BETWEEN PRIVATE AND PUBLIC: THE TRAJECTORY OF SOCIAL AND ENVIRONMENTAL GOVERNANCE IN THE FORESTRY SECTOR

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Abstract

This article presents the emergence and evolution of socioenvironmental governance mechanisms in the forest sector, known as a successful experience in the development of private certification systems operating worldwide, such as the Forest Stewardship Council and Programme for the Endorsement of Forest Certification Schemes. The forest sector case suggests that the internationalization of production chains posed new and complex problems to the traditional regulatory mechanisms, and hence triggered the emergence of private certification systems. The institutional path of certification systems is driven by three pre-existent variables: public regulation, industry competition and organization, and legitimation mechanisms, whose interaction determines the evolution of socioenvironmental governance. Competition among certification systems results in the convergence of public and private environmental regulations, which tend to relocate on the median demand and market spectrum. As an important normative implication, the efficacy of socioenvironmental governance depends on the compliance costs and, as a consequence, on the prevailing public regulation. The latter must be designed not only taking into account its direct effects, but also its indirect effects on the development of private certification systems.

Key words:*regulation; socioenvironmental governance; certification; forest sector; biofuels.*

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1. INTRODUCTION

The evolution of socioenvironmental governance gives an interesting example of how the interaction between public and private mechanisms of control and regulation affects production and consumption relations. Compelled by the recent demand for environmental protection resulting mainly from the accelerated degradation of natural resources and the internationalization of supply chains, the transformations on social and environmental governance represents a complex case of institutional change, as determined by the interaction among various private actors and public regulation.

The last 20-30 years there is a clear trend of transferring functions from public to private actors on the socioenvironmental governance. Private governance mechanisms have been used in natural resource management and also have acquired importance in most economic activities related to environmental goods.

Socioenvironmental certification and labeling have expanded in various economic sectors, especially those directly related to natural resources, such as agriculture. The rapid evolution of this process raises several questions about the factors that enabled the emergence of private certification as a legitimate and effective governance mechanism.

In order to explore these transformations and their consequences on the development of markets, this article analyzes the development of governance mechanisms for environmental regulation, exploring the institutional factors that have contributed to these changes. Our empirical analysis is grounded on the timber/forestry market, commonly referred as a prime example of success in the establishment of private mechanisms of social and environmental governance (Cashore, 2002). The article seeks to identify configurations on this sector that enabled the emergence of private governance mechanisms, such as certifications, and the elements of the institutional environment and other local conditions, which favored the expansion, and effectiveness of private certification systems. Moreover, it was analyzed how trends in the forestry sector could influence the development of governance on other sectors, taking the example of the new forms of governance that are developing the biofuels market.

This article is divided into five sections, including this introduction. Section 2 addresses historical aspects related to the institutional changes in socioenvironmental governance, which led to the emergence of certification schemes and other non-governmental governance arrangements. Section 3 analyses the forest case, being divided into two parts. The first presents the history of the forestry sector, taking into consideration the key-elements that drove the development of instruments for private governance. The second part analyzed the specificities of the two main existing forest certification schemes (FSC and PEFC), and how they expanded into different regions of the world. Section 4, through the lens of institutional economics, discusses the main trends in the forestry socioenvironmental governance , and some implication for other sectors where social and environmental attributes are relevant, such as biofuels. Finally, section 5 concludes.

2. HISTORICAL ANALYSIS OF ENVIRONMENTAL GOVERNANCE

2.1 Environmental Governance: a historical overview of the last 50 years

Industrial development and expansion of agricultural frontiers in the past century have created strong pressure on natural resources such as forests and water reserves. Although this process was already in place in the first decades of the twentieth century, it was not until the second half of the century that environmental issues became more representative and subject to more effective regulatory action by national governments.

Developed countries were the first to deploy regulatory actions through legislation that imposed limits and penalties. The U.S. pioneered these actions by approving a series of laws from the late 1960s, as the National Environmental Policy Act (1969), the Clean Air Act (1970), the Clean Water Act (1972), the Resource Conservation and Recovery Act (1976), among others.

However, defining safe limits and monitoring mechanisms is difficult due to the complexity of some environmental problems. As a consequence, it was crucial to establish environmental agencies in order to set standards of acceptable performance and emissions. In the U.S., the Environmental Protection Agency (EPA) was founded in 1970 to protect public health and restore the environment (Lewis, 1988). Another goal of these agencies was to create a technical staff on environmental issues that could more accurately address the emerging problems.

Mechanisms of environmental regulation experimented several changes in recent decades. Reviewing the statututory law in Anglo-Saxon countries, Gunningham (2009) considers the beginning of a first stage in the early 1970s, when governments established the use of mechanisms of direct control, as emission caps or the adoption of green technologies. Despite criticism from economists due to the negligence of economic incentives and the distortion of business strategies, such mechanisms had an important role to control less complex environmental problems, which were spreading out since the early twentieth century.

However, the emergence of more complex environmental issues has limited the effectiveness of traditional mechanisms of direct control. Additionally, the wave of liberal policies that came to dominate the regulatory debate since the mid-1980s brought a new phase in environmental control, with less direct action of the state mechanisms and greater use of "market-based" tools, in an attempt to mimic the market (Gunningham, 2009). This would be the second stage of social and environmental governance.

Among the new instruments, can be mentioned various voluntary programs and commitments made by industrial sectors, with or without the participation of the State and its agencies. Despite the arguably superiority of these mechanisms in terms of incentives and economic background, such mechanisms have not proved very effective in issues directly affecting profits of companies. Among the factors that explain this modest performance may be mentioned actors influence in setting targets, and the ineffective monitoring and uncertainties concerning the enforcement, which opened space for opportunistic behavior (free-riders).

The difficulty of self-regulation mechanisms in dealing with complex environmental issues launches a third phase in state action on environmental issues. The so-called "new regulation" started in the second half of 1990 sought to integrate the mechanisms of direct control and self-regulation implemented in previous decades. Among the functions of the state in these new governance mechanisms can be highlighted the division of collaborative actions with the private sector, creating economics incentives and the use of State legitimacy and enforcement capacityto ensure compliance with the rules.

These mechanisms tried to bring more transparency and measurement for self-regulation mechanisms. Among the actions implemented during this period, can be highlight the collaborative agenda between private actors to develop new strategies to develop green

technologies, the use of positive incentives instead of punishment by the State, the establishment of performance standards (rather than imposing changes in technology industries) and the adoption of voluntary certification, such as ISO 14001.

Another interesting factor observed with more intensity from the 1990s forward is the role of civil society organizations such as Non-Governmental Organizations (NGOs) in the regulation of environmental issues. These entities have occupied part of the regulatory functions executed by the governments and began to play a key role in new forms of environmental regulation that emerged in this period. The global scale of action of these entities brings a transnational dimension for environmental regulation. Despite having no formal links with the State, the acting and the very legitimacy of these organizations still proves to be quite dependent on government actions at both national and international levels.

The "Smart Regulation", how this new form of State action on environmental issues was named by some experts (Gunningham and Sinclair, 1998), sets a definitive presence of private players in the mechanisms of environmental governance. Among these actors can be mentioned both NGOs and private companies as well as certification schemes.

After the 1990's, certifications became widely used as an important tool for monitoring and reporting on corporate environmental responsibility (CER). Companies operating in more environmental sensitive markets used them as a way to demonstrate how their activities were well above the minimum standards required by law. This became an important marketing tool.

Still, it is worth mentioning that even after this new regulatory era, the State still plays a central role in the control of environmental issues. Even the self-regulation actions carried out by specific industries usually rely on the participation of State agencies.

3. EMERGENCE OF PRIVATE GOVERNANCE IN THE FOREST SECTOR

3.1 Economic development, forests and socioenvironmental governance

Economic development and deforestation usually go together in history of nations. Developed countries like the United States, Australia, Canada and most European nations have substantially reduced their forests in the early stages of their development process. Wood represented the main raw material for building houses and generation of heat, playing an essential role to make possible the industrialization and urbanization of these regions.

According to Williams (2001), in 1750, U.S. had already deforested 430,300 km2 of its native vegetation; in 1810, American pioneers had put down more than 770,900 km2 of native forests.

The colonization was also responsible for the deforestation of large areas in tropical regions, not only for logging, but also aimed at opening up areas for crops like tobacco and sugar cane. This expansion has been responsible for a loss of 2.35 million km2 of forests between 1920 and 1949 (Williams, 2001). In Brazil, widespread deforestation was observed; only in State of São Paulo, the Atlantic forest was reduced from its original area of 204,500 km2 to 45,500 km2 in 1952. This process of tropical deforestation was intensified after the 1950s due to the exponential population growth in these regions. According to Williams (2001), between 1950 and 2000, about 5.5 million km2 of tropical forests have disappeared, especially in Latin America.

This trend of deforestation in tropical regions after the second half of twentieth century was amplified by economic and technological factors, such as the reconstruction of countries after the Second Would War, the adoption of new technologies for exploring forest and the strong global economic growth observed in the 1960s and 1970s. The lack of forest reserves to be exploited in developed countries (USA, Japan and Europe) led to a rapid growth on the international trade of wood (VOIVODIC, 2010).

The internationalization of wood markets contributed to fragment production chains. It is unusual to find a company on this sector that operates at all stages, from timber extraction to final sale to consumers. According to Voivodic (2010), this fragmentation creates barriers to information transmission between different tiers, resulting in low levels of vertical coordination and hindering the implementation of sectorial actions in this chain.

In developed countries, the first specific legislation to control forest devastation emerged in the late nineteenth century - such as the National Forestry Act 1897, the U.S., and Canadian Forest Service in 1899 - and the beginning of the twentieth century, such as the English Forestry Act of 1919. By this time, other European nations have also established their laws. As demonstrated by West (2003), European regulations have emerged mainly as a response to reduction in wood supply due to historical events such as the First World War. In tropical nations, it was only after the middle of last century that regulatory efforts begun, due to the mentioned increase in deforestation rates in these regions.

This lack of vertical coordination together with the increasing demand for timber contributed for uncontrolled deforestation in this period. Although, at first, this process was geographically restricted to countries suffering restrictions on timber supply, concerns with the global effects of deforestation rapidly emerged. Environmental groups like Greenpeace and WWF strongly contributed to increase public opinion worldwide awareness on this issue. Short time later, this problem was incorporated to the agenda of national governments and international agencies like the United Nations.

Thus, discussions at the international level aiming at the creating a regulatory framework to complement national laws started by the mid-1980s. The development of these mechanisms faced the challenge of designing policies that harmonize economic, social and environmental aspects at different governmental levels (national, regional and global) (CHAYTOR, 2001). As an example, can be mentioned the International Tropical Timber Organization (ITTO) linked to UNCTAD and FAO (UN) in 1986, which aimed to develop policies to address the issue of deforestation on an international level. Similarly, it is possible to mention the Convention of International Trade and Endangered Species (CITES), established in 1975 and implemented in the following decade.

These initiatives have not been very fruitful in comparison to similar proposals for the preservation of marine and freshwater ecosystems or control of emissions into the atmosphere (like CFC causing the hole in the ozone layer). According to Chaytor, this could be explained by the fact that forests are generally seen as a national resource. Therefore, attempts to regulate forests are seen as illegitimated interference in the sovereignty of these nations. These issues were widely discussed in Rio 92, which occurred at the UN Conference for Environment and Development (UNCED) (Palo, 2000).

The UNCED discussions occurred under mistrust from developing countries about the intentions of rich nations to regulate their rainforests. There was a strong belief that forest deforestation was being used as a strategy to divert the focus of attention on the responsibilities of developed nations to an international commitment to emission reductions of greenhouse gases. Despite the limited results, the UNCED is considered one of the first steps towards an international climate regulation framework, creating the foundations for the United Nations Convention on Climate Change (UNFCCC).

In general, it is clear that the hope of an international agreement to regulate forest activities were frustrated in Rio 92 by the polarized dialogue between governments of northern and southern hemispheres. Thus, the only output of this conference was a Letter of Intentions, with little effect due to the lack of commitments and monitoring mechanisms (Humphreys, 2004).

These early efforts to create international mechanisms exposed the difficulty of using traditional regulatory mechanisms to coordinate forestry activities, both nationally and internationally. It was clear that even if such systems could be implemented, they could not account alone for the regulation of the forestry sector. The strong opposition of many governments towards an agreement of this kind, for fear of interference in their countries, obstructed the construction of international mechanisms for this purpose (Wang, 2001).

Under this context emerged the first initiatives seeking the creation of governance through market mechanisms, such as private certification (Bernstein and Cashore, 2003). It is worth mentioning that in the 1980s some actions aiming to distinguish wood obtained from sustainable sources were already being developed. As an example, it is possible to point the Wood Workers' Alliance for the Protection of Forests founded in 1990. On the business front, many initiatives seeking to monitor the supply sources to avoid boycotts and other reprisals from environmentalists and consumer groups have developed (VOIVODIC, 2010). These movements, coupled with the inability of international agencies to develop a governance mechanism for forests, can be mentioned as the embryos of private governance initiatives that followed in the 1990s.

As explained in section 2, the process of globalization of markets is often mentioned as the main cause of the emergence of private environmental governance mechanisms. Most of the literature identifies the reduction of state regulatory capacity resulting from the globalization of markets as the primary cause for the development of private governance. However, Howlett and Rayner (2006) point out that in the forest case, this explanation does not fit so well. Since trees cannot be moved easily, the national governments would have full ability to control such activities. In the forest case, other consequences of globalization are responsible for the emergence of private mechanisms.

First, the application of trade rules as defined in the WTO and free trade agreements like those established in the European Union, reduced the ability of states to require mandatory

social and environmental standards. Secondly, new private actors such as NGOs have internationalized their activities and, thus, began to exert greater influence over governments and companies. Thirdly, the development of international timber market, in which major consumer centers are characterized by higher environmental requirements, has raised the sustainability demand over production areas. All together, these drivers opened space to the introduction of mechanisms to enhance the monitoring capacity of consumers about the conditions of production of wood in other parts of the planet (Howlett and Rayner, 2006).

In 1989, two initiatives for global certification of forestry sector were proposed. The NGO Friends of Earth proposed a scheme in association with ITTO (UN), but it was rejected by business players still suspicious about private solutions (POORE, 2003). In the same year, the NGO Rainforest Alliance, which already coordinated a respected sustainable agriculture standard, suggested the label "SmartWood", which was applied to wood extracted from an Indonesian forest. In both cases, it was clear the difficulty of establishing a totally private system, lacking legitimacy in comparison to governments and international bodies such as the United Nations.

3.2 Forest certification schemes

Considering these limitations, in 1993, after two years of conversations involving a diverse group of stakeholders, it was founded the Forest Stewardship Council (FSC), the first global forestry certification scheme. The FSC was coordinated by WWF and represented a clear attempt by the environmental movement to occupy a regulatory vacuum in the absence of a multilateral international agreement to preserve forests. According to Pattberg (2005), the FSC was an important laboratory for private governance mechanisms, highlighting the strengths and limitations of this new way of regulating the activities of markets.

Since then, the FSC has been analyzed by an extensive literature in political and environmental science fields (CASHORE et al., 2004; OVERDEVEST and RICKENBACH, 2006; BARTLEY, 2003). Many of these authors considered FSC as the most successful experience in establishing private environmental governance in a global scale. Pattberg (2005) argues that FSC experience could be easily extrapolated to other sectors in which non-state governance mechanisms are emerging to address complex problems such as externalities and other market failures not considered within State regulatory tools. Moreover, this author

emphasizes that the integration of FSC in national policies endorsed by national governments and international organizations, represents a new trend of interaction between public certifications and state regulations.

The internal governance of FSC operates through a specific system, formed by a Board. All decisions are deliberated by members of three chambers (social, environmental and economic) in meetings, workshops and public consultations. The three chambers are divided between representatives of developed countries (North) and developing nations (South). The form of governance system, in which these three instances interact towards a consensus, is considered one of the main virtues of this system, resulting in a more balanced, democratic and legitimate decision-making process.

Still, this system is subject to two groups of critics. On the one hand, NGOs and other organizations representing environmentalists and forest communities question the close, and some times obscure, relationship between the companies responsible for implementing the certification and forest managers, which are being certified. This could result in an excessive flexibility of the FSC standards (RAINFOREST FOUNDATION, 2002). On the other hand, industries question the elevated requirements of some criteria and difficulty in interacting with other chambers, considered excessively ideological and close to understanding the economic reality of the forest industry. This discontent is an important driver to explain the creation of other certification systems, which will be discussed later in this study.

Another source of questioning of FSC credibility is related to the funding system (PATTBERG, 2005). Although FSC raised US$ 14.3 million between 1996 and 2003, 77% of these resources came from donations from non-profit foundations like the Rockefeller Brothers Foundation, the MacArthur Foundation and the Wallace Global Fund. Initiatives to raise the profitability of the system are being discussed, but this could jeopardize FSC credibility and legitimacy.

Expansion and economic profitability of a certification scheme depends on the adoption by producers, which is directly related to the costs of adopting the practices necessary to reach the standards. In order to understand this trade-off between sustainability requirements and market expansion and profitability, is fundamental to analyze the competition between "substitute" certification schemes. Cashore et al. (2004) notes that this competition has great influence on how standards are defined and how these certifications interact with national

laws. According to Pattberg (2005), in 2005 there were at least 23 certification systems competing with the FSC.

In 1999, some of the stakeholders of the forest production chain developed the Programme for the Endorsement of Forest Certification Schemes (PEFC). Unlike the FSC, PEFC have not tried to develop new standards, but to make the accreditation of existent public standards under requirement at national level (VOIVODIC, 2010). Among these standards incorporated into PEFC can be mentioned the Sustainable Forestry Initiative (SFI), the Canadian Standards Association (CSA) and the Brazilian Program of Forest Certification (CERFLOR).

So, while FSC was formed mainly by NGOs and other bodies representing civil society, the PEFC has greater representation of industries and governments. This origin resulted in more flexible standards for forest industries and lower cost of compliance (Gulbrandsen, 2005). Rametsteiner (2002) points out that, unlike FSC, which sustains its legitimacy through a democratic system that seeks consensus in a heterogeneous group of participants, PEFC legitimacy came from on governmental programs and actors.

The differences between these two schemes are also related to operational procedures. Unlike FSC, PEFC certification do not require annual inspections in loco by accredited certification bodies (PATTBERG, 2005). Therefore, the costs of certification are much lower, especially in large forest areas, usually owned by governments. Although it is clear that the level of monitoring provided by FSC is superior, most consumers do not differentiate certifications, what substantially reduces the penetration of more expensive mechanisms.

Another important explanation why PEFC has lower costs relates to the interaction between these standards and existing regulatory mechanisms. Since PEFC relies on existing standards, the costs of measuring information are much smaller than those incurred by FSC, which in many cases go beyond the requirements made by law. In the same way, since PEFC relies on the legitimacy of state actors and regulations, the costs of enforcing the environmental criteria established by this certification is also diminished.

The presence of state actors also reduces the need for representation of different categories of actors, the main source of legitimacy of systems such as FSC. This feature facilitates the achievement of consensus, which brings greater agility for making adaptations and changes. As a result, although FSC is usually mentioned by governance literature as the most important

mechanism of forest certification, PEFC has almost the double of the area of certified forest (respectively, 223 million hectares to 113 million hectares).

In order to analyze the effect of competition on FSC standards, Gulbrandsen (2005) compared the trajectory of FSC with PEFC in Sweden. The main question analyzed referred to the effect of each certifications on the practices adopted by the forestry sector. The author emphasizes that private certification could even have negative effects on the sustainability due to a reduction of state regulation not offset by private governance mechanisms. The uncoordinated competition between certifications could also reduce the "information" effect, which originated these mechanisms and created incentives for companies to adopt more sustainable practices. This competition between certifications has dubious effect for forestry industry. On one hand, these economic actors may reject very stringent standards, which would increase costs for adapting the production processes; on the other, the open competition between certifications is not interesting, since it reduces the informational effect on consumers that, ultimately, could reduce demand for these products.

The Swedish case shows how seeking for legitimacy depends on the way each scheme handles its stakeholders' interests. Initially, FSC had set stricter criteria in relation to the percentage of certified raw material needed to obtain the label, which substantially restricted the supply of certified wood because of the limited availability of companies that could meet such requirement. As other less stringent certifications were introduced on the market, FSC reduced the requirements in order to keep market share. There was also an attempt to adapt FSC's internal governance system, in order to increase the participation of groups initially excluded from decision-making chambers.

This example demonstrates how competition can lower certification requirements. This process brings the risk of an excessive reduction of requirements, which could jeopardize the effectiveness of these mechanisms to achieve the ultimate goal of improving sustainability practices. Another trend arising from this competition between certification systems is standards cross-fertilization between certifications and regulatory mechanisms. Several studies indicate a convergence of certifications searching for legitimacy, leading them to an intermediate position in terms of requirements. Since they need to increase the potential market for their labels, certification schemes look for covering the largest number of

stakeholders, in a result analogous to the Median Voter Theorem (HOTELLING, 1929; DONWS, 1957).

This interaction between private certifications and state regulation can also result in an interesting regularity. By analyzing three major private forest certifications, McDermott et al. (2008) notes a trend to mimic sustainability criteria already present in national legislation; or in some cases, create mechanisms to enforce the rule of law. As mentioned above, this strategy brings the advantage of lower measurement costs required for certification. From a normative point of view, it can be noted that state regulation is an essential tool to underpin the operation of these forms of private governance.

The nearly 20-year expansion of FSC in different regions of the world provides important evidence of which factors have contributed to boost or restrict the expansion of these certification. Generally, these certification present greater expansion in developed countries, where stricter laws were already enforced and citizens have higher awareness about deforestation problems. This trend reflects not only the lower costs to meet the standards set by certification (indirect costs), but also a lower direct cost on monitoring boreal forests, which are less complex than the tropical forests and does not require same effort of monitoring and preparation for certification process (PATTBERG , 2005). Thus, rainforests, which represented the main focus of deforestation after 1950s, were not much protected by FSC and other private certification mechanisms.

In order to understand the factors affecting the diffusion of FSC and other certifications, Cashore et al. (2004) analyzed in detail characteristics that have contributed to this process in different regions of the planet. Initially, it is interesting to note that the FSC criteria (and many other environmental certifications) are not the same for all regions. The manner these patterns vary is an important evidence of the strategies adopted by the schemes to increase their legitimacy and raise penetration of their criteria in regions where society demands and forest industry practices differ.

Cashore et al. (2004) considered three categories of strategies adopted by certification bodies: a) information, b) conversion, and c) conformation. The information strategy refers to the identification and expansion the potential consumers through awareness campaigns in order to increase demand for the standards used on the certification. The conversion is related to attempts to change consumer and industry preferences raising the importance of more

sustainable practices. The last form of strategy, conformation, refers to the adaptation of certification standards considering the level of legitimacy (and market share) that it have in each region (e.g. if it is low, the certification could lower the stringency). Thus, some local characteristics, such as industry and producers profile and even the national laws, may affect the strategy of certification.

A relevant factor to explain the further development of these mechanisms of environmental governance is related to the interests of the timber industry to export the wood production. In regions with greater exporting focus, the private sector tends to adopt the certification more easily. This is justified by the importance given by these actors to access to foreign markets with high standard requirement in relation to environmental issues.

Another important factor refers to the concentration level of the forest sector (both industries and forests owners - which in many cases are managed by the industries themselves). The more vertically integrated are the production stages, the easier it becomes to manage the chain of custody, vital to the establishment of a certification system. The largest scale of bigger companies also tends to generate increasing returns, which dilutes the costs involved in the certification process. The size of companies may also affect the incentives to certification adoption, since large firms are more have their public image more exposed to environmental movements and consumers. The closer proximity to consumer markets, common in multinational companies, increases the interest of these companies to improve their reputation and seek more harmonious interaction with environmental movements. Thus, it is observed that organizational and technological characteristics of the production chain directly affect the expansion of certification systems.

When analyzing how non-industrial forests owners interact with governance mechanisms such as the FSC, it is clear that these actors are less prone than the industry to interact to the other actors and adopt such certifications. Besides the higher costs of adoption for reasons already mentioned, another possible explanation relies in the fact that the internal governance system of FSC, and possibly other similar organizations, allocate limited participation to those producers in defining criteria and other operation issues. Consequently, in regions where producers are more organized, certifications have more difficulty to expand. Thus, certifiers must make further concessions and reduce requirements for some criteria. Obviously, the scope for conformation strategies is constrained by internal groups, consumers and even

national governments that could close access into their territories if they disrespect the minimum standards required by law.

In a way to analyze such interactions of policies, McDermott el al. (2008) proposes a methodology for classification of public and private policies in the forest sector. A first categorization is related to the mandatory or voluntary character of these policies. Following, the policies are sorted between public and private, according to the main actor that establishes and enforces them. A third categorization considers how the policy requirements are made, distinguishing between substantive and procedural policies. While substantive policies have more prescriptive character, making direct requests for a particular criterion, procedural policies address criteria in a more indirect manner, with no requirements about its implementation. The fourth distinction classification refers to the focus of policies, which can range from a more specific approach (plan-based) to a more general set of rules, in a more holistic approach that covers management practices applied to various sectors (system-based). Finally, this categorization considers the form of interaction with private policies laws, called "contingency" (the private mechanisms that consider criteria already established by law would be classified as contingent).

Based on this classification, McDermott et al. (2008) compared a regulatory policy common to several countries, riparian protection, and how it is treated in private forest certifications. The focus on this specific policy proves ideal for allowing an objective comparison, since it is defined as the distance (meters) along the riverbanks that cannot be cleared. The comparison shows that in regions where the legislation provides a higher requirement (larger conservation area required), certifications present lower requirements. In the case of FSC this relation is clear, as this certification provides differentiated values for each region. Another interesting feature is that in regions where there is limited enforcement of local laws, certification tends to focus on compliance with the law.

It is also interesting to note that public regulation and private certification generally adopt similar criteria (McDERMOTH et al., 2008). This could be explained by the fact that forest governance fall heavily on the scope of state regulation and private mechanisms are subordinate to these. Thus, it is not observed any kind a division of areas of operation between public and private governance.

Rametsteiner (2002) emphasizes the important role of governments in ensuring that private standards are in accordance with the criteria laid down in national legislation. For this author, governments have, more than any other social actor, the legitimacy to define the standards of sustainable forest management. Rametsteiner remembers that considerable part of the criteria used within international certification schemes like FSC was inspired in agreements between governments established in the 1980s. Thus, various channels of interaction between public and private standards can justify the proximity of the standards used.

In some cases, private certifications are used by public regulations in order to prove compliance. Thus, companies can use a private label in order to fulfill a requirement of the legislation. In this case, the form of interaction would be even more complex, since the certifiers were still considering their legitimacy facing the policy makers. In this regard, it is interesting to note another important role of public policies for emergence and expansion of private certifications. Access to markets is one of the main tools available for governments to encourage the adoption of certification by producers.

There is debate to what extent governments should intervene in the private certification process. While some experts argue that regulatory agencies should stick to ensure that private standards are aligned with local laws, others argue that many "flaws" in the certifications' market justify a deeper intervention. The aforementioned problem of financing of certification systems could reduce the credibility. It can also be mentioned a contradictory effect of competition between private certification systems that, on the one hand, can raise efficiency, on the other may generate "noise" in the transmission of information to consumers. Ultimately, the problem of information asymmetry that led to the creation of certifications could create distortions in this competition, making complicated to consumers to distinguish among the available labels. Thus, the market for certification is subject to moral hazard problems, which could justify the intervention of State agencies to guarantee that the positive effects of competition prevail.

4. INSTITUTIONAL ANALYSIS OF FOREST GOVERNANCE AND TRENDS IN SIMILAR MARKETS

4.1 Institutional Analysis of main trends in the forest sector governance

Before discussing the main elements of governance observed in the forestry sector and possible implications for other markets with similar characteristics, follows a brief summary of the main trends in this sector:

1) Pre-existing institutions like international treaties that guarantee sovereignty on national territories and WTO rules obstructed the construction of mechanisms for international governance;
2) The construction of private governance mechanisms is based on a process of legitimation on an environmental arena that includes the participation of NGOs and other non-state actors;
3) The competition between certification systems and their relationship with environmental legislation tends to generate a process of convergence between public and private environmental standards (cross-fertilization);
4) Local features like legislation, consumer preferences and supply chain organization affect the expansion of private certification systems:
    a. Legislation:
        i. Stricter laws tend to raise the standards required by private certifications;
        ii. In countries with low enforcement of legislation, certifications tend to prioritize the achievement of these standards rather than make higher requirements;
        iii. The absence or non-compliance with environmental legislation substantially increases the indirect costs of adapting the productive practices needed to obtain certification;
    b. Consumer Preferences:
        i. The greater the willingness to pay a premium for certified products, the higher the incentives for the adoption of certifications;
        ii. The ability of consumers to influence the legislative process in order to raise the standards legally required indirectly impacts on the stringency of the certifications;
    c. Production chain organization:

i. More concentrated forestry areas (with larger properties) present higher diffusion of certifications mainly because of scale economies observed in the certification process;
ii. The degree of integration between agriculture/forest production and industry affects the costs to establish the chain of custody, having direct influence on the costs of adopting certification;
iii. The level of organization of forest owners can negatively affect the expansion of certifications if they do not consider themselves sufficiently represented in the process of internal governance;
iv. The existence of sectorial associations tend to facilitate the certification process, especially when small holders are involved;
v. Export-oriented supply chains have greater incentives to establish collective actions that favor the certification process.

From an institutional point of view, the above trends reveal the complexity of the interaction mechanisms between public and private governance. Brousseau and Raynaud (2006) point out that "private institutions" (as certification systems) present a relation of substitution and complementarity with "public/generic" institutions (as national regulations). The substitution relation occurs by reducing the need for regulatory mechanisms customized for a sector. On the other hand, these institutions are complementary in the sense that "private institutions" rely on a regulatory apparatus to be applied. As noted by Ingram and Clay (2000), public/generic institutions play a fundamental role in ensuring the functioning of the economic system and creating guarantees that make possible the credible commitment between parties of a transaction.

Still, Brousseau and Raynaud (2006) emphasized that "private institutions" have advantages in relation to more generic and more specific mechanisms, such as bilateral contracts. On one hand, these intermediary institutions are more specific than regulations, showing greater flexibility and reduced costs of adaptation; on the other, private institutions have lower transaction costs than those incurred in the development of bilateral contracts.

However, these benefits depend on a number of variables such as the level of heterogeneity among the actors involved in the implementation of a private institutions and the specificity of the assets involved in the transaction under consideration.

The difficulty of establishing a certification system under a heterogeneous base of members is clear on FSC experience. The consensus building has always represented one of the main challenges for FSC, although this characteristic gives legitimacy for this system with consumers and policy makers. However, when compared to other more homogeneous certification systems, there is major delay and a cost to adaptation of rules and enforcement mechanisms.

However, more relevant than the relative advantage of private mechanisms on public regulation, as pointed out by Brousseau and Raynaud (2006), is the complementarity between these two classes of mechanisms. Certification systems that rely on standards established by public regulation presented reduced measurement cost, getting more efficient monitoring and information transmission processes. Moreover, the costs for adapting the production practices, incurred by producers who sought these certifications, tend to be lower, implying greater demand for their private use.

Particularly in a context of competition between standards, where producers have alternative certifications available, systems that use current regulation as a benchmark seems more attractive. Once certification systems are subject to network externalities[1], this trend may ultimately result in the dominance of those who are drawn in a complementary way to public standards. Furthermore, the emergence of institutions - in this case, the trajectory of environmental governance - is subject to a strong component of path dependence, here in the form of public regulation guiding the development of private mechanisms (BROUSSEAU et al., 2011; GREIF, 2006).

Also relevant to the process of emergence and expansion of certification systems are the costs to establish a chain of custody. The level of vertical integration between the agricultural and industrial tiers affects the costs of establishing a monitoring framework needed for environmental certification. Thus, in regions where forest industry was more integrated with forest production, certifications were more easily applied. Likewise, timber companies generally have larger scale and resources to carry out the certification process, which reinforces this trend. Certification becomes even more costly in supply chains formed by small holders.

[1]The term network externality refers to the highest value that can be obtained in using a standard already adopted by a wide network of users. An example would be the use of Microsoft Word software, which due to its high degree of adoption becomes more attractive than similar tools, even if they have better technical resources.

Likewise, the construction of legitimacy was also decisive in defining the success of each certification. Systems such as FSC, formed mostly by non-state actors, must "compensate" the absence of state legitimacy through political strategies performed by NGOs and other civil society organizations. As stressed by Eden (2009), the construction of legitimacy can be considered one of the main activities performed by NGOs in the formation of the FSC. On the other hand, systems such as PEFC, with large participation of governmental actors, relied on this state legitimacy, which significantly reduced the costs of implementing the system.

As a result, in a context of competition between certification systems, there are three basic elements that define its emergence and trajectory, all with characteristics of path dependence in relation to state of the art which they were originated: public regulation, competitive and organizational structure of the industry, and pre-existing legitimating mechanisms.

This process of competition for market share and quest for legitimacy of certifications implies the convergence of standards required in public regulation and private certifications. Since producers mostly seek certification as a way to access markets, the "value" of labels rises with the network of users who accept them as proof of sustainability. Since all certifications seek to raise the value of their labels and expand its market penetration, there are incentives for them to reach an "intermediate" requirement, satisfying the largest possible number of consumers, without unduly raising the costs of obtaining this certification for producers. When dealing with these restrictions on the side of consumers (minimum standards) and the producer (maximum costs), certification systems adopt strategies of "conformation" and reach a "midpoint".

4.2 Trends on public-private governance in similar sectors: the biofuels case

The trends observed in the forestry sector have many points in common with other markets in which sustainability attributes are not directly measurable by consumers (credence goods), requiring monitoring frameworks to reduce these information asymmetries. Among these similarities, can be mentioned the environmental arena and the actors participating in the political process of building the legitimacy of private governance mechanisms. Thus, actors involved in the development of certifications for a particular sector can act in other segments, due to technical and political resources accumulated in their previous experience. Several NGOs, such as WWF, Greenpeace and Friends of the Earth, who directly participated

in forest certification, also participates in other sectors, where environmental issues are relevant.

This process can be observed on the emerging biofuels market, in which many sustainability criteria considered relevant resemble those in the forestry and other agricultural sectors. According to a survey conducted by a group of experts at the request of the Dutch government, the Cramer Commission (2006), most of the possible harm that could come directly from the production of biofuels, already had monitoring tools available in agricultural and forestry certifications. Issues such as land degradation, pollution and depletion of aquifer reserves, air pollution, loss of biodiversity and deforestation, greenhouse gas emissions in agricultural production and degrading working conditions in the plantations may be listed among the direct effects that, according to Cramer Commission, already had good tools for monitoring. Thus, the report of this Commission suggested that national governments accept pre-existing certifications in agriculture and forestry to prove the sustainability of biofuels entering into their territories. This strategy was adopted by Germany in 2007 and UK in 2008, establishing the so-called meta-standards. Under this system, biofuel producers could submit certifications such as FSC, to prove that their products would not have caused deforestation. Likewise, other agricultural certificates could be used to establish criteria for the sustainability of biomass cultivation.

However, it became clear that many relevant sustainability standards applicable to biofuels, particularly the so-called indirect effects such as change in land use and potential risks posed to food security, were not covered by existing certifications. Thus, the Cramer Commission report suggested that monitoring these more complex criteria should stay in charge of public agencies. This temporary solution was effective and allowed the establishment of national regulations in Germany and UK.

More recently, certifications have been developed specifically for biofuels. Among these, can mention Better Sugar Initiative (BSI-Bonsucro), covering biofuels made from sugar cane, the Roundtable of Sustainable Biofuels (RSB) and the International Sustainability and Carbon Certification (ICSS), both covering biofuels produced from different raw materials. Considering these mechanisms, in June 2001, the European Commission qualified some certifications that fulfill all the criteria required for sustainability of biofuels, according to the Renewable Energy Directive (RED, 2009). So, it was created a meta-standard specific for

biofuels, by which any of the accredited certifications assures producers the right to enter the European market. By adopting an integrated public and private governance system, EU may take economic advantages (lower cost of regulation) if compared to a pure public regulation.

5. FINAL REMARKS

The changes observed in environmental governance over the past decades reveal the complexity of new environmental problems that emerged in the wake of the internationalization of the chains of production and consumption. The emergence of private governance, and more specifically of certification systems, can be seen as response to the failure of traditional regulatory mechanisms to deal with such complex problems urging effective policies in order to mitigate climate changes (IPCC, 2007).

The emergence of these new governance mechanisms can be explained by characteristics of public regulation, organizational and competitive structure of the industry and legitimating mechanism prevailing on environmental arena. The process of competition between certification systems lead to the convergence of environmental standards considered on public regulation and private certifications, reflect the most accepted criteria for consumers, producers and policy makers.

An important normative implication of this result is that the effectiveness of environmental governance to ensure greater sustainability should consider the costs of implementing these standards, which are directly affected by public regulation in force. Since regulation is under the control of policy makers, they should be designed keeping in mind not only their direct results, but also its implications on the development of private certification schemes.

The forest case reflects this process of transformation of environmental governance, where public regulation and non-state actors, especially NGOs, play an important role in the creation of a transnational regulatory space under the aegis of private mechanisms, such as certification. The construction of legitimacy that allowed the emergence and expansion of these certification proves conditioned both by the accumulation of political resources and technical knowledge acquired through the development of efficient tools for measurement of relevant environmental dimensions.

Not coincidentally, monitoring instruments used in forest certification are the base of construction of governance in sectors with similar characteristics, such as biofuels. There is solid evidence that the forest sector experience has inspired the design of environmental governance in the bioenergy market, through the development of new instruments, such as the accreditation of certifications by national legislation (meta-standards). These and other innovations in governance may allow better monitoring of sustainability in productive activities, without increasing the regulatory costs that would be incurred by traditional means.

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