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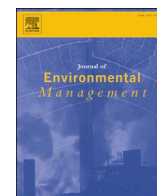
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Review

Effects of EU illegal logging policy on timber-supplying countries: A systematic review

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ABSTRACT

The EU's Forest Law Enforcement, Governance and Trade Action Plan (FLEGT) adopted in 2003 includes bilateral trade agreements known as Voluntary Partnership Agreements (VPAs) signed between the EU and timber-supplying countries. The EU has invested more than 1.5 billion euros in VPAs; however, only one of the seven concerned countries has managed to complete all the necessary requirements to expire FLEGT licences. Since there is no research that comprehensively integrates the scientific evidence regarding the effects of this policy, this study systematically reviews all empirical scientific studies on the effects of VPAs. We found that almost all relevant studies are case reports that use qualitative data and focus on only one country at a time, mainly Ghana, Cameroon, or Indonesia. The evidence suggests that while VPAs have contributed to the establishment of governance structures, tools, and procedures they have not been able to solve social problems (i.e., inequality and injustice) and have potentially harmed the economies of EU timber suppliers. Evidence on the effects of VPAs on illegal logging and trade and the environment remains limited. Thus, future research should focus on more countries; use a greater range of methods, including comparative experimental designs; explore possible intended effects on under-researched categories; and systematically investigate unintended effects on other categories within and outside the forestry sector.

1. Introduction

Forests play a critical role in supporting biodiversity and human well-being and are essential to mitigating global climate change. They are not only crucial carbon sinks but also play a fundamental role in Earth's several biogeochemical systems (Ellison et al., 2017). However, increasing demand for forest and agricultural commodities, wildfires,

and urban expansion have led to deforestation worldwide (Curtis et al., 2018). Around 420 million hectares of forests have been lost since 1990, and the annual rate of deforestation between 2015 and 2020 was 10 million hectares (FAO, 2020). Depletion of both primary and regenerated forests has negatively affected the environment, socio-economic conditions, and governance systems (Carmenta et al., 2021; Elliott, 2007; Murillo-Sandoval et al., 2021). Interest in forest governance has

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therefore grown over time, and reached its first momentum in the 1980s (Humphreys, 2006).

Among the consequences of such a momentum are the intergovernmental negotiations for the establishment of a global forest convention. However, these UN-led negotiations were declared a failure at the 1992 Earth Summit (Humphreys, 2006). Since then, several international forest-focused regimes have emerged; however, none are both global and legally binding (Humphreys, 2006; Krasner, 1982). This continued failure has been attributed to two main reasons. First, difficulty faced by states in reaching a consensus over what sustainable forest management is. Second, the global South's concern regarding the undermining of their sovereignty by a global regime (Humphreys, 2006). Consequently, international forest governance has changed in various ways. There was a shift from determining holistic goals for sustainable forestry to narrower objectives, such as promoting only legal compliance in forest management. Further, attention was diverted from establishing UN-led agreements, which required global consensus, to non-global initiatives that involve fewer nations with similar views on forests (Humphreys, 2006). One such pioneering non-global initiative is the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan adopted by the European Union in 2003 (European Commission, 2003).

The FLEGT Action Plan aims to tackle illegal logging and its related trade, and strengthen forest governance in timber-producing countries (Buchy and Hobley, 2018). The plan relies on two key policies. The EU Timber Regulation targets the demand side by establishing due diligence requirements for operators to minimise the risk of illegally sourced timber entering the EU market (Leipold et al., 2016; Sotirov et al., 2017), while Voluntary Partnership Agreements (VPAs) target the supply side. VPAs are bilateral trade agreements between the EU and a timber supplier country. Each VPA aims to ensure that timber and timber products imported into the EU comply with the timber exporter country's laws (EU FLEGT Facility, 2022). Therefore, VPAs rely on a Timber Legality Assurance System (TLAS), which operationalises the word 'legal', incorporates a timber-tracking system, and provides a licensing system to prevent illegal timber from entering the supply chain (Hoare, 2015; Maryudi, 2016). By February 2021, seven timber-supplying countries were implementing VPAs: Cameroon, the Central African Republic (CF), Ghana, Indonesia, Liberia, the Republic of the Congo (RC), and Vietnam; two countries had concluded negotiations with the EU; and another six were in the process of negotiating (EU FLEGT Facility, 2022). To date, only Indonesia has been able to issue FLEGT licences (EU FLEGT Facility, 2022). Subsequently, it is only natural to question the policy's effects given that more than 1.5 billion euros of public funds have been invested in it since 2004 (European Commission, 2021).

Several scholars have examined the effects of VPAs. A strand of research has described this policy as an experimental governance architecture that addresses the nexus between trade, environment, and social problems associated with illegal logging (Overdevest and Zeitlin, 2014, 2018; Zeitlin and Overdevest, 2021). However, other studies have considered VPAs as an instrument that maintains the business' status quo and reinforces existing inequalities and injustices in forest governance (Hansen et al., 2018; Rutt et al., 2018). Thus, there is abundant literature on VPAs' effects on forest governance, land tenure, and livelihoods (Acheampong and Maryudi, 2020; Adams et al., 2020; Astana et al., 2020; McDermott, 2014; Overdevest and Zeitlin, 2014; Setyowati and McDermott, 2017; Susilawati et al., 2019; Tegegne et al., 2017; Wiersum and Elands, 2013). Moreover, the EU recently made efforts to assess the FLEGT Action Plan's progress and achievements, including VPAs (Terea, 2016). Meanwhile, the Center for International Forestry Research has examined VPAs' impacts in the following four categories among Cameroon, Ghana, and Indonesia: sustainable forest management and forest conditions, relations and development of the formal and informal forest sector, jobs and employment, and law enforcement and governance (Cerutti et al., 2020, 2021). However, there is no comprehensive review of all existing empirical scientific studies on the effects of VPAs, which has hampered the formulation of its overall effects.

Therefore, the present study aims to address this gap by systematically reviewing peer-reviewed empirical scientific evidence regarding the effects of VPAs on timber-producing countries. This study addresses the following questions.

- I. What are the characteristics of peer-reviewed empirical studies on the effects of FLEGT VPAs?
- II. What kind of FLEGT VPA processes' effects have been reported by the peer-reviewed empirical studies?
- III. What are open questions and future research needs on the effects of FLEGT VPAs?

2. Methods

Our methods are based on the 'Guidelines for Systematic Review in Conservation and Environmental Management' published by Pullin and Stewart (2006) and comprise the following five steps.

First, we searched for peer-reviewed articles in two academic databases, ISI Web of Science and Scopus, using the search string TITLE-ABS-KEY ('Timber legality' OR 'FLEGT*' OR 'Forest Law Enforcement, Governance and Trade Action Plan*' OR 'Volunteer Partnership Agreement*' OR 'VPA Forest*'). We selected these search terms to obtain the widest possible population of articles on the effects of FLEGT VPAs regardless of its mention in the title, abstract, or keywords. The study included all the articles published or accepted for publication up to July 31, 2020. After eliminating duplicates, we identified 170 unique records.

Second, we used a filtering process to select studies. The process consisted of reviewing the entire text of select records that 1) had been published in peer-reviewed journals; 2) whose findings were based on an explicitly described empirical methodology; and 3) whose results, discussions, and/or conclusions sections reported the effects of VPAs. We conceptualised the effects of VPAs as the set of intended and unintended outcomes and impacts to which the outputs of the VPA processes have contributed (see Annex 1 for details of the theoretical basis of this conceptualisation). We selected 33 studies and discarded 137 records that came from grey literature, did not state an explicit empirical methodology, or did not report on realised effects of VPAs (e.g. reported potential effects). One of the co-authors validated the filtering processes to increase objectivity. The first filter was verified by reviewing the titles and abstracts of all discarded records, and the second by reviewing the entire text of a random sample comprising 10% of the collected articles and conducting a Kappa analysis of the subsequent results.

Third, we performed data extraction by retrieving general information on each study: author(s), title, year of publication, and scientific journal of publication. Then, we used MAXQDA Astana et al., 2020 to code and retrieve paragraphs that included information on (1) their geographic focus, (2) empirical methods, and (3) the effects of VPAs.

Fourth, we categorised the extracted data as follows. (1) We categorised geographical focus according to the country in which the research was focused. (2) Then, we categorised methodologies according to the type of study design and data used. Study designs were divided into seven types: case report, case-control I, case-control II, quasi-experimental, randomised control trial, systematic review, and meta-analysis (Burivalova et al., 2019). The collected data were classified into three categories: qualitative, quantitative, or a mix. (3) Subsequently, we grouped statements on the effects of VPAs into 10 effect categories (see Table 1 for a detailed description of each effect category). These categories are based on Cerutti et al. (2020, 2021) and Tegegne et al. (2014) and represent important analytical aspects of the (normative) concept of good forest governance (Rametsteiner, 2009; Young, 2011, 2014), which are also used for the broad discussion on different policies to counter illegal logging (Cashore and Stone, 2012; Humphreys et al., 2017; Iben et al., 2014; Partzsch, 2020). They constitute only the issue areas in which the VPAs are intended at having effects (European Commission, 2003). Thus, effects that did not fit into any of these

Table 1
Effect categories based on Cerutti et al. (2020, 2021) and Tegegne et al. (2014).

Effect category	Description
1. Stakeholder participation	Effects on the legal basis, establishment, and representativeness of forest sector multi-stakeholder structures.
2. Information transparency	Effects on the legal basis and establishment of tools for sharing forest sector information.
3. Accountability	Effects on the accountability of stakeholders in the wood and timber products supply chain.
4. Institutional effectiveness	Effects on the effectiveness of governmental and non-governmental forest sector organisations to fulfil mandates related to the VPA process.
5. Law enforcement and compliance	Effects on forest law enforcement and state and non-state actors' compliance with applicable regulatory requirements, with a particular emphasis on those caused by forest sector oversight mechanisms (e.g. verification of compliance, independent audit, and independent observation).
6. Rights of access and tenure rights to forest and forest land	Effects on procedures to recognise access and tenure rights to forest and forest land.
7. International market development	Effects on international timber trade and timber companies participating in the international market.
8. Domestic market development	Effects on domestic timber trade and stakeholders involved in the local market (i.e. smallholders, and small and medium timber producer companies).
9. Livelihoods and poverty	Effects on the livelihoods of local populations, with a special emphasis on the effectiveness of VPAs in terms of social safeguards (i.e. SRAs and subsidies).
10. Ecological condition of forests	Effects on the ecological condition of forests (e.g. carbon storage, nutrient cycling, biodiversity, etc.).

categories were considered as *unintended* and grouped into an 11th category called 'others'. Importantly, some authors conducted a calibration exercise to increase the objectivity of the data extraction and categorisation process: the lead author sampled 10% of the articles, including studies from different disciplines with distinctive characteristics, and two co-authors analysed the sample using the same analytical framework. Then, the authors compared their results and reached an agreement on the data that should be extracted from each article and their subsequent categorisation.

Fifth, we synthesised the evidence on VPAs' effects according to the number of articles on the subject and the degree of agreement between them (see Table 2 for details on the four effect classes). We considered that articles were in agreement if they reported similar effects (see Table 3).

3. Results

3.1. Characteristics of articles on the effects of FLEGT VPAs

Of the reviewed articles, 73% (n = 24) were published from 2017 onwards and 27% (n = 9) between 2013 and 2016. This indicated a rising interest in assessing the effects of VPAs among scholars. Further,

Table 2
Effect classes.

Classes	Number of studies	Degree of agreement
CONSENSUAL among reviewed studies	10 or more	More than 75%
TREND among reviewed studies	3 to 9	More than 75%
CONTROVERSIAL among reviewed studies	10 or more	Less than 75%
KNOWLEDGE GAP among reviewed studies	All other possibilities	

23 studies (70%) focused on one country at a time, five articles on two countries, and three articles on four or more countries (Adams et al., 2020; Cerutti et al., 2021; Overdevest and Zeitlin, 2014; Satyal, 2018). The literature on the effects of VPAs is almost entirely from the seven countries that are in the implementation phase of the policy. Among these, three are dominant: Indonesia (60%, 20), Ghana (40%, 13), and Cameroon (27%, 9). The only country for which the effects of VPA have been assessed, despite it being in the negotiation phase, is Laos (two articles). See Annex 2 for more details on the geographical focus of the reviewed articles.

As for methodology, all except one study employed case studies. The exception is Brusselaers and Buysse's (2018) study which used a Study-I design (case-control) to compare the volume of timber exported from Cameroon to the EU—a variable which is expected to be directly affected by the VPA process—with the volume exported from a counterfactual (country) to the EU. In addition, 28 studies (85%) used exclusively qualitative data, one used quantitative data, and four used both types (see Annex 3 for details on the methodological characteristics of the reviewed studies).

3.2. Effects of FLEGT VPAs

3.2.1. Stakeholder participation

Some studies reported the effects of VPAs on the establishment of multi-stakeholder structures and their effect on stakeholder participation. For instance, Adams et al. (2020, p. 6) indicated that 'the VPA process has contributed significantly to the development of multi stakeholder structure and improved the participation of state and non-state forest stakeholders' in Cameroon, CAR, Ghana, Liberia, and RC. Mbatu (2020, p. 7) found that 'the European Community Forest Platform ... initiated and led a multi-stakeholder FLEGT participation process that brought together ... [various] stakeholders to enhance their participation in the [VPA] process' in Cameroon. Other articles broadly stated that VPAs have contributed to the participatory nature of forest policy dialogue. Neupane et al. (2019, p. 464) noted that the VPA process has contributed to 'the engagement of stakeholders from different sectors, including civil society and private sectors and independent observers in planning, policy dialogue and implementation' in Indonesia. Hansen et al. (2018, p. 79) observed that 'the VPA has established important fora for discussion and dialogue like never before in the forestry sector in Ghana'. Similarly, Overdevest and Zeitlin (2018, p. 81) found that 'the VPA process has led to substantially increased participation by civil society and other stakeholders in forest governance' in Ghana and Indonesia, while Cerutti et al. (2021, p. 2) stated that the VPAs have led to 'participatory policymaking' in Cameroon, Ghana, and Indonesia. In summary, VPAs have contributed to the creation of multi-stakeholder structures and increased the possibilities for stakeholder participation in the forest policy dialogue.

Other studies delved deeper into the participatory process of VPAs and presented a more mixed opinion about the effects of these new participatory structures on de facto participation of different stakeholder groups in forest policy. For instance, a recent study reported that 'local communities living both on and off forestlands receive more consideration in decision-making [thanks to the VPAs]' in Cameroon, Ghana, and Indonesia (Cerutti et al., 2021, p. 2). On the other hand, some studies observed the exclusion of small-scale producers, small firms, and artisans in Indonesia (Maryudi et al., 2020), unclear selection of community forest representatives in Cameroon (Fapa Nanfack et al., 2020), and lack of decision-making power among the local communities in Ghana (Adams et al., 2021). Moreover, studies also indicated that VPAs have benefited Civil Society Organisations' participation by enhancing their capacity to participate in forest governance (Overdevest and Zeitlin, 2018) and opening the government's decision-making process to them in Indonesia (Maryudi et al., 2020), Ghana (Adams et al., 2021), Cameroon, Liberia, and the RC (Satyal, 2018). However, studies conducted at an early stage of the VPA process in Laos indicated

Table 3

Summary table of the effects of FLEGT VPAs.

Effect category	Geographical (country) focus		Nr art.	CM	CF	RC	GH	LR	ID	VN
	Class	FLEGT VPA effects								
Stakeholder participation	CONS	They contributed to the establishment of processes for stakeholder participation but have had mixed effects on the participation of different stakeholder groups, wherein some have been favoured (i.e. Civil Society Organisations), while other have faced disadvantages or have been excluded (i.e. small timber firms, artisans, and local communities).	15	X	X	X	X	X	X	
Information transparency	TREND	They contributed to the development of information dissemination mechanisms and increased the amount of information available, but this information is not accessible and comprehensible for all stakeholders (i.e. local communities and small operators).	6	X	X	X	X	X	X	
Accountability	TREND	They helped the establishment of accounting processes/mechanisms but did not succeed in holding all actors in the supply chain accountable for their actions. Some actors adopted strategies to circumvent legality requirements.	6	X	X	X	X	X	X	
Institutional effectiveness	CONS	They contributed to the increase in the institutional capacity of governmental forest sector organisations but have had a mixed impact on the programmes and quality of services provided by them.	33 ^a	X	X	X	X	X	X	X
	K. GAP	Effects on the institutional effectiveness of non-governmental forest sector organisations.	2							
Law enforcement and compliance	TREND	They helped to enhance forest law enforcement by establishing/supporting various mechanisms. However, complete compliance by some actors (e.g. in the pulp and paper value chain, tree growers, market brokers, sawmills, and wood panel industries) has not been achieved.	7	X			X		X	
Rights of access and forest tenure	K. GAP	Effects on illegal logging	3							
	TREND	They helped to a limited extent improve and/or clarify forest access and tenure for disadvantaged local actors (e.g., indigenous communities), and have instead favoured international actors (e.g., exporting companies).	5				X		X	
International market development	TREND	They contributed to the increase in the operating costs of timber-exporting companies due to additional efforts in terms of legality; and the possible decrease in the volume of timber exported by them to the EU. This facilitated a substitution of this volume by EU importers and its diversion by partner countries' exporters to other markets (i.e. emerging economies, neighbouring countries, and domestic market).	7	X			X		X	
Domestic market development	K. GAP	Effects on illegal timber placed on the international market.	1							
	TREND	They hindered the access of some local actors (i.e. non-exporting timber companies and smallholders) to the domestic market through legality-related efforts (i.e. valid business registration, and operation licence)	5						X	
Livelihoods and poverty	K. GAP	Effect on illegal timber placed on the domestic market.	1							
	CONS	They increased concerns regarding the livelihoods of local populations. However, the safeguards have not been sufficient to prevent the negative effects of the legality and transparency requirements of VPAs on the livelihoods of these populations.	14	X			X		X	
Eco. Condition	K. GAP	Effects on the ecological condition of forests.	2							
Others	K. GAP	The unintended effects of VPAs.	2							

^a This category of effects includes studies from all the categories and therefore, the total number of articles is the maximum possible number.

that, although international and local Civil Society Organisations can participate in the VPA process, their participation is strongly constrained by the unequal power distribution among actors in the (forest) policy network (Mustalahti et al., 2017; Ramcilovic-Suominen et al., 2019). Hence, several scholars have agreed that the VPA process is far from achieving its intended effects on stakeholder participation. For instance, Satyal (2018, p. 92) stated that 'there remains a gap between the utopian objective of participation and its practical implementation' in Cameroon, Ghana, Liberia, and RC. Adams et al. (2020, p. 9) indicated that, for Cameroon, CAR, Ghana, Liberia, and RC, 'stakeholder participation is ... still lacking often due to a lack of political will' and added that 'the existing [VPA] participation mechanisms not only tend to be technocratic, but also remain high-level national affairs without the direct involvement of downward constituents'. Wodschow et al. (2016, p. 8) found that 'the VPA negotiation process was far from meeting the ideals of the incremental [participation] model ... [and instead it] resembled the rationalist model [which only consider participation in the early stages of decision-making]' in Cameroon. Similarly, Carodenuto (2019, p. 276) noted 'the effective participation [in the VPA process] of civil society at the local level remains hindered by a number of complex contextual realities' in Cameroon. In summary, VPAs have had mixed effects on enabling participation of different stakeholder groups—at different levels and in different contexts—therefore, they have not succeeded in involving all stakeholders or their contributions in the forest policy decision-making processes.

3.2.2. Information transparency

Some studies reported the effects of VPAs on information transparency at different levels. For instance, Adams et al. (2021, p. 8) noted that 'VPA information disclosure mechanisms contain comprehensive records of legally recognised harvesting rights and related permits' and that 'legality verification [boosted by the VPA process] provides a ... transparent system' in Ghana. Similarly, Neupane et al. (2019, p. 464) observed that, as a part of the VPA process, Indonesia has clearly defined the roles and responsibilities of stakeholders in the timber forest sector, which facilitates transparency. Although both studies concluded that VPAs have contributed to the development of information disclosure mechanisms, they did not indicate whether the information can be understood or used by stakeholders. In this regard, a recent study reported that 'positive contributions [of the VPA process] lead to ... Improved transparency' in Cameroon, Ghana, and Indonesia (Cerutti et al., 2021); however, other studies revealed that the 'intended effect' of information transparency remains constrained. For instance, Fapa Nanfack et al. (2020, p. 311) found that in Cameroon, although 'communities remembered having been informed about the FLEGT VPA ... [they] did not have a good understanding of FLEGT-VPA'. Similarly, Carodenuto (2019, p. 276) noted that 'information transparency is put forward as a tool to address some of the underlying governance issues in the forest sector, but the transparency agenda is hindered' in Cameroon. Adams et al. (2020, p. 9) stated that 'in general, there is a lack of realised capacity [relating to the VPA process] implementing mechanisms for

information] for transparency' in Cameroon, CAR, Ghana, Liberia, and RC. In summary, VPAs have enhanced the information disclosure mechanisms, but have not entirely ensured that the information is understood and used by all stakeholders.

3.2.3. Accountability

Various studies analysed VPAs' effects on the accountability processes/mechanisms. Carlsen and Hansen (2014, p. 540) observed that 'VPA implementation [in Ghana] ... has resulted in ... the release from the Forestry Commission of a complete list of allocated timber rights'. Overdevest and Zeitlin (2018, p. 67) noted that 'the VPA process has [contributed to the creation of] ... new mechanisms for exposing corruption across the supply chain' in Ghana and Indonesia. Neupane et al. (2019, p. 464) stated that 'clear outlined roles and responsibilities [driven by the VPA process] enable ... accountability' in Indonesia. Adams et al. (2021, p. 9) found that the Ghanaian VPA has driven 'technological advancement in timber supply chain tracking' and a 'legality verification [mechanism that] provides an accountable and transparent system'. However, while these studies concluded that VPAs have contributed to the establishment of accountability mechanisms, studies on Indonesia—the only country where FLEGT licences are being issued—indicated that these mechanisms have not succeeded in holding all supply chain actors accountable for their actions. For example, Setyowati and McDermott (2017, p. 11) reported that 'the [VPA] focus on documentation ignored the issue of whether concessions, plan approvals, or harvest or transport permits were issued through corrupt practises ... [and therefore] risks further entrenching and legitimating of that corruption'. An example of such corruption practises was noted by Acheampong and Maryudi (2020, p. 5) who found that 'the [illegal] practice of renting legality certificates [V-Legal documents and/or FLEGT licences] in order to export timber and timber products appears quite prevalent'. They further observed that 'some timber exporters also use certificates/documents of their verified suppliers to cover products from their non TLAS verified suppliers for export, while some use certificates owned by inactive companies to export their products' (Acheampong and Maryudi, 2020, p. 5). Similarly, Neupane et al. (2019, p. 471) reported that 'there are still loopholes for the entry of illegal logs into the supply chain through certified big companies'. In addition, Acheampong and Maryudi (2020, p. 14) noted that Indonesian exporters are both 'mixing wood with other products such as bamboo, rattan or metals to produce furniture in order to make it a non-wood product and therefore not require the FLEGT licence', and shifting their focus to the domestic market to avoid legality verification and benefit from the growing domestic timber demand (Acheampong and Maryudi, 2020; see also Subsection 3.2.7). In summary, VPAs have contributed to the establishment of processes and accountability mechanisms, but have not succeeded in holding all actors in the supply chain accountable for their actions because some actors have developed various strategies to circumvent legality requirements. Moreover, the current scientific evidence does not show a clear trend of actors who have—or have not—been held accountable as a result of the VPA process. This requires further investigation.

3.2.4. Institutional effectiveness

Several studies examined VPAs' effects on the institutional effectiveness of governmental forest-sector organisations. For instance, Neupane et al. (2019, p. 464) observed that "'stakeholders" involvement in the VPA process has increased the capacity of the government staff related to the implementation of sustainable forest management' in Indonesia. Overdevest and Zeitlin (2018) noted that the TLAS has facilitated sustainable forest management of the Ghana Forestry Commission. Similarly, some studies found that VPAs have contributed to the clarification of the distribution of responsibilities of government forest sector organisations (see Subsection 3.2.3). Other studies presented a more mixed conception regarding an increase in the institutional capacity of countries' governments. Adams et al. (2020, p. 6) noted that

'Cameroon, Congo, Ghana and Liberia have a medium existing capacity to implement the VPA participation mechanism ... [while] CF [Central African Republic] has a very low realised capacity [to do so]'. Furthermore, they also observed that '[while] Ghana and Liberia were classified as having high realised capacity to develop and deploy a functioning TLAS, ... Cameroon and Congo were classified as having medium capacity ... [and] CF was classified as having very low capacity [to develop and deploy the same]' (Adams et al., 2020, p. 8). In summary, while VPAs have contributed to the increase in the institutional capacity of governmental forest sector organisations, they have merely had a mixed effect on the performance and quality of services provided by these organisations.

In contrast, only two examined the effects of VPA on the institutional effectiveness of non-governmental institutions. Neupane et al. (2019, p. 464) observed that "'stakeholders" involvement in the VPA process has increased the capacity related to the implementation of sustainable forest management of ... civil society, forest concessioners, and forestry practitioners in Indonesia'. Likewise, Nurrochmat et al. (2016, p. 63) found that 'the trial phase of the SVLK [i.e. Indonesian acronym for the Indonesian TLAS] has benefited ... [to improve the] knowledge of forest management strengthening farmers' organisations, providing them with opportunities for networking, and other non-financial benefits' in Indonesia. The aforementioned limited evidence prevents the establishment of substantial conclusions; thus, there is a knowledge gap on this topic.

3.2.5. Law enforcement and compliance

Seven studies examined VPAs' effects on law enforcement and compliance mechanisms. Overdevest and Zeitlin (2014, p. 14) observed that VPAs have 'initiated far-reaching processes of legal reform ... [and] created an impressive array of institutional mechanisms for auditing, monitoring, and reviewing the operations of the national timber legality assurance regime'. Similarly, Cerutti et al. (2021, p. 3) observed that in Cameroon, Ghana, and Indonesia, '[thanks to the VPAs] sanctions for at-fault logging companies are enforced more regularly'. Overdevest and Zeitlin (2018) found that in Ghana, the TLAS allowed the detection and correction of operational problems, including non-compliance with social responsibility agreements. Likewise, Hansen et al. (2018, p. 78) observed that 'VPA implementation has resulted in increased policy attention and strengthening of procedures, which is likely to have increased awareness and enforcement of Social Responsibility Agreements' in Ghana (see also Subsection 3.2.9.). Although these studies indicated that VPAs facilitated the enhancement of law enforcement, other authors observed that practical law compliance has remained constrained. For instance, Susilawati and Kanowski (2020, p. 14) found that 'actors in the ... pulp and paper value chain have achieved regulatory [SVLK] compliance, but that this compliance is more on paper than in practice'. Similarly, Susilawati et al. (2019, p. 48) observed challenges related to the implementation of SVLK, such as those related 'to the architecture of SVLK as it applies to small-scale actors and to processing industries, the separation mechanism of supplied wood and to the adequacy of monitoring mechanisms for SVLK compliance' as well as 'particular forms of non-compliance by farmer tree growers, market brokers, sawmills, and wood panel industries ... [which are] indicative of practices more generally in smallholder wood value chains in East Java, where only a small proportion of growers and primary processors are SVLK-verified' (Susilawati et al., 2019, p. 48). Finally, Fapa Nanfack et al. (2020, p. 217) observed that '[although] communities had certain practices that ensure compliance with the FLEGT VPA requirements ... none of the 12 studied Community Forests fully complied with the criteria of the legality grid' in Cameroon. In short, although the VPAs have succeeded in implementing and strengthening enforcement mechanisms, forest law compliance has remained limited.

Furthermore, it is worth mentioning that only three studies examined the effects of VPAs on illegal logging—which is the main issue that such policies aims to address. Astana et al. (2020, p. 30) noted that

‘although not as effective as voluntary regimes, the SVLK regime has also added value in eradicating illegal logging’. Cerutti et al. (2021, p. 2) found ‘a strong perception in Cameroon, Ghana and Indonesia that the VPA process has contributed to a decrease in illegal logging rates’. On the other hand, Nurrochmat et al. (2016, p. 62) observed that ‘the mandatory SVLK requirement appears ineffective and does not further the policy objective of combating illegal timber production ... In community forests in Java [in Indonesia]’. Since the results presented above are diverse and disparate, we believe that there is a surprising information gap on the effects of VPAs on illegal logging.

3.2.6. Rights of access and forest tenure

Five studies examined VPAs’ effects on stakeholders’ rights and access to forest, as well as forest tenure. Adams et al. (2021, p. 9) found that in Ghana, ‘the VPA process does not provide an opportunity for tree tenure rights to be clarified and well documented’. In the context of Indonesian TLAS, Setyowati and McDermott (2017, p. 12) observed that its ‘focus on official documentation of ownership, harvest, and transport rights is ill-suited to address tenure-related corruption and conflicting resource rights’. Neupane et al. (2019, p. 470) noted that ‘uncertainties remain regarding whether [VPA] protects the interests of local and indigenous communities and recognises and respects their customary rights to traditional land’. In this vein, scholars have highlighted that the VPAs have benefitted the access of international exporting companies to the detriment of local stakeholders. For instance, McDermott et al. (2020, p. 15) concluded that ‘the FLEGT VPAs in both Ghana and Indonesia have negatively affected local access [to favour international access]’. Similarly, Myers et al. (2020, p. 140) found that in Ghana and Indonesia, ‘the EU FLEGT perpetuates ... hegemonic understandings of legality, and associated privileging of global over local access to timber’. In summary, VPAs have contributed towards the weakening of local access to forest resource use by prioritising international actors.

3.2.7. International market development

Few studies examined VPAs’ effects on the operational costs of timber-exporting companies. Wibowo and Giessen (2018, p. 33) observed that in Indonesia, ‘[within the framework of the SVLK scheme] the total cost for legality assessments for small and medium scale-wood processing industry could reach 6.6 million IDR [approx. USD743], and up to 28.8 and 170 million IDR [approx. USD2,061 and USD12,166] for bigger industry and large forest management units, respectively’, and that ‘the cost for forest sustainability assessment is around 222–280 million IDR [approx. USD15,887–USD20,037] and up to 132 million IDR [approx. USD9,447] for its yearly surveillance ... excluding travelling cost for auditors from Jakarta to the field’. In addition, research has shown that exporting companies are forced to double certification because ‘by adopting both schemes [mandatory - SVLK-TL/FM and voluntary -Indonesian Ecolabelling Institute (LEI) and Forest Stewardship Council (FSC) - schemes], business practitioners can fulfil legality and market standards at the same time, giving them legal certainty for business and a market for business sustainability’ (Astana et al., 2020, p. 30). ‘Holding two certificates [SVLK-TL/FM and a voluntary one] could create a higher cost burden in the long term, under high pressure from the export markets of timber products’ (Astana et al., 2020, p. 30). These findings are in line with Giessen et al. (2016, p. 80), who noted that, even though ‘for forest companies, [SVLK] certification is a very costly mechanism with very little profit since no differentiated prices are observed ... many buyers request FSC-certified products, forcing companies to satisfy a double [expensive] certification process’ (see Sub-section 3.2.8.). Hence, VPAs have increased operational costs of exporting companies through legality efforts and their need to adopt both mandatory (FLEGT) and voluntary (LEI or FSC) certification to meet market demands.

The VPAs may have also affected timber exports from VPA partner countries to the EU. The only study that exclusively assessed the effects of a VPA on the volume of timber exported from a partner country—i.e.

Cameroon—to the EU is Brusselsaers and Buysse’s (2018). They noted that the VPA implementation process accelerated the downward trend of Cameroon’s timber exports to the EU at two points in time between 2000 and 2015 (Brusselsaers and Buysse, 2018). They attributed the first decline to the uncertainty and anticipative behaviour triggered by the VPA negotiations and the second to overly stringent trade conditions after the implementation of VPA (Brusselsaers and Buysse, 2018). Interestingly, the authors also reported a short period of significant increase in timber exports during the period following the VPA negotiation process. They explained this through the opportunistic behaviour of key actors who were interested in exporting as much as possible before the implementation of stricter conditions of VPA (Brusselsaers and Buysse, 2018). Lastly, this study also revealed ‘a substitution effect between Cameroon and its neighbouring countries as wood supplier to the EU’ (Brusselsaers and Buysse, 2018, p. 172). Similarly, three other studies reported the effects of stricter regulations—but not limited to the VPAs—on international timber trade (Acheampong and Maryudi, 2020; Giurca et al., 2013; Masiero et al., 2015). Acheampong and Maryudi (2020) found that many Ghanaian timber-exporting companies that used to export to Europe are now diverting their products to the timber markets in Asia (mainly China, India, and Vietnam), neighbouring African countries—e.g. Burkina Faso, Mali, Nigeria, and Niger—and their domestic markets. Giurca et al. (2013) observed that imports of tropical hardwoods from Indonesia to the EU, especially the UK, decreased significantly due to international policy measures, such as the VPAs and the EU Timber Regulation. This led to the diversion of timber products to other markets with less stringent regulatory frameworks—e.g. China. Their study also revealed a substitution effect, wherein UK importers opted to source from temperate hardwoods instead of tropical hardwoods to avoid risks (Giurca et al., 2013). Finally, Masiero et al. (2015) found that ‘there might be some diversion i.e., a shift of tropical timber products from traditional importers towards emerging economies ... [and that] this trend is confirmed with regards to imports from VPA countries’ (p. 3469). However, they also stated that while this “diversion” seems quite clear in the case of industrial roundwood [logs] ... it is less evident in the case of sawn wood and not perceivable for veneers and plywood’ (Masiero et al., 2015, p. 3469). In summary, VPAs have contributed to a decrease in the volume of timber exported from partner countries to the EU due to stricter conditions for the export of such products. This has encouraged a) exporting companies in partner countries to divert the volume of timber, previously destined for the EU, to other markets with less restrictive measures—i.e. emerging economies, neighbouring countries, and their domestic markets; and b) importing companies in the EU to substitute the timber volume, previously imported from partner countries, with that of non-partner countries in the tropics or temperate zones.

Although several studies analysed the effects of VPAs on timber trade, only one explicitly examined the effect on illegal timber traded on the international market. It stated that ‘[there is a] clear positive effect on [reducing] illegal industrial timber placed on the export market’ (Cerutti et al., 2021). However, more scientific evidence is required to draw concrete conclusions.

3.2.8. Domestic market development

Few studies assessed the VPAs’ effects on stakeholders involved in the local market. Neupane et al. (2019, p. 469) noted that in Indonesia, ‘concessionaires consider that the FLEGT VPA adds an additional cost and brings no direct economic benefit to them’. Similarly, Nurrochmat et al. (2016, p. 63) observed that the SVLK shrinks the profit margins of forestry enterprises in rural areas until they are lower than other land uses, which makes forestry production less desirable for Indonesian businesses. In addition, in the context of Indonesia, Maryudi et al. (2015 p. 5) found that ‘the substantial, prohibitive costs of mandatory [SVLK] legality verification are seen by smallholders ... as the principal constraint for them to engage in commercial markets’. Similarly, Setyowati and McDermott (2017, p. 12) noted that ‘economies of scale

have put smallholders, as well as small-scale enterprises [processors and traders], at a disadvantage in achieving [SVLK] certification'. Acheampong and Maryudi (2020, p. 6) observed that in Indonesia, 'several timber product manufacturers simply quit the timber business ... [due to] primarily difficulties in getting timber supplies, the many rules and regulations that timber producers need to contend with, the administrative complexities involved in acquiring timber legality verification documents and the high cost of legality verification'. In summary, VPAs hindered the access of local actors to their domestic markets through legality-related efforts.

Only one study examined VPAs' effects on the share of illegal timber placed on the domestic market. Cerutti et al. (2021, p. 3) noted that the 'VPA process has only marginally contributed to reducing the share of illegal timber placed on the domestic market' in Cameroon, Ghana, and Indonesia. However, more research is required to draw meaningful conclusions.

3.2.9. Livelihoods and poverty

Some researchers reported that VPAs cause additional concerns related to the livelihoods of local populations. Wiersum and Elands (2013, p. 15) found that in Ghana, 'the professional forest sector orientation towards timber legality became adjusted [thanks to the VPA], and a new policy assemblage emerged in which international concerns on timber legality became integrated with international concerns on improving forest-livelihood relations'. Similarly, Overdevest and Zeitlin (2018, p. 81) found that 'the VPA process has focused attention on protecting the livelihoods of small producers in the transition to the new timber legality regime—in Ghana through the domestic market policy and enforcement of Social Responsibility Arrangements, and in Indonesia through subsidised group certification'. Likewise, Neupane et al. (2019, p. 470) noted that 'the implementation of SVLK has ensured that the concessionaire contributes financial incentives for community development either through providing employment to local people or through sharing benefits [in Indonesia]'.

However, other studies that focused on the effects of VPAs on local populations' livelihoods reported negative findings. First, some studies revealed the ineffectiveness of VPA's safeguards in Indonesia—e.g. social responsibility agreements. For instance, Setyowati and McDermott (2017, p. 12) observed that 'despite some state subsidies, economies of scale have put smallholders, as well as small-scale enterprises [processors and traders], at a disadvantage in achieving certification' and Susilawati et al. (2019, p. 48) noted that 'current levels of financial assistance [or subsidies] are insufficient to support farmers who wish to become and remain SVLK-verified'. Conversely, Neupane et al. (2019, p. 473) found that the 'contribution [of the VPA process] to the indigenous people/local people regarding benefit sharing mechanism and the forest land tenure is unclear'. Tegegne et al. (2017, p. 10) observe that in Cameroon, 'the planned social safeguards of neither FLEGT VPA and REDD + will in practice be able to effectively safeguard indigenous populations and local communities ... [and that] there is rather a real risk that associated funding from the World Bank, UN REDD, and the EU will likely serve the vested interests of powerful individuals'. Second, some studies reported that VPAs have deprived local actors from the timber market due to the complexity of fitting into the legality grid (Fapa Nanfack et al., 2020; Susilawati and Kanowski, 2020; Susilawati et al., 2019) and, specifically, increasing costs to prove legality (Acheampong and Maryudi, 2020; Giessen et al., 2016; Maryudi et al., 2015; Neupane et al., 2019; Nurrochmat et al., 2016; Setyowati and McDermott, 2017). It has also been suggested that VPAs undermine the access and tenure rights of local stakeholders in favour of international exporting companies. For instance, Maryudi and Myers (2018, p. 52) stated that 'while differential powers among actors would exist without FLEGT, we suggest that there are several ways in which these imbalances are exacerbated due to the VPAs ... [mainly because the] SVLK ... provides opportunities for the larger companies to become more powerful and presents challenges for smaller actors'. Similarly, Maryudi

et al. (2020, p. 11) noted that 'VPAs served to favour already advantaged actors ... [because] larger companies are flourishing thanks to their competences of knowledge and resources to comply with burdensome legality verification requirements for exports under the FLEGT regime' and, therefore, they concluded that 'the effort to stamp out illegal timber from the EU market has effectively stamped out small scale operators at the same time' (see also Subsection 3.2.6.). In summary, VPAs' legality and transparency requirements can negatively affect access to forest and tenure rights, and the livelihoods of local populations. These concerns have not been mitigated completely through established the safeguards.

3.2.10. Ecological condition of forests

Only two articles included this effect category. Neupane et al. (2019, p. 467) noted that in Indonesia, the VPA process 'has resulted in progress towards Sustainable Forest Management mainly providing the enabling conditions for it through forest law enforcement, improved forest governance, and increased transparency' and that it 'contributes indirectly towards forest ecosystem health and vitality through enhanced legality, capacity building and multi layered monitoring mechanism'. Similarly, Astana et al. (2020, p. 26) observed that 'in enhancing sustainable forest management, the SVLK-FM has added a similar amount of value as voluntary [certification] schemes'. However, given that only two articles present vague results on this matter, future research is required to obtain concrete conclusions.

3.2.11. Others

We found that two publications reported (no) effects on categories other than the 10 that were intended to be affected by VPAs. In relation to the legitimisation of traditional knowledge by governmental actors, Fapa Nanfack et al. (2020) observed that the VPA process did not contribute to the inclusion of traditional indigenous forestry practices—such as the role of traditional chiefs in forest management—within the Cameroonian forestry legal framework. Regarding the effect on jobs and employment, Cerutti et al. (2021, p. 3) noted that 'the VPA process has not greatly contributed to making progress in the labour market through improved working conditions, although curricula in various academic and technical institutions have been improved thanks to VPAs' actions' in Cameroon, Ghana, and Indonesia. In summary, information on the unintended effects of VPAs in categories other than the 10 mentioned in this paper remains ambiguous.

4. Limitations

This study has two main limitations. First, the systematic review methodology has shortcomings. Due to our inclusion criteria, we excluded results from the grey literature and studies that were not empirical, lacked explicitly described methods, or used pre-intervention data to identify potential VPA effects. This was a purposeful decision—and, we believe, justified—but it led to the omission of several papers with potentially interesting findings. An example of a relevant but excluded grey literature was the study developed by Chatham House, which presented the estimates of the effects of international timber legality policies, including VPAs, on the trade of wood-based products at high risk of illegality (Hoare, 2015). Thus, future research could complement this study by including such excluded literature.

The second important limitation refers to the inherent constraints of the available literature that was reviewed. One major constraint is geographical bias. Since most studies focused on only three countries—i.e. Cameroon, Ghana, and Indonesia—it is not possible to generalise our results for other countries where VPAs are being implemented or negotiated. Another constraint is the diversity of research designs employed by these studies. Almost all studies are single case studies that have used qualitative data. Therefore, it is challenging to attribute a direct causal relationship to VPAs for the observed effects (Burivalova et al., 2019; Knill and Tosun, 2020; Giurca et al., 2013; Masiero et al., 2015; Acheampong and Maryudi, 2020). Although scholars have

claimed that VPAs are responsible for the diversion of timber imports from Europe to emerging economies—i.e. China and India—we do not know whether such changes are due to the VPAs or other factors, such as shifts in economic power and trade patterns at the global level.

Thus, future research should a) broaden its geographic focus to include other countries in addition to the conventional three; b) move beyond individual case studies to include comparative experimental designs, such as randomisation of sample selection, use of counterfactuals, and inclusion of confounding variables; and c) make greater use of quantitative or mixed methods. We do not advocate the abandonment of qualitative case study research—it has been invaluable in shedding light on the local effects of VPAs. However, it needs to be supplemented with more comparative, cross-border, and quantitative methodologies.

5. Conclusions

5.1. Intended effects of FLEGT VPAs

We draw three general conclusions. First, VPAs have partially resulted in the reformation of public forest policies and institutions in the researched countries but have been much less effective in addressing broader societal issues, such as marginalisation and criminalisation of small-scale timber producers and inclusion of indigenous and local communities. Hence, literature describes VPAs as a process that strengthens state government and its various bureaucracies, which may facilitate powerful actors in capturing (forest) resources (Maryudi and Myers, 2018; McDermott, 2014; Van Heeswijk and Turnhout, 2013; Wodschow et al., 2016). Secondly, VPAs entail the risk of damaging the timber supplying countries' economies by increasing timber legality-related efforts without providing a premium price for FLEGT certified timber and reducing the volume of—potentially risky—timber exported by such countries to the EU. This highlights a potential major challenge regarding the nature of forest exploitation in the VPA countries: on the one hand, shutting down illegal timber harvest is a major goal of the policy, on the other hand, corresponding efforts harm the competitiveness of small-scale producers and firms. Furthermore, our review indicates that 'risky' timber is diverted to markets with less restrictive conditions, making it difficult to comprehensively assess the real effects of VPA on illegal logging and timber trade. Third, there are striking gaps in knowledge on the impacts of VPAs on i) illegal logging and ii) the volume of illegal timber traded in domestic and international markets. Thus, it cannot be ascertained whether VPAs are achieving their main objective: combating illegal logging and trade in illegal timber. In addition, iii) the highly relevant category of 'effects on the ecological condition of forests' has also been neglected.

In summary, the evidence suggests that VPAs can contribute to the establishment of specific national governance structures, tools, and procedures. However, they have not been able to solve social problems such as inequality and injustice. In fact, they can even harm the economy of EU timber suppliers. Furthermore, there is no conclusive evidence on the intended effects of VPAs on illegal logging, trade in timber, and their effect on the environment. Therefore, more interdisciplinary research is required to explore the effects on the under-researched categories.

5.2. Unintended effects of FLEGT VPAs

We further unveiled unintended policy effects on societies and the economy of EU timber supplier countries. Some examples are the—presumably negative—effect of VPAs on the legitimisation of the traditional forestry knowledge reported in Cameroon (Fapa Nanfack et al., 2020), as well as the non-effect on the forest-related labour market and—presumably positive—effect on education reported by Cerutti et al. (2021). Thus, future research should investigate the effects of international forest policy on the intended categories and its unintended effects that may or may not be linked to the forestry sector. This would

be especially useful for sectors outside forestry to learn from the FLEGT experience (Begemann et al., 2021).

Moreover, future research could address questions such as: What is the role of VPAs in the implementation of broader national governance reform processes and programmes, for example, in the forestry, taxation, environment, law enforcement, and international trade sectors? What are the effects of VPAs on the broader trade and environmental sector? What are the unintended legal, policy, and political implications of VPAs in the national forestry sector, and the sociological or anthropological consequences at sub-national and local levels? How do VPAs—competitive coordination processes that can lead to changing government priorities—interact with other sectors such as agriculture, energy, taxation, and climate?

5.3. Implications for the EU's newly proposed deforestation-free regulation

An EU regulation on deforestation-free commodities is under negotiation, and while it may absorb or replace the FLEGT voluntary partnership agreements in the long run, the future of the latter is still uncertain (European Commission, 2021). Thus, the authors highlight the following. The shortcomings reported by this study in various areas (e.g. stakeholder participation, livelihoods, and poverty) should not be an argument for abandoning interest in transforming them. On the contrary, we believe that social challenges must be managed to acknowledge the history of oppression and marginalisation of indigenous peoples and ethnic minorities. In addition, we recommend that interventions should be developed from the outset in line with the specific concerns and needs on the ground, as well as with those of the local population. This approach calls for a transformative governance agenda (Larson et al., 2021; Ramcilovic-Suominen et al., 2021; Ramcilovic-Suominen, 2022). Such an agenda would focus more on innovative governance approaches that, for example, enable both local control based on traditional knowledge and strong tenure security.

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Declaration of competing interest

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Data availability

Data will be made available on request.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jenvman.2022.116874>.

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