simple indicators of socio-economic evaluation seem to justify the legitimacy of setting up the scheme. However, thanks to our analysis of the socio-institutional context in our study, we noted that for many producers, timber extraction only appears to be a transitory activity, given that the sustainable management units for forest species will be exhausted faster than was calculated initially. The leakage effects have already been observed with the profits generated reallocated to other activities, which could be more or less damaging to the environment and fail to reduce deforestation. Thus, we highlight major doubts about the variability of the effects of this mechanism in the long term. New questions emerge relating to the legitimacy of diffusing forestry certification.

Firstly, if the diffusion of certification had clearly been a catalyst in the development of forest exploitation within the communities in the zone studied, it now seems that the guarantee system has become less advantageous than simply exploiting sustainable management units of forest species without certification (fewer constraints than POA, high extraction rate allows for better bargaining power in terms of price per hectare). Given that our results show, first and foremost, that a market-oriented logic determines the choice of the certification process, the question arises as to the persistence of practices linked to certification among producers, once their area quota for exploitation has been reached (and in the event that the quota is not reviewed)¹⁴. Theoretically, producers are supposed to maintain their certification over time, even if there is a period when they no longer extract timber from their concession. This way, they can resume the sale of FSC certified timber later on.

¹⁴ In fact, this question is raised in the longer term because some land seems to be divided de facto between producers' children (even though this is not authorised by the concession contracts).

Nevertheless, it is hard to imagine how producers who no longer generate income from selling timber will continue to monitor and pay for certification (audit, certificate, labour time for inventory and training, etc.). The question also applies in the situation where public aid no longer supports the certification initiative.

Secondly, we question the privatisation of sustainable forestry management and the ensuing cost of setting up certification, an outlay that local stakeholders cannot afford. Thus, the certification projects' dependency on help from external sponsors and NGOs has been highlighted as a serious problem for years, in terms of the durability of certification projects for sustainable standards, particularly in the case of sustainable forest management (Thornber and Markopoulos, 2000). This dependency is problematic, both in terms of the human capital required for the bureaucracy involved in certification (producing management plans, maps, forest inventories, and marketing contracts), and the cost of certification. Moreover, it is not always in the interests of the NGOs to transfer skills, which form the very basis for the economic maintenance of the "development aid businesses". Let us point out that a discussion among NGOs responsible for or involved in promoting the FSC standard is underway on the viability of community certification.

In conclusion, our research findings have allowed us to draw attention to serious doubts about the variability of the effects of FSC certification in the longer term and to question its legitimacy in this context. This was only possible because empirical observations were highlighted (classic evaluation indicators) using a more complex analysis of the logic of rationality and the social dynamics that govern the development of FSC certification in the framework of forest communities in Acre. It is important to underline the exploratory dimension of this analytical framework. In fact, this approach should be applied carefully depending on the context so that findings are not indiscriminate. The future construction of a more formal microeconomic framework for analysis in development economics is required to further our understanding of the phenomena in different situations.

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