Received: 25 June 2021 | Accepted: 1 March 2022

DOI: 10.1002/aepp.13263

FEATURED ARTICLE

Seeing the trees for the forest: Adoption dynamics of the Forest Stewardship Council

Charline Depoorter | **Axel Marx**

Leuven Centre for Global Governance Studies, University of Leuven, Leuven, Belgium

Correspondence
Charline Depoorter, Leuven Centre for Global Governance Studies, KU Leuven, Deberiotstraat 34, 3000 Leuven, Belgium.
Email: charline.depoorter@kuleuven.be

Funding information
This research was funded by the VSS4F/WOOD project of the University of Leuven, and by the GLOBE Project funded by the European Union's Horizon 2020 research and innovation programme (grant agreement no. 822654).

Editor in charge: Stefano Boccaletti

Abstract

The integration of voluntary sustainability standards (VSS) into public policy (i.e., their institutionalization) is generally considered a driver for their adoption. However, although the Forest Stewardship Council (FSC), a leading VSS in forest governance, has been increasingly institutionalized, its adoption has been stagnating recently. To understand what drives this stagnation, we analyze the adoption of FSC certification globally and at the country level over a 20-year period. We show that the global stagnation in FSC adoption hides distinct adoption dynamics at country level. We highlight three types of country-level adoption dynamics: stagnation, growth, and decline. Based on selected descriptive country case studies, we explore factors driving these dynamics, with a focus on the role of governments and competition with other VSS.

KEYWORDS

adoption dynamics, forest certification, FSC, private governance, voluntary sustainability standards

JEL CLASSIFICATION

F18, Q56, Q23

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Voluntary sustainability standards (VSS) have flourished over the past 30 years, both in number and in the extent of recognition by various actors, including states, which have increasingly integrated VSS into public policy (i.e., VSS institutionalization) (Lambin et al., 2014; Marques & Eberlein, 2020). VSS are private forms of transnational governance that use market-based mechanisms to make global value chains — from producers to consumers — more sustainable (Cashore, 2002; UNFSS, 2013). VSS perform three functions: they set standards, ensure conformity with these standards, and issue certificates for compliance (Cashore et al., 2007; Gulbrandsen, 2004; Pattberg, 2005).

VSS are increasingly recognized as transnational governance tools by governments. Governments endorse VSS, support producers in complying with VSS requirements, integrate VSS into public procurement policies, use VSS for export promotion purposes or as tools for regulating market access, and adopt VSS in state-led production operations. This increasing institutionalization of VSS is assumed to boost their adoption by economic actors (UNFSS, 2020), and we expect this to be the case for the Forest Stewardship Council (FSC), the first and most prominent VSS established for the sustainable management of forests worldwide.

However, we observe that the rate of adoption of FSC certification – that is, the area in hectares (ha) of forests certified by the FSC – has been stagnating in recent years (2013–2019) at the global level. This contrasts with its earlier sustained rate of growth and creates an interesting research puzzle. On the one hand, VSS such as the FSC are increasingly used and integrated with public policy, which potentially scales up their adoption. On the other hand, we observe a stagnation in adoption. This conundrum suggests that adoption dynamics are not linear and that global trends hide diverse underlying dynamics which get "lost in aggregation." This paper aims to "see the trees for the forest" by unraveling these underlying dynamics of adoption and exploring possible explanations. This helps us understand the potential and limits of forest certification.

We analyze the adoption dynamics of FSC certification (i.e., the evolution of certified forest area) at the global level, at the level of countries grouped by income level, and at the country level over a 20-year period (2000–2019) based on a newly created dataset. More particularly, we focus on the 2013–2019 period in order to understand possible explanations for the recent stagnation in FSC adoption based on selected descriptive country case studies. The paper finds that the stagnation observed at the global level hides distinct adoption dynamics at country level, including stagnation, growth, as well as decline in FSC adoption. We explore explanations for these dynamics based on selected descriptive country case studies and show that adoption dynamics are not only driven by market demand for certified products, but also by the absence or presence of support from governments and by competition with other certification schemes.

This paper is organized as follows. First, the next section further develops the idea of institutionalization of VSS and applies it to the FSC. Second, we present our case study on the FSC and the methodology used. Third, we present trends in FSC adoption at the global and countries' income group level. Fourth, we focus on country-level adoption dynamics and explore explanations based on selected country case studies. The conclusion discusses the main factors influencing FSC adoption dynamics.

VSS INSTITUTIONALIZATION AND ADOPTION

The FSC is one of the leading VSS globally. Although the effectiveness of the FSC and of VSS in general on a range of sustainability parameters is still widely debated (Oya et al., 2018), there is

evidence of the positive impact of FSC certification on sustainable development according to the Evidensia and Conservation Effectiveness databases (Conservation Effectiveness, n.d.; Evidensia, n.d.). As a result, public policies increasingly engage with the FSC. The institutionalization of VSS has been more broadly captured in VSS research on public-private interactions. Lambin et al. (2014) characterize public-private interactions as being either complementary, substitutive, or antagonistic. "Complementary" involves states offering an enabling regulatory environment for VSS operations, and VSS reinforcing public regulations or filling policy gaps; "substitutive" refers to governments absorbing existing VSS into public policies or laws by transforming private rules into public ones; and "antagonistic" refers to public and private rules prescribing conflicting practices. Marques and Eberlein (2020) likewise distinguish different types of public-private interactions of which several foster higher adoption rates of VSS, including VSS which "substitute" public regulations, and governments "adopting and supporting" VSS by acting as clients of certification for state-led production operations, providing administrative or financial support to domestic firms to comply with VSS, politically endorsing VSS, or enacting policies that recognize VSS as proof of compliance with public requirements (see also Marx, 2018).

Some concrete examples further illustrate the institutionalization of VSS, and of the FSC in particular. An increasing number of free trade agreements refer to the relevance of VSS (UNFSS, 2020). Public procurement policies such as the European Union's Directive 2014/24/EU on public procurement (Art. 43, L 94/122) also recognize VSS as possible proof of compliance with public tenders' criteria. In addition, regulations such as the EU Timber Regulation (EUTR) (2010) or the Republic of Korea's Act on the Sustainable Use of Timbers (2017) aiming to ban imports of illegal timber explicitly recognize VSS certificates, including FSC certificates, as credible proof of compliance with requirements such as risk assessment procedures or due diligence and legality requirements. Additionally, governments have used VSS as export promotion tools. For example, in 2018, the Government of Gabon made the issuance of all forestry concession permits conditional on FSC certification by 2022 in order to promote its timber exports (FSC, 2020a). Lastly, governments have adopted VSS in state-owned operations. For example, a considerable area of state-owned forests is certified by the FSC, such as in Croatia, where the state owns 71% of domestic forests, of which 95% is under FSC certification (FAO and UNECE, 2020, 97).

Consequently, it is expected that the institutionalization of the FSC has boosted the adoption of the scheme. Adoption studies have explored both the motivations for adoption and the degree to which VSS in general, and FSC certification in particular, are taken up across countries in terms of hectares and entities certified. Motivations for forest managers to adopt VSS mainly relate to market-based mechanisms and include: increased access to high-value markets, price premiums, improved reputation, social benefits, knowledge and skills transfer, more efficient forest management practices, greater consumer demand, improved competitiveness, willingness to contribute to sustainability, and increased capacity to comply with public regulations (Galati et al., 2017; Marx et al., 2015; Schepers, 2010). In particular, studies highlight the prevalence of economic motives and market-based mechanisms for VSS adoption and retention (Galati et al., 2017).

In terms of the degree of adoption, the literature shows that VSS adoption varies across regions. In particular, about 200 million ha of forests across 80 countries from all regions of the world are certified as being managed in conformity with FSC standards, yet most of them are boreal forests in northern countries, which creates a North–South divide (Marx & Wouters, 2015; Savilaakso et al., 2017; Tayleur et al., 2018). Marx and Cuypers (2010) link forest

certification to development level and highlight the "stuck at the bottom problem": forest managers in countries at lower levels of development are less likely to engage in certification than those in more developed countries due to a lack of financial and technical capacity to comply with standards. Moreover, the density of FSC certification (i.e., percentage of certified forest in total domestic forest cover) varies greatly across countries. In particular, forest certification is associated with the primary function of forests and is concentrated in forests allocated for production (mainly of timber), which also highlights the contribution of export orientation to certification adoption (Auld et al., 2008).

However, studies on the adoption of FSC certification have mostly taken a static approach and have overall overlooked the dynamics of its adoption. Some case studies have explored the impact of specific social, economic and/or political developments, such as the entry into force of new forestry regulations, on the scheme's adoption. Wyatt and Teitelbaum (2020) focus on Quebec's Sustainable Forest Development Act (2010), which transferred forest management from private entities to the Ministry of Forests, Fauna, and Parks, which committed to engaging with the FSC. The Act's entry into force was expected to foster the adoption of FSC certification, but this was hampered by conflicts related to the involvement of indigenous communities. Espinoza and Dockry (2014) focus on the FSC in Bolivia and observe a shift from growing adoption of the scheme between 1996 and 2005 to a decline from 2006 onwards. They ascribe this shift to the withdrawal of support for certification by the Bolivian government and international actors, and to the drop in demand for certified products following the 2008 global financial crisis (see also Ebeling & Yasué, 2009). Another study by Ehrenberg-Azcárate and Peña-Claros (2020) focuses on FSC adoption in tropical regions and highlights a stagnation caused by economic pressures. Beyond these case studies, the literature has generally assumed that FSC coverage is increasing globally, has not systematically assessed different dynamics that can unfold at country level, and has focused on market mechanisms to explain adoption. This paper aims to fill the gap in understanding the dynamics of adoption of the FSC at the country level and to make sense of the recent stagnation in the scheme's coverage despite its increasing institutionalization.

CASE SELECTION AND METHODOLOGY

Case selection. This paper focuses on the FSC as a leading VSS in the forestry sector which is often considered to be one of the most advanced examples of VSS. The FSC was founded in 1993 by several environmental non-governmental organizations (NGOs), along with profit-making firms, as a response to rising public concerns about deforestation and repeated failures of intergovernmental efforts to regulate the management of global forests (Cashore et al., 2007; Gulbrandsen, 2004; Pattberg, 2005). Initially dedicated to tackling environmental issues linked to forest management, the scheme has gradually adopted a sustainability approach by including social objectives as well. The FSC issues two types of certificates. On the one hand, forest management certificates (FSC-FM) attest that a forest area is sustainably and responsibly managed in line with FSC standards. FSC-FM certificates cover more than 200 million ha of forests across 80 countries, representing about 5% of the world's forests. On the other hand, the chain of custody certificates (FSC-CoC) traces the path of products emanating from certified forests throughout their supply chain, and verifies that FSC-certified material is identified or kept separate from non-certified material. In this paper, we look into the adoption dynamics of the FSC's forest management certification (FSC-FM) over a 20-year period (2000–2019).

Data sources. First, quantitative data were gathered on the area certified by the FSC for each country for the period 2000–2019, and on the number of FSC-FM certificates issued during that period. Data for the period prior to 2012 were obtained from the "Wayback Machine", a website that can "replay" specifically requested URLs and the contents of ISO-standard Web ARChive (WARC) file containers. Two websites were used: www.fscoax.org (period 2000–2007) and www.fsc.org (period 2008–2012). The data retrieved took the form of PDFs, graphs, maps and PowerPoint documents. The second source of data for the pre-2012 period was an Excel file received directly from the FSC (FSC, 2020b). For post-2012 data, "Facts and Figures" reports were retrieved from the FSC's website (www.fsc.org). As the FSC reports data on a monthly basis, two sets of data per year were selected (June and December reports). A new database was constructed for the 2000–2019 period, and time series were created to study the evolution of the adoption of FSC certification. Quantitative data on total forest area per country were also retrieved from the Food and Agriculture Organization of the United Nations (FAO) to calculate certification density (FAO, 2021). Since competition plays a part in understanding FSC adoption dynamics, we also collected data on the coverage of the PEFC, the main competitor of the FSC, in terms of hectares of forests certified annually between 2005 and 2019 (no data available prior to 2005) from the PEFC Annual Reviews (PEFC, 2020b) as well as on double certification. Second, different data sources were used to interpret the observed country-level dynamics. For each type of adoption dynamics, specific country cases were selected and further explored to identify possible explanatory factors based on different sources including primary documents and reports, secondary literature, and publicly available audit reports. While the identified explanations hold for the selected countries, we hypothesize that they hold true for others as well, though we stress that further in-depth research is needed.

GLOBAL ADOPTION DYNAMICS OF FSC CERTIFICATION

Figure 1 represents the adoption dynamics of the FSC at the global level and at countries' income groups level in the 2000–2019 period. Figure 1 first shows that the adoption of the FSC at the global level has been stagnating since 2013 in terms of hectares of forests certified. While the scheme experienced an almost tenfold increase in its global coverage from 21 million ha in 2000 to 200 million ha in 2019, such growth mainly occurred between 2000 and 2013 and slowed down thereafter. The annual growth rate of FSC certification declined from an average of 18% during the 2000–2013 period to an average of 1.7% after 2013, with negative growth rates in 2015 and 2019. Besides, the number of countries in which FSC-FM certificates are issued grew from 37 countries in 2000 to 80 in 2019, but most of this increase took place between 2000 and 2010. It peaked at 87 countries in 2010 but has stagnated at around 80 since 2011.

Figure 1 also shows distinct adoption dynamics across countries' income groups (low income, lower-middle income, upper-middle income, high income) (World Bank, 2020) based on which two observations can be made. First, while the increase in FSC global coverage since 2000 has been mainly driven by high and upper-middle-income countries, there has been no significant increase in FSC coverage in high-income countries since 2013, whereas it has continued to grow in upper-middle-income countries. Figure 2 supports this observation: whereas in the early 2000s, high-income countries accounted for 85% of the FSC's global coverage, upper-middle-income countries have been catching up, accounting for 42% of the total area certified by the FSC globally in 2019.

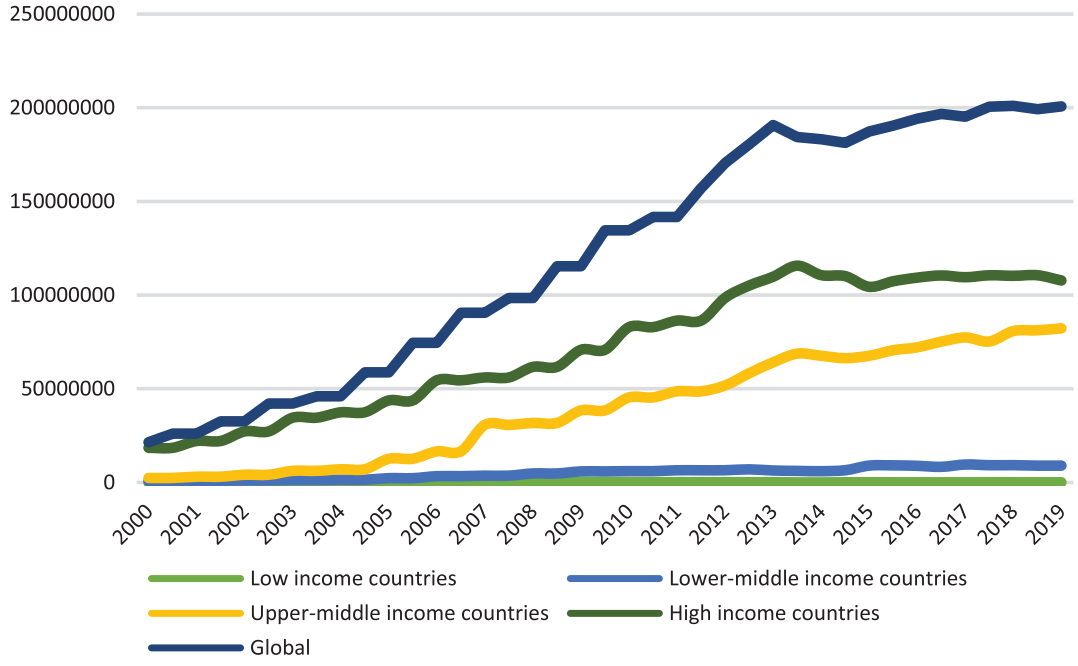


FIGURE 1 FSC coverage (ha) globally and by income groups [Color figure can be viewed at wileyonlinelibrary.com]

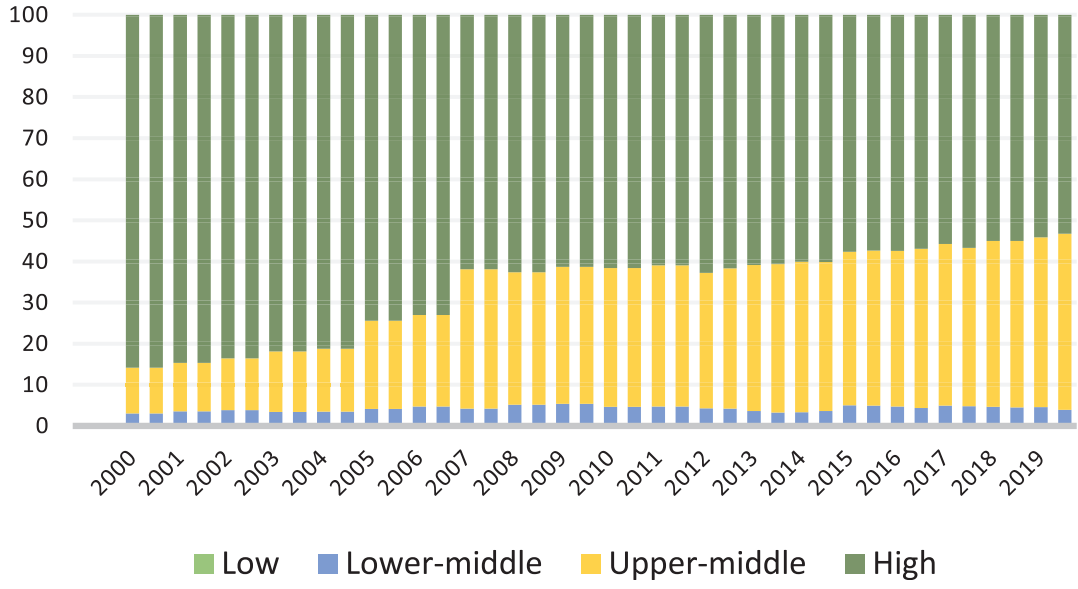


FIGURE 2 Income groups' respective shares of FSC's total coverage (%) [Color figure can be viewed at wileyonlinelibrary.com]

Second, Figure 1 shows that FSC coverage in lower-middle and low-income countries remains negligible, as the two income groups together account for barely 4% of the total FSC coverage. The literature on VSS in general and on the FSC in particular points to a "stuck at the bottom problem" (Marx & Cuypers, 2010), meaning that adoption levels in lower-income countries typically tend to be lower largely due to their lack of financial and technical capacity to comply with standards. As a result, those countries remain excluded from higher-value markets. The regulatory gap between public regulations and VSS requirements is also typically larger in developing countries than in developed countries. This makes it more difficult for forest managers in the former countries to comply with FSC requirements as they would need to make more significant changes in practices than forest managers in the latter countries (Marx & Wouters, 2015).

Further substantiating the "stuck at the bottom" problem, Figure 3 shows the density of FSC certification (i.e., the share of forest area certified by the FSC in total forest area) in each income group to account for differences in their respective forest cover, which partly determines their potential for forest certification. It shows significant differences between higher and lower-income countries. Between 2000 and 2019, the density of FSC certification in high-income countries progressed from less than 2% to more than 10%, but there was no significant increase after 2013. For upper-middle-income countries, it evolved from 0.1% to 3.8% in the same period and continued to show an upward trend. For lower-middle income countries, it grew from 0.1% to 1.6%, but in low-income countries, the proportion remains negligible, with only 0.02% of forests certified, which shows that low-income countries engage only marginally with the FSC. In fact, the FSC is present in only 3 low-income countries (Madagascar, Mozambique and Uganda).

While the stagnation in the adoption of FSC certification observed at the global level hides different dynamics across income groups, to assume that these trends hold true at the country

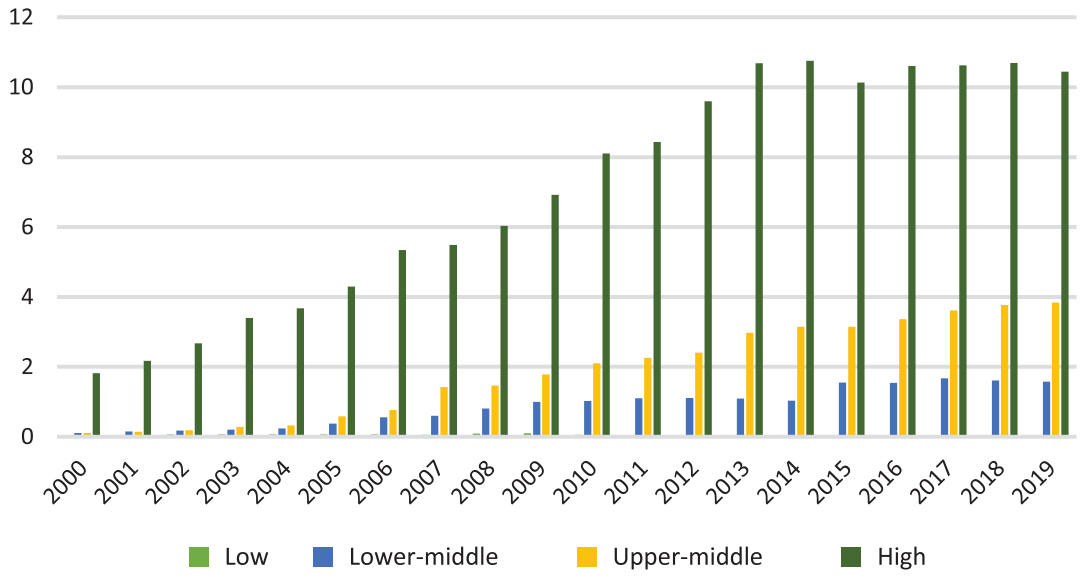


FIGURE 3 Share of FSC-certified forest over total forest area in each income group (%) [Color figure can be viewed at wileyonlinelibrary.com]

level would be an ecological fallacy. First, many countries in each income group still do not engage (or engage very little) with the FSC. Second, countries from the same income group that do engage with the FSC experience very different adoption dynamics, as adoption is influenced by various factors. We disaggregate trends at the country level and explore why the FSC remains absent from some countries, and how and why it is being taken up in others. This can help us understand the potential and challenges for future growth in FSC adoption.

COUNTRY-LEVEL ADOPTION DYNAMICS OF FSC CERTIFICATION

In this section, we analyze FSC adoption data at country level. We first focus on countries where FSC certification has not (or barely) been adopted. We then examine the dynamics of adoption in countries where the FSC is present and explore explanations for these dynamics based on selected descriptive country case studies.

Absence of FSC certification

A first element contributing to the overall stagnation in the uptake of the FSC in recent years is the lack of involvement of forest managers in forest certification in some countries. The FSC issues about 1600 FSC-FM certificates across only 80 countries out of a total of 218 (World Bank, 2020). In some countries, the absence of FSC certification can be explained by the negligible size of their forests. Nonetheless, some forest managers in countries with relatively small forest areas did apply for FSC certification to demonstrate sustainable forest management, but the FSC redirected them to the International Union for Conservation of Nature (IUCN), which is arguably more adapted for certification of small forest areas for conservation purposes (FSC, 2021). Conversely, forest managers in several countries with significant forest areas (in absolute terms or relative to country size) still do not engage with the FSC, such as in Angola, the Central African Republic, the Democratic Republic of the Congo, Ethiopia, Myanmar, Sudan, and Zambia. None of them engage with the PEFC either, which excludes competition as a determinant of non-engagement with the FSC. Additionally, UN Comtrade data on exports of wood products (HS codes 4403, 4407 and 4409) show that these countries are not significant players in international trade in wood, ranking, respectively, 90th, 71st, 55th, 114th, 50th, 210th, and 101st out of 218 countries. Involvement in such trade can influence a country's engagement in certification, especially as certification is increasingly becoming de facto mandatory on international timber markets, which also raises questions about the voluntary nature of VSS. The export value of wood products from countries with FSC-certified forests is, on average, 50 times higher than that of countries with non-certified forests (Marx & Wouters, 2015; UN Comtrade, 2021). Moreover, these countries that do not engage with the FSC but have significant forest areas are all low or lower-middle income countries, which feeds into the "stuck at the bottom" problem. While there is an association between development level and FSC adoption, it does not follow that a low-income country is automatically excluded from certification. Uganda, for example, has been engaging with the FSC since 2002, although it has experienced significant fluctuations in the share of domestic forests certified (from 6.2% in 2002 up to 8% in 2009, and down to 1.5% in 2019). Rwanda also started engaging with the FSC in 2019, and has 3.6% of its forests certified. A few lower-middle income countries have

certified a significant proportion of their respective forest areas as well as of 2019, such as Cameroon (1.7%), Eswatini (25.3%), Republic of the Congo (11%), and Ukraine (44.8%). Several factors determine the adoption of FSC certification in some developing countries (i.e., low and lower-middle income countries). First, in some countries, the FSC benefits from support from the government as a large forest owner. The Uganda Wildlife Authority (UWA) (Ministry of Tourism and Wildlife) had certified two of its national parks, covering over 190,000 ha or 6.8% of domestic forests (FSC, n.d.), although the certificates were terminated respectively in 2010 and 2013. The UWA has, however, reiterated its desire to achieve FSC certification for three of its national parks, mainly as a tool to promote ecotourism (FSC, 2018). This example shows not only that forest ownership structure combined with state support for certification can drive the adoption of FSC certification, but also that while certification schemes have traditionally relied on timber markets as incentives for adoption, there is an increasing perceived value of other ecosystem services as drivers for certification as well. Second, the presence of a significant wood export sector can drive the adoption of FSC certification, particularly in countries that export to sustainability-sensitive markets. In such cases, consumer demand for certified sustainable products influences certification adoption on the supply side. For example, the EU is the leading export market for Cameroon timber (UN Comtrade, 2021), and the uptake of FSC certification in Cameroon corresponds to the conclusion of a Voluntary Partnership Agreement (VPA) with the EU in the context of the EU Forest Law Enforcement Governance and Trade (FLEGT) regulation (see also UNFSS, 2020, p. 42). Under this regulation, countries can use FSC certificates as proof of compliance with due diligence requirements in order to export timber to the EU market. Hence, a developing country is not necessarily prevented from engaging in certification; other factors may be strong drivers of VSS adoption, such as public forest ownership and support for certification, as well as the presence of significant sustainability-sensitive timber export markets.

A second element contributing to the FSC's recent stagnation is the drop-out of some countries from the scheme. In 2019, the FSC was active in only 80 countries, down from 87 in 2010. Countries that were once certified but have dropped out of the FSC as of 2019 include Greece, Kenya, Liechtenstein, Madagascar, Morocco, the Philippines, Venezuela, and Zimbabwe, with Madagascar and Venezuela having dropped out of the scheme in the 2013–2019 stagnation period. In these countries, the presence of the FSC involved only a single or a couple of FSC-FM certificates, covering only a marginal proportion (less than 1%) of the domestic forest area (except for Lichtenstein). The few certified forest managers might have dropped out due to the cost of adapting practices, the lack of a financial incentive or price premium, a lack of government support, or domestic political instability (as in Venezuela). We exclude the possibility that they might have preferred engaging with the PEFC since it was not present in any of those countries (and has never been). An analysis of the FSC's public assessment reports seems to indicate that for Kenya, Madagascar, Morocco, and Zimbabwe, certification was not renewed due to non-resolution of major corrective action requests (CARs), possibly because of the costs involved (FSC, n.d.). This would re-confirm the "stuck at the bottom" problem. The future of FSC-FM certification might depend on the scheme's ability to support and create incentives for forest managers in developing countries to engage in and maintain certification.

A third element contributing to the FSC's stagnation involves the marginal coverage and lack of expansion of FSC-FM certification in some countries, such as Austria and France, as well as Mozambique, Nicaragua, Papua New Guinea, Peru, and Sri Lanka. In the latter group of developing countries, the marginal presence and stagnation of FSC coverage may be linked to a lack of government support, lack of access to markets or to price premiums, the forest ownership structure, the unwillingness of traditional foresters to engage in certification, or to the "stuck at the bottom"

problem. In those countries, FSC-FM certification could disappear due to drop-out cases mentioned earlier, but it might also expand if support and incentives for certification are strengthened. In contrast, in developed countries such as Austria and France, the reason why the FSC is not taking off is mainly due to the forest ownership structure. Those countries do engage in forest certification, but prefer the PEFC: in France, the PEFC certifies 30% of forests compared to 0.2% by the FSC; in Austria, it certifies 83% of forests compared to 0.01% by the FSC. This can be explained by the fact that three-quarters of these countries' forests are owned by small, private forest owners (FAO and UNECE, 2020). Typically, the PEFC, as an industry-led and more business-friendly scheme, is prevalent in countries where forest ownership is mostly private and fragmented, whereas the FSC is favored in countries where the share of publicly-owned forests is higher (Auld et al., 2008; Bernstein & Cashore, 2010; FAO and UNECE, 2020, 98; Judge-Lord et al., 2020). The future evolution of the FSC in those countries will therefore depend on its comparative attractiveness to small private forest owners.

Presence of FSC certification

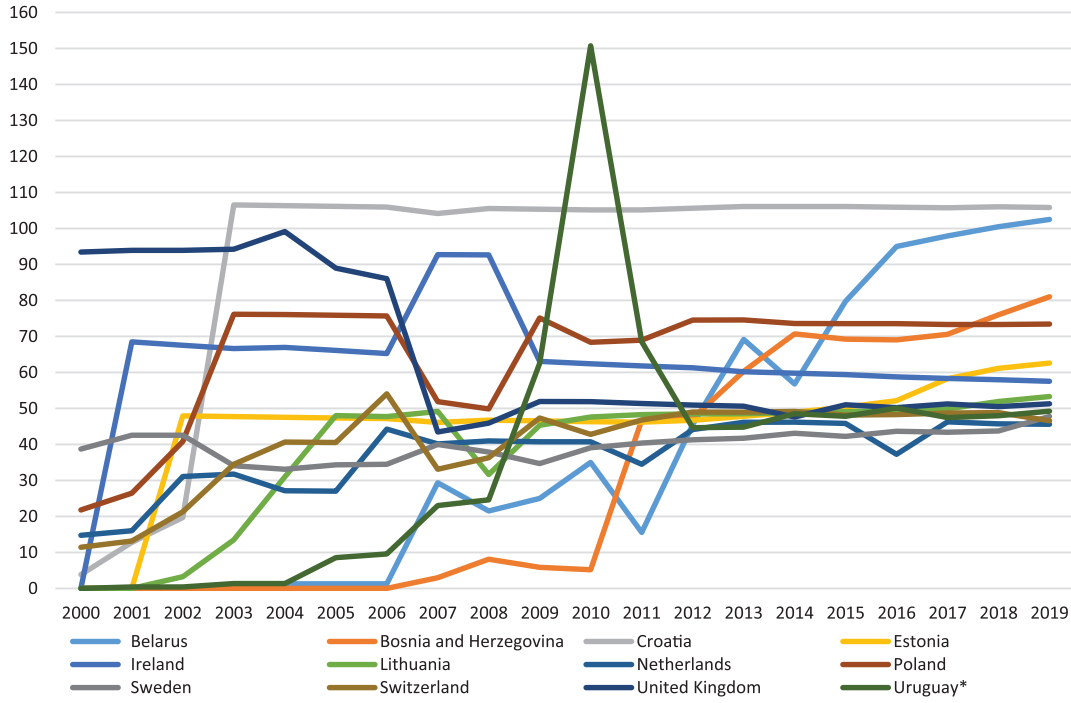
In countries where the FSC issues FSC-FM certificates, we identify four trends in adoption in the 2013–2019 period, which are reported in Table 1. However, these four trends only account for the direction in the evolution of FSC coverage, and not for its scale (i.e., the density of certification). In some countries, similar dynamics might occur, but not in the same proportions. Taking into account both the direction and scale of the evolution of FSC coverage, we highlight three distinct adoption dynamics: stagnation, growth, and decline.

Stagnation in FSC coverage

In 12 countries with either *stagnating* or *growing* trends (Table 1), the adoption of the FSC might have reached a point of saturation as a highly significant proportion of forests are already

TABLE 1 Classification of countries based on their trends in FSC adoption

FSC adoption trends (2013–2019)	Countries
Growing	Argentina, Australia, Belarus, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Chile, Colombia, Czechia, Estonia, Finland, France, Germany, Ghana, Guyana, Indonesia, Malaysia, Mexico, Namibia, Norway, Paraguay, Portugal, Romania, Russia, Slovakia, Spain, Tanzania, Turkey, Ukraine, Viet Nam
Decreasing	Austria, Bolivia, Cameroon, China, Honduras, Korea (Republic of), Latvia, Nepal, Papua New Guinea, Solomon Islands, Venezuela
Stagnating	Belize, Ecuador, Guatemala, Hungary, Canada, Costa Rica, Croatia, Denmark, Fiji, Gabon, Ireland, Japan, Lithuania, Luxembourg, Mozambique, the Netherlands, New Zealand, Nicaragua, Peru, Poland, Serbia, Slovenia, South Africa, Swaziland, Sweden, Switzerland, Uganda, United Kingdom, United States, Uruguay
Fluctuating	Cambodia, Rep. of the Congo, Dominican Republic, India, Italy, Lao People's Democratic Republic, Madagascar, Panama, Sri Lanka, Suriname, Thailand



*Uruguay: 2010 data showing 150 percent of forests FSC-certified is probably an error in FSC documents.

FIGURE 4 Stagnation in FSC coverage (percentage of domestic forest area FSC-certified). *Uruguay: 2010 data showing 150% of forests FSC-certified is probably an error in FSC documents [Color figure can be viewed at wileyonlinelibrary.com]

certified, in some cases for a long time (Figure 4). This includes Belarus, Bosnia and Herzegovina, Croatia, Estonia, Ireland, Lithuania, the Netherlands, Poland, Switzerland, Sweden, the United Kingdom, and Uruguay, which all have between 45% and 100% of their forests certified by the FSC. In those countries, further growth in FSC coverage is unlikely. This might contribute to the further stagnation of the FSC globally.

The FSC may even experience a decline in those countries if competing schemes, and the PEFC in particular, start gaining ground at the expense of the FSC (a zero-sum game). However, most of the FSC-certified forests in these countries are also PEFC-certified, that is, are under double certification (except for Croatia, Bosnia and Herzegovina, Lithuania, and the Netherlands, where the PEFC is absent or marginally present), with the PEFC having appeared when the FSC was already well established and not having replaced the latter. In those countries, FSC certification seems to have little potential for further growth but is also unlikely to decline in favor of the PEFC.

Growth in FSC coverage

In several countries with *growing* trends or with *stagnating* trends that do not involve a saturation, the adoption of the FSC has potential for further growth (Figure 5). We explore different cases below.

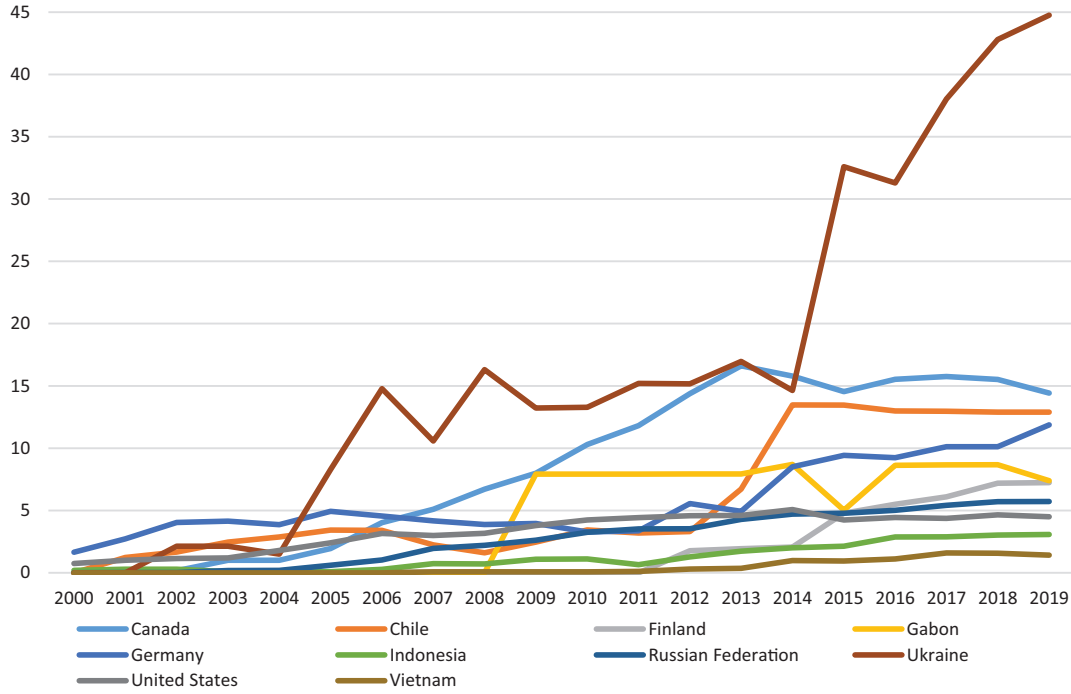


FIGURE 5 Growth in FSC coverage (percentage of domestic forest area FSC-certified) [Color figure can be viewed at wileyonlinelibrary.com]

A number of countries have experienced growth in FSC certification, which covers an increasingly significant proportion of domestic forests. In Ukraine, for example, there has been consistent growth and an even more sustained increase since 2014, with about 45% of the forests certified in 2019, with scope for further expansion of the FSC's coverage. Similarly, although on a smaller scale, in Indonesia, the scheme's coverage has increased steadily, from 204,000 ha in 2000 (0.2% of forests) to about 2,950,000 ha in 2019 (more than 3%). However, the PEFC is also increasingly active in the country, covering about 4% of forests, without double certification. While FSC certification has potential for further growth in Indonesia, it might face competition from the PEFC.

Yet, there is potential for further growth of FSC certification even in countries where the PEFC has historically been predominant. In Finland, for example, the PEFC covered almost 100% of the forests in the early 2000s when the FSC was virtually absent. However, FSC certification has been picking up since 2012, and now covers about 7% of the forests, mostly through double certification with the PEFC. Similarly, in Chile, the PEFC certified 3–4 times more forests than the FSC between 2005 and 2012. However, FSC certification expanded rapidly in 2013 and 2014, covering about 13% of Chilean forests in 2019 (70% of which involves double certification) and exceeding PEFC coverage. These trends show that the predominance of the PEFC in a country does not necessarily prevent the adoption of FSC certification. They also show that some forest managers are interested in obtaining double certification.

Furthermore, in some countries, governments have adopted measures that support certification, thereby enabling the FSC to expand its reach. In 2011, the Government of Viet Nam

adopted a decision to grant a lump sum to support (VND100,000 or approx. USD4.3 per ha) forest managers who agree to sustainable forest certification, which entered into force in 2012 (Viet Nam Law & Legal Forum, 2011). Following this, FSC coverage in Viet Nam increased from about 15,000 ha in 2011 to more than 200,000 ha in 2019 (or about 1.4% of Vietnamese forests). Similarly, in Gabon, the President announced in September 2018 that forestry permits would be withdrawn from all forestry operators that are not certified by the FSC by 2022, although the impact thereof on FSC coverage is not yet apparent.

Lastly, there is considerable scope for growth of FSC coverage in countries with significant forest areas, and more specifically in major wood exporting countries such as Canada, Germany, Russia, and the United States (Table 2). While some forest managers may seek FSC certification for non-trade-related reasons, such as biodiversity conservation, most forests currently certified by the FSC are production forests dedicated to wood trade (FSC, 2021). In Russia, FSC certification has been growing steadily since 2002, and now covers about 5.7% of the domestic forest area, with potential for further growth. Similarly, in Germany, the scheme's coverage has steadily increased since 2011 extending to 11.9% of the forests in 2019. In the United States and Canada, the two largest wood exporters globally, the FSC certifies 4.7% and 14.4% of forests respectively. Although there is potential for further growth, FSC coverage has been stagnating in both countries since 2015. Considering the share of both these countries in the total number of hectares that the FSC certifies worldwide (together accounting for 33% of FSC global coverage), their stagnation is a strong determinant of the stagnation in FSC coverage observed in high-income countries as well as at the global level (Figure 1). In Canada, the stagnation might be explained by an increase in the PEFC's coverage, possibly competing with the FSC. In the United States, both the FSC and the PEFC have seen their coverage stagnate since 2015, probably because the United States' exports of timber are not highly dependent on sustainability-sensitive markets. Rather, their main export market is China, which accounts for one-third of the total export value of the United States' wood products (HS codes 4403, 4407 and 4409) (UN Comtrade, 2021). Further in-depth research is needed to understand the reasons for the stagnation of FSC certification in both these countries. In major wood-producing countries, FSC coverage might expand if there is support from their governments and if demand for sustainable products grows in their main export markets.

TABLE 2 Largest exporting countries of wood products (HS codes 4403, 4407 and 4409) in 2016

Country	Exported value (1000 USD)
Canada	8,649,498
United States of America	5,720,813
Russian Federation	4,602,137
Sweden	2,986,767
Germany	2,453,071
New Zealand	2,438,440
Finland	1,932,952
Austria	1,504,372
Malaysia	1,406,791
Thailand	1,155,261

Note: Source: (UN Comtrade, 2021).

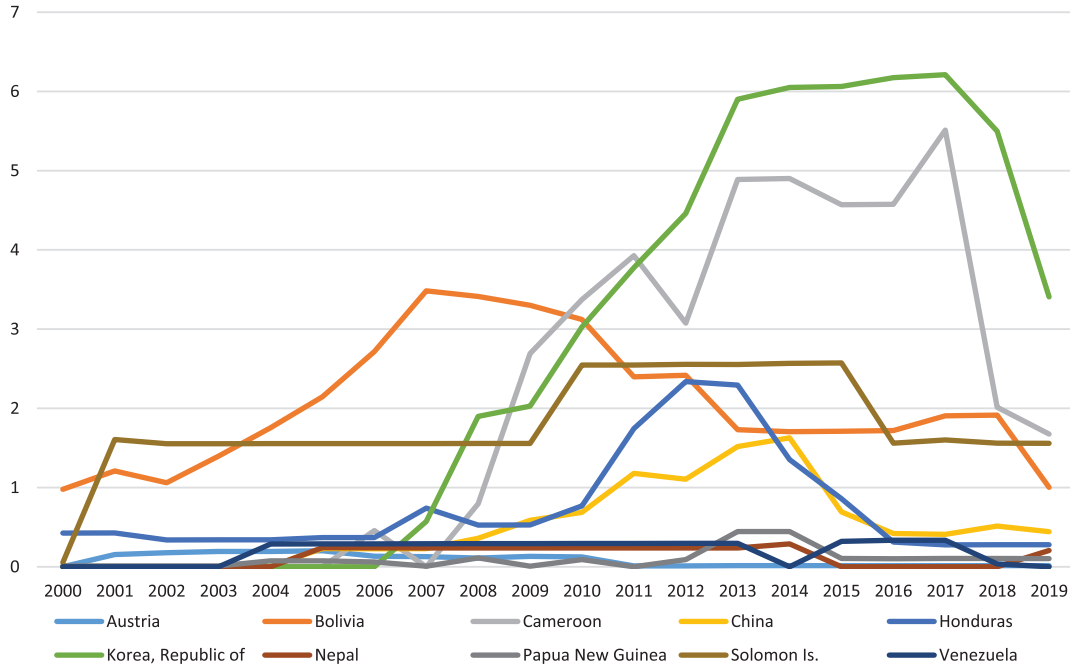


FIGURE 6 Decline in FSC coverage (percentage of domestic forest area FSC-certified). The authors left out Latvia for readability purposes [Color figure can be viewed at wileyonlinelibrary.com]

Data published by the FSC for 2020 and 2021 show that following the 2013–2019 stagnation period, the FSC's coverage has been increasing once again. Its global coverage amounted to 226 million ha in mid-2021, compared with 200 million ha in 2019. Russia's increased adoption accounted for half of this growth (13 million ha), which supports the hypothesis that FSC certification has further potential for growth in major wood-producing countries.

Decline in FSC coverage

Since 2013, FSC certification has been declining in 11 countries (Figure 6): Austria, Bolivia, Cameroon, China, Honduras, the Republic of Korea, Latvia, Papua New Guinea, Solomon Islands, and Venezuela, as well as Nepal, which eventually dropped out. We look into some of those countries' dynamics to identify potential factors undermining growth in FSC certification.

One reason for the decline in FSC coverage is competition from other VSS, most notably the PEFC. The Republic of Korea, for example, engaged with the FSC in 2006, and the scheme experienced significant growth until 2013, when it stagnated (to about 6% of domestic forest cover) before declining in 2018 and 2019, from almost 400,000 ha to barely 36,000 ha in the second half of 2019. This massive decrease in 2018 and 2019 was mainly due to 6 forest managers (out of 8 in total) dropping out of the scheme. In parallel, the PEFC entered the country in 2019, directly certifying 450,000 ha without double certification with the FSC. We observe that the certificate holders who dropped out of the FSC were mostly public agencies and chose to

certify their forests against the PEFC's standards instead (FSC, n.d.; PEFC, 2020a). The case of South Korea shows that, in some cases, the decline is induced through zero-sum competition between the FSC and the PEFC, whereby one scheme wins and the other loses. Yet, it should be noted that competition does not necessarily lead to a zero-sum outcome. In some countries, such as Finland and Chile, the FSC and the PEFC are complementary and have been evolving together through double certification, fostering a positive-sum game.

China is a second example of the FSC declining, possibly also due to competition. Between 2004 and 2014, the FSC's coverage grew steadily in China, reaching 3.4 million ha (1.6% of forest cover), before dropping to about 1 million ha (0.5%). The decline in 2015 and 2016 corresponds to a fall in the number of certificates issued in China from 70 to 63, and can be attributed to the drop-out of a few certificate holders who manage large forest areas. Meanwhile, the PEFC appeared in China in 2015 and certified about 6 million ha of forests. Large forest owners, which we can easily assume to be public actors since 59% of forests in China are state-owned (FAO, 2020), may have shifted from the FSC to the PEFC.

A third example of the FSC's declining coverage due to competition and insufficient support from the government is Austria. There, the FSC issued its first forest management certificates in 2002 as some forest managers sought to respond to increasing consumer demand for sustainable wood products. However, the FSC was perceived as interfering in Austrian forest management and the country developed its own public certification scheme that was later endorsed by the PEFC (FSC, 2020b). As a result, the FSC's coverage dropped from about 5000 ha in 2012 to a mere 500 ha from 2013 onwards.

The cases of the Republic of Korea, China, and Austria show that adoption or enlargement of certification schemes, such as those of the FSC, can be affected by competition from other schemes, but also by forest ownership structure and by interactions with governments. Reasons for shifting from the FSC to the PEFC may include lower costs of certification, less demanding requirements, or better lobbying of governments by the PEFC. With regard to this latter, VSS may be viewed as interest groups that compete in accessing and lobbying public policymakers (Renckens, 2020). In the Republic of Korea, the Act on the Sustainable Use of Timbers recognizes both the FSC and the PEFC as proof of compliance, along with due diligence and legality requirements for timber imports. Given the significant drop in FSC coverage in 2018 and 2019 and the simultaneous emergence of the PEFC, the PEFC may arguably have lobbied the Korean government to switch from the FSC to the PEFC to certify the management of public forests.

A second reason for the decline in FSC coverage in some countries involves political and economic developments unfolding both domestically and internationally, as the case of Bolivia illustrates. In 1996, the Bolivian government enacted Ley 1700 — a progressive forest law that promotes the sustainable management of forests with standards similar to those of the FSC. It also established Forestry Superintendence as an independent body to approve forest management plans. Following that, and with the support of international development agencies and NGOs (Nebel et al., 2005), the FSC was adopted and grew steadily until 2007, covering over 1.8 million ha (3.5%) of forests. Certified timber was mostly exported to Western sustainability-sensitive markets, where the demand for certified products was increasing. After 2007, however, FSC coverage declined steadily and accounted for barely 1% of the country's forests in 2019. This decline can be explained by several political and economic factors at the domestic and international levels. Politically, from 2006 onwards, there were changes in government policies relating to the management and use of forests. Evo Morales came into power in 2006 and enacted agrarian reforms that ran counter to the diffusion of the FSC (Pacheco et al., 2016). He replaced the independent Forestry Superintendence with the government-led Forest and Land

Authority, which lacked enforcement capacity. In such a weak regulatory environment, forest managers were not encouraged to upgrade their practices. Economically, at the international level, the 2008 financial crisis caused a reduction in Western demand for certified products, undermining the added value for Bolivian forest managers of being certified (Espinoza & Dockry, 2014). Simultaneously, demand for timber from less ecologically sensitive countries, in particular from China, grew significantly. This, combined with domestic economic factors such as the latent issue of illegal logging, which creates market distortion, deterred forest managers from engaging in certification. In short, the decline in the adoption of the FSC can be driven by political factors, including non-supportive policies and a weak regulatory environment, and by economic factors such as the loss of export markets, growing demand from non-sustainability-sensitive trade partners, and market distortions that weaken the incentive for forest managers to maintain certification. In addition, the adoption of the FSC in one country can deter its adoption in another country if the two countries are rivals (e.g., United States–China trade war).

A third reason for the decline in the FSC's coverage might be its increasingly stringent standards and enforcement mechanisms. Judge-Lord et al. (2020) studied the evolution in the stringency of forest certification schemes in the United States during the 2008–2016 period and found that the FSC had become more stringent in terms of prescriptiveness (i.e., presence of substantive and mandatory features such as performance thresholds) and policy settings (i.e., the substance of mandatory features). Increased stringency potentially undermines the ability and/or willingness of certified forest managers to maintain certification, yet it is essential to reach sustainability goals. From our dataset, we do not observe a decrease in FSC coverage in the United States for the 2008–2016 period despite its documented increased stringency, which might signal a commitment to a stronger sustainability pathway. Other scholars such as Cerutti et al. (2011) who studied the FSC's operations in Cameroon observed less stringent standards, leading to expectations of an increase in FSC certification. Indeed, our data show an increase in FSC coverage in Cameroon between 2006, when the FSC issued its first FSC-FM certificates, and mid-2009, the end of the case study period. Increased stringency of the FSC's standards and enforcement mechanisms is necessary to achieve sustainability goals but its impact on the scheme's adoption most likely varies across countries. Besides, forest managers in lower-income countries are likely to be more sensitive to changes in the scheme's stringency than those in higher-income countries. Further research on this hypothesis is warranted.

CONCLUSION

Considering the increasing institutionalization of the FSC, this paper investigates the recent stagnation in the adoption of the certification scheme. It finds that the adoption of the FSC is not linear and that the global stagnation hides distinct adoption dynamics across countries. In particular, we highlight three types of adoption dynamics. First, the FSC has been stagnating in some countries as a result of saturation. In other countries, we observe growth in FSC adoption, especially where governments adopt supportive measures toward certification. Lastly, FSC adoption has been declining in several countries.

Overall, these dynamics show that VSS adoption is not only driven by market dynamics (i.e., demand for certified products), as we would expect from a market-based instrument, and we identify two main additional factors which influence adoption.

First, government forces may either support or undermine the adoption of FSC certification. The cases of Austria and Bolivia clearly show that the withdrawal of public support for the FSC

significantly undermined its adoption. In Viet Nam, on the other hand, the government's financial support for FSC certification resulted in its increased adoption. Indeed, government intervention can be a driver for VSS adoption, as the state itself can be a client of certification, or it can directly support certification. In addition, governments' wider regulatory conditions in which VSS operate may constrain or facilitate VSS operations.

Second, competition can influence adoption dynamics both in a positive and negative way. Through this analysis, we show that competition from the PEFC influences the adoption dynamics of the FSC. First, competition might restrict access to possible adoption markets, as is the case in France and Austria. Second, competition might outcompete a VSS, as we identify in South Korea. Conversely, competition can lead to a positive sum game and strengthen the adoption of multiple VSS, such as in Finland and Chile. The negative effects of competition might be weakened through so-called double certification, which is emerging in many countries. However, double certification is not occurring everywhere. In Indonesia and Malaysia, both the FSC and the PEFC are active, but there is little or no double certification, possibly because of the additional costs involved, the extra administrative burden, and/or difficulties in complying with two different schemes.

To conclude, while the FSC and the PEFC together certify around 10% of the world's forests (5% and 8% respectively, with 3% jointly through double certification), one would expect that there is still significant room for increased adoption. Recent stagnation in FSC adoption, measured globally, seems to contradict this. However, the global stagnation in FSC adoption hides distinct adoption dynamics at country level, some of which present potential for further growth in the scheme's adoption. The institutionalization of the FSC – and of VSS in general – is a significant driver for growth in adoption, but other factors can undermine this dynamic, including market forces, competition, and lack of government support. This paper calls for more in-depth case studies on the dynamics of the adoption of VSS to better understand factors that support their expansion, and ultimately, their effectiveness.

ACKNOWLEDGEMENTS

The authors would like to thank Elizabeth Bennett, Eva Boonaert, Marion Karmann, Charles Roger and Anakarina Pérez Oropeza for comments on an earlier draft, as well as the anonymous reviewers from the Applied Economic Perspectives and Policy journal. A draft version of this paper was presented at the European Association of Agricultural Economics (EAAE) Seminar 175, at a seminar of the Horizon 2020 Project GLOBE, and at a United Nations Forum on Sustainability Standards (UNFSS) Academic Advisory Council meeting.

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How to cite this article: Depoorter, Charline, and Axel Marx. 2022. "Seeing the trees for the forest: Adoption dynamics of the Forest Stewardship Council." *Applied Economic Perspectives and Policy* 1–19. https://doi.org/10.1002/aepp.13263