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Paper for discussion

Zero deforestation and low emissions development

Public and private institutional arrangements under jurisdictional approaches

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Setting the stage: Initiatives to achieve global sustainability goals

Debates on the challenges and opportunities for sustainable agricultural production and natural resources management - mainly of land, water, and forests - have intensified in recent years. This is due not only to a more prominent climate change agenda, aimed at mitigating greenhouse gas (GHG) emissions to limit global warming to less than 1.5oC [1]; it is also due to the recent Sustainable Development Goals (SDG) agenda [2]. The role that forests play in climate change mitigation is at the heart of climate change and sustainability debates; as such, reducing the pressure that 'forest-risk' commodity crops (e.g. palm oil, cocoa, soy, beef, timber) place on forests is key [3]. Forest conversion contributes to soil erosion, reduces water quality and supply, leads to biodiversity loss and increases carbon emissions [3]. An issue of increasing concern is how to support the meaningful integration of smallholders in these commodity supply chains, as well as improve their capacity to capture greater market benefits [4].

For zero deforestation and low emissions development (LED) strategies to succeed, they should contribute to broader objectives of food and energy security, ensure agriculture is sustainable and natural resources are conserved,

whilst also improving local wellbeing and greater social inclusion. Thus, along with reducing deforestation rates, there is also a need to increase the productivity of already-cleared forestlands, and ensure that smallholders and local populations can benefit from markets opportunities, while maintaining their values and sustaining their livelihoods. This is an enormous challenge, yet increasingly embraced by public and private actors from global to sub-national levels. This paper examines the scope for synergies between value chains and landscape perspectives under a jurisdictional approach, and their potential for addressing some key social and environmental challenges when moving towards zero deforestation and LED strategies.

We argue that three options are likely to emerge when linking corporate efforts to sustainability and public regulations in specific landscapes: 1) **co-existence** between private interventions and government actions in sub-national jurisdictions, 2) **alignment** of voluntary sustainability interventions, including NGOs initiatives and government actions, and 3) **orchestration** to fully integrate public and private interventions across diverse dimensions. Identifying these options enables us to ask questions on their likely feasibility, effectiveness, and limitations in addressing key social and environmental sustainability challenges, while managing associated development and conservation trade-offs.

The following four sections first explore the different governance approaches and their interactions in terms of working towards commitments to zero deforestation and LED. The main social and environmental sustainability challenges to overcome are then examined. Building on previous assessment of challenges, we then discuss the potential and limitations of different jurisdictional-based approaches to address such challenges, before the last section provides some concluding remarks.

What is new? Jurisdictional approaches to zero deforestation and LED

Initial efforts to support reduced carbon emissions, and transition to low emissions development, were undertaken under 'reducing emissions from deforestation and forest degradation' (REDD+) initiatives. Key actions were aimed at adjusting national regulatory frameworks to reduce forest conversion, and thus to generate carbon credits under the expectations of a global carbon agreement. These efforts, however, showed their limitations when competing with business-as-usual incentives [5]. While some resources were invested in readiness actions for REDD+ implementation in tropical countries, such as Brazil and Indonesia, a major proportion of investment was still directed to the most profitable land uses, such as pulp and paper, soy and oil palm plantations, and processing facilities [6]. This called for increased attention on finding ways to disrupt the economic forces shaping land use change and forest landscapes transformations, through both demand- and supply-side interventions [7].

In the context of the Paris Climate Agreement, national governments have committed to reduce their emissions under their National Determined Contributions (NDC), but often politics tends to constrain more aggressive implementation that shifts away from business-as-usual pathways. An increasing number of sub-national level governments, grouped into the 'Governors Climate and Forests Task Force', have started to develop some jurisdictional approaches to REDD+, and are now actively embracing strategies to transition to low emission development goals [8]. In the private sector, major corporate groups have been making commitments to sustainability in their operations, aiming to reduce their environmental footprint. Notably, the Consumer Goods Forum (CGF), followed by New York Declaration on Forests (NYDF) [9], have triggered commitments from global corporations and traders to delink their supply chains from deforestation. Major palm oil groups in Indonesia have additionally committed to 'No Deforestation, No Peat, and No Exploitation' (NDPE) policies [10].

Private sector initiatives aimed at deforestation-free supply tend to rely on voluntary private standards and certification, and supply chain self-regulations (e.g. sustainability policies and codes of conduct) that enhance their environmental performance. Governments, in turn, base their actions on formulating and implementing 'stick and carrot' policies at national to sub-national levels [11]. Building on initial proposals aimed at jurisdictional approaches to REDD+ implementation at multiple levels [12], and linking with growing debates on how to ensure sustainability in specific landscapes, ideas of landscape governance have become more prominent [13, 14]. Increasingly, ideas of landscape governance are intercepting with ideas of value chain governance, under the label of 'jurisdictional approaches'.

These jurisdictional approaches are becoming the new mantra for achieving zero deforestation, and making progress towards LED at a sub-national level (either in states, provinces, districts or municipalities). Jurisdictional approaches lie at the intersection of three approaches, specifically: landscape approaches for managing the trade-offs between conservation and development; jurisdictional approaches for addressing competing land uses under REDD+ implementation; and voluntary corporate sustainability efforts to

eliminate deforestation from their supply chains [15]. These perspectives are converging in different ways in diverse contexts, and still may have different meanings for different landscape stakeholders [16]. Underlying motivations are varied: certification bodies are looking for ways to scale up the uptake of sustainability standards; companies are looking to trace their supply from smallholders in more cost-effective ways; investors are looking for production zones with comparatively lower risks; and governments are trying to improve the performance of public investments, while at the same time attract foreign investments and international cooperation.

Various initiatives and projects aimed at implementing REDD+, promoting integrated development and sustainable landscapes, are now claiming to adopt jurisdictional approaches. This is driven by certain sub-national jurisdictions having regulations to incentivize lower carbon emissions, sustainable agriculture and conservation, coupled with company policies aimed at deforestation-free sourcing and traceability. Some suggest the most notable commonality in jurisdictional approaches is their difference, since each initiative is uniquely tailored to the particular government, commodities, communities, and challenges of the jurisdiction, with the most important feature being to drive dialogue and unite goals across business, government, and community stakeholders [15].

A recent study suggests that there are multiple jurisdictional initiatives underway around the world. In spite of their differences, the main commonalities of these initiatives are 1) seeking to align governments, businesses, NGOs, local communities, and other stakeholders around common interests in conservation, supply chain sustainability, and green development, 2) focusing on the political level at which land use decisions are made and enforced, and 3) advancing land use planning of production and protection areas with geographically tailored policy interventions, market incentives, and climate finance [17]. These jurisdictional initiatives can be grouped into three categories. First, demand-side initiatives that aim to source from jurisdictions that demonstrate improve sustainability. Second, supply-side models that aim to show the market that sustainability is being pursued, mainly linked to wider uptake of sustainability systems. Third, place-based initiatives that bring together supply and demand-side stakeholders to agree on sustainability goals and implementation strategies [17]. This is however a very simplistic classification, which fails to unpack the approaches being adopted under each developing model.

At the core of jurisdictional approaches are supply chain and landscape-related interventions. The two have potentials on their own, but also face limitations. Supply chain interventions aim to reduce the social and environmental externalities of production, processing and trade, while sustaining economic profits. Landscape-related interventions aim to sustain the provisioning of ecosystem services in the landscape, while supporting local livelihood and development options. Supply chain interventions increasingly focus on achieving deforestation-free supply through the adoption of production standards and traceability, but often neglect power and political economy dimensions [4, 18]. Landscape-related interventions often embrace multiple actors and value chains, and privilege multi-stakeholder processes for territorial planning; they set up incentives and mechanisms for harmonizing conservation and development and managing their trade-offs, but tend to over-emphasize public interventions, and neglect connections with downstream markets and investments [19].

Main challenges in achieving sustainable supply and landscape management

Indonesia is at a crossroads in its attempts to continue to develop the national economy; the country is trying to lift people out of poverty without increasing the threat to environmental integrity or affecting the livelihoods of traditional rural people. This has proven a difficult task, due to the inherent trade-offs between economic growth and environmental impacts. In addition, Indonesia made strong commitments towards climate change mitigation, notably its commitment to reducing emissions by 2020 by 26% below business-as-usual (BAU) projections, or by 41%, with foreign assistance [20]. However, carbon emissions continue to grow, particularly due to emissions in energy and land use sectors, as well as forest fires. In spite of poverty reduction gains, rural poverty is still widespread [21]. In this context, there are some key social and economic challenges when it comes to achieving landscape sustainability.

Agricultural expansion has major impacts on environmental integrity

Agricultural expansion occurs at the expense of forest conservation, affecting the integrity of natural ecosystems. The expansion of plantations, particularly pulp, paper and oil palm, have led to major forests and peatland conversion [22]. At present, most forest conversion is due to oil palm expansion, associated not only to the development of large-scale plantations but also the expansion of smallholder plots [23]. The main environmental impact arising from plantation expansion is the associated carbon emissions; oil

palm expansion into forest and peatlands results in significant carbon debt. Carbon debts are especially high on converted peatlands, due to peat oxidation and land subsidence [24]. Agricultural commodity expansion equally results in the expansion of roads and processing facilities, which in turn attracts large numbers of immigrant farmers, leading to further deforestation, and often to soil degradation and water pollution [25]. In contrast, effective actions to reduce deforestation constrain road expansion, create protected areas, insulate forest frontiers, enforce laws, and grant local tenure rights [26]. A way out of this dilemma is to put in place measures that prevent the expansion of agricultural production into forests and peatlands, while stimulating yield growth in already-cleared land [25].

Smallholder farmers are under pressure to sustain biodiverse systems

The impact of large-scale commercial activity on the ecosystem tends to be different from the impact of mixed cash and subsistence smallholder farming systems, due to the intensity of resources used in each system. Commercial agriculture tends to homogenize local practices and involve supply chain smallholders under not always favorable benefit-sharing agreements. In contrast, less integrated subsistence farmers tend to preserve production practices that value ecosystem diversity [27]. Diversified farms contribute to more diverse farming landscapes, increasing biodiversity and stimulating interactions between different species; this increases the resilience of livelihood strategies and helps to protect natural systems and preserve biodiversity. The expansion of commercial agriculture tends to homogenize landscapes, with high inputs and capital intensive systems that rely on chemical fertilizers and pesticides [28]. Industrial agricultural expansion enables fewer actors to capture much of the agricultural value generated, reinforcing their economic and political power, and thus their ability to influence land allocation, and the governance of land and landscapes by establishing, in some cases, very extended patronage systems [29].

Farmer performance is affecting more equitable benefit sharing

When farmers get involved in commercial agriculture, they tend to underperform compared to industrial producers, which translates into lower yields. Smallholder yields from oil palm fresh fruit bunches (FFB) are in practice between 6% and 40% lower than best practice reference yields, with commercial operations typically exceeding smallholder yields by 46-116% [30]. The lower yields obtained by smallholders leads to a reduction in the capture of benefits from FFB production, which also decreases the land and labor returns generated by small-scale growers. This situation is often due to the underperformance of smallholders, who often have planted low quality seedlings yielding lower FFB production [31]. Farmers may also lack the resources to purchase fertilizers and other inputs required to properly manage the plantations, yet they also may not be willing to invest in low productive plantations, instead finding their profits reasonable. Increasing smallholder yields is expected not only to help improve the competitiveness of the overall sector, but also to reduce land pressure and enhance rural incomes [32].

Finance and investment face higher risks due to weak governance

Finance still tends to flow to economic activities yielding higher short-term benefits, including more specialized commercial agriculture, as well as infrastructure that enables private investments. While climate finance has gone to support some conservation-based initiatives, the amount disbursed is minimal when considering the total financial flows invested in Indonesian landscapes. Yet increasingly, government attempts to regulate agricultural expansion (particularly oil palm plantation in peatlands), as well as market changes, are increasing the regulatory and financial risks of loans to agriculture, particularly for banks exposed to upstream production risks [33]. This is exacerbated by land conflicts between companies and indigenous, often local marginalized, populations who typically lack secure tenure rights [34, 35]. Paradoxically, many companies have preferred to establish their oil palm plantations in peatlands and forests due to the reduced likelihood of experiencing land conflicts, and the opportunity to recuperate plantation establishment costs through timber extraction [36].

Potential and limits of different jurisdictional approaches

Corporate sustainability initiatives and government actions interact in different ways when trying to address zero deforestation and LED strategies. We argue that three types of interactions are likely to occur in landscapes: 1) **co-existence** between private sustainability interventions and government actions in sub-national jurisdictions, with relative independence from one another; 2) **alignment** between voluntary sustainability initiatives, including NGOs interventions and government actions, in order to achieve shared social, economic and environmental

goals; and 3) **orchestration** of hybrid public and private mechanisms and incentives, to accelerate the transition to more sustainable landscapes and manage trade-offs, to achieve social, economic and environmental objectives. These three options do not necessarily represent clear-cut situations, and there can be overlaps among them.

Below we describe in more detail each of these options, and then explore their likely effectiveness in terms of addressing the social and environmental sustainability challenges identified in the previous section. We then look at the potential and limitations of these three jurisdictional-based approaches.

Co-existence between private sustainability standards and government action: this is the most likely basic model in jurisdictional initiatives, which consists of company initiatives co-existing with sub-national government actions, but with little interaction between the two, despite the fact that both may be working towards the same objectives. In several sub-national jurisdictions, companies are putting in place systems to trace their sourcing, and monitor supplier performance, but they are disconnected from any government actions. In turn, sub-national governments continue their own strategies to develop plantations, protect peatlands, support conservation forests, but do so in relative isolation from private sector commitments in their jurisdictions. This means that both government and private actors each progress at their own pace; the actions of each not necessarily affecting performance of the other. Equally, the primary decision-making authority may not be at sub-national level; targets tend to be set up independently, either by a company manager or by government officials, with a lack of multi-stakeholder dialogue platforms at jurisdictional level.

Alignment between voluntary sustainability initiatives and government action: this often takes place when companies, at the time of implementing their commitments, recognize the limitations of their own actions, and realize the need for coordination. The need to reduce encroachment or the incidence of forest fires in company concessions, for example, calls for government action on land planning and tenure registration. Equally, when companies face the need to upgrade smallholder production practices, this calls for government action on more effective agricultural extension services. Governments may equally need companies to assist by not purchasing produce originating from illegally encroached public lands, or other additional measures to help in law enforcement that could reduce external investor risks. In such cases, coordination works through more formalized channels, built into sub-national government decision-making systems, with some authority held by companies' local managers. In several cases, NGO projects tend to bridge the gap between company managers, public officials, and civil society organizations, as well as help to operationalize their commitments.

Orchestration of hybrid public and private mechanisms and incentives: this may imply a different range of actions, including: agreeing on planning processes and common targets (e.g. through participatory planning); deciding on shared mechanisms to ensure sustainable produce (e.g. joint or complementary production standards); providing private incentives for protection of environmental public goods (e.g. traceability systems with compensation for good performance); providing finance under mechanisms that share costs and risks (e.g. blended funds); and joint monitoring frameworks to measure progress at jurisdictional level. Many of these incentives and instruments, however, are designed by authorities above the jurisdictions. In these cases, orchestration at sub-national jurisdictional level is needed for effective implementation, enforcement and monitoring, in ways that satisfy the interests of different stakeholders, and not only those of the most powerful players. This may also involve mechanisms for expanding social investments that compensate more marginalized groups when conserving natural infrastructure, while at the same time extending their access to energy, and other social infrastructure (health and education), initiatives which private investments are often not interested in.

How effective are the different systems in addressing sustainability challenges? This question likely requires empirical evidence if it is to be answered well. Yet, achieving the objectives of zero deforestation and LED strategies will no doubt depend on how far government commitments go in embracing low emission development goals that entail social inclusion targets, as much as it will also depend on private initiatives moving beyond the confines of their own plantations, supply chains and suppliers.

The option of co-existence is likely to be most efficient for companies interested in cleaning their supply chains (e.g. palm oil), as they can move ahead in implementing their traceability and the risk management systems of their main second and third-party suppliers. However, this option may not necessarily help to improve the sustainability of smallholder farming systems in the long run, nor to reduce conflicts with local populations or diminish territorial risk linked to poor law compliance. That is, unless companies make investments to upgrade their supply chain through more meaningful involvement of smallholders, however this may be costly if sub-national governments do not invest in service

provision. The attraction of this option, however, is that it involves lower transaction costs, makes impact accounting simpler, and reduces dependence on government and NGO actions.

The option of alignment may help to design and implement mechanisms that better share the costs involved in halting deforestation, through supporting uptake of better management practices in profitable crops (e.g. palm oil), providing incentives for good environmental performance linked to the use of agreed sustainability standards (e.g. RSPO, ISPO), and reducing the social impacts of agricultural expansion by protecting local people's rights. Yet, alignment will likely have a limited impact on moving towards sustainability beyond a few commodity crops that generate higher economic value in the landscape. In a few cases where companies are interested in building local alternative livelihoods, alignment could lead to exploring new business opportunities.

The option of orchestration may offer larger potential to accelerate impacts in some specific value chains, but it also entails higher short-term transaction costs. It does, however, have the potential to trigger public and private action in specific jurisdictions - and beyond - towards more integrated approaches that cut across diverse supply chains. As such, it may allow for a move beyond supply chains yielding higher short-term economic benefits, to instead look for more integrated ways to support diversified farming systems. It may also facilitate implementation of financial schemes supporting nature-based business options that are not triggered by demand-driven value chains, but that are instead based on the capabilities of smallholders or indigenous people. The latter, however, implies the risk of additional institutional confusion and further transaction costs that public and private actors will likely not be willing to pay for.

The main limitations of the jurisdictional approach are operational. When examining the integrated landscape approach experiences on which the jurisdictional approach built, there is reluctance among individuals, companies and other organizations to operate outside of their regular realms of operation and expertise, and thus undertake collaborative action to achieve common goals. Equally, connecting different economic sectors and diverse societal demands has proven difficult [19]. Improvements in one landscape can lead to leakage from well-performing jurisdictions to poor ones which face less pressure to uptake sustainability practices [11]. In spite of such limitations, jurisdictional approaches have considerable potential to meet social and environmental objectives at sub-national level, while aiding national government efforts, and transnational corporate initiatives to address ongoing global challenges.

Concluding remarks

When it comes to harnessing the benefits of both supply chain governance and landscape governance in order to meet zero deforestation and LED challenges, the potential and limitations of a jurisdictional approach are still open questions in need of empirical answers. We believe their potential depends on the specific interactions established between voluntary private initiatives and government actions. Currently, building a jurisdictional approach that combines vertical value chain interventions with horizontal landscape governance is an aspirational target, loaded with expectations on likely effectiveness. We suggest that a situation of simple co-existence between public and private actions may lead to achieving zero deforestation, but it may not necessarily lead to achieving LED, and is even less likely to achieve more ambitious sustainability goals. The latter may require greater alignment and orchestration efforts, in order to complement more actively public and private interventions. This could add negotiation and transactions costs, with long-term benefits that may not compensate for short-term costs, although different actors may balance costs and benefits in different ways. Therefore, it is important that processes aiming to build jurisdictional initiatives on zero deforestation and LED consider closely the aspirations of all stakeholders involved.

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