

Reviewing initiatives to promote sustainable supply chains

The case of forest-risk commodities

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1 Preamble

This review presents a synthesis of the multiple initiatives to promote sustainable supplies of some forest-risk commodities, and aims to make it easier to understand a vast and rapidly expanding literature. It was prepared on the basis of: (a) a workshop co-hosted by CIFOR and CIRAD in Montpellier, France, on 11 July 2019 and financed by the CGIAR Research Program on Forests, Trees and Agroforestry (FTA), (b) a literature review, (c) discussions during the FTA Science Conference (14-25

September 2020), (d) internal workshops (Montpellier in 2018 and Lima in July 2019) building an analytical framework and knowledge on the outcomes of zero-deforestation jurisdictional initiatives, and (e) participation in four webinars conducted from September to November 2020.¹ By drawing on the published literature and recent discussions, the review highlights some of the outstanding challenges that urgently need to be addressed in order to achieve the targeted impacts.

1 Good Growth Partnership/Tropical Forest Alliance/ Consumer Goods Forum, 'Business action in and beyond supply chains,' 23 September 2020; Amsterdam Centre for European Studies 'EU external action against deforestation: Which ways forward?' 29 October 2020; Accountability Framework/CDP, 'Reporting on forest-risk commodities,' 17 November 2020; and Chain Reaction Research, 'Fast-moving consumer goods companies' zero-deforestation challenges and growing exposure to reputation risk,' 19 November 2020.

2 Introduction

The continued growth of a relatively small number of agricultural (soybean, palm oil, cocoa, coffee, rubber and beef) and forest (primarily timber) commodities in global trade has placed increasing pressures on forests across landscapes in the tropics and sub-tropics of Latin America, sub-Saharan Africa and Southeast Asia (Defries et al. 2008; Rudel et al. 2015; Meyfroidt et al. 2010; Song et al. 2018; Curtis et al. 2018; Pacheco et al. 2021).

These pressures are amplified by growing domestic demand for these commodities in producing countries. Furthermore, recent research has highlighted the critical role of domestic banks in financing 74% of Brazilian beef and soy (Kaynar et al. 2020).

The growth of global trade (Table 1) has led to multiple environmental challenges linked to forest cover loss, biodiversity loss and rising carbon emissions. It also creates social challenges, including threats to local food and nutrition security, tenure rights and the livelihoods of Indigenous peoples and local communities (Lambin and Meyfroidt 2010; Reboredo 2013; Lee et al. 2014; Baker and Spracklen 2019).

The expansion of agricultural trade over the past three decades (DeFries et al. 2010) has been matched by improved access to information on the social and environmental impacts associated with global and domestic supply chains in agricultural and forestry commodities, particularly regarding some with higher exposure to scrutiny by civil society organizations (e.g. soybean in the Cerrado, beef in Brazil, palm oil in

Indonesia, and cocoa in West Africa).² This has resulted in growing pressure from civil society organizations, consumers in importing countries, international banks and shareholders of consumer goods companies to develop and implement a diverse array of instruments and tools to promote sustainable or deforestation-free sourcing as a way to reduce exposure to likely reputational, financial and regulatory risks (Gereffi et al. 2005; Newton et al. 2013; Mithofer et al. 2017; Rueda et al. 2018).

Multi-stakeholder platforms (MSPs) and commodity roundtables emerged, inter alia, in response to criticisms of government failure in the global South, and the amplification of 'voice' in the global North, particularly through the advent of social media. MSPs provided a mechanism to build coalitions of interest groups through "the balanced representation and participation of all categories of stakeholders" (Cheyns 2011, 1). MSPs have subsequently been conceived as 'pathways of influence' (Cashore and Lupberger 2015) and to promote 'stakeholder learning dialogues' (Cashore et al. 2019).

These trends were reinforced following the adoption of the 2030 Agenda for Sustainable Development (UN, 2015). In particular, the Sustainable Development Goal (SDG) that focuses on "means of implementation" (SDG 17) invites states and other stakeholders

2 'Supply chain' is used throughout this document as it focuses on the itinerary followed by commodities along the chain in contrast to a 'value chain' that emphasizes the distribution of value among actors at all stages of the chain.



Cable system to transport fresh fruit bunches of oil palm in San Martin, Peru.

Photo by Juan Carlos Huayllapuma/CIFOR

Table 1. Estimated changes in volume of global trade in key commodities

Commodity	Palm oil (million metric tons)	Soybeans (million metric tons)	Cocoa (‘000 tons)	Coffee (arabica) (‘000 x 60kg bags)	Rubber (natural) (million metric tons)	Timber (million m ³)
2012/13	56	269	3.759 (2005/06)	70.484 (2005/06)	6.8 (2000)	1.408 RWE
2018/19	74	360	4.824 (2019/20)	94.826 (2019/20)	13.6 (2019)	1.465 RWE

Sources: <https://www.statista.com/statistics/>; ITTO; WWF, 2017

to “enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries” (SDG 17.16). States and other stakeholders should also “encourage and

promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships” (SDG 17.17). The Addis Ababa Action Agenda (AAAA 2015) stressed the importance of MSPs to complement the efforts of national governments in ending hunger and poverty and achieving sustainable development in its three dimensions.

3 Deforestation, forest degradation and global supply chains

Among the many challenges to achieving sustainable land use, the prevalence of deforestation and forest degradation (D & D) is recognized as a major environmental problem due to their impacts on livelihoods, biodiversity, cultural losses and climate change. D & D is a complex issue driven by economic, financial, social and political factors at different spatial and temporal scales (Geist and Lambin 2001; Hansen et al. 2013; Busch and Ferretti-Gallon 2017; Rudel et al. 2019). Deforestation is primarily related to agricultural expansion in forest areas, often after a process of degradation associated with the removal of commercial tree species, and/or with fires.

Deforestation of humid forests is associated with commodity crops – including high-value tree crops such as cocoa, oil palm and rubber (Rice and Greenberg 2010; Pacheco et al. 2017; Austin et al. 2017; Grogan et al. 2019; Warren-Thomas et al. 2018) – and pasture expansion for beef production, which led to extensive deforestation in the Brazilian Amazon (Margulis 2004; Pocard-Chapuis 2020). Soy and pasture expansion for beef have also triggered the conversion of dry forest zones in Latin America (Fearnside 2001; Escobar et al. 2020; Pacheco and Pocard-Chapuis 2012; Pocard-Chapuis 2020), all of which are to meet growing demand in both domestic and global markets (DeFries et al. 2010).

The processes through which land-use change and deforestation occur are specific to each landscape where commercial agriculture is expanding, although some patterns can be identified.

For example, landscapes dominated by large-scale farmers tend to experience more rapid and massive forest conversion to monocrop agriculture linked to global markets (e.g. soybean and pasture in the Amazon, oil palm in Southeast Asia – Barona et al. 2010; Lee et al, 2014, respectively). In contrast, landscapes that are dominated by smallholders and are less connected to global markets tend to feature more diverse land-use trajectories that result in mixed mosaic landscapes (Chomitz 2007).³

In many cases, both dynamics co-exist, which can lead to more complex local realities (Browder et al. 2008). For example, beef production in the Amazon (Pacheco et al. 2012; Pocard-Chapuis 2020) and palm oil in Indonesia (Pacheco et al. 2017) have facilitated greater involvement of smallholders who take advantage of the production infrastructure and market logistics established primarily by large-scale commercial agriculture. Some dry forest landscapes have shown extraordinary resilience over centuries, such as the shea (*Vitellaria paradoxa*) parklands of West Africa (Wardell and Fold 2013).

Improvements in the spatial and temporal resolution of satellite imagery enable detection of smaller and more localized changes to the Earth's land surface relative to results from earlier monitoring efforts

3 This is changing in some contexts due to recent globalized trade in lesser-known non-timber forest products, such as shea nuts and shea butter, to supply the 'speciality fats' and vertically integrated buyer-driven cosmetics markets, respectively (Rousseau et al. 2015).



Women processing shea butter in Burkina Faso.

Photo by Ollivier Girard/CIFOR

(Defries et al. 2002; Hansen et al. 2010). Nevertheless, there is a disconnect between very granular analyses of land-use change in specific places and the coarse resolution of global analyses, and these analyses do not inform each other. A useful high-resolution study may still be insufficient to differentiate between regions when, for example, all of the African continent is classified under shifting agriculture, or much of the Amazon region is linked to the expansion of commercial agriculture (Curtis et al. 2018).

The State of the World's Forests (SOFO) 2016 showed that it is possible to increase agricultural productivity and food security while halting or even reversing deforestation, highlighting the successful efforts of Costa Rica, Chile, the Gambia, Georgia, Ghana, Tunisia and Vietnam (FAO 2016). In a similar manner, a decoupling of deforestation and soy production was evidenced in the period 2006–2010 in the southern Amazon (Macedo et al. 2011; Angelsen and Kaimowitz 2001).

Following the adoption of the New York Declaration on Forests in September 2014, the estimated global annual rate of tree cover loss, based on Hansen/UMD/Google/USGS/NASA dataset,⁴ increased 43%, reaching over 26 million ha per year.⁵ It was 30 million ha in 2016 and 2017, and dropped in 2018 to 25.6 million ha. Based on the same source, tropical primary forest loss was 44% higher in 2014 (4.3 million ha per year) than during the baseline period 2002–2013 (3.0 million ha per year) (NTDF 2019).

The Food and Agriculture Organization (FAO), however, suggests that net deforestation in the tropics and sub-tropics declined 34% in the period 2015–2020 (3.7 million ha per year) compared with the period 2010–2015 (5.0 million ha per year) – see <https://fra-data.fao.org>. Whatever the case, the two datasets suggest that forests continue to be lost every year at a very high rate in the tropics and sub-tropics.

While estimates differ (Hosonuma et al. 2012; Curtis et al. 2018; De Sy et al. 2019 – see Table 3), some argue that commercial agriculture continues to drive tropical deforestation globally, with forest clearance especially associated with the production of four commodities: palm oil, soy, timber and pulp, and cattle. During the period 2015–2020, a large number of companies made commitments to address commodity-driven deforestation and to provide publicly available progress reports. Furthermore, 95% of companies participating in groups such as the High Carbon Stock Approach, the Tropical Forest Alliance 2020 and the Tropical Forest Trust adopted commitments (Donofrio et al. 2017).

Specific, measurable and time-bound commitments and policies to eliminate

⁴ <https://data.globalforestwatch.org/datasets/14228e6347c44f5691572169e9e107ad>

⁵ NYDF Assessment Partners. *Protecting and restoring forests: A story of large commitments yet limited progress five-year assessment report*, September 2019 (based on Hansen et al. 2013 and hence, does not address deforestation per se, but only tree-cover loss).

Table 2. Tracking corporate commitments to deforestation-free supply chains

Year	Total no. of companies	No. of companies without public commitments	No. of companies with public commitments	No. of commitments	% of companies without public commitments
2016	566	200	366	579	35
2017	718	271	447	760	51
2020 ^a	411	199	212	911	48

a Based on the full Accountability Framework version 1.0 released in June 2019 and the 2019 CDP Forests questions (Accountability Framework/CDP 2020:38-40).

Sources: Donofrio et al. 2017; Accountability Framework/CDP 2020.

deforestation and other forms of ecosystem conversion associated with agricultural and forestry production systems have progressively become more complex. Commitments on palm oil as well as timber and pulp continue to lead the way due to well-established certification programs. *An Accountability Framework baseline for 2020 and beyond* was released on 17 November 2020 (Accountability Framework/CDP 2020) – see Table 2. This is discussed further in Sections IV and VII.

The attribution of deforestation to different drivers at a global level is still a challenging task, in spite of all the knowledge we have acquired in understanding land-use change dynamics. An overview of recent estimates of the key drivers of deforestation and forest degradation during the period 2012–2019 is presented in Table 3. The three seminal studies cited in this table are not necessarily comparable since each adopted different methodologies, definitions and time periods to understand drivers of deforestation and forest degradation at global or regional scales. As a result, they depict contrasting situations, particularly regarding the



Cocoa production in Cameroon.

Photo by Ollivier Girard/CIFOR

contribution of ‘commercial agriculture versus shifting agriculture’ to deforestation and forest degradation. The three are specific to the different tropical forest basins.

Table 3. Estimates of drivers of tropical deforestation and forest degradation

Source	Type of study	Key drivers of tropical deforestation and forest degradation (D & D) (%)								Notes
		Commercial agriculture	Shifting agriculture ^a	Forestry/ tree crops	Wildfire	Pasture	Urbanization, other land use	Mining	Infrastructure	
De Sy et al. 2019	Post-deforestation land use, 1990– 2000	11% (LA)	61% (SSA) 35% (SEA)	28% (SEA)		72% (LA) 15% SSA)	7% (LA) 16% (SSA) 30% (SEA)		1.8% (LA) 1.3% (SSA) 3.3% (SEA)	Large regional differences in drivers of D & D (cf. Repetto and Gillis 1988)
Curtis et al. 2018	Drivers of global forest loss, 2001– 2015 based on high-resolution Google Earth imagery	27% +/- 5%	24% +/- 3%	26% +/- 4%	23% +/- 4%	-	0.6% +/- 0.3%	-	-	High resolution is useful but does not allow us to see regional differences
Hosonuma et al. 2012	Global non-spatially explicit analysis of proximate drivers of D & D, ^b 2000– 2010	40%	33%	-	-	-	10%	7%	10%	Estimates used by FAO in State of the World's Forests 2016 ^c

a Shifting agriculture is not synonymous with deforestation according to definitions that focus on permanent land use change

b Data analyzed were from 46 countries, reflecting 78% of forest areas and 81% of forest loss in 2000-2010 in all 100 tropical and sub-tropical countries (Hosonuma et al. 2012: 7)

c See FAO 2016 and [http://www.fao.org/resources/infographics/infographics-details/en/c/425852/#:~:text=The%20State%20of%20the%20World's%20Forests%20\(SOFO\)%202016%20shows%20that,Ghana%2C%20Tunisia%20and%20Viet%20Nam.](http://www.fao.org/resources/infographics/infographics-details/en/c/425852/#:~:text=The%20State%20of%20the%20World's%20Forests%20(SOFO)%202016%20shows%20that,Ghana%2C%20Tunisia%20and%20Viet%20Nam.)

4 Private sustainability initiatives over time

Consumers and advocacy groups have placed pressure on commodity producers, retailers, consumer goods manufacturers, and processors to source raw materials (and their derivatives) produced in accordance with socially and environmentally acceptable sustainability standards. More specifically, such efforts increasingly aim to de-link deforestation from their supply chains (Climate Focus 2016). This has motivated several global agribusiness companies to make more recent political commitments to achieve zero deforestation (Pirard et al. 2015a; Pirard et al. 2015b; Jopke and Schoneveld 2018).

Environmental non-governmental organizations (NGOs) are increasingly engaged as intermediaries to help companies address social and environmental risks in the supply chain, and to support sub-national governments in meeting their sustainability commitments (Abbott, 2017; Pacheco et al. 2018b; Busch and Amarjargal 2020). Such initiatives also foster partnerships between corporations and governments around shared objectives of low-carbon rural development, sustainable landscapes or jurisdictions, and deforestation-free supply chains. These partnerships may adopt different ways, depending on the main actors that orchestrate them: corporations, NGOs or governments (Pacheco et al. 2017). Perceptions of different types of stakeholders vary along each supply chain (Camargo et al. 2019). There is a need for more in-depth understanding of the extent to which these partnerships can transform business as usual, and to gain insights into the type of initiatives and tools that are adopted, depending on the case to advance sustainability.

There are multiple approaches to support sustainability initiatives and their implementation frameworks, which also relate to how supply chains are structured (Rajeev et al. 2017; Agrawal et al. 2018; German et al. 2020). Rueda et al. (2017) view the different types of sustainability instruments on the basis of their environmental stringency – i.e. the potential to reduce negative environmental impacts – and classify them as: (1) ‘unilateral’ (direct investments at origin, and internal codes of conduct), or (2) ‘collaborative’ (commodity roundtables, end-market standards, NGO-designed certification, appellation of origin, and bans or moratoria). Lambin et al. (2018) classify them into: (1) collective aspirations; (2) company pledges; (3) codes of conduct; and (4) sectoral standards, including certification. There is, typically, a lack of articulation between the different initiatives. Pacheco et al. (2018b) group them into: (1) individual company or group-focused approaches based on the adoption of Voluntary Sustainability Standards (VSS); (2) sectoral approaches with a focus on supply chain-based interventions; and (3) mixed supply-chain and territorial approaches embraced at the jurisdictional level.

Pacheco et al. (2018b) suggest that each approach has specific potential and limits, and can lead to different associated risks and benefits for the stakeholders, depending on their influence in the particular landscape or supply chain. These approaches are now being applied to support the sustainability of commodity production and to promote their low or zero impact on forest cover (Ingram et al. 2020).



Wood processing in Cameroon.

Photo by Ollivier Girard/CIFOR

Among the different approaches to promote sustainability and zero deforestation, VSS are a market-driven tool to address key social, economic and environmental issues in the production, processing and trade of agricultural and forestry commodities. VSS came into existence by offering credible and more transparent mechanisms for companies and producers of agricultural and forestry commodities to verify sustainability. These mechanisms have since been the most widely adopted so far, often helping to reinforce public regulations in the countries where producers and companies operate (Djama 2011). The mechanisms are now under greater scrutiny regarding the extent to which they are delivering – or not delivering – their expected outcomes (see Figure 1).

In 2012, a multi-stakeholder committee of international experts, drawn from academia, business and civil society organizations – including the Rainforest Alliance, ISEAL

Alliance and the Soil Association – published the white paper *Toward sustainability: The roles and limitations of certification*. This independent research review provided an early assessment of the VSS performance and sought to determine whether certified products are better for the environment and communities, whether they catalyze more sustainable production and consumption across whole sectors, and under what circumstances they promote sustainable practices. A series of webinars conducted in late 2018 highlighted evidence gaps on the systemic, socioeconomic and conservation impacts of VSS, and the emergence of new private initiatives by non-state actors (ISEAL Alliance 2018). A series of publications on “Progress on the NYDF” provides insights on the level of implementation per sector and impacts (or lack thereof) of zero-deforestation pledges (public) and commitments (private) – see Climate Focus 2016; NYDF Assessment Partners 2019).

Commodity	Approaches to sustainability and zero deforestation							
	VSS	CoC	JA	PPP	Corporate pledges	DD	MSP	Regulatory
Palm oil	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Yellow
Soybean	Green	Yellow	Yellow	Green	Green	Grey	Green	Green
Cocoa	Green	Grey	Yellow	Green	Yellow	Yellow	Yellow	Yellow
Coffee	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Grey	Yellow
Rubber	Grey	Yellow	Grey	Green	Yellow	Grey	Green	Grey
Timber	Green	Yellow	Yellow	Green	Yellow	Green	Grey	Green
Beef	Yellow	Grey	Grey	Green	Green	Grey	Grey	Green

Figure 1. Overview of approaches to sustainability and zero deforestation

VSS = Voluntary Sustainability Standards; CoC = Code of conduct; JA = Jurisdictional approach; PPP = Public-private partnership; DD = Due diligence; MSP = Multi-stakeholder platform

Grey = Absent; Yellow = Present; Green = Strong

Source: Authors and adapted from Ingram et al. 2020.

The past quarter-century has witnessed the proliferation of VSS for, *inter alia*, agriculture, fodder, timber, biofuels and carbon. There are also several ongoing multilateral initiatives to embrace multi-commodity or landscape approaches. In 2020, the Ecolabel Index tracked 457 ecolabels in 25 industry sectors in 199 countries (ecolabelindex.com). The number of labels increased roughly fivefold from 1988 to 2009 (Gruere 2013). The costs of implementing VSS – including certification, monitoring and verification – are large. The incentives for VSS adoption need to be sufficient to cover the costs of criteria compliance; determining these costs is a key topic for future research (Smith et al. 2019: 2130). There has been a more recent convergence of pre-eminent VSS certification systems, as market leaders in each sector, while certification standards have also been displaced due to the widespread adoption of specific company standards (internal codes of conduct) to ensure sustainability, particularly in cocoa (Ruf et al. 2013; Camargo et al. 2018) and coffee (Ponte 2002).

Certification systems for globally traded products are often associated with high transaction costs and increasingly complex sustainability and legal standards. This has often resulted in the exclusion of smallholder producers as well as small and medium-sized enterprises (Jopke and Schoneveld 2018).

Despite the efforts of the Forest Stewardship Council (FSC) to promote certification schemes adapted to smallholders, only 4% of the total FSC-certified area is owned by smallholders (FSC 2018). Furthermore, growing concerns about the limits of certification have been expressed, with one author even suggesting that “certification isn’t working and is, in fact, part of the problem” (Poynton 2015). In 2018, two VSS studies were published: *The Systemic Impacts of Voluntary Sustainability Standards* (Aidenvironment/WWF/ISEAL 2018) and *Conservation Impacts of Voluntary Sustainability Standards* (Meridian Institute/Gordon and Betty Moore Foundation 2018). A systematic review of agricultural certification in developing countries (Oya et al. 2018) concluded that, in general, there is limited and mixed evidence on the effects of VSS on a range of intermediate and final socioeconomic outcomes for agricultural producers and wage workers. There are inevitably differences in how, for example, deforestation and community engagement are addressed by the FSC and the Roundtable on Sustainable Palm Oil (RSPO) due to the nature of each system and the commodity involved.

Some VSS have initiated concerted efforts to engage smallholders such as the Global Platform for Sustainable Natural Rubber (<https://www.gpsnr.org/>) and the FSC’s



Herd of Brahman cattle led by Pantanerio cowboy in Matto Grosso, Brazil.

Photo by Bernard Dupont, licensed under the terms of the [cc-by-sa-2.0](https://creativecommons.org/licenses/by-sa/2.0/)

New Approaches for Smallholders and Communities Certification project (<https://fsc.org/en/for-people/solutions-for-smallholders-and-communities>). The scientific evidence on the economic, environmental and social outcomes of tropical forest certification is also encouraging (Burivalova et al. 2017),⁶ although another report concluded that “If there is to be a role for certification in the transition to a sustainable economy, it must undergo some serious reforms” (Changing Markets Foundation 2018).

The interest in VSS has been accompanied by other complementary private governance regulations that aim to govern private actors through, *inter alia*, codes of conduct, principles and guidelines, moratoria and wider commitments to sustainability (Gereffi et al. 2005; Newton et al. 2013; Lambin et al. 2014; Byerlee and Rueda 2015; Agrawal et al. 2018; Lambin et al. 2018) including promoting greater transparency along supply chains. Transparency for Sustainable

Economics (TRASE) is prominent in this regard and follows trade flows to identify sourcing regions, to profile supply-chain risks and to assess opportunities for sustainable production. In October 2020, TRASE Finance was launched to evaluate the financing of commodity traders exporting Brazilian beef, Brazilian soy and Indonesian palm oil. It will expand to cover the financing of other commodities mapped by the TRASE initiative to cover more than half of the volume of globally traded soft commodities by 2021.

A recent bold step has been the adoption of public and private commitments to zero deforestation as a way of responding to consumer pressure on deforestation-free supplies (Climate and Land Use Alliance 2014; Amsterdam Declaration 2015; Climate Focus 2016; Jong 2018; Newton and Benzeev 2018). Initial emphasis was placed at the production level – such as High Carbon Stock (HCS) and High Conservation Value (HCV) standards – followed by efforts to constrain expansion in a specific biome – e.g. soy moratorium in Brazil (Gibbs et al, 2015) – and the peatland moratorium in Indonesia (Pacheco et al. 2017b). Recent pledges on zero deforestation have become prominent and have been followed by frameworks providing guidance to companies on implementation, notably the Accountability Framework developed on the basis of extensive consultations and involving

⁶ This review of 40 studies followed a systematic review search protocol to compare variables under certified or reduced impact logging with those of conventional logging, or before and after certification. *Nota bene*: Data points cannot be summed or used to calculate the overall effect of certification. <https://imgs.mongabay.com/wp-content/uploads/sites/20/2017/09/20224924/Data-on-forest-certification.pdf>

a large number of NGOs (Accountability Framework Initiative 2020; Pirard et al. 2015a).

States that import forest-risk commodities – in particular, the European Union – are also playing an increasing role in the development of approaches, policy instruments and tools to limit imported deforestation, with a growing emphasis on bilateral or multilateral relations between consumer and producer states. Several European countries are also developing their own policies to combat imported deforestation. France published a national strategy in 2018, the implementation of which is widely discussed today. The UK launched a Global Resource Initiative – which aims to make supply chains more sustainable – and has just published a Strategic Sustainable Commodity Action Plan with binding targets by 2030. Germany recently published guidelines for “promoting deforestation-free agro-product supply chains.”

In addition, the urgency to implement actions on the ground in order to halt deforestation has led to a new generation of initiatives led by collaborative efforts. However, they also involve a combination of policy instruments, originating in state regulations – at national or sub-national levels – and private sector rules. These are labeled as “hybrid” or “multi-partner” forms of social and environmental governance (Cashore 2002; Lemos and Agrawal 2006; Lee et al. 2012; Pacheco et al. 2017; Zeitlin and Overdevest 2020).

These hybrid initiatives are still under development, remaining experimental and exploratory in nature. They may take multiple dimensions depending on who orchestrates them, yet they all have collaborative partnerships or arrangements at the center. Some are built around enhancing regulatory frameworks and enforcement – e.g. the Soy Moratorium combining state regulations and traders’ commitments – (see Gibbs et al. 2015). Others constitute partnerships for improving the uptake of good practices for a specific commodity within wider land-use planning and service-provision schemes (e.g. Cocoa & Forests Initiative, Sabah jurisdictional RSPO certification). Other examples constitute de-risking schemes for financial actors when investing in forest-risk landscapes (e.g. IDH, ISFL), and a larger number constitute wider partnerships to advance sustainability at the jurisdictional level under different approaches. These include: (a) Green Growth Compacts (e.g. East Kalimantan, Aceh and South Sumatra in Indonesia – <https://www.nature.org/en-us/about-us/where-we-work/asia-pacific/indonesia/stories-in-indonesia/green-growth-compact/>); (b) Produce, Conserve and Include (PCI) – e.g. Mato Grosso and Para in Brazil (<https://pcimonitor.org/>); and (c) the FSC’s commitments to reduced impact logging to mitigate climate change (RIL-C) (see Ellis et al. 2019) – e.g. Gabon and Republic of Congo, or the Mayan Biosphere Reserve in Guatemala – <https://fsc.org/en/newsfeed/guatemalas-maya-bioreserve-region-owes-its-survival-to-a-community-forest-cooperative>. (See also Section V on Jurisdictional Approaches.)

5 State interventions and private initiatives across forested landscapes

Agricultural growth throughout Latin America, sub-Saharan Africa and Southeast Asia has been promoted through the use of policy incentives. Concomitantly, its expansion has been regulated by land use and environmental regulations to protect vulnerable ecosystems and to promote sustainable management of natural resources. Weak regulatory enforcement often led to uncontrolled expansion, from large-scale plantations and smallholder agriculture into forested landscapes. Market-based instruments were proposed as a way of influencing the adoption of sustainability practices through compensation (e.g. payment for ecosystem services) or price premiums associated with certification. Such mechanisms have faced several constraints limiting their adoption (Pacheco et al. 2011; Waldman and Kerr 2014; Pacheco et al. 2018a; Van der Ver and Cashor 2018; Pirard et al. 2019; Smith et al. 2019; Heilmayr et al. 2020), but credible certification and RIL-C have been adopted or explored in certain countries in the Congo Basin, as well as in Indonesia, Peru and Suriname.

The uptake of certification has proven slow due to several institutional factors, associated costs and a lack of market premiums for certified supplies, without necessarily ensuring either long-term sustainability or reduced deforestation (Mithöfer et al. 2017). However, certain certification systems have been able to decrease deforestation significantly within certified management units (Auld et al. 2008). ‘Spillover effects’ can occur due to the restrictions within one location, undermined by the movement of actors, processes or knowledge to other locations. For example, RSPO certification in Indonesia reduced deforestation within Indonesia’s forest estate,

but increased deforestation in areas zoned for agricultural use (Heilmayr et al. 2020). There have also been failures associated with the auditing systems of different certification systems (EIA 2015; Piketty and Drigo 2018; Piketty et al. 2019; Ehrenberg-Azcarate and Pena-Claros 2020). Certification alone has not been able to address the wicked problem of D & D in multi-functional landscapes. The continuing emergence of private sustainability initiatives has encompassed direct investments at origin; internal codes of conduct; collective commitments through commodity roundtables; end-market standards; NGO-designed certification systems; appellations of origin; and moratoria to address critical environmental and social concerns, and to shape the practices of corporations and firms (Table 3).

Governments in consumer countries or regions, such as the European Union (EC 2019), have also adopted several measures to constrain imports of unsustainable and illegal timber as well as other commodities – such as palm oil, soja, coffee and cocoa – responsible for deforestation. These measures include the EU’s Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan and the New York Declaration on Forests (NYDF) (Climate Focus 2016), which triggered several public and private commitments to zero deforestation (Climate and Land Use Alliance 2014; Pirard et al. 2015b). Several influential European states promulgated the Amsterdam Declaration in 2015 and have since been working to establish national strategies for sustainable tropical commodities without deforestation. France has even enacted a National Strategy to Combat Imported Deforestation with quantified medium-term commitments.



Rubber plantation in Indonesia.

Photo by Ryan Woo/CIFOR

While these initiatives complement “potential pathways of influence to improve social, environmental, and economic conditions” to sustainably manage tropical forests under the United Nations Sustainable Development Goals (Swamy et al. 2018), they have not yet achieved impacts at scale and have fallen short of their targets (NYDF Assessment Partners 2019). As result, other government-driven initiatives are under way, including France’s policy to tackle ‘imported deforestation’ (Ministère de la Transition Ecologique et Solidaire 2018), and there is an ongoing discussion around a wider EU Action Plan on Deforestation (EC 2013; EC 2019). At the sub-national level, the Governors’ Climate and Forests Task Force (GCF Task Force) is the most visible initiative.

This has inevitably increased the complexity of the regulatory environment shaping agricultural and timber supplies, with implications for land-use decision making (Lambin et al. 2018). This has been framed as the emergence of interactive systems

of co-governance, with multiple private initiatives that complement, substitute or contradict public regulations. These ‘hybrid’ governance arrangements focus primarily on regulation setting, implementation and the monitoring of outcomes (Lambin et al. 2014; Lemos and Agrawal 2006). A recent empirical study questions the assumption that hybrid transnational governance will necessarily “harden” accountability. The study shows that the European Union Timber Regulation (EUTR) and REDD+ policies are neither more demanding nor enforced more strictly (Moser and Leipold 2019), as accountability *per se* has been reduced to legal compliance and cost-effectiveness, without establishing legitimacy with a broader audience.

Others have adopted place-based approaches that emphasize partnerships around supply chains in specific territories. Examples include the African Cocoa Initiative II (<https://www.worldcocoafoundation.org/initiative/african-cocoa-initiative-ii/>), and the Global Coffee Platform in Vietnam. Such

approaches still rely on certification as the main instrument to ensure compliance, like the jurisdictional approach to certification in Sabah (Malaysia), Central Kalimantan (Indonesia) and Ecuador – three pilot experiences under RSPO that also led to the upgrade of these sustainability standards (RSPO 2019).

The new institutional arrangements to tackle deforestation – involving governments, the private sector, farmers and civil society groups – are diverse. They vary across landscapes (dominated by smallholder farming systems

or capital-intensive plantation systems), have different types of value chains, and show a diversity of linkages to both domestic and global end-markets. The specific sustainability initiative(s) unfolding in different contexts will depend on which individual actor, or coalition of actors, has the motivation, authority and resources to orchestrate arrangements aimed at advancing sustainability through supply-chain and/or jurisdictional measures.

An overview of sustainability initiatives associated with seven key forest-risk commodities is presented in Table 4.

Table 4. Sustainability Initiatives across seven major ‘forest risk’ globally traded commodities.

Commodity	Palm oil	Soybeans	Cocoa	Coffee	Rubber	Timber	Beef
Key country (-ies)	Indonesia and Malaysia (82% of global supply)	Brazil, US and Argentina	Cote d’Ivoire and Ghana	Brazil, Vietnam and Indonesia	Asia – Thailand, Indonesia, China, Malaysia, Cambodia	China, US, Canada, Russia, Brazil, Cameroon, Ghana, Indonesia	Brazil, Argentina, US, Australia
Key company (-ies)	Wilmar International and Cargill	Cargill, ADM, Bunge and Louis Dreyfus	Cargill, ADM, Barry Callebaut, Petra Foods	Nestlé, Mondelez and DE Master Blenders 1753	Bridgestone-Firestone plantation in Liberia	FSC and PEFC market leaders in timber certification	<ul style="list-style-type: none"> • JBS, Marfrig and Minerva • ABIEC
Key purchaser(s)	Wilmar operates 160 processing plants in 20 countries and sells meal and oil to, inter alia, Unilever, Nestle and Procter & Gamble	Cargill owns processing facilities and ports in Brazil, so high leverage in the soy value chain.	Mars Fragmented supply chains. Origin of cocoa not disclosed for mass market.	100,000s of local traders/cooperatives. Starbucks sources from 27 countries in SSA, LA and SEA	Tire manufacturers including Michelin, Goodyear and Continental	<ul style="list-style-type: none"> • 10,000s of local traders to meet domestic demand. • FLEGT-VPA and EUTR w/e 2003 to supply EC markets 	Domestic consumption and key exports of Brazilian beef to China (50%), Middle East (28%), Latin America (9%) and EU (8%)
Global production (m tons, 2018/19)	74	360	4.8 (2019/20)	5.7 (2019/2020)	13.6 (2019)	1.465 million m ³ RWE (2019)	71.7 (2018) www.Trade.org
Trigger(s)	Greenpeace, WWF and other NGOs w/e 2000	<ul style="list-style-type: none"> • Brazilian NGOs • Greenpeace campaign w/e 2007 	Global Witness	<ul style="list-style-type: none"> • NGOs w/e 1990s • Product differentiation (quality and sustainability) 	WBCSD w/e 2017, Greenpeace, Global Witness and Tire Industry Project	FSC w/e 1994	<ul style="list-style-type: none"> • Long-term decline in beef production as % of total meat production (39% in 1961 and 20% in 2018).^a • Climate change.

Continued on next page

Table 4. Continued

Commodity	Palm oil	Soybeans	Cocoa	Coffee	Rubber	Timber	Beef
Environmental and social issues	Clearing intact or logged forests; CO2 emissions due to peatland conversion; biodiversity and habitat loss; land conflicts	Loss of dry forest habitats – Cerrado Intensive use of lime, NPK fertilizers and pesticides	Deforestation and forest degradation Child labor and modern slavery	Conversion of shade-grown coffee to monocrops. Intensive use of NPK fertilizers and pesticides. Water use.	-Deforestation and illegal forest conversion -Land appropriation -Displacement of LCs and IPs	Illegal logging and forest degradation. Loss of livelihoods for LCs and IPs.	<ul style="list-style-type: none"> • High GHG emissions associated with beef production • Child labor • Abattoir workers' rights and conditions
Key instrument(s)	<ul style="list-style-type: none"> • RSPO, ISPO • Environmental and social standards developed • Moratorium on peatlands 	Voluntary moratorium not to purchase soy in areas deforested after 24 July 2006. RTRS 3rd party certification	Rainforest Alliance and Fairtrade certification. 'Sustainable Cocoa Initiative' and Mars 'Vision for Change'. Cocoa productivity/R&D	C.A.F.E. – internal code of conduct developed by Starbucks and Cl. Improvements by producers are not a priori compliance.	Global Platform for Sustainable Natural Rubber (GPSNR) – a multi-stakeholder platform launched at World Rubber Summit in March 2019.	FSC certification PEFC certification FLEGT-VPA and EUTR	<ul style="list-style-type: none"> • Rural Environmental Cadastre (CAR) – beef produced on lands not deforested after July 2008. • Beef moratorium and TAC • SISBOV (sanitary certification) • Rainforest Alliance/ IMAFLORA
Current status	Industrywide agreement – a preemptive alliance to obtain a license to operate.	Moratorium extended to May 2016, and indefinitely thereafter. Little progress with RTRS	Precondition to extend cocoa certification in future. Niche markets	Farmer practices independently audited (90% of coffee bought in 2013).	Private tracking approaches developed by Michelin and Halcyon	Weaknesses in audit systems; FSC's New Approaches aims to tailor the system for SMEs	<ul style="list-style-type: none"> • CARs too rapid and imprecise. Deforestation of more than 25 ha. 30% of producers excluded from moratorium/TAC
Notes	National instruments – ISPO, MSPO	Soybeans not recognized by consumers	FLEGT-like approach proposed in Cameroon	Starbucks – Fairtrade (8%) and organic (1%)	Smallholders as part of GPSNR	Multiple and competing instruments.	PPP – Xingu Beef Initiative (TNC, Marfrig and Walmart) and ICV - Good Livestock Practices

a <https://www.bloomberg.com/news/articles/2020-07-07/pandemic-set-to-spark-biggest-retreat-for-meat-eating-in-decades>; and <http://www.fao.org/news/story/en/item/1287515/icode/>
Source: Adapted from Rueda et al. 2018; FAO 2016 and Pocard-Chapuis 2020.

6 Jurisdictional approaches

Recent jurisdictional approaches lie at the intersection of three approaches, namely landscape approaches for managing the trade-offs between conservation and development; addressing competing land uses under REDD+ implementation; and voluntary corporate sustainability initiatives to eliminate deforestation from their supply chains (Wolosin 2016; Pacheco et al. 2017). They are broadly defined as wall-to-wall frameworks that seek to align governments, businesses, NGOs and local stakeholders in specific administrative jurisdictions with common interests in land-use governance (Fishman et al. 2017; Boyd et al. 2018). These frameworks strongly resemble integrated landscape approaches, but their key distinctive feature is a high level of governmental involvement in a landscape that is defined by policy-relevant boundaries (Ros-Tonen et al. 2018).

Multiple initiatives are under way, with each one taking different forms depending on the main actor orchestrating them.⁷ Several examples were provided in Section IV. Each jurisdictional initiative involves a different number of actors, each playing specific roles and able to choose between many different actions in accordance with: (a) the objectives they collectively hope to achieve; (b) the information available on potential outcomes; and (c) the expected costs and benefits to obtain results (Stickler et al. 2018). This can lead to three types of interactions between corporate sustainability initiatives and government interventions at the landscape scale: co-existence with relative independence from one another; alignment

to achieve shared social, environmental and economic goals; and the orchestration of hybrid public-private mechanisms and incentives to accelerate the transition to sustainable landscapes, and to more effectively manage trade-offs (Pacheco et al. 2017).

The mix of public and private interventions results in different outcomes that translate into new regulatory frameworks and arrangements effectively implemented or enforced in the jurisdiction concerned. These may include: 1) different mixes of policies and regulations (e.g. moratoria, voluntary and mandatory sustainability standards); 2) changes or adjustments in incentive systems (e.g. financing schemes, integrated service delivery models, tax distribution systems that reward states or municipalities on the size and/or quality of protected area management); 3) new institutional arrangements (e.g. partnerships for land registration, territorial planning and identification of HCS/HCV areas, technology transfer); 4) technological innovations (e.g. production, traceability, monitoring); and 5) changes in market orientation (e.g. co-production of timber and non-wood forest products) (Sheppard et al. 2020). These outputs have diverse degrees of alignment in strategic targets and implementation approaches along the regulatory processes.

The key difficulties with jurisdictional approaches are linked to: (a) the operational challenges of undertaking collaborative action to achieve common goals among diverse actors (Reed et al. 2016); (b) developing effective and cost-efficient incentives for local stakeholders (Rueda et al. 2017); (c) social inclusion in the supply chain (German

7 See, for example, Brandao et al, 2020 and <https://jaresourcehub.org>



Soy production in Santa Cruz, Bolivia.

Photo by NeilPalmer/CIAT

et al. 2020); (d) linking different economic sectors and diverse societal demands to disrupt and replace policy instruments in order to achieve a paradigm shift (Wunder et al. 2020); and (e) the risks of leakage from well-performing jurisdictions to poor ones (FAO 2018). Supply-chain initiatives and private efforts do not align well with governmental efforts at sub-national levels, as shown in the Brazilian Amazon (Brandao et al. 2020).

Supply chains and jurisdictional governments are not targeting the same priorities, nor are they necessarily working at the same scale or with the same time horizon. Jurisdictions can engage actors and monitor their commitments only inside their boundaries and need to attract

responsible corporations engaged in long-term sustainable development goals. Market differentiation and associated premiums are mostly targeted by corporate sustainability initiatives but may not translate into significant economic benefit at the jurisdictional level. Private initiatives that are linked to achieve deforestation-free supply chains aim to improve the efficiency of supply chains, while reducing the negative effects of production. Jurisdictional public interventions are more focused on putting in place the regulatory frameworks and associated incentives, along with other public goods (e.g. tenure security, information technologies), to reduce deforestation while promoting sustainable land use and supporting agricultural and rural development.

7 Future challenges to promote sustainable supplies of forest-risk commodities

7.1 Balancing upgrading and upscaling

Early analyses of global agricultural commodity chains focused on issues such as quality regulation, restructuring processes and upgrading (Raikes and Gibbon 2000; Gibbon 2001; Ponte 2002; Fold and Pritchard 2005). The emphasis was linked to the (then) broader debate on development trajectories via participation in global markets as an (assumed) more viable alternative to reliance on local or domestic markets (Humphrey and Schmitz 2002). More recent research on the impact of Finnish-Swedish pulp and paper investments in Brazil and Uruguay also provides perspectives on these two models of development, suggesting these are “reminiscent of colonial production and trade patterns between Latin America and Europe” and “have rekindled local, regional and international conflicts concerning land use and the equitable distribution of rents” (Pakkasvirta 2012: 1).

Growth in global trade and the associated land-use and forest-cover changes (Nadvik 2008; DeFries et al. 2010; Meyfroidt and Lambin 2011; Hansen et al. 2013; Curtis et al. 2018) continue to impact the environment (Lee et al. 2014; Baker and Spracklen 2019) and smallholders (Lee et al. 2012). The structure and complexity of global supply chains have evolved as new policy instruments for land-use governance (Lambin et al. 2014), new transnational regulatory frameworks and more complex supply-chain initiatives have changed the interactions – and distribution of returns – among actors (Newton et al. 2013; Rueda et al. 2017; Lambin et al. 2018).

Growing demands to meet new social, environmental and food-safety standards while reducing delivery times are leading to the development of more complex buyer-seller relationships. These involve extensive coordination in areas such as sourcing, product design, quality systems, logistics and production scheduling (Figure 2).

Coordination without ownership is a striking feature of the global economy. The coordination of international production networks involves both the vertically integrated and geographically dispersed operations of transnational companies. Organizational fragmentation – as well as the geographical fragmentation of value chains – is a feature of globalization. In general, it is easier to upscale good practices and to mainstream sustainability in more vertically integrated models. A key challenge to sustainability is how to upgrade the practices of marginalized groups, such as smallholders with access to fewer resources, in the palm-oil, cocoa and beef sectors, for example.

New drivers of globalization have also emerged. These encompass global buyers involved in the design and marketing of products – and potentially in global logistics – but not in production or manufacturing *per se*. Among these firms, large retail chains – including supermarkets – have become particularly important in global trade. Three factors have driven changes, such as:

- Increased emphasis by retailers on product differentiation and innovation (new products, new packaging, greater processing);
- More emphasis on the quality of products, leading to greater coordination and/or

Food retailers (supermarkets and others)	Concentrated	Buyer-driven chains	Bilateral oligopolies
		Public + private/ Safety-focused standards	Private/most comprehensive standards
		e.g. horticultural products and shea butter (cosmetics)	e.g. bananas and fresh pineapples
	Fragmented	Traditional markets	Producer-driven chains
		Limited public standards/ Least comprehensive standards	Public + private/ Quality-focused standards
		e.g. shea nuts (cocoa butter equivalents and agribusiness)	e.g. coffee and cocoa
		Fragmented	Concentrated
Food production (farmers and manufacturers)			

Figure 2. Global supply-chain structure and agri-food standards

Source: Adapted from Lee et al 2012

- streamlining of activities along the supply chain; and
- Greater concern for social and environmental standards that place stricter requirements on companies to show ‘due diligence’ in the sourcing, manufacture, transportation, storage and preparation of products, and to hold them accountable for lapses in their suppliers’ performance⁸

7.2 Balancing stringency and inclusion

Companies face several challenges to achieve their commitments and comply with more stringent environmental regulations that tend to exclude smallholders. Company responses include supply chain-based interventions, such as internal codes of conduct, auditing procedures, product information systems, procurement guidelines and traceability systems (Boström et al. 2015). In turn, such private commitments place demands on the public sector to effectively implement policies and actions

in order to improve land-tenure security, territorial planning, credit access and the availability of technology/extension support services to help farmers upgrade their production systems (Pirard et al. 2015). This has been the dilemma between RSPO and ISPO, highlighting the question of whether interactions between private and state regulations would increase the level of ambition of ISPO. There is a risk that only the most capitalized farmers will be able to upgrade their production systems if some of the enabling institutional and market conditions are not in place to include less-endowed smallholders. This means it may reinforce smallholder exclusion, as has been experienced with VSS. Nevertheless, strengthening the interactions between corporate sustainability initiatives and government interventions at the landscape scale may provide opportunities for formal and informal experimentation to promote inclusion. However, as some researchers have found, “the main paradoxes of MSPs (and commodity roundtables) relate to their willingness to be ‘inclusive’ and at the same time their exclusionary or ‘closure’ effects due in part to interactions with existing political economic contexts and embedded power inequalities, as well as more subtle manifestations of power linked to the favouring of some forms of knowledge and

8 IISD’s State of Sustainability Initiatives project, initiated in 2008, led to four reviews: Sustainability and Transparency (2010), Standards and the Green Economy (2014), Blue Economy (2016) and Extractive Economy (2018), as well as a series of eight commodity-specific reviews (<https://www.iisd.org/ssi/>).

engagement over others” (Cheyns and Riisgaard 2014: 409).

Civil society also needs to promote greater inclusiveness and representation. Hence, improved experimental orchestration may offer significant potential to promote innovation and systematic learning by all actors (Abbott 2017; Cashore et al. 2019) and to build on earlier efforts to rescale environmental and political governance (Batterbury and Fernando 2006).

7.3 Ensuring effectiveness and legitimacy of outcomes

The growing complexity in the governance of commodity supplies, due to the emergence of transnational regimes shaped by national and sub-national policy regulations, has raised concerns about the effectiveness versus legitimacy of the institutional arrangements being put in place (Pacheco et al. 2017b). Interventions that are seen as legitimate or acceptable by different actors may not necessarily contribute to effective outcomes due to poor compliance associated with limited accountability and weak enforcement. In contrast, interventions that are effective in achieving desired outcomes, such as zero deforestation commitments, may not be legitimate to all actors as they impose unequal costs and distribute benefits to different groups in society. Thus, in order for interventions to be sustained, they have to balance effectiveness with legitimacy.

Schouten and Glasbergen (2011) suggest that there is a need to adopt a multidimensional approach in order to understand the legitimization processes of private governance initiatives. This approach involves issues of legality, moral justification and consent/acceptance. The three perspectives

complement each other, helping explain the tension and trade-offs in how different actors create legitimacy for regulatory governance processes and arrangements. As shown by the authors, the inclusion of a large variety of stakeholders increases the need to base decisions on consensus, and has been crucial to the legality of RSPO. But it has also brought about various compromises in the moral justification underlying the topic of sustainable palm oil, leading to less strict standards and, in turn, reducing the legitimacy of RSPO, and thus acceptance for many NGOs.

More legality of international standards is not always accepted vis-à-vis national statutory regulations, which tend to be seen as more legitimate by some national stakeholders. Hospes (2014) shows that governments and producer associations in Indonesia and Brazil have launched national standards – which are less stringent – to challenge RSPO or RTRS, considered as interventions from the North.

Transnational multi-stakeholder learning dialogues face three key challenges: (i) they rarely shape policies or behavior directly but may contribute to incremental improvements in specific domestic or jurisdictional contexts; (ii) they may lead to ‘compromise’ approaches that do not address the core problem; and (iii) they risk being overly influenced, or captured, by powerful interest groups to shift problem definitions or to adopt narrow instrument choices (Cashore et al. 2019). The effectiveness of emerging transnational policy regimes in shaping deforestation is difficult to determine as the institutional arrangements put in place to reduce deforestation are not necessarily linked to a coherent policy framework. Instead, they may be linked to combinations of different policies, regulations, incentives, technological change and changing markets, whose effects are difficult to isolate.

8 Conclusions

1. Growing multiplicity and complexity of governance initiatives do not necessarily equate with greater effectiveness in terms of actions on the ground or reduced rates of deforestation and forest degradation.

The multiplication of sustainability initiatives has been driven by the growing complexity and diversity of conditions under which agri-food and timber supply chains operate. These encompass geographical, demographic, logistical and cultural challenges associated with global value chains as well as more specific variations in knowledge production, extension services, technology transfer, national and international legislation, credit access, value-chain development, and pricing mechanisms. They involve many different types of actors, including farmers who make land-use decisions as a function of their access to land, and other assets; urban consumers; environmental NGOs lobbying for change; financiers; investors; and buyers of commodities. All of them have an indirect influence on land-use decisions.

Broad interest in VSS has been accompanied by other private governance regulations that aim to govern private actors through, inter alia, codes of conduct, principles and guidelines, moratoria and wider commitments to sustainability. A more recent bold step was the adoption of public and private commitments to zero deforestation as a way of responding to consumer pressure on deforestation-free production. Nevertheless, the latest Forest 500 report indicates that no palm-oil, soy, cattle or timber company that has committed itself to eliminating

deforestation from its supply chain by 2020 will meet this goal (Earthsight 2020), leading one observer to suggest that “investors and companies are fiddling while forests burn” (Hillsdon 2020). Others have noted that “policies designed to achieve zero-deforestation commitments are not being adopted or implemented at the pace needed to meet 2020 goals” (Curtis et al. 2018: 1111). This indicates that there are still many challenges to implementing private standards (Mayer and Gereffi 2010; Challies 2012; Waldman and Kerr 2014).

Increasingly, the emerging institutional arrangements to govern global supply chains involve the intervention of more non-state actors to enhance environmental governance aimed at reducing negative externalities (Cashore 2002; Byerlee and Rueda 2015). Such emerging regimes remain, but are highly polyarchic, and there is broad scope for autonomous initiatives by NGOs and private service providers, along with national governments, international organizations, and multi-donor partnerships (Zeitlin and Overdevest 2020). They often require periodic adjustments in governance arrangements to ensure that they are adapted to changing circumstances, as well as political influences during implementation. Recent experience with deforestation trends in Brazil is a case in point (Carvalho et al. 2019). Other recent research has highlighted a discernible trend in the evolution of agricultural supply chains toward more exclusive agribusiness as governments scale back support to smallholders, as more stringent standards raise barriers of entry, and as firms streamline operations to enhance competitiveness (German et al. 2020).

2. Combating imported deforestation: Will states take the lead in the development of incentives and binding tools?

Over the past 20 years, private-sector actors have increasingly defined and monitored their own sustainability performance by using certification standards or by developing their own procedures and criteria. These voluntary approaches have often been criticized for affecting only a minority of companies and tending not to extend to other productive actors who supply markets that are not sensitive to the sustainable production of agricultural commodities. These VSS also largely neglect small-scale producers, especially when they are engaged in informal activities. Moreover, companies that have voluntarily committed themselves to combating deforestation rarely provide information that makes it possible to assess the implementation of their good practices along supply chains (Pirard et al. 2020). On the one hand, they are often nontransparent with respect to the criteria of their corporate social responsibility strategies and their progress over time. On the other hand, they rely on private certificates whose evaluation audits are, at best, only partially accessible (Piketty et al. 2019).

Another line of criticism of these private voluntary approaches relates to the unfulfilled commitments of many companies, particularly when they have declared their intention to embark on a deforestation-free production approach. Every year, the progress made by multinational companies to meet the targets set by the New York Declaration on Forests or the Bonn Challenge is minor, if not zero or negative.

The lack of substantial results from companies on tropical deforestation, and the increased pressure from Western consumers (represented by citizens and NGOs), appear to have given a new voice to states over the past two or three years in the search for workable solutions to combat deforestation. Policy reversals have also occurred, as in the

case of Brazil (Escobar 2020),⁹ although some states and municipalities continue to make progress (Piketty et al. 2017).¹⁰

Since 2013, consuming countries – particularly member states of the European Union – have published (Cuypers et al. 2013) a series of reports, studies and other documents considering various measures to reduce the consumption and importation of forest-risk commodities. These moves are now translating into efforts to adopt specific policy goals and regulations through wider consultations (e.g. between the UK and the EU). Producing countries have also upgraded their land-use and environmental regulations to halt deforestation (e.g. Forest Code in Brazil), and issued specific instruments (e.g. soy moratoria in Brazil and peatland moratoria in Indonesia). Yet, at the sub-national level there is probably greater interest for provincial and municipal governments to leverage private standards and company commitments as a way to overcome institutional barriers linked to land-tenure registration, the provision of technical services, the upgrading of smallholder production, and access to finance. In addition, there is a growing willingness to build bilateral agreements between governments in consuming and producing countries, and to develop approaches that manage the geographical risk of deforestation in southern countries. It is likely that some of these states and/or the European Union will succeed in establishing binding regulatory measures to limit their contribution to deforestation. These will probably be combined in an innovative way with private approaches that are also in development.

9 The final data (released on 7 August 2020) from Brazil's near real-time deforestation detection system (DETER) for the monitoring year from August 2019 to July 2020 showed deforestation had increased by 34% compared with the previous year.

10 See also <https://www.cirad.fr/actualites/toutes-les-actualites/communiqués-de-presse/2020/paragominas-agriculture-elevage-conservation-forets>

3. Need to better understand and manage the ambiguities and trade-offs during implementation of complex policy regimes

The growing complexity of policy regimes implies that they comprise multiple social, economic and environmental dimensions at international, national and sub-national levels. This, inevitably, results in ambiguities and leads to many trade-offs between gains and losses. It may include shifts in responsibility and authority, as well as compliance risks.

Sustainability and zero-deforestation commitments by corporate actors are often characterized by different cut-off dates and levels of ambition. They take time to be implemented in a concrete and effective way. This is no surprise as they require ambitious coordination between private and public governance instruments and an unprecedented reconciliation of public and private strategies. Ambiguities may result from not being able to embrace upstream suppliers and informal economies. If the initial 2020 deadline has been missed (Earthsight 2020), there is a need to quickly redefine clear cutoff dates after which imported deforestation is definitively impossible. As long as cutoff dates are not clearly defined, such commitments may have perverse effects and lead to a headlong rush, encouraging actors to take advantage of the last opportunities to deforest before it is no longer possible. Importing countries could already clarify these dates – which should not be a future date but a date that has already passed – in order to avoid this risk, to ensure compliance and to start monitoring their impacts.

In terms of the major trade-offs, at the internal level, mainstreaming environmental concerns into trade decisions may have had the effect of discriminating against suppliers unable to comply with the new requirements, thus increasing the gap between fast adopters and laggards. This can result in fragmenting markets, with some consuming countries favoring sustainable supply while others are less sensitive to it. This may also lead consumer-goods companies to focus their sourcing on safer landscapes, while discriminating against riskier ones. Similar

effects may influence smallholders, who might lack the incentives or simply cannot afford the uptake of improved practices. In addition, the misalignment of policies – such as fiscal policies failing to reward good environmental performance for smallholders, groups or jurisdictions – can increase the disparities since they may benefit large corporate groups while discriminating against local communities and smallholders. This will tend to reinforce vigorous informal economies in producing countries.

We still need to better understand the broader consequences or outcomes of these policy regimes, which affect multiple dimensions and result in diverse trade-offs (Taylor and Streck 2018; van der Ven and Cashore 2019). This requires an improved understanding of the structural factors limiting small-scale farmers as they attempt to “grow producer power” (Cotula and Polack 2020). The emergence of VSS, as well as international private policies and processes for halting deforestation, has tended to increase the divide between adopters and non-adopters of sustainability standards. This has also helped shift the blame to those unable to follow such standards, often medium-sized national companies and smallholders. It has also resulted in the (assumed) greater authority of international standards, with direct implications for shaping access to markets and finance. Some producer countries have tried to challenge this authority by issuing their own mandatory sustainability standards, notably in the palm-oil sector. This is still an unresolved issue, and more is needed to understand how policy motivations shape sustainability processes, and vice versa. By contrast, collaborative initiatives involving governments in consuming countries have tended to work against the proclaimed national interest of producing countries. This has, in some cases, increased tensions and weakened collaborative efforts between consuming and producing countries to upgrade the performance of forest-risk commodities. Variations do occur given the heterogenous policy contexts across countries and landscapes. A greater convergence has been identified in global policy processes, contrasting with fragmentation at the

country level, which thereby increases the risk of lagging behind development and sustainability goals.

4. Looking toward the outcomes of jurisdictional approaches and how to monitor progress

Multiple voices from NGOs, sub-national governments and companies tend to favor a move toward landscape and/or jurisdictional approaches as a way of building collective action to tackle the barriers and bottlenecks hampering sustainability goals. However, there is an important need to better understand how the interactions between state regulations and non-state sustainability initiatives can combine supply-chain and jurisdictional approaches to stimulate wider uptake by farmers. How beneficial will the shift toward jurisdictional approaches be with regard to promoting sustainable commodity supplies? This will involve identifying innovations to promote collective action, finding ways to avoid ‘free riding’ and building more social accountability, while empowering local stakeholders. New cost-effective metrics at the landscape level will be needed to reconcile differences in perceptions of risk associated with forest-risk commodities and corporate actors who are looking for cheaper, faster solutions. The effectiveness of policy regimes in tackling deforestation requires an examination of the direct outcomes from these interventions, and also of the associated impacts they may have on other dimensions. These relate to carbon emissions, biodiversity and cultural losses, people’s livelihoods and economic growth in the landscapes, or in jurisdictions where zero deforestation interventions linked to wider sustainability commitments are being implemented.

Empirical knowledge remains scarce about how jurisdictional approaches work in practice and under what conditions they are effective (Chervier et al. 2020). Additional research is needed to better understand their potential in terms of legitimacy and effectiveness; to support land-use intensification and to enhance

landscape goods and services. New insights may be gained from case studies of select jurisdictions where public and private policies, as well as hybrid governance arrangements, have been implemented over the past 20 years (Brandão et al. 2020).

We also need to improve our knowledge about the social outcomes of zero deforestation commitments and how new institutional arrangements have affected changes in market conditions, access to credit and microfinance, the adoption of new technologies, and land-use dynamics. It is necessary to develop transparent and participatory monitoring systems in order to highlight progress, to identify gaps and to assess how local actors perceive positive change or any shortcomings, thereby enabling adaptive management (Brandão et al. 2020).

5. New initiatives and potential areas for new research

A number of recent initiatives hold promise in furthering our understanding of how to reduce deforestation and promote sustainable landscapes and livelihoods. These include the following:

Forest Positive Alliance (FPA) is a new initiative of the Consumer Goods Forum (CGF) comprising a coalition of 17 companies, with a US\$ 1.8 trillion market share. It was launched on 23 September 2020. CGF members are working to promote and adopt sustainable business practices, including sourcing deforestation-free commodities (e.g. palm oil and soy as well as paper, pulp and fiber-based packaging) and ensuring alignment with the CGF Priority Industry Principles against forced labor.

Underpinning the actions of the coalition is a new theory of change supported by a charter, which outlines the coalition’s objectives to which all members are committed. By transitioning from deforestation- and conversion-free supply chains to deforestation- and conversion-free businesses, FPA members are accelerating



Coffee agroforestry plantation, Lampung Province, Indonesia.

Photo by Ulet Ifansasti/CIFOR

Table 5. Disclosures through CDP's 2019 forests questionnaire included in AFi/CDP baseline for 2020 and beyond

No. of companies disclosing	Timber	Palm oil	Soy	Cattle	Rubber	Other
	291	146	106	93	27	35

Source: AFi/CDP, 2020: 7

efforts to remove deforestation from entire supply chains and production.¹¹

Innovative finance for critical agri-SMEs is a recent initiative of the Global Agribusiness Alliance (GAA) to use a digital finance platform for improving agribusiness SMEs' access to finance. The tool is available free of charge for the first six months, effective September 2020. GAA is an international, CEO-led, private-sector platform of supply-side companies that are committed to harnessing

their collective strengths to tackle shared environmental, social and sustainability challenges. Members span the globe as growers and producers, traders, fertilizer and agrichemical manufacturers, seed suppliers, primary processors and agri-tech suppliers from food and non-food crops.¹²

An Accountability Framework baseline for 2020 and beyond was released by the Accountability Framework initiative and CDP on 17 November 2020 to help track

11 <https://www.theconsumergoodsforum.com/environmental-sustainability/forest-positive/>

12 <https://invest.globalagribusinessalliance.com/>

progress toward eliminating deforestation, and other forms of ecosystem conversion, from corporate supply chains. It is based on the full Accountability Framework version 1.0 released in June 2019, and on data from 411 companies that made full disclosures on 698 forest-risk commodities (Table 5).¹³

In terms of research gaps, there is a clear need – alluded to above – to better understand how the interactions between state regulations and non-state sustainability initiatives can combine supply-chain and jurisdictional approaches in order to stimulate wider uptake by smallholders. Corporate

actors are increasingly looking for place-based solutions using science-based targets. Many are trying to identify ways to resolve the tension between the materiality of sourcing (i.e. what is being extracted from a particular landscape), and how much they need to put back with regard to improving livelihoods and access to, inter alia, clean drinking water as well as educational and primary health-care facilities. Such approaches are not new but, in the context of new reporting requirements aligned with the Sustainable Development Goals (Swamy et al. 2018), are increasingly perceived as reducing reputational risks.

13 <https://accountability-framework.org/how-to-use-it/resources-library/disclosure-for-a-deforestation-free-supply-chain>

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FTA WORKING PAPER

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The continued growth in demand for a relatively small number of agricultural and forest commodities in global trade has placed increasing pressures on forests across landscapes in the tropics and sub-tropics. These pressures are amplified by growing domestic demand in producing countries. Such trends have led to multiple environmental challenges linked to loss of forests and biodiversity and rising carbon emissions. They also create social challenges including threats to local food security, tenure rights and the livelihoods of indigenous peoples and local communities.

Expansion of trade in forest-risk commodities over the past three decades has resulted in increased pressure from civil society organizations, consumers, international banks and shareholders of consumer goods companies to develop and implement a diverse array of instruments and tools to promote sustainable or deforestation-free sourcing, and as a way to reduce exposure to reputational, financial and regulatory risks. Multi-stakeholder platforms and commodity roundtables also emerged, in response to criticisms of government failures.

The multiplication of sustainability initiatives has been driven by the growing complexity and diversity of conditions under which agri-food and timber supply chains operate. Private sector actors have increasingly defined and monitored their own sustainability performance by using certification standards or by developing their own procedures and criteria. More recently, a discernible shift toward landscape or jurisdictional approaches is seen as a way to meet sustainability goals. The growing complexity of policy regimes, inevitably, results in ambiguities and can lead to trade-offs between gains and losses.

This review presents a synthesis of the multiple public, private and hybrid governance initiatives that aim to promote sustainable supplies of key forest-risk commodities. It aims to make it easier to understand a vast and rapidly expanding literature. By drawing on the published literature and scientific discussions, including the recent FTA 2020 Science Conference, the review highlights some of the outstanding challenges that urgently need to be addressed in order to achieve the targeted impacts.

The CGIAR Research Program on Forests, Trees and Agroforestry (FTA) is the world's largest research for development program to enhance the role of forests, trees and agroforestry in sustainable development and food security and to address climate change. CIFOR leads FTA in partnership with ICRAF, the Alliance of Bioversity International and CIAT, CATIE, CIRAD, INBAR and TBI.

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