

ESEE 2013

Ecological Economics and Institutional Dynamics

10th International Conference of the European Society for Ecological
Economics

Lille, 17-21 June 2013

Paper submitted to the special session:

"Critical analysis of environmental management arrangements"

Evaluation of the FSC Forest Certification Scheme from an Environmental Effectiveness Perspective: Methodological Challenges and Proposals

S. Guéneau¹

¹CIRAD, Centre de Coopération Internationale en Recherche Agronomique pour le Développement

Abstract. Voluntary multi-stakeholder instruments such as certification schemes have played an increasing role in global environmental governance. Implemented for nearly two decades, the Forest Stewardship Council is emblematic of these new forms of private environmental governance based on market values. It has emerged as one of the most promising solutions to global forest concerns. Although there have been many studies on the impacts of FSC, this remains a controversial and contested issue. Drawing on a critical review of the methodologies used to date to assess the impacts of forest certification schemes, this paper identifies three challenges that evaluation scholars have to address in order to assess the FSC scheme in terms of environmental effectiveness: developing a point of reference to which certification measures must be compared; extending and contextualising the scope of the evaluation; and analysing all effective management measures that contribute to obtaining the environmental result observed before examining the specific role of certification. The paper then shows why the concern-focused evaluation framework appears to offer some interesting perspectives for addressing these challenges.

Introduction

Several multi-stakeholder certification schemes emerged in the 1990s as new instruments to promote sustainability. Created in 1993 as a response to concerns over global deforestation and the failure of intergovernmental negotiations on forests, the Forest Stewardship Council (FSC) is an international non-governmental organisation that can be considered as a pioneer of these new forms of private governance arrangements. FSC is one of the most important forest certification schemes implemented in the tropics, and works as a voluntary market-based instrument. Through a seal of approval, its aim is to inform consumers that a wood product comes from responsibly managed resources. Growing demand for certified goods creates an incentive for forest managers to voluntarily adopt responsible standards. These standards are developed within a multi-stakeholder forum, through consensus-based procedures. Standards result from an agreement produced by

bringing together heterogeneous points of view. Compliance with the standards is checked by accredited third party certification bodies.

A considerable amount of social science research has studied the emergence and rapid development of FSC around the world, from the perspective of global governance. Several scholars are very enthusiastic about the regulatory potential of FSC. Based on political legitimacy analysis frameworks, various global governance studies have shown why and how FSC is one of the most successful environmental arrangements in the forest sector (Cashore et al., 2004). Pattberg (2005) argues that FSC provides an institutionalised solution to global environmental problems. Gulbrandsen (2010) believes that the creation of certification schemes such as FSC is an effort by non-State organisations to institutionalise accountability mechanisms beyond the State. He argues that these schemes could be more effective in forcing wood producers to implement forest management standards than governmental regulations. Thus, from the global governance perspective, a large body of research has focused on the institutional effectiveness of FSC. However, global governance scholars recognise the difficulties in assessing the overall environmental impact of FSC, or in other words, to what extent FSC contributes to alleviating the environmental problem it addresses (Tikina and Innes, 2008; Visseren-Hamakers and Pattberg, 2013). Recent surveys reveal a critical knowledge gap regarding forest certification assessment (Cashore and Auld, 2012; Romero and Castrén 2013). The FSC success story is therefore related more to its procedural performance than to empirical evidence of problem resolution on the ground.

The lack of knowledge on the impacts of FSC has led to intense debate among scientists and between different stakeholders involved in public action on tropical forests. Some government agencies and NGOs believe that the conservation impact of FSC is positive (Burger et al., 2005; WWF, 2010). But others, including some NGOs involved in the creation of FSC, are much more reserved or critical about the environmental performance of this scheme (Counsell and Loraas, 2002). Therefore, some civil society organisations, foundations, private companies and government agencies wonder if their investment in FSC supporting actions is relevant (Cashore and Vanderbergh, 2010). In view of these debates and questions, assessing the impact of FSC seems relevant.

Drawing on an extensive literature review of forest certification evaluation studies, the aim of this paper is to discuss some key methodological challenges in order to suggest an environmental effectiveness evaluation framework for the FSC certification scheme. Using the concept of environmental effectiveness, we situate our research in relation to the ability of a management system to resolve the environmental problem that prompted its creation.

The first part of the paper reviews the main approaches to, and results of, the assessments of forest certification effectiveness that have been used to date, at both the micro and the macro level. The second part documents the failures of these evaluation methodologies. Our objective is to demonstrate the critical knowledge gap regarding forest certification assessment. In the last part of the paper, we focus on the main challenges we have to face in order to assess the environmental effectiveness of FSC certification. We then indicate some research perspectives to build an evaluation framework that can address these challenges of forest certification environmental assessment.

Assessing the Impact of Forest Certification: Methodologies and Results

Two major analytical approaches have attempted to measure the effects of forest certification schemes. The first focuses on the micro-level effects of certification, studying the forest management unit to which the scheme is directly applied. The second examines the macro-level effects, in other words the way in which certification schemes address the problem of tropical forest decline as a whole.

Measuring the Impact of Certification at Forest Management Unit Level

The first major series of forest certification assessment research conducted at the forest management unit level is inspired by experimental assessment methodologies. The latter are largely applied to the fields of medicine and natural science, and have recently been extended to development economics (Duflo, 2005) and to a growing number of public policies, including environmental policies. They are aimed at comparing two samples chosen at random, one “test” sample to which a measure is applied, and another “control” sample, which is not concerned by this measure. However, given the limited number and heterogeneity of forest certification situations, making a random selection appears to be impossible. The forest certification assessment studies that take this approach therefore use methods known as “quasi-experimental”. These consist in comparing certified units with non-certified control units with equivalent characteristics – or at least similar characteristics. The aim of these studies is to show whether or not a certified forest management unit is better managed than a non-certified unit.

These methodologies have been applied to Honduras, for example, through a comparison of regeneration rates for some 10 tree species between a certified forest plot, a non-certified harvested forest plot and an untouched natural forest (Kukkonen et al., 2008). In Gabon, an FSC certified forest concession was compared with an adjacent non-certified plot using indicators

such as logging damage, above-ground biomass and changes in tree species density and composition (Medjibe et al., 2013). Other research conducted in Sabah, Malaysia, compares the diversity of large vertebrates and carbon density in the Deramakot certified forest to those observed in the adjacent Tangkulap forest, which is conventionally logged (Imai et al., 2009). Two other studies focus respectively on deforestation in certified and non-certified plots in a biosphere reserve (Hughell and Butterfield, 2008), and on wildlife management measures in certified and non-certified concessions (Rayden and Essame Essono, 2010).

A handful of studies have attempted to extend these methods to a wider range of environmental management indicators. For example, a study examined the impact of certification in community forests in the state of Acre in the Brazilian Amazon (de Lima et al., 2008). The research was conducted through a survey of local perceptions regarding a series of parameters such as the signs of forest degradation (deforestation, forest fires, game hunting, etc.), or people's level of environmental awareness (waste storage, knowledge of regulatory measures, etc.).

Another study published by FAO (Billand et al., 2010) compares the way in which biodiversity is addressed through a survey conducted among a sample of 26 industrial logging companies in the Congo Basin, only some of which have forest management certification. The strength of this study is that it has a dynamic dimension, since the sample is divided into four groups of companies according to their increasing implementation of management measures presumed to improve biodiversity conservation. The comparison is made between operators with no management plan, those whose management plan is being prepared, companies that have implemented such a plan and, finally, certified companies.

Most forest certification evaluation studies using these comparative methodologies find that environmental management is more effective in certified forests than in non-certified forests. For example, the study conducted in the state of Acre (de Lima et al., 2008) reveals that 87% of the certified communities' members said they implement wildlife protection measures – such as not hunting with dogs, catching game only for their local consumption, respecting a hunting calendar, and preserving trees that provide food for wild animals –, whereas only 44% of the non-certified control group members said they took such measures. The results of the study conducted in Malaysia (Imai et al., 2009) reveal a greater diversity and abundance of vertebrates and a higher carbon stock in the certified forest than in the non-certified forest. The study carried out in Central Africa (Billand et al., 2010) also shows that certified companies are more likely to implement management measures intended to protect biodiversity than non-certified companies.

The second series of evaluation studies conducted at the forest management unit level attempts to determine the effectiveness of certification schemes by

observing improvements in environmental management procedures implemented further to the certification audits. To do so, scholars generally choose to study the corrective action requests (CARs) issued by third party certifying bodies. The improvements in management practices made to comply with the CARs are included in the auditing reports. The main underlying assumption of this type of evaluation is that operators are obliged to make the corrective action required or risk losing their certificates, which are issued for five years in the case of FSC (Newsom et al., 2006). Thus, renewal of the certificate is a good indicator that forest managers have met the auditors' requirements.

Evaluation studies based on the analysis of CARs have been widely applied for more than 10 years in varied contexts, whether for boreal and temperate forests (Cubbage et al., 2010; Gullison, 2003; Hirschberger, 2005; Newsom et al., 2006; Thornber, 1999), or for tropical forests (Klooster, 2006; Nebel et al., 2005). Some of these quantitative studies are very comprehensive since they involve large samples, such as the one concerning 123 tropical forest management units (Peña-Claros et al., 2009). The results of these studies show that management improvements are generally made by the companies in order to comply with FSC standards. The most frequent corrective actions made concern the delimitation and protection of riparian areas and high conservation value forests (HCVF). Implementing actions aimed at the protection of endangered species is another example of forest certification outcomes.

Assessing Certification as an Instrument for Solving Global Forest Problems

Insofar as FSC emerged to counter the lack of legally binding international instruments on forests and the failings of forest public policies (Humphreys, 2006), another major line of research has focused on the macro-level effects of forest certification. The goal of this research is to measure the contribution of certification schemes to the resolution of global forest concerns. A relatively simple and direct way of doing so consists in compiling data on the extent of certification and correlating this data with changes in deforestation rates at the global and national levels. In the case of FSC certification, a correlation of this kind was initially made on a sample of 14 countries (Gullison, 2003). This work was subsequently updated (Auld et al., 2008), then improved using a higher number of countries and a longer period of time (Marx and Cuypers, 2010). The findings of these studies show that the relationships between the extent of certification and the reduction of deforestation are very limited. Some try to explain these effects by comparing them with macro-level indicators such as the level of development or the degree of corruption at the national level (Marx and Cuypers, 2010).

However, most of the meta-evaluation research studies have opted instead for a qualitative analysis approach, using relatively diverse methodologies. The most common are comparative case studies based especially on historical analysis, extensive literature reviews, and expert consultations.

The most significant study mobilising expert knowledge deals with the effects of certification on biodiversity conservation in tropical forests (Sheil et al., 2010). Based on a call for evidence and an open questionnaire, this study collected 127 contributions – 40% of which were from researchers – from experts who gave their opinion on several aspects pertaining to their own perception of the impact of certification on biodiversity. The replies received help to identify a general trend on the effect of management practices associated with certification, which appear to be beneficial for biodiversity. However, the answers to the questionnaire show no clear consensus on this point, especially where the global impact of certification is concerned.

Several comparative case studies have been conducted on the effects of certification, generally based on research comparing the factors likely to have an impact in two countries (Ebeling and Yasue, 2009; Espach, 2006; Gulbrandsen, 2005). The most extensive comparative study concerned a sample of 16 transition and developing countries (Cashore et al., 2006). The case studies conducted by national experts highlighted the different factors that had influenced the emergence and development of certification in each country. Rather than drawing firm conclusions on the effectiveness of certification, these studies stress the way in which the uptake of certification schemes has evolved in various public action contexts.

Given the relatively small number of studies dealing specifically with certified forests, meta-reviews of the literature are difficult to achieve. However, in order to offset this limitation, some authors have extended the scope of the impact analysis to include good management practices. This extension has made it possible to assess the effects of forest certification on biodiversity based on 67 scientific publications (van Kuijk et al., 2009). Through the analysis of literature, the original idea of this methodology was to examine sustainable forest management practices and to select among them the key parameters for biodiversity that are most often associated with certification in the literature. These parameters are: reduced-impact logging; the creation of riparian buffer zones; green tree retention in clearcuts; the establishment of biodiversity corridors; the designation of protected areas within forest management units; and the identification of high conservation value forests (HCVF). The literature is carefully examined in order to extract the effects on biodiversity linked to the implementation of each sustainable management parameter. The authors conclude that as a rule, forest management practices associated with certification seem to be beneficial for biodiversity in managed forests. However, they add that there are still many

uncertainties surrounding these effects, for example regarding the long-term impact of certified forest management on biodiversity.

Finally, the most prolific series of research on the global effects of forest certification is inspired by the numerous studies over the last 20 years that have focused on the effectiveness of international environmental governance institutions (Underdal, 1992). The aim of this framework is to determine whether the actions resulting from the establishment of an international environmental regime help to eliminate or alleviate the problem that prompted the creation of this regime. In order to do so, these studies opt for the indirect measurement of the factors likely to solve the environmental problems posed.

In this line of research, the question of the uptake of certification schemes is one of the issues that has been analysed in the most depth. The basic premise of this research is that FSC certification can only be effective at the global level if it is adopted by the largest possible number of actors. But since certification is a voluntary scheme, the stricter the standards it imposes, the lower its uptake. Based on this dilemma, research has concentrated on the elements that motivate forest operators to adopt a stringent certification scheme (Gulbrandsen, 2010), the parameters that influence uptake in a national context (Espach, 2009), or the “triggering” factors that could lead non-certified operators to commit to a certification scheme in the future (Cashore et al., 2007). Rather than assessing the impacts, the goal of these studies is to understand the conditions for uptake of stringent certification schemes in various socio-economic contexts, in order to steer public action towards greater effectiveness of the certification system as a whole.

Some researchers have developed global assessment frameworks including a series of factors that help to understand the overall effectiveness of certification schemes. Tikina and Innes (2008), for example, adapted to the case of forest certification the analysis framework with six dimensions for assessing environmental regimes developed by Oran Young (1994): problem solving, goal attainment, behavioural effectiveness, process effectiveness, constitutive effectiveness and evaluative effectiveness. Others have developed an assessment framework based on changes to forest management practices on the ground – which amounts to analysing the micro-level effects of certification –, the degree of participation of forest managers in the voluntary certification programme, the level of involvement of actors along the supply chain, the prevalence of conflicts between actors on forest issues and, finally, the way in which private certification schemes interact with public policies (Gulbrandsen, 2005). Regarding the overall environmental effectiveness of forest certification, the findings of these research efforts are somewhat mixed: in the current state of knowledge, it is impossible to draw firm conclusions on the ability of forest certification schemes to solve the environmental problems for which they were created (Gulbrandsen, 2010; Marx et al., 2012).

Forest Certification Assessment Methodologies: a Critical Appraisal

Limitations of Comparisons between Certified and Non-certified Units

Most of the studies that we have presented above seek to determine whether the certification schemes have “changed anything”. If we refer to evaluative theories (Underdal, 1992), this type of assessment should consist in comparing an observed situation with a hypothetical situation that would have existed in the absence of a certification scheme. This task is complicated because the observed situation may result from a set of actions (subsidies, incentives, legislation, new market conditions, etc.) among which it may prove very hard to isolate the effect of the certification scheme alone. It is therefore difficult for the evaluators to draw conclusions on the effectiveness of certification without first determining the causal relations between a set of parameters and the observed effects. Since certified companies are usually the “best students”, which had already decided to improve their management systems well before committing to the certification process, it is likely that the more effective management observed in certified forest units results from other factors, such as the obligation to adopt a management plan or pressure from NGOs to ensure the company protects the environment. In these conditions, the role of certification may be limited to rewarding past good management. Certification in this case is the consequence rather than the cause of forest management improvements (Cashore and Auld, 2012).

Thus, the evaluation must be based on a credible counterfactual to accurately determine the certification effect. In other words, it is necessary to find a situation similar to the one that would have existed if it had not been certified. This remains a huge challenge (Blackman and Rivera, 2011). To ensure the assessments based on a comparative analysis of certified and non-certified units do not present an unacceptably high risk of selection bias, the management situations prior to the implementation of the certification scheme must be absolutely identical between the test unit and the control unit. Such configurations are rarely seen in reality.

Consequently, some analyses comparing relatively heterogeneous situations lead to questionable interpretations concerning the effectiveness of certification. For example, based on assessment studies, some authors claim that certified harvested forest areas are more effective than the adjacent protected areas in terms of biodiversity conservation, since the densities of large vertebrates observed there are higher (Van Kreveld and Roerhorst, 2010). It is possible that rather than being the result of a certification effect, this situation has more to do with the inadequate management of protected areas in tropical countries, where they are generally just “paper parks”, due to the limited resources provided to ensure their management.

Furthermore, even if it is possible to find credible counterfactual situations, at most these comparative assessments show that certified units are better managed than non-certified units, but are unable to show how certification helped to improve this management. Indeed, the binary nature of the result (“more effective than” versus “less effective than”) removes the explanatory function of the assessment (why did we get this result?), which is nevertheless essential for guiding management action (Belna et al., 2012)

Assessing Compliance is not an Environmental Effectiveness Evaluation

Evaluative approaches based on CARs avoid this pitfall by revealing the progress made further to obtaining certification, along with the actions that enabled these improvements. However, these methodologies focus on management processes rather than on the environmental outcomes (Nussbaum and Simula, 2004). At most, the analysis of audit reports is sometimes supplemented by a survey of certified operators (Cubbage et al., 2010). The assessments are therefore made without in-depth studies to show the environmental impacts actually observed on the ground, using specific indicators.

Moreover, improving management systems so that they comply with a standard is no absolute guarantee of environmental effectiveness. A parallel can be drawn with the assessment of regulatory mechanisms: determining whether or not citizens abide by the law by no means indicates whether or not this law solves the problem that justified its creation. Consequently, to ensure assessment approaches based on the study of CARs are truly relevant, it is important to check the stringency of the standards. If we look at the small number of studies dealing with this issue, the standards seem far from being strict enough, for several reasons.

First, some authors highlight the fact that management standards include very few criteria and indicators concerning elements that are nevertheless deemed essential for environmental quality. These particularly involve aspects linked to wildlife protection, which are under-represented in forest management certification standards, even though one of the well documented indirect effects of logging is an increase in unsustainable hunting of bushmeat species (Bennett, 2001). Second, the formulation and implementation of environmental indicators for national certification standards may vary considerably from country to country, despite the proximity of the forest ecosystems concerned. For example, a study comparing the biodiversity conservation goals of FSC certification schemes in Russia and Sweden show significant differences between the two standards and the way in which they are implemented on the ground (Elbakidze et al., 2011).

Finally, several authors stress the fact that standards are vague and subject to interpretation, which results in the implementation of heterogeneous

environmental management measures that are not sufficiently stringent. For example, a study of 17 forest management units that obtained FSC certification between 1997 and 2005 in the Brazilian Amazon shows that due to the imprecise design of the FSC standard, many environmental management indicators are interpreted in a range of different ways by the forest managers (Schulze et al., 2008). This is true of the following FSC forest management indicator: “Seed trees are maintained in the forest unit, at appropriate spacing and density, to guarantee the reproduction of the species”. The implementation of this indicator implies determining verifiable parameters such as the minimum percentage of commercial species per hectare and the number of the rarest species conserved per hectare, parameters that are in fact set by the Brazilian forest authorities. However, studying the audit reports for certified companies shows that although some apply stricter measures than the official standards, others apply less stringent measures.

Certain research conducted in Cameroon also illustrates these problems of interpreting FSC standards. The FSC forest management standard implemented in this country includes the following indicator: “The current rates of harvest shall not exceed the forest’s long-term regenerative capacity”¹. This indicator is verified by auditors inter alia by setting minimum cutting diameters. In the case studied in Cameroon (Cerutti et al., 2008), the authors show that to meet the environmental objective of regeneration rates of at least 50% for certain commercial species, the minimum cutting diameter would have had to be set at 90cm, whereas the diameter set by the certifying body is only 80cm. Another study on the impact of certification in 10 forest management units in the same country (Cerutti et al., 2011) shows that the interpretation of the FSC management standard by the certifying bodies led to an 18% reduction in the annual allowable cut. If we consider this result alone, the positive impact of the certification scheme seems clear, since it ensures better renewal of the resource before the next harvest and mitigates the damage by reducing harvesting intensity. But the authors add that if the FSC management standard had been applied with a view to meeting the 50% minimum regeneration rate objective, in order to be consistent with the overall FSC objectives, the annual allowable cut would then have been reduced by 38%.

The determination of minimum cutting diameters is certainly a complex issue that is still surrounded by considerable scientific uncertainty. It is therefore no surprise that it is settled by negotiation. But what appears problematic is the fact that these minimum cutting diameters are set by the certifying bodies, which make trade-offs between an environmental objective on the one hand, and economic profitability considerations for the company

¹ Indicator 5.6.3 of the FSC forest management standard adapted by the Bureau Veritas certification body for Cameroon (RF 03 FSC GF Cameroon version 1.3)

on the other (Cerutti et al., 2011). In the case studied in Cameroon, for example, the audit report indicates that: “This solution is the acceptable compromise to ensure that the operations of the forest management unit (...) are ecologically sustainable and economically viable”. It then specifies that: “If the diameter is too large, harvesting of this species becomes very marginal and incompatible with economic viability [of the company], despite its considerable presence in the forest”. Ultimately, negotiations between certified companies and certifying bodies lead to a reduction in the ecological measures required to be in compliance with the FSC certification standards. Yet these measures, with their questionable effectiveness, have provided the basis for assessments made so far.

Indirect Effects at the Landscape Level

A final critical point regarding these micro-level assessment methods concerns the failure to take into account the indirect effects that may occur at the landscape level. Indeed, for the effectiveness of certification schemes to be demonstrated, it would be necessary to assess to what extent the strengthening of environmental management measures in the certified forest unit may lead to harmful activities being transferred to adjacent areas. This hypothesis, known as the leakage effect, may be seen for example in the relocation of hunters accustomed to hunting in certified concessions to adjoining areas with less surveillance.

In addition, some studies point out the adverse effects of forest certification. For example, in the state of Acre in Brazil, income made from the sale of certified timber by communities is reinvested in unsustainable activities such as livestock or agriculture (Drigo et al., 2009; Piketty, 2008).

A number of studies have shown that selective logging is just the first stage in a more complex process that may lead to the total disappearance of forests. Selective logging of the most profitable species per hectare only has limited impacts on the forest ecosystem, but requires roads to be opened, which bring in hunters and farmers to forest areas that were hitherto relatively undisturbed (Laurance et al., 2009). For example, in the Pokola region in northern Congo, the development of an industrial logging operation attracted migrant populations to the logging zone, transforming a village of just a few dozen migrant fishermen in the 1970s into a town of more than 12 400 people in 2006 (Clark and Poulsen, 2012). This population growth led to the development of a large-scale bushmeat trade and, consequently, a reduction in the number of wild species in the areas around the certified concession.

The Weakness of Results at the Macro Level

Forest certification macro-evaluations are aimed at measuring the impact of certification as a global environmental governance instrument, or in other words, as a way of addressing forest concerns as a whole. At this level, it should first be noted that research that finds certification to be ineffective based on a simple ratio between certified areas and forest cover changes in the countries where deforestation is the most acute do not enable us to understand the overall environmental effects. Indeed, the consequences of certification may far exceed its direct effects observed in certified plots, through the way in which it can influence public policies, the definition of management standards and producer and consumer behaviours (Visseren-Hamakers and Pattberg, 2013).

Furthermore, most of the limitations of assessments that we have just described on a micro level also apply to a wider scale. For example, several studies conducted at the macro level concentrate more on certification uptake as a condition for global effectiveness. These approaches therefore implicitly consider that certification standards are stringent enough to address the environmental concerns, which is far from being the case.

Another limitation concerns the causal relationship between the implementation of the certification scheme and its effects, which are extremely difficult to identify, making evaluators cautious. This is the case, for example, of the study on the effects of forest certification on biodiversity, which concludes that it is probably effective, but that there is no proof of this (van Kuijk et al., 2009). Some researchers (Cashore and Auld, 2012) suggest using process-tracing, a methodology that uses historical research and interviews to reveal causal inferences. To our knowledge, this technique has not yet been applied methodically to forest certification. Even if this were the case, it would probably help to get as close as possible to the situation that could have evolved in the absence of certification, but would by no means guarantee that we would be exactly at this point if the certification scheme did not exist.

The research inspired by the analytical framework for the effectiveness of environmental regimes also acknowledges the limitations of this framework, indicating first that the application of certification schemes is too recent to enable us to measure its impact in terms of problem solving, and second, that they are unable to isolate the effects caused by the certification scheme alone (Gulbrandsen, 2010; Tikina and Innes, 2008). The small number of studies that have attempted to update the contribution of the FSC scheme to the resolution of global forest problems have been based on a simple review of the literature on assessments made at the micro level, based on the premise that they could help to gather a set of partial evidence that is nevertheless

sufficient to demonstrate the overall effectiveness of the scheme (Marx et al., 2012). These studies find that it is impossible to draw firm conclusions regarding effectiveness on the basis of existing evidence. Noting the failure of the analysis framework for regimes to analyse the global environmental effectiveness of institutions, some authors advocate moving from the analysis of effectiveness to the analysis of influence, and propose a framework for understanding influence mechanisms applied to the forest sector (Bernstein and Cashore, 2012).

With regard to approaches based on literature reviews and expert opinions, these also seem to lack methodological robustness, and their reliability may be questioned. A considerable number of the experts consulted are members of NGOs that are either at the origin of or that support certification schemes, consultants involved in the monitoring and implementation of certification, forest industry representatives, or even members of the executive secretariats of certification schemes, all categories that have an obvious interest in demonstrating the positive effects of certification. Some of these experts are themselves involved in a considerable share of existing evaluation research (Visseren-Hamakers and Pattberg, 2013). Many experts are therefore far from being disinterested, and the findings of their evaluation works remain questionable.

Methodological Challenges and Proposals for an Assessment of Environmental Effectiveness

What can we learn from this critical analysis in terms of methodology? What are the challenges that must be overcome in order to assess the environmental effectiveness of forest certification schemes? And what proposals can we make for developing an evaluation framework for assessing the environmental effectiveness of FSC? These are the questions we will examine in this section.

Setting Management Objectives

Although they highlight improvements in the integration of environmental problems, most of the assessment studies we have just reviewed do not provide any formal evidence of the environmental effectiveness of the certification schemes in place. In a few rare cases where situations are comparable and for several specific management indicators, the assessments generally indicate that certified forests are better managed than non-certified forests, without however formally proving that this result is due to certification. Approaches comparing situations before and after obtaining certification clearly reveal the improvements resulting from certification. But these improvements only indicate that the certified operator complies with a

certain standard of certification, which itself only reflects a compromise between different and sometimes incompatible interests (van Kuijk et al., 2009), and not environmental effectiveness. For the assessment to be truly relevant, it would be necessary to measure the discrepancy between the standard applied and the desired environmental objectives, in other words those that should be met in order to solve the environmental problem that justified the creation of the certification scheme.

Consequently, a first methodological challenge consists in defining this point of reference against which the certified forest management measures should be assessed, so that it reflects not only pragmatic management considerations, but also a real ambition to translate a desired environmental quality into specific biophysical terms. Given the uncertainties and controversies between biologists, this is no easy matter. Indeed, this is one of the main reasons given by conservation biologists to explain the very limited inclusion of biodiversity conservation issues in certification standards (Ghazoul, 2001).

Nevertheless, drawing on the research on strategic analysis of environmental management (Mermet et al., 2005), it is possible to create an assessment toolkit adapted to the evaluation of forest certification schemes. In particular, the concern-focused evaluation framework (Mermet et al., 2010) provides some interesting methodological solutions to counter the difficulties we have just described. The idea supported by this approach is that the assessment should not be based on objectives agreed on or shared by the greatest number of actors. On the contrary, the goal is to compile a set of information (international and national declarations and legal texts, scientific publications, expert reports, position papers by environmental NGOs, etc.) in order to identify the key points that constitute the least indisputable environmental targets to be achieved. Thus, the objectives are not always aligned with national or international political commitments, or solely with irrefutable scientific criteria – which is probably impossible – , or with social demands expressed by environmental associations. Instead, they are based on the work of the researcher, which should be guided by the principle of the most robust criteria possible in a context of controversy, using the knowledge available at the time. An analogy can be made with a trial for which the investigation did not succeed in exposing the whole process leading to an offence: even if grey areas remain, it takes just a small amount of irrefutable evidence to back up the accusation and convince the jury of liability.

Through this positioning, evaluation makes a conceptual shift by choosing to set out from a problem to be solved – in this case deforestation and forest degradation – before looking at the management system. This kind of approach has already been tested on several occasions, in particular in the case of the assessment of environmental management programmes for the Senegal River (Leroy and Mermet, 2012). Where forests are concerned,

research studies have already taken steps in this direction, analysing the crucial elements that could be integrated into a framework for environmental management in tropical forests (Guéneau, 2011): avoiding large-scale deforestation; regenerating and restoring forest cover; conserving tropical forest habitats essential to the preservation of biodiversity; and guaranteeing the maintenance of forest ecological functions. At the forest management unit and landscape level, the management objectives to be met by FSC in biophysical terms have also been the subject of discussions between experts, especially at a side event during an international conference on tropical forest management in 2011. Based on these consultations, a small number of major ecological objectives for forest management were defined (Romero and Castrén 2013), such as the maintenance of hydrological functions and services, biodiversity conservation at species level, and the reduction of carbon emissions and of pollution from harvesting operations. These different studies lay the foundations for the potential content of a framework to be developed as part of a concern-focused evaluation. In our view, it is this approach to contextualised forest certification assessment studies that appears the most promising.

Extending the Geographical Context of Assessment

Once the benchmark has been established (the environmental goals to be reached), an “actual versus aspiration” evaluation consists in measuring the gap between the present state of affairs and the situation that should be achieved in order to solve the environmental problem that justified the creation of the scheme. At this point, one of the difficulties to take into consideration is linked to the existence of indirect effects of certification. As we have previously shown, the consequences of certification are likely to far exceed the changes that occur at the level of the certified forest plot. Effects may be seen in adjacent areas, through population growth in logging towns, for instance. If we want to measure the impact of certification on wildlife at the forest region level, questions worth asking include “would animal densities have been higher in the absence of certified logging?”

For any attempt at evaluation, it therefore seems essential to extend the scope of effects beyond the management unit. Specifying and justifying this geographical extension is already a complex task in itself. For example, certification may contribute to an increase in income for loggers and to population growth in harvested areas. In this case, direct effects may be observed around the certified zone, which implies accurately determining the affected area. But it is also possible that the income earned from certification may be reinvested in activities that impact the environment in more distant areas.

Extending the geographical scope of the forest certification assessment – to the landscape level, for example – will however only produce a partial view of the environmental effectiveness of the FSC scheme. Indeed, it is important to distinguish between the local indirect consequences on the ground and the indirect political and institutional implications of FSC certification for other processes that will help to solve the problem or, on the contrary, worsen it, whatever the effects observed at the level of the harvested plot and its immediate environment (Auld et al., 2008).

Unexpected effects such as improved environmental performance in competing forest certification schemes can be considered (Overdeest, 2010). Public policies can also draw on private certification schemes to raise the overall level of forest management (Espach, 2009; Lister, 2011). The effect of forest certification is also measured through the dissemination of an environmental governance model in other sectors that are potentially harmful to forests, especially agriculture. On the other hand, observing the consequences of certification on a wider scale may also reveal negative environmental impacts. For example, when certain communities opt for forest certification, they may change the market conditions for non-certified communities. The latter may then abandon forest operations to adopt less sustainable agricultural activities (Fonseca, 2006).

Ultimately, many political and institutional implications of the FSC forest certification scheme must be taken into consideration in an extended assessment approach. Limiting assessment to a smaller spatial context – the landscape level, for instance – helps to clearly identify the specific contribution of certification on the ground, but does not show its global effects. Certification is a voluntary scheme which, by definition, does not apply to all operators. Consequently, one of the key points that assessment must be able to determine at the global level is to what extent FSC certification acts as a guiding principle capable of boosting public environmental action or, on the contrary, whether it is a “green marketing” instrument that rewards the good students but has no effect on the operators who are the biggest contributors to environmental degradation. Consequently, the scope of assessment cannot be extended solely on the basis of an in-depth analysis of the indirect effects of a certification scheme on the ground. It is in fact the environmental problem, rather than the certification scheme, that should determine the scope of the assessment.

Clarifying Responsibilities

The need to extend the geographical scale produces another challenge that evaluators must address. Beyond the forest management unit, responsibilities are extended and often diluted, as environmental effectiveness depends on a set of management measures that go well beyond those implemented by the

certified manager at the forest management unit level. For example, hunting, farming, fires, road construction, mining or agricultural settlement are all elements that will impact the state of forests at the landscape level. It is therefore a whole set of management measures, which stem from public and private actions, that must be analysed. And the further the scope of assessment is extended, the more the effect of certification will be diluted in a set of public action measures, some of which are in fact influenced by certification. In this complex management process, where a set of factors works to create a given situation, how can the effects of an environmental management scheme such as certification be analysed?

The strategic analysis of environmental management is an analytical framework that can be used to overcome this difficulty. Its general principle consists in analysing the whole set of de facto policies that have affected the environmental problem identified, before examining the contribution of intentional action specifically focusing on this problem. Applied in the context of concern-focused evaluation to the contextualised assessment of FSC forest certification, this principle should help initially to identify the range of public actions that have contributed to the outcome of the environmental concern associated with forests. Next, the goal is to examine certification in the broader context of the overall public actions that impact the state of the environment, including those that are directly influenced by certification.

In our view, this analytical framework is the most promising in terms of tackling the complex range of interventions in which certification is situated, when the aim is to assess its effectiveness at a scale that goes beyond the forest management unit. By isolating the specific contribution of intentional environmental action linked to FSC certification in a contextualised area, then by putting into perspective the gap between this action and the pre-established environmental objectives, we believe it is possible to assess to what extent certification helps to solve the forest problems identified in this area.

Using the concern-focused framework should settle the problem of the stakeholders' responsibilities, which is one of the most heatedly debated issues for supporters and opponents of FSC. For example, in tropical contexts in which State involvement in public policy implementation is limited, such as in the Congo Basin, certified logging companies are encouraged to take on some of the State's functions, with the support of bilateral and multilateral cooperation agencies. But this extended private sector responsibility is often limited due to the impossibility of fully replacing the role of the State, for instance in terms of controlling poaching in adjacent protected areas, or ensuring land tenure security. The assessment will thus be able to determine whether certification has adverse effects, and whether or not these are addressed by appropriate public action, either through action by government agencies, or through a cooperation programme led by an NGO or another

organisation. Ultimately, the assessment should help to clarify the conditions for public action within which certification can play an effective role in protecting the environment.

Conclusion

The exhaustive literature review on assessment methodologies used to date reveals a considerable lack of knowledge concerning the environmental effectiveness of FSC forest certification: we simply do not know whether this scheme helps to solve the problem for which it was created.

Scholars evaluating the effects of forest certification are facing a serious dilemma. On the one hand, some evaluators choose to measure the effects on a micro scale, that of the certified forest unit. In this configuration, some studies succeed in demonstrating a number of impacts. However, they fail to reflect a set of indirect effects on a larger scale, whether the impacts on the landscape or the broader consequences in terms of forest governance. Yet these effects may in fact be contrary to the environmental objectives for which the FSC system was created. On the other hand, some scholars opt for measuring the effects on a global scale. But in this case, the evaluations appear to be disembodied. The findings focus on actions that are supposed to benefit the forest. However, the causal relationship between these actions and the impact on the ground is far from proved.

Pinpointing the main failings of these assessment techniques has enabled us to identify three challenges that we believe must be addressed in order to be able to assess the FSC forest certification scheme in terms of its environmental effectiveness: developing a point of reference to which certification measures must be compared; extending and contextualising the scope of the evaluation; and analysing all effective management measures that contribute to obtaining the environmental result observed before examining the specific role of certification.

What we have shown is that one of the main problems of the evaluation methodologies implemented so far is that they seek to evaluate the effectiveness of the FSC system as if it were running in isolation, without interacting with other processes that together will lead to an observed ecological state. Instead, the certification is embedded in a set of public action measures. This may be because the effectiveness of the certification is dependent on the effectiveness of public policies, for example land tenure regulation, which remains a condition for effective environmental management measures on the ground. Or it may be because the certification largely influences public action measures, for example when it comes to developing stringent management standards or public and private procurement policies. Within a forest area where environmental issues are clearly

identified, it is by clarifying all management measures that the specific role of certification can be revealed. Instead of taking the certification scheme for the initial fulcrum, evaluation research on certification impacts should begin by taking the environmental concerns as a point of reference, before disentangling the public action measures, including certification.

From this perspective, the concern-focused evaluation framework (Mermet et al., 2010) seems to be the most promising research opportunity for identifying the effects of FSC forest certification and its possibilities for achieving the environmental quality desired by advocates of this scheme.

References

- Auld, G., Gulbrandsen, L.H., McDermott, C.L. (2008) Certification Schemes and the Impacts on Forests and Forestry. *Annual Review of Environment and Resources* 33, 187-211.
- Belna, K., Leménager, T., Mermet, L. (2012) Évaluer l'efficacité de politiques et programmes environnementaux : quel cadrage méthodologique proposer. Le cas du Fonds de partenariat pour le carbone forestier., Agence française de développement, Paris.
- Bennett, E.L. (2001) Timber Certification: Where Is the Voice of the Biologist? *Conservation biology* 15, 308-310.
- Bernstein, S., Cashore, B. (2012) Complex global governance and domestic policies: four pathways of influence. *International Affairs* 88, 585-604.
- Billand, A., Fournier, J., Rieu, L., Souvannavong, O., (2010) Prise en compte de la biodiversité dans les concessions forestières d'Afrique centrale, in: 1, D.d.t.s.l.b.f. (Ed.). FAO, Rome.
- Blackman, A., Rivera, J. (2011) Producer-level benefits of sustainability certification. *Conservation biology* 25, 1176.
- Burger, D., Hess, J., Lang, B., (2005) Forest Certification: An innovative instrument in the service of sustainable development? *Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ)*, Eschborn, Germany.
- Cashore, B., Auld, G., (2012) Forestry Review, in: Certification, T.S.C.o.t.S.-o.-K.A.o.S.a. (Ed.), *Toward Sustainability: the Roles and Limitations of Certification*. Resolve, Washington (D.C.), pp. A-88 - A-124.
- Cashore, B., Auld, G., Bernstein, S., McDermott, C. (2007) Can Non - state Governance 'Ratchet Up' Global Environmental Standards? Lessons from the Forest Sector. *Review of European Community & International Environmental Law* 16, 158-172.
- Cashore, B., Gale, F., Meidinger, E., Newsom, D., (2006) *Confronting Sustainability: Forest Certification in Developing and Transitioning Countries* Yale School of Forestry and Environmental Studies Publication Series, New Haven, USA.
- Cashore, B., Vanderbergh, M., (2010) Exploring the impacts of certification systems, in: Sheil, D., Putz, F.E.Z., Roderick J. (Eds.), *Biodiversity conservation in certified forests*, p. 137.

- Cashore, B.W., Auld, G., Newsom, D. (2004) *Governing through markets : forest certification and the emergence of non-state authority*. Yale University Press, New Haven.
- Cerutti, P.O., Nasi, R., Tacconi, L. (2008) Sustainable forest management in Cameroon needs more than approved forest management plans. *Ecology and Society* 13.
- Cerutti, P.O., Tacconi, L., Nasi, R., Lescuyer, G. (2011) Legal vs. certified timber: Preliminary impacts of forest certification in Cameroon. *Forest Policy and Economics* 13, 184-190.
- Clark, C.J., Poulsen, J.R., (2012) *Tropical Forest Conservation and Industry Partnership: An Experience from the Congo Basin*, Conservation Science and Practice. Wiley-Blackwell.
- Counsell, S., Loraas, K.T., (2002) Trading in credibility: the myth and reality of the Forest Stewardship Council. Rainforest Foundation UK, p. 159.
- Cubbage, F., Diaz, D., Yapura, P., Dube, F. (2010) Impacts of forest management certification in Argentina and Chile. *Forest Policy and Economics* 12, 497-504.
- de Lima, A.C.B., Keppe, A.L.N., Alves, M.C., Maule, R.F., Sparovek, G., (2008) *Impacto da certificação florestal FSC em comunidades agroextrativistas do Acre*. Piracicaba: Imaflora.
- Drigo, I.G., Piketty, M.G., Abramovay, R. (2009) Certification of community-based forest enterprises (CFEs): limits of the Brazilian experiences. *Ethics and Economics* 6.
- Duflo, E. (2005) Évaluer l'impact des programmes d'aide au développement: le rôle des évaluations par assignation aléatoire. *Revue d'économie du développement* 19, 185-226.
- Ebeling, J., Yasue, M. (2009) The effectiveness of market-based conservation in the tropics: forest certification in Ecuador and Bolivia. *J Environ Manage* 90, 1145-1153.
- Elbakidze, M., Angelstam, P., Andersson, K., Nordberg, M., Pautov, Y. (2011) How does forest certification contribute to boreal biodiversity conservation? Standards and outcomes in Sweden and NW Russia. *Forest Ecology and Management* 262, 1983-1995.
- Espach, R. (2006) When is sustainable forestry sustainable? The forest stewardship council in Argentina and Brazil. *Global Environmental Politics* 6, 55-84.
- Espach, R.H. (2009) Private environmental regimes in developing countries: globally sown, locally grown. Palgrave Macmillan.
- Fonseca, S.A., (2006) Forest certification in Mexico, in: Cashore, B., Gale, F., Meidinger, E., Newsom, D. (Eds.), *Confronting Sustainability: Forest Certification in Developing and Transitioning Countries* Yale School of Forestry and Environmental Studies, New Haven, USA.
- Ghazoul, J. (2001) Barriers to Biodiversity Conservation in Forest Certification. *Conservation biology* 15, 315-317.
- Guéneau, S., (2011) *Vers une évaluation des dispositifs de gestion des forêts tropicales humides*. AgroParisTech, Paris, p. 580.
- Gulbrandsen, L. (2005) The Effectiveness of Non-State Governance Schemes: A Comparative Study of Forest Certification in Norway and Sweden. *International Environmental Agreements: Politics, Law and Economics* 5, 125-149.

- Gulbrandsen, L.H. (2010) Transnational environmental governance: the emergence and effects of the certification of forests and fisheries. Edward Elgar Publishing.
- Gullison, R.E. (2003) Does forest certification conserve biodiversity? *Oryx* 37.
- Hirschberger, P., (2005) The effects of FSC-Certification in Estonia, an analysis of Corrective Action Requests. . WWF, Austria.
- Hughell, D., Butterfield, R., (2008) Impact of FSC Certification on Deforestation and the Incidence of Wildfires in the Maya Biosphere Reserve. Rainforest Alliance.
- Imai, N., Samejima, H., Langner, A., Ong, R.C., Kita, S., Titin, J., Chung, A.Y.C., Lagan, P., Lee, Y.F., Kitayama, K. (2009) Co-Benefits of Sustainable Forest Management in Biodiversity Conservation and Carbon Sequestration. *PLoS ONE* 4, e8267.
- Klooster, D. (2006) Environmental Certification of Forests in Mexico: The Political Ecology of a Nongovernmental Market Intervention. *Annals of the Association of American Geographers* 96, 541-565.
- Kukkonen, M., Rita, H., Hohnwald, S., Nygren, A. (2008) Treefall gaps of certified, conventionally managed and natural forests as regeneration sites for Neotropical timber trees in northern Honduras. *Forest Ecology and Management* 255, 2163-2176.
- Laurance, W.F., Goosem, M., Laurance, S.G.W. (2009) Impacts of roads and linear clearings on tropical forests. *Trends in Ecology & Evolution* 24, 659-669.
- Leroy, M., Mermet, L. (2012) Delivering on environmental commitments? Guidelines and evaluation framework for an "on-board" approach. John Libbey Eurotext, Montrouge, France.
- Lister, J. (2011) Corporate Social Responsibility and the State: International approaches to Forest Co-Regulation. University of British Columbia Press, Vancouver, Canada.
- Marx, A., Bécault, E., Wouters, J., (2012) Private Standards in Forestry: Assessing the Legitimacy and Effectiveness of the Forest Stewardship Council, in: Marx, A., Maertens, M., Swinnen, J., Wouters, J. (Eds.), *Private Standards And Global Governance: Economic, Legal and Political Perspectives*. Edward Elgar Publishing, Cheltenham, UK, pp. 60-97.
- Marx, A., Cuypers, D. (2010) Forest certification as a global environmental governance tool: What is the macro-effectiveness of the Forest Stewardship Council? *Regulation & Governance* 4, 408-434.
- Medjibe, V.P., Putz, F., Romero, C. (2013) Certified and Uncertified Logging Concessions Compared in Gabon: Changes in Stand Structure, Tree Species, and Biomass. *Environmental Management*, 1-17.
- Mermet, L., Billé, R., Leroy, M. (2010) Concern-Focused Evaluation for Ambiguous and Conflicting Policies: An Approach From the Environmental Field. *American Journal of Evaluation* 31, 180-198.
- Mermet, L., Billé, R., Leroy, M., Narcy, J.-B., Poux, X. (2005) L'analyse stratégique de la gestion environnementale : un cadre théorique pour penser l'efficacité en matière d'environnement. *Natures Sciences Sociétés* 13, 127-137.
- Nebel, G., Quevedo, L., Bredahl Jacobsen, J., Helles, F. (2005) Development and economic significance of forest certification: the case of FSC in Bolivia. *Forest Policy and Economics* 7, 175-186.
- Newsom, D., Bahn, V., Cashore, B. (2006) Does forest certification matter? An

- analysis of operation-level changes required during the SmartWood certification process in the United States. *Forest Policy and Economics* 9, 197-208.
- Newsom, D., Hewitt, D., (2005) The global impacts of smartwood certification, Rainforest Alliance, USA.
- Nussbaum, R., Simula, M., (2004) Forest certification: a review of impacts and assessment frameworks, *The Forests Dialogue*. Yale University, School of Forestry and Environmental Studies, , New Haven, USA.
- Overdeest, C. (2010) Comparing forest certification schemes: the case of ratcheting standards in the forest sector. *Socio-Economic Review* 8, 47-76.
- Pattberg, P. (2005) What Role for Private Rule-Making in Global Environmental Governance? Analysing the Forest Stewardship Council (FSC). *International Environmental Agreements: Politics, Law and Economics* 5, 175-189.
- Peña-Claros, M., Stijn, B., Frans, B. (2009) Assessing the progress made: an evaluation of forest management certification in the tropics. Wageningen University and Research Centre, Department of Environmental Sciences Tropical Wageningen, The Netherlands.
- Piketty, M.G. (2008) Certification environnementale et durabilité au Brésil. *Économie rurale*, 169-183.
- Rayden, T., Essame Essono, R., (2010) Evaluation de la gestion de la faune dans les concessions forestières des aires prioritaires de conservation des grandes singes de Lopé - Waka et Ivindo. WRI.
- Romero, C., Castrén, T., (2013) Approaches to Measuring the Conservation Impact of Forest Management Certification. , Program on Forests (PROFOR). World Bank Washington D.C.
- Schulze, M., Grogan, J., Vidal, E. (2008) Forest certification in Amazonia: standards matter. *Oryx* 42.
- Sheil, D., Putz, F., Zagt, R., (2010) Biodiversity conservation in certified forests, ETFRN News. Tropenbos International, Wageningen, the Netherlands, p. xx + 204 pp.
- Thorner, K., (1999) Overview of global trends in FSC certificates, Instruments for Sustainable Private Sector Forestry. International Institute for Environment and Development (IIED), Forestry and Land Use Programme, London.
- Tikina, A.V., Innes, J.L. (2008) A framework for assessing the effectiveness of forest certification. *Canadian Journal of Forest Research* 38, 1357-1365.
- Underdal, A. (1992) The Concept of Regime 'Effectiveness'. *Cooperation and Conflict* 27, 227-240.
- Van Kreveld, A., Roerhorst, I., (2010) Impacts of certified logging on great apes, in: Sheil, D., Putz, F.E., Zagt, R.J. (Eds.), Biodiversity conservation in certified forests. ETFRN, pp. 120-125.
- van Kuijk, M., Putz, F.E., Zagt, R.J., (2009) Effects of forest certification on biodiversity, in: International, T. (Ed.), Wageningen, the Netherlands.
- Visseren-Hamakers, I.J., Pattberg, P. (2013) We can't see the forest for the trees: The environmental impact of global forest certification is unknown. *GAIA* 22, 25-28.
- WWF, (2010) WWF Position Paper on Forest Certification, October 2007, updated April 2010 ed.
- Young, O.R., (1994) *International Governance : Protecting the Environment in a Stateless Society*. Cornell University Press (Ithaca), New York, USA, p. 221.