PBL Netherlands Environmental Assessment Agency

The outcomes of deforestation-free commodity value chain approaches

Summary

A discussion paper commissioned by the Netherlands Environmental Assessment Agency (PBL)

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Rationale

Over a quarter of global forest loss from 2001 to 2015 is permanent deforestation caused by commodity-driven agriculture, meaning these areas are likely not be forested again [1]. This has led to deforestation to be on global economic agendas, such as during the 2019 World Economic Forum. In the past decade deforestation has risen in prominence on the political agendas of individual countries as well, leading in 2014 to the New York Declaration of Forests, the 2015 Amsterdam Declaration on Deforestation signed by seven European governments, and a 2019 EU Action Plan and Communication on Stepping-up EU Action to Tackle Deforestation. These declarations encourage private-public partnerships and action to ultimately remove deforestation from supply chains by 2020. The private sector is also increasingly active on the topic. In 2010, 400 companies comprising the Consumer Goods Forum committed to achieve zero deforestation within their supply chains by 2020 [2]. A review of commitments made between 2015 and 2018 towards zero-net deforestation by companies and financial institutions which influence global forest-risk chains such as palm oil, cattle, soy, timber and paper showed increased engagement since the Amsterdam Declaration [3]. Finally, suppliers of financial capital, such as banks and credit organisations increasingly require a due diligence approach from companies they lend capital to, to reduce such risks, or carry out due diligence themselves [4].

Zero deforestation (ZD) commitments emphasize the role of the production and trade of commodities as a cause of deforestation, while also recognizing vital place that forests play in global climate, biodiversity, and livelihoods. However, whether the targets and pledges in these commitments are achieved, and whether current approaches and instruments deliver their stated objectives is largely unclear [5]. At the same time, there is a wealth of information on deforestation, the causes, awareness and urgency, and on the initiatives implemented by companies, both globally and regionally, including third party certification of commodities. The economic risks of commodity-driven deforestation for financial institutions have also become increasingly clear. These include public controversies and reputational damage caused by deforestation in commodity producing regions [6], and more stringent and legal forms of liability. Notwithstanding this wealth of information, the links between zero deforestation commitments, actual policy approaches, and evidence of their effectiveness need systematisation.

This objective of this study for the Netherlands Environmental Assessment Agency (PBL) is to trace the impact of approaches advocated to reach the objective of zero deforestation value chains (ZD-VC). The concepts of value chains and geographic nexus (see figure 6) [7, 8] were used to look at the types, impacts and success of different approaches used to reduce deforestation driven by six forest-risk commodities: cattle, coffee, cocoa, soy, palm oil and timber.

Methods

This discussion paper is a summary of the report ”The outcomes of deforestation-free commodity value chain approaches” [9], in which a review of evidence in literature (peer reviewed, grey literature and websites) and databases was analysed using three approaches:

Discourse analysis: Discourses on zero deforestation in literature - including written communications and debates, media and websites - were investigated for how they present the logic or theories of change (ToC) of zero deforestation interventions, how they do or do not establish causality across the value chain, and what they present as major themes in achieving ZD-VC for the six commodities in different localities. From here the most common discourses, and approaches used and by which stakeholders were constructed.

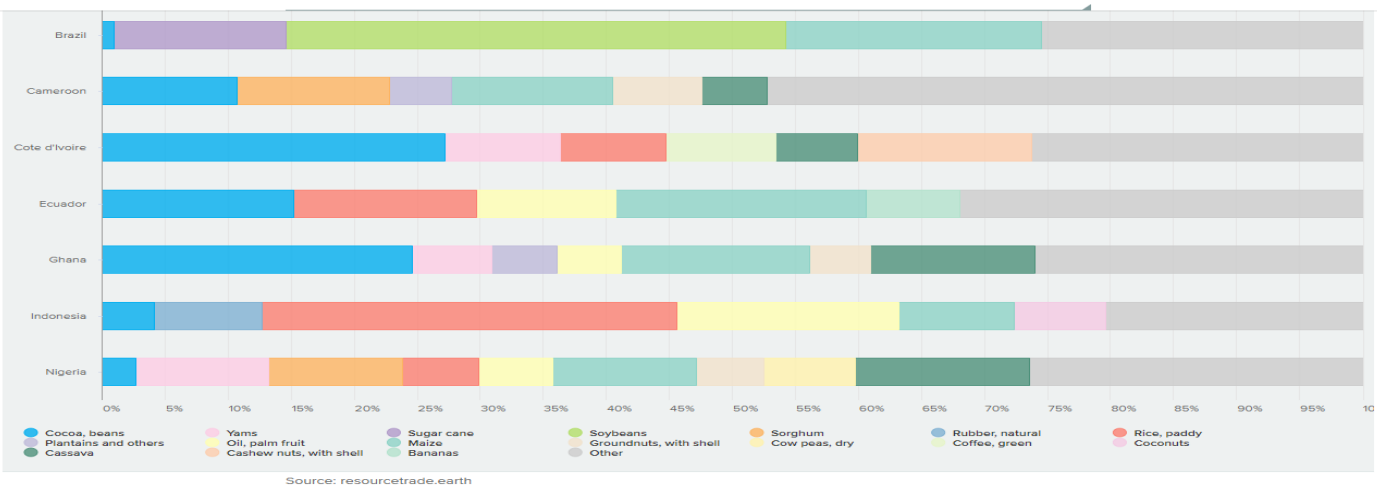
Evidence analysis: Literature and databases were reviewed for evidence on how commodities drive deforestation, definitions and terms used, the outcomes and impacts of different ZD initiatives and lessons learnt. Details of 46 initiatives implemented in the six commodity chains least two initiatives investigated per approach and commodity were entered into a database, detailing the organisations involved, activities, timing and scale of the initiative, criteria and indicators of success, monitoring frameworks and data sources, claimed attribution and causality, and reported outcomes and impacts of these initiatives. The initiatives were classified into approaches, drawing on a typology of interventions enhancing the sustainability of commodity chains [10] and a framework of non-state market driven governance systems [11]. The initiatives reviewed and evidence on different ZD approaches from literature and websites were evaluated for their effectiveness in meeting the objective of zero deforestation value chains. A five point scale from “very effective”, to “no effect” and “not effective” was used to evaluate against ten criteria developed by Garret et al. [12] and others [13-18]. Where there was no or little evidence, this was also indicated.

Theories of Change: Taking a Theory-Based-Evaluation approach, the logic of zero deforestation interventions was assessed using a theory of change (ToC)[19]. When the logic behind specific initiatives and approaches were not explicitly documented, a ToC was constructed per commodity and approach by inspecting the database of initiatives, and the initiative, outcomes, impacts and pathways to assumed impact and leakage (see [9] Annex 2 for details). These were analysed and mapped into aggregated impact logics per commodity value chain. Qualitative expert judgement by the research team was used to summarize these analyses.

Commodities drive deforestation directly and indirectly

For the six commodities studied, multiple ways through which commodity production drives deforestation was found. The simplest types of drivers are "direct": when a forested piece of land is deforested and then used for commodity production. For example, when a forest is cut down, burned and then sown with grass to create pasture for cattle. Or when a forest is cut down and palm trees are planted. As figure 1 shows, commodity production, such as cocoa in Cote d'Ivoire or soy in Brazil, comprises a large proportion of the agricultural areas of those countries, and has historically replaced forests at some point in time. Some commodities were direct drivers of deforestation decades ago, like most of cocoa currently grown in Ghana, Ivory Coast and Cameroon. Some increases in commodity production are difficult to link to direct deforestation as they can also result from agricultural intensification, such as soy replacing cattle ranching in. Some commodities, such as timber, are more likely to be direct drivers of deforestation than for example, coffee or cocoa, simply because timber is the commodity first and most easily produced when deforesting an area. Deforestation can be driven by commodities indirectly when forested land is gradually degraded such as by shifting cultivation and timber extraction, infrastructure development and habitation, and eventually replaced by commodity cash crops. When major periods of deforestation have happened is clear, but how booms and bust cycles of commodities interact and how smallholders or large-scale producers react to it are less clear. To get a grip on these issues, baseline cut-off dates for deforestation play a key role. However, cut-off dates for different commodities and geographies differ widely: reflecting when initiatives started more than when commodity driven deforestation occurred. Thus, the concept of current exposure to ongoing (and not historical/pre-cut-off) deforestation risk is key.

Figure 1 Land footprint of major tropical commodities in main producing countries, 2014



Source: FAOSTAT data [20]

Indirect drivers of deforestation are multiple and difficult to address in ZD-VC approaches. Complex social systems and interactions, including national economies, global financial systems and trade, population growth, resource governance and corporate power, poverty, corruption, weak law enforcement are all considered indirect drivers of deforestation [21]. However, indirect drivers of deforestation can be captured more concretely in the concepts of leakage and deforestation hot spots. The concept of leakage (or spillage) refers to the displacement of deforestation to elsewhere. Deforestation can for example be moved further down the value chain: from the cattle rancher that sells mature cows to the calve breeder from which he buys his young animals. Or deforestation "leaks" or "spills over" from one commodity to another, or unsustainable activities are transferred from one region to another or from one type of producer – such as increased soy production in one area driving the creation of pasture lands for beef production in other forested areas. Another form of leakage is when the production of one commodity – such as palm oil – causes the need for land use change elsewhere for another commodity, for example rice or coffee. Thus zero-deforestation commodity trade holds a key place in addressing the issue of leakage.

Political discourses steer the preferences for different ZD-VC approaches

Five discourses were identified that meaningfully link commodity production with deforestation and present a range of actions promoted to address such deforestation. These discourses are found in public media, in statements by government and private actors, and in reports and documents on zero deforestation commitments. These five discourses dominate public debates and discussions and help explain the five different ZD-VC approaches mostly commonly used in the six commodity value chains described in the previous section. They reflect the variety of values and worldviews held by politicians, policymakers, and private actors behind specific initiatives [22]. By doing so they set the framework for how the outcomes of ZD approaches and ZD indicators are conceptualized and present five alternative pathways to attain the common impact of zero deforestation supply[1] or value chains.

The *neoliberal discourse* exhibits confidence in the role of markets to find solutions to environmental problems. Espoused by "moderate" NGOs, the private sector, and liberal governments, it strongly favours market mechanisms such as Payments for Environmental Services (PES) schemes, REDD+ programmes, emissions trading, carbon caps, land sparing (e.g. productivity increases), voluntary sustainability mechanisms such as standards, and individual sustainability business CSR and financial investment stimuli. The *legality and responsibility discourse* embodies support for the rule of law and carrying out proper and careful management of sourcing and procurement practices to reduce the impact of commodity production. Supporters include governments, the EU, NGOs focussing on corporate transparency and financial organisations In this discourse, confidence is shown in the effectiveness of interactions between legal frameworks, corporate responsibility for implementing due diligence principles and active civil society organisations. The *limits to growth discourse* calls for global governance with solutions being a stronger role for governments and regulatory approaches to set boundaries to the expanding economy, and calls for worldwide transformative, systematic change in consumption and production patterns. Proponents include "conscience keeping" NGOs. local agroecological and peasant movements, indigenous associations, some scientists, climate activists, youth activists, and the slow food movement. It argues against privileging traditional market players and embraces efforts for global burden sharing, and fair and equitable shares in global consumption. The *local livelihoods discourse* argues for recognising the need for land use practices in forested areas and government support for the development of decent/acceptable livelihoods of local farmers and communities. Land tenure is accordingly seen as an important legal condition for producing deforestation free commodities. Less used at an international level, it is mostly expressed by farmers and communities, development organisations and in some voluntary standards schemes. PES schemes such as REDD+, legal protection of farmers, and agricultural extension services are proposed solutions to halt or reduce deforestation. In the *new colonialism discourse* commodity production is considered as a development engine that is threatened by Western sanctions under the guise of nature conservation and environmental awareness. This discourse rejects the negative impacts associated with commodity production as an unfair limiting factor to development. This discourse is apparent in communications from governments in Brazil, Indonesia, and India, and among palm oil and meat producers. Solutions proposed are consumer behavioural change through information and awareness, regulations and economic compensation.

These discourses seen in public and political debates steer towards using specific ZD-VC approaches and solutions more than the evidence base about which approach works why, where and how. This conclusion is underpinned by the finding that an evidence base on the outcomes and impacts is lacking for most approaches. Regulatory as well as landscape and jurisdictional approaches are favoured by the legality and responsibility discourse, as well as by the limits to growth discourse. While these discourses share very different objectives (sustainable growth vs de-growth), they favour similar types of initiatives. Voluntary sustainability standards, corporate pledges, and public-private partnerships fit within the neoliberal market discourse, but the use of voluntary standards as solution also appeal in the livelihoods discourse as it is one of underlying principle of many certification standards systems implemented in smallholder farming systems.

[1] The term value chain is used in preference to supply chain. See the full report (Ingram et al 2020 Annex 1) for explanation and definitions.

Six approaches used - but no one approach has successfully halted commodity-related deforestation

From the review of initiatives identified in the six commodity value chains, six ZD-VC approaches could be classified as being advocated for and implemented by various state, private, and civil society actors:

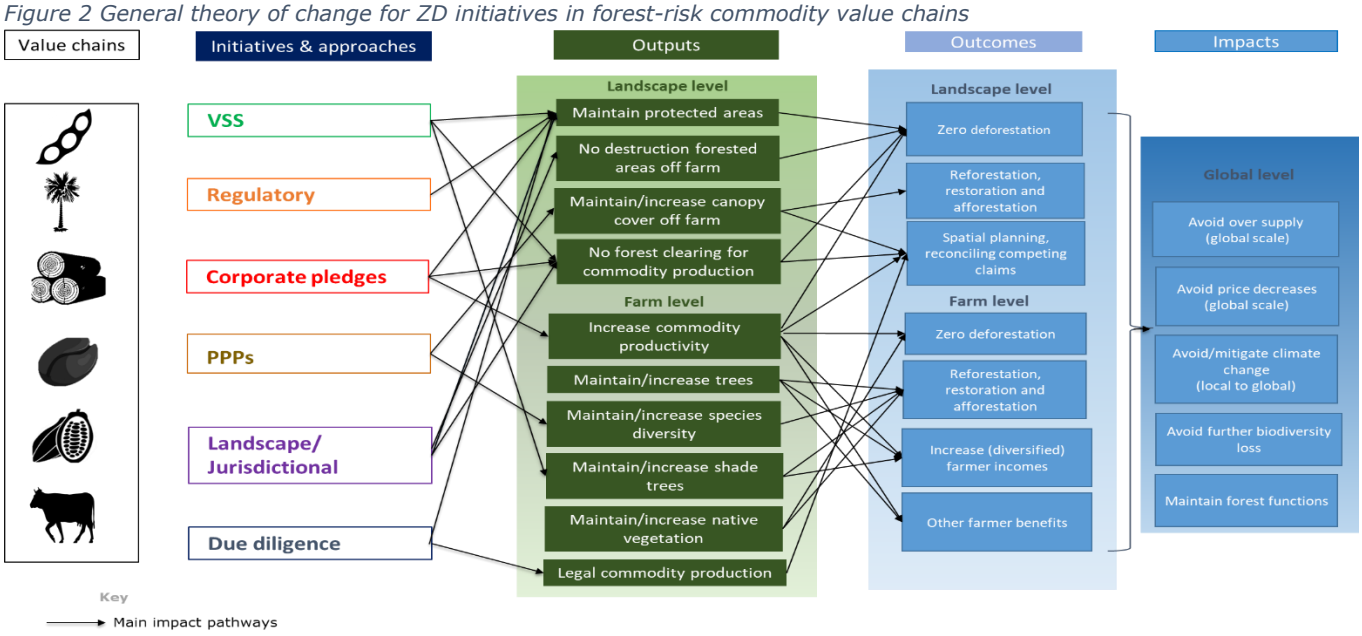
1. **Voluntary Sustainability Standards (VSS)**: broadly defined as "standards to which producers voluntarily adhere, requiring them to improve their production practices across a variety of sustainability indicators". Most VSS take the form of certification standards and are used in all stages of commodity chains.
2. **Regulatory approaches**: state regulations and government policies governing commodity value chains and seeking to govern the landscapes which the commodities originate from, from both the supply, production side of the value chain and the consumer, demand side.
3. **Corporate pledges**: a form of corporate social responsibility and self-regulation, whereby a business (or association thereof) pledges and then monitors and ensures active compliance with the spirit of the law, ethical standards, and national or international norms on CSR. These include actions that appear to further a social or environmental goods beyond the interests of the firm(s) and what is required by law. Most pledges are from companies in trading, manufacturing and retailing stages of value chains.
4. **Public-private partnerships (PPPs)**: include platforms, networks, associations, partnerships and agreements between private sector and public sector, and often also research, civil society (CSO), and non-governmental (NGO) organisations collaborating on a common goal of sustainability with a declared policy or programme and plan of action. Many PPPs include governments in producer and consumer countries, and large companies in the trading, manufacturing and retailing stages of value chains.
5. **Landscape and jurisdictional approaches**: initiatives taking place at a scale that match administrative boundaries of local, regional, sub-national or national governments in commodity producing countries or production and ecosystems areas. These tend to cover actors at different stages of one commodity chain, with producers most widely represented numerically.
6. **Due diligence mechanisms**: include individual and joint actions, investigations or the exercise of care by companies to avoid committing an offence. The offence maybe due to a legal obligation or a voluntary initiative on taking responsibility for supply-chains. These include traceability mechanisms, third-party campaigns and investigations, voluntary disclosure initiatives and moratoriums - and commonly occur at the supply and consumer ends of commodity value chains.

Theories of change underlying ZD-VC approaches tend to be biased towards farm-level avoided deforestation

The overall theory of change for ZD-VC approaches shown in figure 2 shows that multiple, parallel approaches are used in forest-risk value chains, with often deliberate associations between different initiatives in a value chain. For example, VSS certification plus corporate pledges plus PPPs are common in coffee, cocoa and palm oil chains, reflecting the neoliberal market discourse. VSS, pledges and landscape approaches all commonly use several different pathways to attain impact. The regulatory approach is less prominent, seen mostly in the timber, soy and cattle chains. It is associated with issues of legality, in terms of land use conversion, the legality of commodity trade, and is context specific given the legal systems governing commodity trade and land use in origin countries and consumer markets. This legal approach flows from the regulatory and new colonialism discourses where the sovereignty of production countries to determine the rules of allowed and illegal deforestation on their own territory is acknowledged. Increasing agricultural productivity (i.e. "closing the yield gap") and sustainable intensification are interventions favoured in this discourse, reflecting calls for development in the new colonialism discourse.

While the discourses all combine specific problem definitions and causal mechanisms to favour certain solutions, there are also shared blind spots. All discourses focus predominantly on deforestation – but not degradation and fragmentation - which are just as important in understanding the problem and land-use dynamics that ultimately lead to forests disappearing. Few discourses focus on reforestation, restoration, afforestation or compensation - also critical in redressing the problem. A single commodity focus – also used in most landscape approaches, ignores how interactions and spillage between commodities occurs. Historical deforestation and baseline cut-off dates also detract attention from the new deforestation frontiers (i.e. the non-traditional commodity producing countries).

Figure 2 General theory of change for ZD initiatives in forest-risk commodity value chains

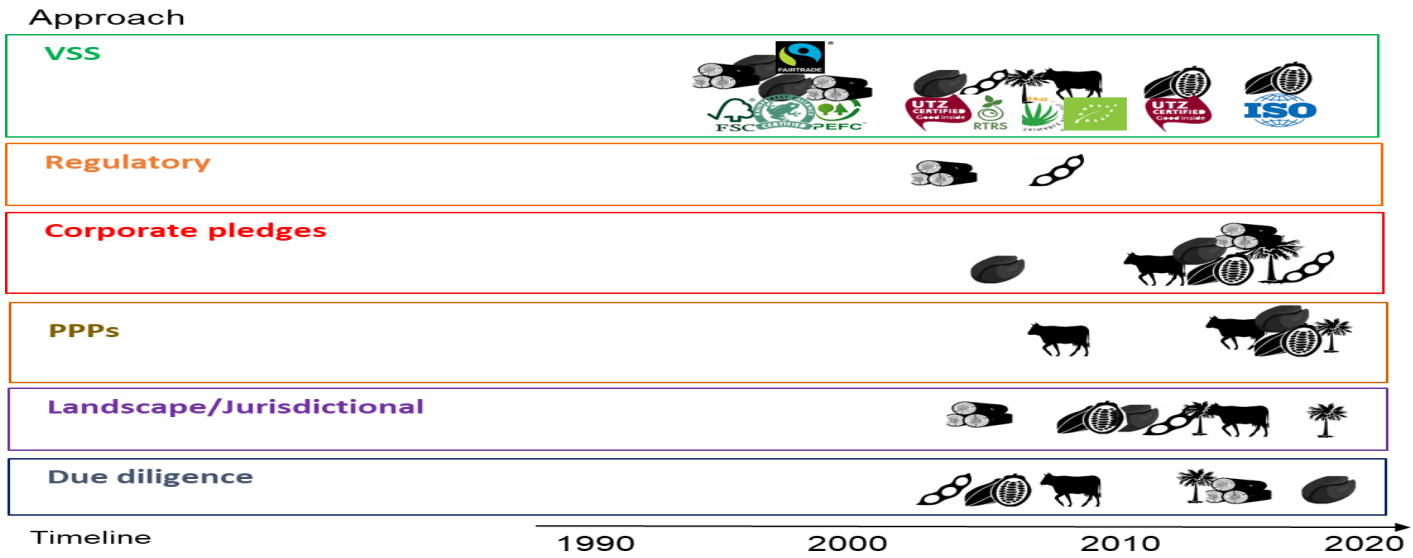


Reforestation, afforestation and restoration (RAR) are not common interventions within the initiatives or generally in the different approaches. Even when they are mentioned (for example in Cocoa & Forests Initiative in West Africa) they are hardly measured or used at farm or landscape scale. Although promoted by PES and REDD+ policy and initiatives, RAR is rarely used in VC-ZD approaches. Although huge advances have been made by trading companies in collecting spatial data and mapping production at producer farm level, on-farm restoration and especially off-farm RAR measures were little reported upon outcomes. This is despite rapidly evolving tools, maps and databases that make this possible and enable historical comparisons. Also, less addressed in the ToCs and practice are due diligence approaches which provide localised vulnerability/risk assessment and early warning systems for commodities in high-risk and vulnerable forested areas (e.g. palm oil in Indonesia).

Evidence on the effectiveness, outcomes and impacts of ZD-VC approaches

Evidence on the outcomes and effectiveness of each of these approaches - other than VSS and regulatory approaches - has not been systematically studied or reported upon so far. The evidence reviewed in this analysis was not aggregated for major production regions, making the establishment of causal links between initiatives as interventions, and the outcomes and impacts on avoided deforestation and preventing leakage tenuous. Where effectiveness has been positively established (based on a sufficient evidence), it mostly relates to small-scale VSS certification initiatives and concerns mostly outcomes at farm level. These initiatives do not address the leakage of deforestation to other forested regions or spillover effects where other types of commodities or local market demands become drivers of deforestation.

Figure 3 Timeline of approaches used in the six commodity value chains



One reason behind the lack of evidence is the timeline when most of initiatives have been implemented, shown in figure 3. This figure also illustrates that most approaches emerged in the last decade, and that different commodities have adopted different approaches, reflecting the different preferences and discourses of actors and geo-political settings involved. Learning across commodities and between regions has been limited, due to the different contexts. VSS have had the longest history, taking off in the mid-1990s in Western consuming countries and have since been adopted in all the commodity value chains with a proliferation of different standards in most chains. This long history is shown in their meeting most of the success criteria for effectively tackling issues and barriers around ZD-VC [12]. Some of this evidence however carries a risk of bias and is not generalizable to all certified commodities and production locations [23-25]. Of the ten criteria for ZD approaches identified (see first column in Table 1), VSS are the only approach that meets more than four criteria, and the only approach to do so for all commodities studied. Landscape/jurisdictional approaches in cattle and soy chains also meet several of success criteria, with due diligence mechanisms presenting a promising approach.

Table 1 ZD initiatives that meet success criteria per commodity value chain

Criteria	Cattle	Cocoa	Coffee	Palm oil	Soy	Timber
Baseline year defined	VSS	VSS	VSS	VSS	VSS	VSS
(De)forestation definition		VSS	VSS	VSS R	VSS	VSS
No deforestation or degradation of HCV forests	VSS S CP	VSS	VSS	VSS	VSS CP	VSS R
Effective governance	L/J DD PPP	L/J PPP	PPP	L/J PPP	L/J DD PPP	L/J PPP
Collective action	L/J PPP	VSS PPP	VSS PPP	VSS PPP	L/J PPP	VSS PPP
Market benefits	L/J VSS	VSS PPP	VSS PPP	VSS	L/J	VSS
Smallholder support	L/J	VSS PPP	VSS PPP	VSS	L/J	VSS
Smallholder fairness		CP	CP	CP		CP
No leakage	L/J DD				L/J	
Free, prior & informed consent process	CP DD				DD CP	VSS
Transparency, monitoring & accountability mechanisms	CP DD VSS	VSS	VSS	VSS	DD CP VSS	VSS
Effectiveness, efficiency & equity	L/J DD					

Key: VSS = Voluntary sustainably standards CP = company pledges R= Regulation PPP = public private partnerships DD= due diligence mechanisms L/J=Landscape/jurisdictional

No evidence was found that any of the approaches on their own halt deforestation. Even the longest running and most well implemented VSS have not had significant impacts beyond a farm scale and farmer-livelihood impacts. Whilst moratoria (eg on soy expansion in the Amazon and palm oil in Indonesia) appeared to work on a landscape level, studies showed leakage to other landscapes and countries. Regulations have had mixed success. Little data on the effectiveness of due diligence is available, including the plethora of new third party, independent monitoring and traceability systems, which are highly geographic and commodity specific and do not monitor interventions, and thus provide few insights into effectiveness. Few initiatives promote litigating measures – such as agroforestry, restoration, afforestation or reforestation.

Most of ZD-VC approaches, including initiatives reported on, focus on farm and/or landscape level outputs and impacts to maintain on-farm trees or increase productivity to prevent off-farm deforestation by preventing land use change. Consequently, impacts remain limited to farm and landscape level, where deforestation is avoided on limited geographical scale. Landscape level approaches usually use interventions like maintaining protected areas and/or commitments to prevent further deforestation, with historical deforestation having occurred. The impacts of these approaches logically remain at a landscape level. Approaches advocating global level interventions are mostly absent. Global level impacts require approaches and interventions addressing leakage and telecoupled impacts to target deforestation hotspots. Presently used ZD VC approaches are not able to do that. Multi-lateral governmental cooperation could tackle this spatial level, but is not yet in place. The EU for instance, provides support via VPAs for national forest governance based on EU FLEGT regulations. Legality issues have been little addressed. Whilst some VSS (palm oil and timber) address land tenure and permitting as key aspects of legality, many of small holder focused VSS do not address the problems inherent in the customary titles held by small-scale farmers, which can lead to farming on land classified as forests and protected areas.

Approaches appear to be converging as different actors in the value chains take similar approaches across commodities. This may in part because some of end-of-chain actors operate in several chains (e.g. Pepsi, Unilever, Olam and Cargill) and collaborate in different programs, and as consumer country governments increasingly focus on multiple forest-risk commodities, rather than just those that are important in their bilateral trade relations.

Combining the best of different approaches could be a solution

Different elements of all the approaches are increasingly used together. For example, certification is part of many ZD corporate pledges, giving these pledges extra credibility and accountability, as well as an established institutional framework to build on. Public-private partnerships are also increasingly working together implementing landscape approaches, such as the Cocoa and Forest Initiative in Ghana and Côte d'Ivoire. Combining approaches maybe a promising way to tackle all the drivers and pathways of deforestation at different spatial and temporal scales. Cooperation between actors, public and private is needed that incorporates multiple strategies and compensates for limited spheres of influence of different stakeholders. Further, a combination of approaches seems able to provide all the success criteria for delivering on the ZD-target. Building a multi-level, multi-intervention approach, may make the best use of the strengths and weaknesses of each approach. Research indeed shows that effective governance of both the production system and ecosystem services landscape and the value chain, combining the different single approaches, can prevent deforestation [13], at least temporarily.

Figure 4: Tweet by journalist Dom Philips on corporate accountability. ESG is a "sustainable" stock portfolio listed on Brazilian stock exchange

A critical element for many approaches is the lack of enforcement of regulations and loopholes in VSS, which undermine effective governance. Additionally, most single approaches lack convincing accountability and traceability mechanisms, illustrated in figure 4. Some initiatives therefore focus on supporting and urging states to do what they have committed to do, but have failed to do so far, i.e. enforcing forest policies and conserving protected areas. Due diligence approaches have sought to increase accountability for different approaches – such as corporate pledges, PPPs and the outcomes of VSS - by making visible how companies live up to the commitments they make.

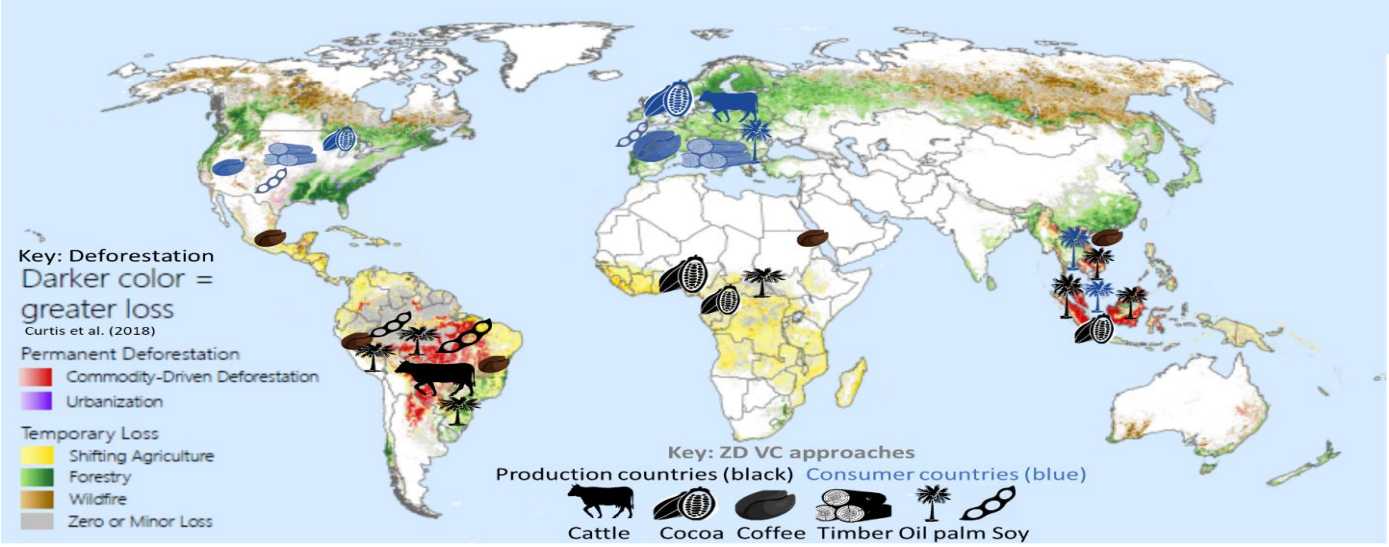
A key argument for combining approaches is that single approaches are not targeted at achieving impacts beyond farm and landscape levels. While both VSS and landscape approaches tick multiple success criteria for ZD-VCs (see table 1), individually they fail to address leakage, consider historical deforestation and to protect high value forests. To have impact on a global level, zero-deforestation approaches need to be scaled up to fully cover global value chains. The multiple actors and multiple approaches used in commodity value chains thus also call for combination of multiple approaches in a global and multi-lateral setting.

A geographic focus, reforestation, combining approaches and tools potential keys to ZD success

Figure 5 shows that the main geographic focus of zero deforestation initiatives are in already-known, historically deforested hotspots, such as West Africa (cocoa, timber), the horn of Africa (coffee), Indonesia (cocoa, palm oil, timber) and Brazilian/Peruvian Amazon and Cerrado (cattle, soy, timber). The figure shows that a value chain approach is taken mainly by actors in European and North American consumer countries (shown in blue per commodity) who have high and increasing forest cover, and which work with producer origin countries (shown in black). Emerging hotspots of commodity driven deforestation (shown in red) on the edges of the Amazon basin and in Myanmar, Vietnam, Congo and East Africa do not currently have ZD-VC initiatives or only very recent initiatives e.g. in Colombia. Missing are actors in major consumer countries in such as China and India.

A geographic focus on deforestation leakage is critical for global success in decreasing and avoiding deforestation and degradation driven by agricultural commodities. First, avoiding the risk of leakage or spillage is key to address indirect drivers. Leakage - preventing the geographical displacement of deforestation from one area to another - needs to be an explicit success criterion for any approach that has the ambition to be effective beyond the farm-level. Addressing leakage within value chains that include large commodity traders may thus significantly limit deforestation, as trading companies jointly cover a large share of many commodity markets. Explicitly addressing leakage is possible through the value chain concept and by considering the land footprint of commodity production. Simply put, not buying from producers that present a high risk of deforestation because of their location near a deforestation frontier and from those who make productivity gains without expanding their land footprint, could be robust ways to minimize the risks of leakage.

Figure 5 Main geographic focus of ZD initiatives in six commodity value chains



Second, a geographic focus needs to take deforestation hotspots into account. While more than 80% of deforestation has resulted from commodity production [26], only a relatively small proportion of commodities is responsible for *new* deforestation. A weakness of many current ZD-VC approaches is that they focus on areas where deforestation has occurred long ago e.g. in cocoa the predominately focus is on West Africa, for soy in Amazon, for oil palm in Kalimantan and Sumatra in Indonesia. The new deforestation frontiers are areas and countries with increasingly levels of forest-risk commodity production and still significant forest cover levels (such as Suriname, Colombia, Cameroon, Republic of Congo, DR Congo, Sierra Leone, Liberia, Vietnam, PNG and Myanmar), which also often have HCV, HCS and native forests and frequently also difficult governance situations. This combination of characteristics signals that urgent attention to these geographical areas with fragile governance structures is needed to avoid the cycles of commodity-led deforestation and leakage seen historically.

Third, agroforestry, reforestation and afforestation are not included in many of the presented approaches as either mitigation and compensation measures. While a focus on maintaining existing forests is important, the value of high biodiverse agroforestry and REDD+ initiatives or sustainable forest management for timber production should not be discounted either. Supporting conservation and restoration of non-pristine, secondary forests and forest-agriculture hybrids are thus underutilized approaches and could be used as a complementary intervention. In VSS where farmers are steered to become less biodiverse because diverse, shaded systems are not valued whereas off-farm conservation is, there are still easy gains to be made at different scales to reverse and speed up meeting zero deforestation objectives .

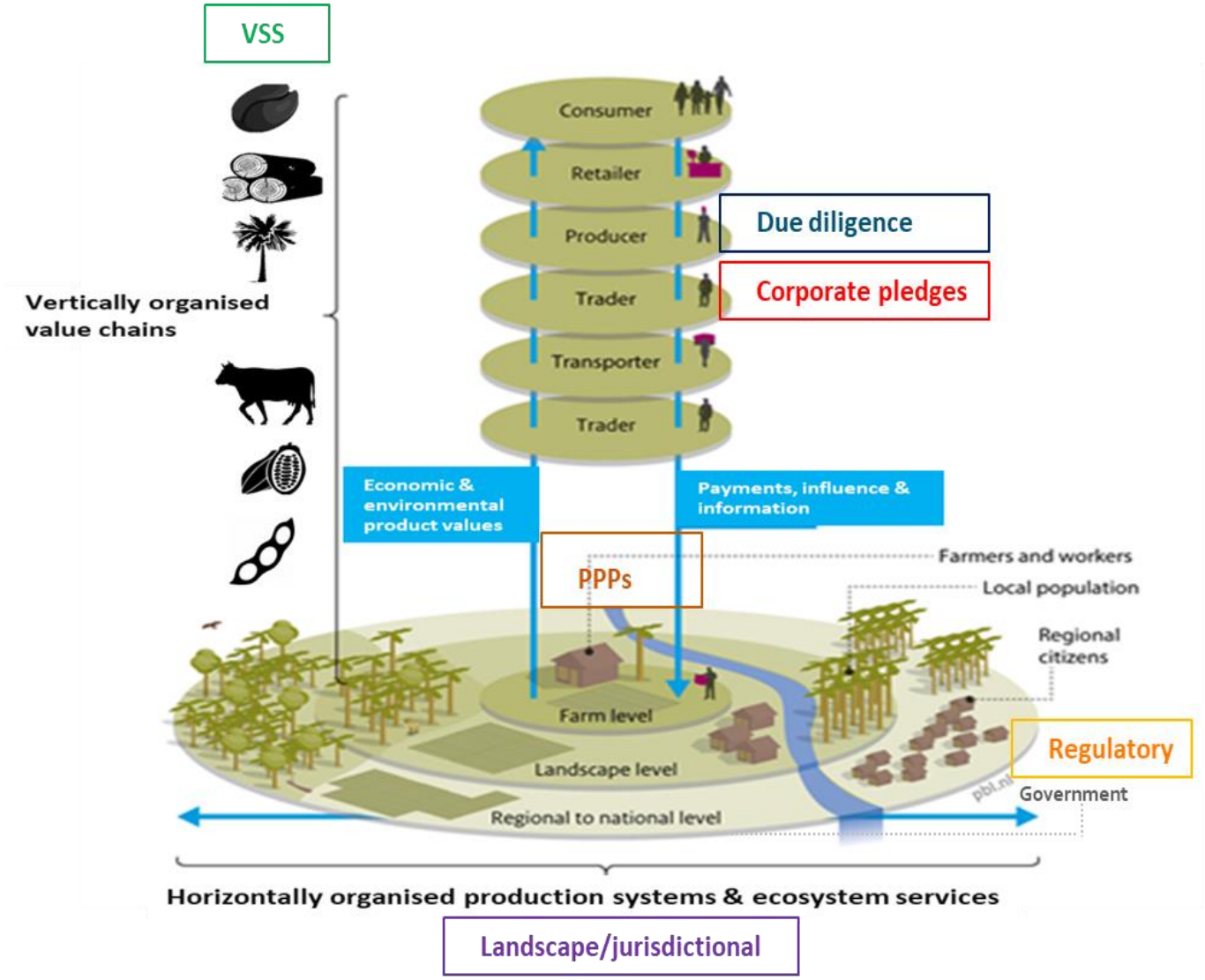
Fourthly, there are other tools available that could complement the current combination of approaches used. Traceability and transparency make allow the outcomes of multiple initiatives together under an approach to become clearer. These include economic and financial mechanisms (such as commodity pricing that addresses externalities, compensatory finance etc). Also missing is a focus on other major players in value chains – such as midstream value chain agents, the finance sector and consumers. The growing set of due diligence mechanisms can also address these issues and stakeholders. Traceability tools and remote sensing techniques can aid financiers and investors, CSOs and consumers and other critical stakeholders to identify high risk areas, commodities with investment risks, and to "name and shame" companies not providing information on their value chain activities and policies. These technologies, transparency and responsibility tools need to be connected to theories of change in that explicitly take geographical focus.

Finally, research and conceptual work by academic institutions collaborating with NGOs and business partners is urgently needed to establish an evidence based and upon which shared strategies can be based to evaluate ZD-VCs going across commodity markets, approaches and regions. This would create a systematic evidence base supporting claims about the effectiveness of different and combined ZD approaches. ZD approaches should be scrutinised for the societal and political values inherent in them and the theories of change they ascribe to. Research to support evidence-based policymaking is needed on: appropriate baseline-cut off dates; measuring deforestation and cycles of (in)direct drivers; mechanisms for the financial sector to influence ZD corporate, chain and sector interventions; and accounting for forest gain and loss.

References

1. Curtis, P.G., C.M. Slay, N.L. Harris, A. Tyukavina, and M.C. Hansen, *Classifying drivers of global forest loss.* Science, 2018. 361(6407): p. 1108-1111.
2. Ludwig, K., *The emerging governance landscape around zero deforestation pledges. Insights into dynamics and effects of zero deforestation pledges*, in *Background Report*. 2018), PBL Netherlands Environmental Assessment Agency: The Hague. p. 64.
3. Rogerson, S., *forest 500 annual report 2018. The countdown to 2020*. 2019, Global Canopy: Oxford, UK.
4. TFA, *A "commodity-first" approach to identifying landscapes for private sector engagement*. 2019: Geneva.
5. Lambin, E.F., H.K. Gibbs, R. Heilmayr, K.M. Carlson, L.C. Fleck, R.D. Garrett, Y.l.P. de Waroux, C.L. McDermott, D. McLaughlin, and P. Newton, *The role of supply-chain initiatives in reducing deforestation.* Nature Climate Change, 2018. 8(2): p. 109-116.
6. World Economic Forum, *Annual Report 2018–2019*. 2019, World Economic Forum: Geneva.
7. van Oorschot, M., C. Wentink, M. Kok, P.J.H. Beukerink, O. Kuik, M. Van Drunen, F. Oosterhuis, J. van den Berg, V. Ingram, L. Judge, E.J.M.M. Arets, and F. Veneklaas, *Integrating values of ecosystem goods and services into Dutch supply chains: Potential private and public benefirs of voluntary markets standards for sustainable production:*, in *PBL Report nummer 1700* 2016, PBL Planbureau voor de Leefomgeving: Den Haag.
8. Ruijs, A. and P. van Egmond, *Natural capital in practice: How to include its value in Dutch decision-making processes.* Ecosystem services, 2017. 25: p. 106-116.
9. Ingram, V., J. Behagel, A. Mammadova, and X. Verschuur, *The outcomes of deforestation-free commodity value chain approaches*. 2020, Forest and Nature Conservation Policy Group, Wageningen University and Research: Wageningen. The Netherlands.
10. Newton, P., A. Agrawal, and L. Wollenberg, *Enhancing the sustainability of commodity supply chains in tropical forest and agricultural landscapes.* Global Environmental Change, 2013. 23(6): p. 1761-1772.
11. Cashore, B., *Legitimacy and the privatization of environmental governance: How non–state market–driven (NSMD) governance systems gain rule–making authority.* Governance, 2002. 15(4): p. 503-529.
12. Garrett, R.D., S. Levy, K.M. Carlson, T.A. Gardner, J. Godar, J. Clapp, P. Dauvergne, R. Heilmayr, Y.l.P. de Waroux, and B. Ayre, *Criteria for effective zero-deforestation commitments.* Global environmental change, 2019. 54: p. 135-147.
13. Nolte, C., A. Agrawal, K.M. Silvius, and B.S. Soares-Filho, *Governance regime and location influence avoided deforestation success of protected areas in the Brazilian Amazon.* Proceedings of the National Academy of Sciences, 2013. 110(13): p. 4956-4961.
14. Vuohelainen, A.J., L. Coad, T.R. Marthews, Y. Malhi, and T.J. Killeen, *The effectiveness of contrasting protected areas in preventing deforestation in Madre de Dios, Peru.* Environmental management, 2012. 50(4): p. 645-663.
15. van der Ven, H. and B. Cashore, *Forest certification: the challenge of measuring impacts.* Current Opinion in Environmental Sustainability, 2018. 32: p. 104-111.
16. Fung, A., M. Graham, and D. Weil, *Full disclosure: The perils and promise of transparency*. 2007: Cambridge University Press.
17. van Oorschot, M., A. Sewell, and S. van der Esch, *Transparantie verplicht: verwachtingen over het instrument transparantie om maatschappelijk verantwoord ondernemen te stimuleren*. 2018. , PBL Planbureau voor de Leefomgeving: Den Haag
18. Mol, A.P. and P. Oosterveer, *Certification of markets, markets of certificates: Tracing sustainability in global agro-food value chains.* Sustainability, 2015. 7(9): p. 12258-12278.
19. Weiss, C.H., *How can theory-based evaluation make greater headway?* Evaluation review, 1997. 21(4): p. 501-524.
20. Resourcetrade Earth. *Cocoa trade, climate change and deforestation*. 2017; Available from: https://resourcetrade.earth/stories/cocoa-trade-climate-change-and-deforestation#section-187
21. Kissinger, G., M. Herold, and V. De Sy, *Drivers of deforestation and forest degradation: a synthesis report for REDD+ policymakers*. 2012, Citeseer.
22. Mammadova, A., J. Behagel, and M. Masiero, *Making deforestation risk visible. Discourses on bovine leather supply chain in Brazil.* Geoforum, 2020.
23. Dietz, T., J. Grabs, and A.E. Chong, *Mainstreamed voluntary sustainability standards and their effectiveness: Evidence from the Honduran coffee sector.* Regulation & Governance, 2019.
24. Potts, J., M. Lynch, A. Wilkings, G.A. Huppé, M. Cunningham, and V.A. Voora, *The state of sustainability initiatives review 2014: Standards and the green economy*. 2014: International Institute for Sustainable Development Winnipeg, Manitoba, Canada.
25. Smith, W., E. Nelson, J.A. Johnson, S. Polasky, J. Milder, J.S. Gerber, P. West, S. Siebert, K.A. Brauman, and K.M. Carlson, *Voluntary sustainability standards could significantly reduce detrimental impacts of global agriculture.* Proceedings of the National Academy of Sciences, 2019. 116(6): p. 2130-2137.
26. IDH, *The urgency of action to tackle tropical deforestation*. 2020, Prepared for IDH by FACTS Consulting, COWI A/S and AlphaBeta Singapore: Utrecht, the Netherlands.

Figure 6: The forest-risk commodity value chain and geographic nexus approach



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