



## Shaping the implementation of the FSC standard: the case of auditors in Brazil



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### ABSTRACT

The Forest Stewardship Council (FSC) label is one of the most widely accepted standards aimed at assessing long-term sustainable forest management worldwide. Through audits, accredited certification bodies assess the level of conformity of a firm's performance against the standard to grant or not the certificate on behalf of the FSC. In this paper, we assess the scope auditors have to shape the implementation of the FSC standard in Brazil. Our work is based on the analysis of certification bodies' rules and of available public full assessment and annual audit reports covering the period 2009–2013, completed with interviews with key informants. We show that most indicators of the Brazilian FSC standard leave no scope for interpretation. However, firms are certified and re-certified with a significant number of minor non-conformance with social, legal and environmental indicators. Moreover, the gradual improvement of the performance of the firm cannot always be considered as final. We conclude that some indicators are too broad and need to be clarified, that the FSC should limit the number of minor non-conformance issues allowed and prohibit their recurrence. More systematic surveys could narrow possible interpretations by auditors and certification bodies.

### 1. Introduction

The Forest Stewardship Council (FSC) was founded in 1993 by a group of businesses, environmentalists and community leaders to catalyze changes towards sustainable forest management worldwide (Pinto and McDermott, 2013). Member of ISEAL (International Social and Environmental Accreditation and Labeling) Alliance, with slightly over 180 million hectares certified by FSC in 80 countries, it is one of the most widely recognized forest certification systems. Its aim is to reassure consumers that the timber products they are buying come from well managed forests that respect specific environmental, social and economic principles and criteria (Lewis and Davis, 2015). It is a quite demanding standard since certification is based on 10 principles, 55 criteria and an average of 200 indicators that have to be verified by external audit. Certification bodies and their auditors report conformance and non-conformance with each indicator, request corrective actions (CAR) and grant (or not) certification. They are responsible for the quality and effectiveness of the certification system (Tulaeva, 2013).

Several authors have analyzed why forest companies are reforming their practices to comply with the FSC standard (e.g. Harstfield and Ostermeier, 2003; Cashore et al., 2005; Van Kooten et al., 2005;

Overdeest and Rickenbach, 2006; Araujo et al., 2009; Galati et al., 2017). Even with sometimes limitations to their basis for causal inference (Romero et al., 2017), others have focused on the impacts of FSC on forest management (e.g. Cerutti et al., 2011), on the enhancement of livelihood conditions (e.g. Cerutti et al., 2014; Harada, 2014; Kalonga and Kulindwa, 2017), or on the conservation of ecosystem services (e.g. Van Kuijk et al., 2009; Sheil et al., 2010; Nasi et al., 2012; Dias et al., 2015). By looking at the impacts of FSC through the results of certification audits, several studies have provided detailed analysis of the CARs found in audit reports (e.g. Newsom et al., 2006; Pena Claros et al., 2009; Masters et al., 2010).

Despite these studies, more research is needed on how certification is implemented (Tysiachniouk and McDermott, 2016). Indeed, little is known about “how” certification bodies, auditors' rules, and audit procedures shape the implementation of the standard even though what they define as non-compliance guides the company in reforming their forest management through the required corrective action (Maletz and Tysiachniouk, 2009). A better understanding of the “how” requires examination of the indicators of specific national standards, the rules and practices of certification bodies and their auditors.

To fill this knowledge gap, this paper assesses the scope certification bodies and auditors have to shape the implementation of the FSC

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standard.

We selected one case study, Brazil, where a total of 6 168 550 hectares had been certified by FSC in May 2016 (FSC, 2016), ranking Brazil 7<sup>th</sup> worldwide and first among tropical countries. Seventy-five percent of certified areas are forest plantations, which have increased dramatically in the last 10 years. Moreover, around 1.5 million hectares of natural forests managed and certified by FSC are located in the Brazilian Amazon. Forest certification in this biome is expected to increase the financial profitability of sustainable forest management and to help reduce forest degradation, which, unlike deforestation, may have increased in the last decade (Souza et al., 2013).

## 2. Material and methods

### 2.1. Overview

The two major certification bodies implementing FSC certification of forest management and plantation in Brazil are the Rainforest Alliance, through its representative, the Institute of Forest and Agriculture Management and Certification (Portuguese acronym IMAFLORA) and the SCS Global Service (SCS), through its representative SYSFLOR. In 2013, IMAFLORA and SYSFLOR certified respectively 64% and 26% of the total area under forest management and plantations with a FSC label. For both, we combined a review of public documents, qualitative interviews and a quantitative analysis of indicators and non-conformance found in audit reports. Public summary audit reports were examined to trace non-conformance (see below and Table 1). FSC public guidelines for certification bodies were analyzed to look for general rules applied to audit procedures. Eight qualitative interviews were conducted with certification managers of IMAFLORA and SYSFLOR (2 interviews), the coordinator of certification of IMAFLORA (1 interview), auditors of IMAFLORA and SYSFLOR (5 interviews), to complete existing information regarding audit procedures and to validate quantitative analysis of NCs found in audit reports. The aim of the methodology was to assess the scope auditors have to shape the implementation of the standard because of the structure of the standard itself (how widely can the indicators of the standards be interpreted?) and because of the specific rules of the certification bodies as private entities (is there any scope for interpretation in the private rules for audits drawn up by certification bodies?).

### 2.2. Procedures and sample

The first step of our work was to analyze the specific rules defined by certifying bodies to guide the implementation of certification in order to assess if these rules leave any scope for interpretation. For example, in addition to FSC rules, certification bodies can have their own specific rules that limit (or not) possible interpretation i.e. by strictly defining the levels of performance for some indicators (or not), leaving open the number of documents to be checked for specific indicators (or not). We searched all available public documents and completed our knowledge through qualitative interviews with IMAFLORA and SYSFLOR certification managers.

Since 2014, the two FSC standards implemented for private forest management and forest plantation in Brazil have been respectively the FSC standard for Forest Management on “Terra Firme” in the Brazilian Amazon (FSC-STD-BRA-01-2001 V1-1 EN) and the Harmonized Certification Bodies’ Forest Stewardship Plantation Standard for the Federative Republic of Brazil (FSC-STD-BRA-01-2014V1-1 EN). Before 2014, for forest plantations, two interim standards were applied: the IMAFLORA interim standard (Assessment of forest plantations management in Brazil (version – 2.0) and the SCS Interim Standard (version 2, November 2008).

Until 2014, the FSC standard for forest management on “Terra Firme” comprised nine principles, 55 criteria and 202 indicators. The two interim standards for forest plantation comprised 10 principles,

56–70 criteria and 202–214 indicators. Our first task consisted in homogenizing the two interim standards for forest plantations. We then classified the indicators of each standard in four categories: indicators reproducing the legal framework vs. indicators that correspond to voluntary commitments, and objective indicators vs. less objective indicators. Objective indicators (OI) are those that are easily evidenced by documents, registers or through observation of practices in the field. Interpretation cannot vary from one auditor to the other. Less objective indicators (LOI) are those that can be interpreted differently depending on the specific knowledge or judgment of the expert conducting the audit, as illustrated by the following example.

In the FSC standard for Forest Management on “Terra Firme” in the Brazilian Amazon, indicator P6.C5.I10 (Indicator 10, Criterion 5, Principle 6) states that « The workers of the forest management unit and the surrounding communities are informed about the importance of the activities of forest management and its environmental implications ». This statement does not specify what information and communication processes are essential and acceptable. Are flyers distributed to local communities or are local workshops sufficient? Is it necessary to repeat the information regularly? If so, how often? If the workers and members of the local communities, when asked, provide an interpretation of the information received that is different from that provided by the firm, are records of the events or copies of the documents distributed sufficient? The response to these questions may vary from one auditor to the other and depends on the context of the audit. Our classification aimed to assess if this happened frequently with the standards implemented for forest management and forest plantation in Brazil.

FSC certificates are valid for five years. In the four years following the granting of the certificate, certification bodies must perform annual audits. Annual audits are focused on a smaller number of features including specifically (but not exclusively) the resolution of non-conformance issues identified the previous year. Indeed, during full assessments (audits for certification), annual audits and re-assessments (audits for re-certification), auditors report the observed conformance, non-conformance (NC) and corrective actions implemented by certificate holders to resolve the previous NCs. The certificate holder is responsible for taking corrective actions.

Auditors can grade NCs as either major or minor. Major NCs imply prohibition: they have to be solved before the certificate is granted. After a full assessment or re-assessment, the firms have up to one year to solve major NCs, or a new full assessment has to be performed. When major NCs are found in annual monitoring audits, the firms have only three months to correct them and if auditors find five or more major NCs, they can suspend the certificate. Minor NCs do not prevent certification. They have to be solved within one year. A minor NC that is not solved after one year automatically becomes major in the following annual audit and then has to be solved in three months. There are no quantitative limits to the number of minor NCs. However, if too many minor NCs are found for the same criterion, the criterion itself might be tagged as a major NC.

Certification and annual audit reports are public and can be consulted on FSC website (<http://info.fsc.org/certificate.php#result>). But this public database does not contain old reports. Primary data collection occurred in 2014. We surveyed all the certification and re-certification reports available on FSC website and found 12 reports for the standard FSC standard for Forest Management on “Terra Firme” in the Brazilian Amazon and 46 reports for the interim FSC standards for forest plantations (see Table 1). These reports covered the period 2009 to 2013.

In each report, we identified the minor NCs and distributed them according to our four categories.

Finally only for the firms certified by the FSC standard for Forest Management on “Terra Firme” in the Brazilian Amazon, we identified the number of minor NCs cited in their certification (full assessment and/or re-assessment reports) and annual audit reports. Reports not found on FSC website were requested directly from IMAFLORA and

**Table 1**  
Sample of full assessment and re-assessment certification reports.

Certification body	Number of reports	Type of reports
Natural forest management		
IMAFLOA	10	Full assessments (3) Re-assessment (7)
SYSFLOR	2	Full assessments (2)
Forest plantation		
IMAFLOA	24	Full assessments (18) Re-assessment (6)
SYSFLOR	22	Full assessments (21) Re-assessment (01)

**Table 2**  
Sample results for the analysis of changes in minor NCs.

Natural forest management firm	Total number of reports per firm	Type and number of reports analyzed
Firm 1	7	2 re-assessment 5 annual audit
Firm 2	3	1 re-assessment 2 annual audit
Firm 3	4	1 re-assessment 3 annual audit
Firm 4	9	1 full-assessment 1 re-assessment 7 annual audit
Firm 5	6	1 full-assessment 5 annual audit
Firm 6	9	1 full-assessment 1 re-assessment 7 annual Audit
Firm 7	2	1 full assessment 1 annual Audit
Firm 8	2	1 full assessment 1 annual Audit

SYSFLOR. We could find and analyze 42 reports (see Table 2).

### 2.3. Limits

Despite the transparency of FSC certification and the availability of certification and annual audit reports, conformance assessments by auditors are not published, i.e., only non-conformance reports and the description and judgment of the corrective actions taken by certificate holders can be found in public reports. FSC has published normative documents (#73 documents) guiding auditors’ behavior and audit procedures that define how the conformance of indicators shall be assessed during audits. Moreover, the competence, impartiality and

**Table 3**  
Distribution of objective and less objective indicators in the Brazilian FSC standard for natural forests.

Principles	Indicators reproducing the laws		Indicators of voluntary commitments		Total		
	#	% OI	#	% OI	#	% OI	% LOI
1. Legality and conformity with national laws and FSC rules	11	91	13	54	24	71	29
2. Property rights and communities access to land and resources	4	100	12	100	16	100	0
3. Indigenous People	1	100	13	62	14	65	35
4. Assessment of workers’ rights and social impacts	27	100	25	84	52	92	8
5. Benefits from forests	2	100	16	75	18	78	22
6. Environmental impacts	9	100	30	93	39	95	5
7. Management plan	11	100	17	76	28	85	15
8. Monitoring	0	0	10	100	10	100	0
9. High conservation value	0	0	1	100	1	100	0
	#	#	#	#	#	#	#
Total	65	64	137	112	202	176	26

# Number of indicators.

Source: The authors based on public audit reports.

performance capability of certification bodies against FSC standards is guaranteed by accreditation from Accreditation Services International (ASI). ASI verifies and testifies that auditors assess various indicators properly. Nevertheless, there is still scope for interpretation since the means of verification are not systematically defined and may vary from one certification body to the other. A full comparison of the conformance and non-conformance assessments made by auditors would have enabled us to refine our analysis.

We were not able to access the full rules of audit implementation defined by certification bodies. According to Brazilian legislation, both IMAFLORA and SYSFLOR are considered private entities. They have complemented FSC rules by specific guides that detail their own *modus operandi* (mode of operation) for audit rules. These guides are confidential because certification bodies have to protect their technical expertise and intellectual property. As confirmed by the representatives of the certification bodies we interviewed, a large number of rules are taken directly from FSC directives, so there are probably no major differences between certification bodies. However, we were unable to assess whether minor differences could shape the implementation of the standard differently.

### 3. Results and discussion

#### 3.1. Most indicators in the Brazilian FSC standards are objective

Tables 3 and 4 present the number of indicators reproducing the laws and the number of voluntary commitments, with the share of objective indicators and less objective indicators for the FSC standard for natural forests and forest plantation, respectively.

First, they show that both standards provide added value to the legal framework, with 68% of the indicators corresponding to voluntary commitments for the standard for natural forests and 82% for forest plantations.

The share of indicators that reproduce the laws is the biggest in both standards for Principle 4 (Workers’ rights and social impact assessment), 1 (Legality and conformity with national laws and FSC rules) and 6 (Environmental impacts), confirming that the complex Brazilian legal framework is very demanding (McDermott et al., 2010; Pena Claros et al., 2009).

Most indicators in both standards can easily be assessed in documents or by observing practices in the field. The standards can thus be considered as highly objective and scope for interpretation of the indicators by the auditors is very limited.

However, most of the indicators that are subject to possible interpretation are crucial for voluntary commitments. In the standard for natural forest management, 25 out of 26 less objective indicators attest to voluntary commitments. In the interim standard for forest

**Table 4**  
Distribution of objective and less objective indicators in the Brazilian interim FSC standard for forest plantations.

Principles	Indicators reproducing the laws		Indicators of voluntary commitments		Total		
	#	% OI	#	% OI	#	% OI	% LOI
1. Legality and conformity with national laws and FSC rules	8	100	10	90	18	94	6
2. Property rights and communities access to land and resources	1	100	11	90	12	91	9
3. Indigenous People	1	100	14	93	15	93	7
4. Assessment of workers' rights and social impacts	12	100	15	80	27	85	15
5. Benefits from forests	3	100	13	100	16	100	0
6. Environmental impacts	8	100	24	96	32	97	3
7. Management plan	0	0	19	100	19	100	0
8. Monitoring	0	0	26	100	26	100	0
9. High conservation value	0	0	16	100	16	100	0
10. Specific aspects of plantations	3	0	20	100	23	96	4
	#	#	#	#	#	#	#
Total	36	36	168	161	204	195	9

# Number of indicators.

Source: The authors based on public audit reports.

plantations, the nine less objective indicators concern voluntary commitments.

Some of these voluntary commitments are very representative of the added value to the already complex Brazilian legal framework provided by FSC certification. For Principle 1, they require an effective engagement by the firm outside the boundaries of its properties to prevent or control invasions and fires by third parties. For Principles 3 and 7 in the natural forest management standard, they cover several important aspects regarding the information provided to traditional, indigenous communities and more broadly, to local stakeholders, concerning forest management decisions, their possible participation and the minimization of negative social and cultural impacts. For Principle 5, they cover several actions aimed at enhancing the value of the forests beyond timber management and at promoting long-term investment. For Principle 4, they cover issues such as the avoidance of employment turnover or involving neighboring communities in decisions concerning forest management activities.

In the standard on forest plantations, the less objective indicators in Principle 4 aim to encourage the firm to give priority to local employment and purchases. Those in Principles 2 and 3 try to ensure that the local, traditional and indigenous communities who are impacted by forest activities have given their free and informed consent. Those in Principle 6 make it possible to avoid the conversion of natural forests into forest plantations.

Other less objective indicators are simply impossible to check through an audit procedure. This is especially true of four indicators in Principle 1 of the natural forest management standard. They require the firm to respect the international conventions on Climate, Biological Diversity, Labor International Organization and International Tropical Timber. Such indicators are much too broad to be objectively checked by the auditors and depend on their specific expertise for each convention.

### 3.2. Minor non-conformance (NC) issues mainly concern objective indicators (OI)

Table 5 shows that companies are certified by the Brazilian natural forests FSC standard with, on average, 10% of the indicators in minor NCs, the same share amounting to 5% for forest plantations certified by FSC. Most NCs concern objective indicators, i.e. their assessment does not depend on auditors' specific expertise or on the context of the audit. This means that the corrective actions required are mostly linked with the requirements of the standards. Finally, a significant number of NC issues concern indicators reproducing the legal framework. These indicators are easily assessed through an audit. This means that certification by FSC in Brazil does not necessarily guarantee that certified

**Table 5**  
Number and distribution of minor NCs.

Standard	Number of reports	Number of indicators assessed	Average number of NCs per report	Share of OIs in NCs	Share of legal indicators in NCs
Natural forests	12	202	21	96%	44%
Plantations	46	204	10	98%	28%

**Table 6**  
Distribution of minor NCs according to principles in the two Brazilian standards.

Principles	Brazilian FSC standard for natural forests		Brazilian interim standards for forest plantations	
	Number	%	Number	%
1. Legality and conformity with national laws and FSC rules	9	6	51	10
2. Property rights and communities' access to land and resources	8	5	11	2
3. Indigenous People	4	3	6	1
4. Assessment of workers' rights and social impacts	41	27	151	28
5. Benefits from forests	8	5	15	3
6. Environmental impacts	34	22	103	19
7. Management plan	26	17	64	12
8. Monitoring	12	8	65	12
9. High conservation value	10	7	25	5
10. Specific aspects of plantations	NA	NA	43	8
Total	152	100	534	100

forest companies are complying with all existing social and environmental laws.

In both standards, most NC issues concern Principle 4 (working conditions) and Principle 6 (environmental impacts) (Table 6), confirming previous quantitative analysis (e.g. Silva et al., 2016; Rafael et al., 2018). These two principles have the highest number of indicators (Tables 3 and 4), which can explain the high number of NC found. For example, in the Brazilian FSC standard for Natural Forests, Principle 4 reproduces the completeness and complexity of the laws regulating working conditions in Brazil with 27 indicators of the laws and 25 indicators corresponding to voluntary commitments. Exhaustive compliance with all the legal requirements concerning health, hygiene and safe working conditions appears to be almost impossible for forest

companies. Principle 6 comprises a larger share of indicators of voluntary commitments with important requirements to encourage companies to minimize their environmental impacts.

Unfortunately, as mentioned above, the way conformance is assessed in certification and re-certification audits is not included in public audit reports, so we can only state, but not analyze in more detail, that less objective indicators are rarely found in non-conformance. This could be because there is scope for interpretation by the auditors when the indicators are assessed or because it is less difficult to comply with them.

### 3.3. The improved performance concept: strength and limits

Companies are thus certified despite minor non-conformance issues, and it appears to be almost impossible to avoid this situation, at least for Brazilian forest companies, given the complexity of the legal framework and the large number of indicators.

Certification bodies have endorsed a position defending the improved performance concept. Such a position is not officially accepted by FSC but appears to be an unavoidable management decision. Indeed, auditing is not only a matter of checking a list of indicators but also a way to promote the improvement of the social, economic and environmental performance of forest companies. Even if FSC can be considered as a performance-based certification system of organizations, many of the indicators are not based on absolute values of specific performances but rather on processes. In this situation, certification bodies recognize that optimum performance may not be immediately reachable and hence allow time to reach specific targets. In this context, the number of NC issues would be expected to be high in the first years of certification but to gradually decline thanks to the implementation of the corrective actions.

A look at the first available certification report and the last annual audit report of certified forest companies confirms that the number of minor NCs decreases, sometimes substantially (Table 7). What is more, except in two cases, companies never exceed the initial number of NCs, evidence that there has indeed been some improvement. However, such improvement is not always gradual and continuous as shown for firms 1, 3, 4 and 6 in Table 7.

Moreover, some minor NC issues appeared several times for the same firm. Firm 1 had a minor NC for indicator P4.C2.I15 three times, Firm 4 had minor NCs for indicator P4.C2.I30 twice, and Firm 6 had minor NCs for indicator P8.C1.I1 twice.

Indicator P4.C2.I15 lays down safety conditions for the transport of workers. The main difficulty with this indicator is assessing if the investments made by the firm to solve the non-conformance issue and to prevent recurrence in an annual audit are sufficient for all forest operations in the long term. Indicator P4.C2.I30 requires that subcontractors of the forest company comply with labor laws. As mentioned previously, given the complexity of the Brazilian labor laws and

**Table 7**  
Number of minor NC issues each year for firms certified for natural forest management.

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Firm 1			<b>37</b>	10	10	9	6	<b>12</b>	5
Firm 2							<b>11</b>	9	4
Firm 3					27	2	3	3	
Firm 4	<b>29</b>	12	9	8	13	<b>16</b>	7	6	9
Firm 5				<b>13</b>	14	2	0	1	0
Firm 6	<b>14</b>	6	8	15	5	<b>12</b>	3	8	4
Firm 7								<b>12</b>	0
Firm 8								<b>14</b>	4

Source: The authors based on reports found on <http://info.fsc.org/certificate.php#result> in 2014 and additional reports requested to certification bodies.

Note: Bold numbers are coming from full assessment or re-assessment reports, other numbers from annual audit reports.

the institutional context in the Amazon, the companies themselves have some difficulty complying with all the rules, and the situation is of course the same for their subcontractors. A company may thus have difficulty systematically finding subcontractors who comply with all the labor laws. Indicator P8.C1.I1 refers to post-exploration monitoring: this indicator requires that companies present a documented plan to monitor all aspects of forest management, not only environmental but also social aspects. Auditors can accept the presentation of the method to monitor post-exploration as evidence of conformance, but some auditors shape the implementation of the standard complementing indicator P8.C1.I1. They ask for evidence that the method is effectively applied and that the measurements are sufficiently consistent to show the changes made year by year, even though the word effective is not part of the indicator.

### 3.4. Grading non-conformance

Understanding how auditors grade non-conformance issues is important because their grading affects the amount of time the firm has to implement corrective actions without losing certification. Like the rules governing auditing, the general rules on how to grade a conformance as minor or major are defined by FSC guiding principles and completed by the specific (confidential) rules of the certification bodies. Completing the public documents with interviews enabled us to identify the objective and subjective criteria applied during auditing.

First, if there are no stated limits to the number of minor NCs that prevent certification, a criterion with a large number of indicators in minor NC will generally be tagged as major non-conformance.

Second, when the non-conformance of one indicator is observed over a large area of forest or concerns a large number of people, it is usually also tagged as a major NC. For example, indicator P6.C3.I1 requires the conservation of tree seeds in the Forest Management Unit to guarantee the reproduction of the species. If the audit reveals that these tree seeds are not conserved in a large number of working units, the indicator must be tagged as major non-conformance. The same applies to indicator P6.C5.I6 when soil erosion is found over a large area of the forest management unit or when the process of erosion is very severe. However, the quantitative levels or thresholds for these indicators are not always specified. What is more, for some indicators (such as the sustainable species regeneration), more research is needed to identify specific thresholds (for example, for the conservation of tree seeds).

Third, very few or no exceptions are allowed for certain indicators (5 indicators in both standards). This is the case for safe working conditions. Even if only one worker is found working with a dangerous product or equipment without adequate protective clothing, this is sufficient to grade a major non-conformance for the indicator. This rule aims to force the firm to rapidly correct the situation. The auditor can even grade a major non-conformance and allow only one month for corrective action.

Finally, auditors must also check for the possible recurrence of certain non-conformance issues throughout the five years of a certification cycle. If a minor non-conformance with an indicator is observed more than once during the cycle, it shall be graded as a major non-conformance.

Although such rules may seem very clear and easy to apply, some difficulties persist for less objective indicators or for indicators that have several dimensions. For example, the first indicator of Principle 1 requires that the firm comply with all the laws, regulations and administrative procedures at the municipal, state and federal levels. Recurrence may be diagnosed because, in one year, the firm does not comply with one municipal administrative procedure, whereas, four years later, non-compliance is found for a federal procedure. In this case, the NC may remain minor even if it occurs twice. The same situation may also occur because some administrative procedures depend on public institutions, and even if the firm does everything in its power

to obtain all the licenses required to operate, some public institutions may fail to deliver them in time. Moreover, all the indicators requiring the assessment of the magnitude of any actions or damage without specifying the exact acceptable level is subject to interpretation by the auditors. This explains why the grading of the same situation may also vary from one auditor to the other.

The final decision regarding the grading of any NC belongs to the certification manager, who is usually more experienced than the individual auditors, and who undertakes a complete review of the final report handed in by the audit team. During this process, some grades may change based on evidence the certification manager finds in the report or on further dialogue with the audit team. Peer reviewers are also involved in full assessment and re-assessment reports. They can point out different NC grading or decisions with respect to some indicators. The certification manager can accept their indication or not. Peer reviewers' suggestions are confidential and were therefore not available for inspection during our study.

#### 4. Conclusion

The large number of objective indicators in the Brazilian FSC standards limits the possibility that auditors shape its implementation. Nevertheless, they still have important responsibilities in the process of implementation, some of which involve risks for the certification bodies themselves. FSC should undertake systematic surveys, based on ASI assessments, with certification bodies, to identify the persisting bottlenecks regarding possible interpretations by auditors and certification bodies.

With the existing system of minor and major non-conformance, the auditors decide how much time the companies have to correct management failures without losing their certification. The certification manager of each audit team is responsible for deciding if the overall performance of the company is sufficient to justify certification, even with a significant number of minor non-conformance issues. At the same time, such decisions are those that allow the company to make further improvements.

Certified companies do not comply with all the indicators of the standard. In the Brazilian context, this means in particular that auditors and certification bodies do not succeed in guaranteeing full compliance with the labor and environmental legislation. FSC should work more closely with national teams to define which indicators of the national standards can explicitly remain not fully in full conformance during a specified period because their full conformance does not depend only on the certificate holders' actions. FSC could also promote more frequent reviews of the national standards and of their indicators, for example every two years instead of every five years currently, to account for the results of the audits.

Like for major non-conformance issues, the FSC should set a limit to the number of minor non-conformance issues allowed and forbid the recurrence of certain minor non-conformance issues. The possible recurrence of NCs should be checked not only over one cycle of certification but right from the beginning of certification. Any indicator found more than once in minor NCs should be automatically tagged as a major NC, even if the recurrence occurred in another certification cycle.

Some indicators are still too broad to be properly checked by an auditor and are subject to interpretation by an auditor. They render the task of certification bodies and auditors even more difficult and need to be clarified. The scope of such indicators should be narrowed to consider the dimensions that only depend on the firm's management decisions or should be removed from the standard, thereby recognizing that an audit procedure does not allow true assessment. Further, the recurrence of minor NCs should not be permitted even if the NC does not refer to the same dimension.

Indicators referring to the magnitude of any action or damage should clearly specify the minimum acceptable levels.

For indicators that engage not only the responsibility of the

company itself but also the responsibility of public institutions (e.g. the delivery of licenses), it is crucial to define exactly what effort made by the company is sufficient to consider that the indicator conforms.

The International FSC Board is aware of some of these challenges. In 2012, the organization issued the new set of Principles and Criteria and initiated the development of International Generic Indicators (IGIs). IGIs are indicators designed as references for the development of National Indicators. At present, for each criterion, FSC National Initiatives can adopt the IGIs as proposed, adapt, or drop them. In 2015, FSC Brazil thus started to develop new standards for native and plantation forests. There has been a trend to adopt the IGIs as written with no radical adaptations or exclusions, because the proposed indicators are shorter and more objective. The criterion of auditability was taken into consideration when they were being developed. Despite these improvements, some IGIs are still subject to interpretation by auditors.

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#### References

- Araujo, M., Kant, S., Couto, L., 2009. Why Brazilian companies are certifying their forests? *For. Pol. Econ.* 11, 579–585.
- Cashore, B., Van Kooten, G.C., Vertinsky, I., Auld, G., Affolderback, J., 2005. Private or self regulation? A comparative study of forest certification choices in Canada, United States and Germany. *For. Pol. Econ.* 7 (1), 53–69.
- Cerutti, P.O., Tacconi, L., Nasi, R., Lescuyer, G., 2011. Legal vs. certified timber: preliminary impact of certification in Cameroon. *For. Pol. Econ.* 13, 184–190.
- Cerutti, P.O., Lescuyer, G., Tsanga, R., Kassa, R.N., Mapangou, P.R., Mendoula, E.E., Missambalola, A.P., Nasi, R., Ekebil, P.P.T., Yembe, R.Y., 2014. Social impacts of the Forest Stewardship Council certification: an assessment in the Congo Basin. In: Occasional Paper 103. CIFOR.
- Dias, F.S., Bugalho, M.N., Rodriguez-Gonzales, P.M., Albuquerque, A., Cerdeira, J.O., 2015. Effects of forest certification on the ecological condition of Mediterranean streams. *J. Appl. Ecol.* 52, 190–198.
- FSC, 2016. FSC Facts & Figures. FSC, Germany. <https://br.fsc.org/preview.fatos-e-numeros-maio-2016.a-1030.pdf>, Accessed date: 26 May 2016.
- Galati, A., Gianguzzi, G., Tinervia, S., Crescimanno, M., Salcatore la Mela Veca, D., 2017. Motivations, adoption and impact of voluntary environmental certification in the Italian Forest based industry: the case of FSC standard. *For. Pol. Econ.* 83, 169–176.
- Harada, K., 2014. Certification of a community based forest enterprise for improving institutional management and household income: a case from Southeast Sulawesi, Indonesia. *Small Scale For.* 13, 47–64.
- Harstfield, A., Ostermeier, D., 2003. Certification: the view from FSC-certified land managers. *J. For.* 101 (8), 32–36.
- Kalunga, S.K., Kulindwa, K.A., 2017. Does certification enhance livelihoods conditions? Empirical evidence from forest management in Kilwa District. *Tanzania For. Pol. Econ.* 74, 49–61.
- Lewis, R.A., Davis, S.R., 2015. Forest certification, institutional capacity, and learning: an analysis of the impacts of the Malaysian Timber Certification Scheme. *For. Pol. Econ.* 52, 18–26.
- Maletz, O., Tysiachniouk, M., 2009. The effect of expertise on the quality of forest standards implementation: the case of FSC forest certification in Russia. *For. Pol. Econ.* 11, 422–428.
- Masters, M., Tikina, A., Larson, B., 2010. Forest certification audit results as potential changes in forest management in Canada. *For. Chron.* 86, 455–460.
- McDermott, C., Cashore, B., Kanowski, P., 2010. Global Environmental Forest Policies: An Institutional Comparison. Earthscan, London.
- Nasi, R., Billand, A., Van Vliet, N., 2012. Managing for timber and biodiversity in Congo Basin. *For. Ecol. Manag.* 268, 103–111.
- Newsom, D., Bahn, V., Cashore, B., 2006. Does forest certification matter? An analysis of operation-level changes required during the SmartWood certification. *For. Pol. Econ.* 9, 197–208.
- Overdevest, C., Rickenbach, M.G., 2006. Forest certification and institutional governance: an empirical study of forest stewardship council certificate holders in the United States. *For. Pol. Econ.* 9 (1), 93–102.
- Pena Claros, M., Blommerde, S., Bonfers, F., 2009. Assessing the Progress Made: An Evaluation of Forest Management Certification in the Tropics. Wageningen University Research Centre, Wageningen, The Netherlands.
- Pinto, L.F.G., McDermott, C.L., 2013. Equity and forest certification – a case study in Brazil. *For. Pol. Econ.* 30, 23–29.
- Rafael, G.C., Fonseca, A., Gonçalves Jacovine, L.A., 2018. Non conformities to the Forest Stewardship Council (FSC) standards: Empirical evidence and implications for policy

- making in Brazil. *For. Pol. Econ* 88, 59–69.
- Romero, C., Sills, E.O., Guariguata, M.R., Cerutti, P.O., Lescuyer, G., Putz, F.E., 2017. Evaluation of the impacts of Forest Stewardship Council (FSC) certification of natural forest management in the tropics: a rigorous approach to assessment of a complex conservation intervention. *Int. For. Rev.* 19 (2), 1–14.
- Sheil, D., Putz, F.E., Zagt, R.J., 2010. *Biodiversity Conservation in Certified Forests*. Wageningen, Tropenbos International.
- Silva, E.V.de, Basso, V.M., Souza, D.N., Carvalho, A.M., Dias Junior, A.F., Araujo, E.J.G., 2016. Quais os principais desvios no manejo florestal da Amazônia Brasileira perante a certificação. *Amazon J. Agric. Environ. Sci.* 393–400.
- Souza, J.R., Siqueira, J., Riberio, J., Sales, M., 2013. Desmatamento e degradação florestal do Bioma Amazônia (2009-2010). Imazon, Belem, Brazil.
- Tulaeva, S., 2013. Institutional trust: The process of trust formation in Russian forest villages in accordance with the international system of forest certification. *For. Pol. Econ.* 31, 20–27.
- Tysiachniouk, M., McDermott, C.L., 2016. Certification with Russian characteristics: implications for social and environmental equity. *For. Pol. Econ.* 62, 43–53.
- Van Kooten, G.C., Nelson, H.W., Vertinsky, I., 2005. Certification of sustainable management practices: a global perspective of why countries certify. *For. Pol. Econ.* 7, 857–867.
- Van Kuijk, M., Putz, F.E., Zagt, R.J., 2009. *Effects of forest certification on biodiversity*. Tropenbos International, Wageningen, the Netherlands.