

ASSEMBLAGE OF SUSTAINABILITY GOVERNANCE IN THE COLOMBIAN OIL PALM SECTOR

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Latin American oil palm expansion has largely avoided the widespread deforestation that has stigmatized the industry in Southeast Asia. Colombia is the largest palm oil producer in Latin America and seeks to distinguish its palm oil on the international market. Toward this effort, both industry and state actors that have traditionally enabled oil palm expansion are now adopting a larger role in its regulation through sustainability governance. I apply an assemblage lens to explore the uptake of transnational governance mechanisms like eco-certifications and zero-deforestation commitments as they are transformed into novel, public-private governance arrangements in the Colombian oil palm sector. State enabling policies have long supported oil palm expansion through narratives of peacebuilding, smallholder alliances, and biodiesel demand. The emerging sustainability-oriented political economy now seeks to expand exports in response to saturated domestic markets. The differing social and environmental conditions on display across the major geographic oil palm production zones of Colombia result in regional assemblages that mediate the adoption and outcome of these regulatory and enabling policies. I argue that to understand and address the socio-ecological implications of oil palm expansion in different settings, more nuanced attention is needed to these outcomes at different scales.

INTRODUCTION

The rapid expansion of tropical commodity crops like oil palm is the leading driver of global land use change and deforestation (Curtis et al. 2018). These land use changes often bring socio-ecological trade-offs and pose significant challenges for governance, considering that oil palm expansion outcomes vary greatly across different settings. In Southeast Asia, oil palm expansion has caused widespread forest conversion, whereas, in Latin America, most recent expansion has occurred on previously cleared lands,

particularly cattle pastures (Furumo and Aide 2017). With looming land constraints in Southeast Asia, Latin America has become the fastest-growing region of oil palm expansion globally. It is expected to become a dominant region of future production (Pirker et al. 2016). Colombia is the largest palm oil producer in Latin America and has a major opportunity to lead on sustainability. The country has one of the lowest rates of forest conversion to oil palm plantations in the region and ample previously cleared lands surrounding existing plantations that have little overlap with biodiversity-rich habitat (Furumo and Aide 2017, Garcia-Ulloa et al. 2012, Ocampo-Peñuela et al. 2018). Colombia is also pioneering public-private sustainability efforts in the sector to avoid future deforestation. However, seizing these opportunities to create a more sustainable oil palm industry will ultimately depend on effective policies and coordinated governance across multiple scales.

Governing the oil palm industry is a patchwork of interacting *enabling* and *regulatory* institutions situated at multiple levels within, above, and below the nation state (Hamilton-Hart 2015). Enabling institutions include markets for international trade and state policies put forth by governments seeking to expand rural development opportunities through oil palm cultivation (e.g., financial incentives, land concessions). Regulatory efforts have largely been advanced by civil society and private actors through transnational initiatives that employ market-based mechanisms for more sustainable supply chain governance (Lambin et al. 2018). The leading industry standard is the Roundtable on Sustainable Palm Oil (RSPO), a multi-stakeholder commodity roundtable developed in the early 2000s. The RSPO is supported by several other market-based eco-certification standards targeting different aspects of palm oil production, such as habitat conservation (e.g., Rainforest Alliance), chemical inputs (e.g., IFOAM Organic), and carbon emissions (e.g., ISSC).

More recently, producers and traders have adopted commitments to eliminate deforestation from palm oil supply chains, initiated by the Consumer Goods Forum pledge in 2010 (Garrett et al. 2019). Although these initiatives began as corporate pledges, they have evolved into public-private implementation strategies supported by several transnational actor groups like the Tropical Forest Alliance (TFA)—a global public-private

partnership—and the New York Declaration on Forests (NYDF). Thus, current sustainability efforts in the oil palm sector are increasingly embodied in hybrid governance arrangements forged by issue linkages among commodity production, forest conservation, rural development, and climate change agendas (Furumo and Lambin 2020). The result has been a blurring of the traditional roles between state enablers and non-state regulators.

The extent to which states adopt, block, or circumvent transnational initiatives that address sustainability in the oil palm sector has led to complex regulatory interactions between public and private institutions at multiple levels (Pacheco et al. 2018). The rise of transnational governance has often been associated with a “hollowing-out” of the nation-state, in which governments are bypassed by new regulatory institutions (Jessop 2013). However, a more accurate metaphor might be the “re-articulation” of the nation state, rather than its retreat (Andonova 2014, Astari and Lovett 2019). For instance, the Indonesian government has sought to bypass regulation by the RSPO by creating its own national standard—Indonesian Sustainable Oil Palm (ISOP). The ISOP is modeled after the RSPO but is less stringent on land clearing, allowing deforestation in areas permitted by Indonesian law (Hospes 2014). In other commodity sectors like Chilean timber, weaker national standards have also been developed to circumvent industry and civil society standards (i.e., Forest Stewardship Council) with underperforming results (Heilmayr and Lambin 2016). In the Colombian oil palm sector, the government is leading a national zero-deforestation agreement with palm oil producers toward the goal of making all palm oil produced in Colombia deforestation-free by 2020 (Furumo and Lambin 2020). Producers can use RSPO certification to demonstrate compliance with the national agreement in the form of transnational policy absorption (Lambin et al. 2020).

To better understand and theorize these interactions across scales (global-local) and actor domains (public-private, state-nonstate), the notion of policy transfer has been supplanted with a *policy mobilities* orientation—i.e., policies are not merely copied from one setting and pasted into another, but undergo forms of translation, mutation, and reassembly during their adoption (McCann and Ward 2013). This has brought assemblage thinking

into discussions on policymaking (Prince 2017, Savage 2019). Assemblage thinking (AT) seeks to overcome the temporal and spatial scale issues challenging network perspectives of social movements (e.g., Social Network Analysis, Actor Network Theory) by merging distal connections with place-based conditions (McFarlane 2009, Santos and Moragues-Faus 2019). The notion of assemblage considers how heterogeneous sets of human (e.g., actors, institutions, policies) and non-human (e.g., land, ecosystems, disease) entities come together to produce emergent, irreducible wholes that serve a variety of interests and goals. Policy assemblages are best thought of as a process rather than an outcome; they are in a constant flux of destabilization and reassembly ('de/re-territorialization') as new actors and policies enter the mix.

To borrow from ecology, assemblages are defined as "a taxonomically related group of species that occur together in space and time" (Stroud et al. 2015). The term originates from community ecology, a field that examines the effects of biotic and abiotic features on the structure of communities of species. A 'metacommunities' focus considers the interactions between communities at different scales through species dispersal mechanisms (Wilson 1992, Leibold et al. 2004). Following this natural science analog, assemblages of species (i.e., human entities) are the result of both habitat-specific local conditions (i.e., non-human entities) and interactions with other communities (i.e., assemblages) at different scales that reshape their composition (i.e., de/re-territorialization). Species interactions across communities are analogous to the *multiplicity* of assemblages described in governance research (Briassoulis 2019). Thus, an assemblage perspective facilitates our understanding of complex mechanisms across multiple scales of spatio-temporal organization, whether focusing on a community of species or a policy domain and its actors.

In this article, I adopt a 'translocal' assemblage perspective (McFarlane 2009) to explore how enabling and regulatory policies from state and transnational institutions become articulated locally in Colombia. Palm oil production in Colombia occurs in four primary geographic zones—North, Central, East, Southwest. Each zone features unique ecosystems, land use histories, cultures, and socioeconomic realities that influence the adoption and outcome of regulatory and enabling policies for oil palm expansion. The

Colombian oil palm sector has historically been decoupled from international markets, oriented instead toward domestic food, industry, and biodiesel consumption. Thus, the institutions governing the sector are largely domestic, making for an interesting case study of the policy assemblage around sustainability adoption. I focus on the regional outcomes of (1) state and sector-led enabling policies to expand domestic oil palm cultivation, and (2) the adoption of transnational regulatory governance (i.e., RSPO certification) to improve the sustainability of the sector. A focus on translocal assemblages intends to “blur or bypass the scalar distinction between local and global” (McFarlane 2009). This builds on the concept of ‘regional assemblages’ put forth by Allen and Cochrane (2007) that rejects the notion of regions as territorially fixed and governed according to political boundaries. Instead, regional assemblages are a tangle of public and private institutions, with embedded segments of central, regional, and local governments, and fragments of transnational authority. I argue that the socio-ecological outcomes of oil palm expansion are the result of how enabling and regulatory policies are mediated by these translocal assemblages.

First, I begin with a background on the Colombian oil palm industry, including a description of the salient features of the Colombian *oil palm complex*—the assemblage of actors, institutions, and natural systems that support oil palm production (Cramb and McCarthy 2016). Next, I review the major enabling policies advanced by the sector and state throughout different oil palm development stages and illustrate how these institutions are assuming a more regulatory role through sustainability governance. Lastly, I focus on the most critical period of oil palm expansion since the early 2000s and the political economy narratives advanced by enabling and regulatory policies: (1) biodiesel demand, (2) peacebuilding through smallholder alliances, and (3) sustainability commitments to increase exports. I consider the differential adoption and outcome of these policies across the translocal assemblages of regional production zones.

COLOMBIAN OIL PALM COMPLEX

Colombia is the fourth largest palm oil producer globally and the largest in Latin America, with 540,687 hectares planted as of 2018 (Fedepalma 2019). Cultivation of oil palm in the Americas first

began in the 1920s with interest from the *United Fruit Company* in developing new tropical cash cultivars to diversify banana holdings after Fusarium Wilt and Sigatoka disease outbreaks (Richardson 1995). Experimental plots were first pioneered in Central America—Guatemala, Honduras, and Costa Rica. The global shortage of primary materials during World War II spurred further enthusiasm in the crop. United Fruit began replanting large areas of disease-stricken banana fields with oil palm (Ospina and Ochoa 1998).

Human Entities - Actors, Markets, Institutions, Social Constraints

In Colombia, the first commercial oil palm plantation was established in 1945 on the Caribbean coastal plain near Sevilla, Magdalena, using seeds developed in Honduras (Ospina and Ochoa 1998). Early plantations were established mostly by families of rural elites, and today the production and processing of palm oil remain dominated by Colombian companies. Colombian oil palm plantations are, on average, considerably smaller than those of Southeast Asia. In 2011, 74% of the total area planted was on plantations smaller than 2000 hectares, and smallholder production (< 50 hectares) represented 13% of the total area planted (Potter 2020).

The major challenges facing Colombian palm oil producers are high production costs, marketing, and phytosanitary conditions. In 2010, producing a ton of palm oil in Colombia cost roughly 600 USD compared to less than 500 USD in Malaysia, and only 400 USD in Indonesia (Rueda-Zárate and Pacheco 2015). Labor costs are the primary difference, reaching as high as 30% of total production costs in Colombia. Imported fertilizer inputs are also expensive and can range from 25-40% of the total cost of production (Mosquera et al. 2017). The high production costs make Colombian palm oil less competitive on the international market than Asian palm oil. These price issues have consequent impacts on marketing, which also presents a major challenge for Colombian palm oil producers. In avoiding less profitable exports, producers have historically looked to the domestic market to sell palm oil and relied on favorable government policies to increase demand in these markets. As a result, most Colombian palm oil is consumed

domestically. While Colombian palm oil exports have traditionally remained in the Americas (Furumo and Aide 2017), exports to Europe have increased in the last decade. They now represent over 60% of total exports (FAO 2020).

The Colombian palm oil sector was originally established by the government to reduce reliance on foreign vegetable oil imports and has always been heavily influenced by the central government and other parastatal bodies. The sector is highly organized under the leadership of *Fedepalma*, the national federation of oil palm growers. *Fedepalma* has been instrumental in intervening on behalf of the sector in public policy fora. Together with its marketing (*Acepalma*) and technical research (*Cenipalma*) branches, *Fedepalma* has procured technical support and financial assistance for Colombia's palm oil producers to enhance production and commercialization of palm oil. At several junctures in history, the government of Colombia has promoted oil palm as a rural development strategy for peacebuilding (see below). Colombia is currently emerging from a decades-long armed political conflict largely centered around land inequality. In 2016, the governments signed a peace accord with the largest armed rebel group in the country (FARC). Demobilization created a power vacuum in many rural areas leading to large-scale land grabbing and deforestation (Furumo and Lambin 2020). In the current post-conflict period, the government seeks to stabilize the countryside through illicit crop substitution programs and rural development opportunities that include oil palm.

Non-Human Entities - Oil Palm Landscapes, Ecosystems, Biophysical Constraints

Compared to Southeast Asia, Colombian oil palm landscapes are highly transformed, given the long history of cattle ranching. Few large, undisturbed areas of lowland habitat remain in these landscapes. Oil palm is grown in four primary geographic production zones across Colombia (Figure 1), each featuring different biophysical, socioeconomic, and cultural conditions (Ospina-Bozzi 1998, Castiblanco et al. 2015, Furumo and Aide 2019). The North zone sits on the coastal Caribbean plain with tropical dry broadleaf forests and xeric shrubland ecosystems. It is the oldest region of production with the most degraded oil palm

landscapes. The core of the Central zone is located in the Middle Magdalena river region with moist tropical forests. Early development was geographically concentrated among several adjacent large-scale operations (5-10 thousand hectares each) but has since become more diffuse with the spread of small and medium-scale producers into more forested fringe areas. Located in the tropical savanna and grasslands of the Orinoco region, the East zone is the largest producer with 230,000 ha planted and features the largest plantations in the country. The majority of plantations occur closer to the Andes foothills in areas long-since transformed by cattle ranching (Etter 2008), but recent expansion occurs in the more remote natural savannas. Given the low population density of the region and strong cattle culture, much of the labor in the East zone is provided by Colombian migrant workers. Finally, the Southwest zone is the smallest producer with 22,000 ha planted. It is concentrated in the Pacific Chocó region of Tumaco (Nariño department) bordering Ecuador and is among the wettest ecosystems in the country. Each production zone has a primary urban market where most of its palm oil is sold, coinciding with the largest cities of Colombia—Bogotá (East zone), Barranquilla (North zone), Cali (Southwest zone), Medellín, and Bucaramanga (Central zone).

Phytosanitary issues have been detrimental at different stages of oil palm development in these production zones. Lethal bud-rot disease, known colloquially as “PC” (*Pudrición de Cogollo*), is the most pressing threat. PC is a plant pathogen that enters the palm through insect vectors (i.e., *Rhynchophorus palmarum*). It is particularly prone to spread in conditions of flooding (Silva and Martínez 2009), resulting in high palm mortality. The East zone faced the earliest outbreaks in the late 80s. The Southwest zone is still recovering from a 2006-2009 epidemic that caused over 35,000 ha of loss (Ayala and Romero 2019) and forced many workers to migrate to the plantations of the East zone. The Central zone lost nearly 38,000 ha in a separate outbreak during this same period. The seasonal dry conditions of the North zone have historically insulated it from PC spread, but the region is currently in the midst of a serious outbreak. As of 2019, the total economic losses from PC in Colombia have been estimated at nearly 2.5 billion USD (Ayala and Romero 2019). In response, the sector has developed a

hybrid oil palm variety by crossing the American oil palm (*Elaeis oleifera*) with the African oil palm (*Elaeis guineensis*). This “OxG” hybrid has lower yields and higher production costs. It requires assisted pollination, but is more resistant to disease, produces a higher quality oil, and can be harvested for longer due to its stunted physiology (Alvarado 2013). In areas affected by PC, the hybrid palm has become an important strategy for oil palm companies to stay in business.

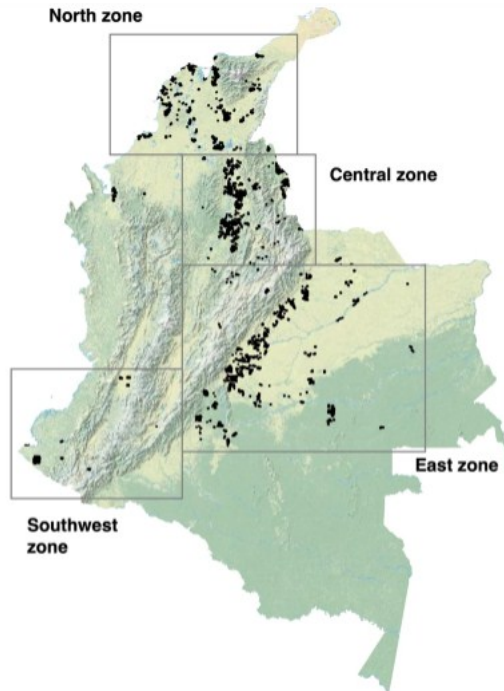


Figure 1 Map of four major geographic oil palm production zones in Colombia

HISTORICAL STAGES OF OIL PALM DEVELOPMENT— ENABLING AND REGULATORY POLICIES

In this section, I describe the historical role of the state and sector as enabling institutions of oil palm expansion in Colombia. Following Rueda-Zárte and Pacheco (2015), I trace key enabling policies across three stages of oil palm development with unique

political economies: (1) *Protectionist* (1950s-1990), (2) *Market Liberalization* (1991-2000), and (3) *Biodiesel Boom and Consolidation* (2001-2012). I then propose a fourth stage of development currently underway, *Sustainability Adoption* (2013-present), in which the Colombian oil palm sector is prioritizing sustainability commitments to access new markets abroad. This current stage marks the shift in the role of the state and sector from enabling to regulatory institutions. The chronic marketing and commercialization challenges facing Colombian palm oil producers are reflected in the policy strategies advanced throughout these development stages.

Early Stage - Protectionist (1950s – 1990)

In the post-war period, the political economy of the Colombian government prioritized the strengthening of national industries, giving rise to the modern commercial agriculture sector. The government created a new Ministry of Agriculture and implemented protectionist measures that increased production and exports. To increase cotton production for the national textile industry, an entity was created in 1950 under the Ministry of Agriculture called the *Instituto de Fomento Algodonero* (IFA). Although the IFA was initially focused on cotton fiber, its mandate expanded to include the development of other oilseed crops to satisfy a rapidly growing national demand for vegetable oil. Palm oil entered the discourse, and in 1958 it was estimated that 33,000 hectares would be needed to cover the national deficit of edible fats (Ospina and Ochoa 1998, 62).

The first national development strategy for oil palm was introduced in 1957. It consisted of financial incentives to encourage both production and uptake of palm oil in the national market (Ospina and Ochoa 1998, 65-70, Rueda-Zárata and Pacheco 2015). The IFA financed plantation development for associations of producers in rural areas. The colonization strategy largely failed due to poor infrastructure in frontier areas and a lack of technical capacity and experience managing the crop. However, it was successful in introducing oil palm into what would become the primary geographic production zones (Figure 1). Under the national development plan, the government also offered favorable credit that reflected the long payback time of the perennial crop,

and a system of quotas and tariffs on imports. The permanence of these benefits was inconsistent over the next several decades and became a source of intense lobbying by the sector. Adopting a successful model from the coffee sector, the national association of oil palm growers, *Fedepalma*, was established in 1962 to create a direct channel to the government and would eventually gain influential political weight toward securing favorable conditions for producers. Nearly 20,000 hectares had been planted by the end of the 1960s, but the 70s were a decade of relatively little growth due to an increase in vegetable oil imports entering Colombia.

By the 1980s, the sector experienced its first 'boom' in expansion, closing the decade with nearly 110,000 hectares planted (Ospina and Ochoa 1998, 150). The surge was largely fueled by economic factors, including renewed protectionist tariffs, favorable tax legislation, the devaluation of the Colombian peso, and expanded government credit for perennial crops like cocoa, rubber, and oil palm. With quota limits on vegetable oil imports, palm oil prices remained high. To circumvent the high costs of importing primary materials, domestic food processors and manufacturers had begun investing in plantations and controlled 40% of the national palm oil supply (Ospina and Ochoa 1998: 161), initiating the high degree of vertical integration observed in the sector today. There were dozens of palm oil producers at the time but only a handful of processors and manufacturers, resulting in oligopolist conditions that created tension in the sector. By the end of the decade, the industry faced a crisis as increased production outpaced demand from the national market, exacerbated by contraband palm oil imports. With a crash in price and calls for fairer market conditions, the sector was propelled into the next development stage under market liberalization.

Intermediate Stage – Market Liberalization (1991 - 2000)

Under the new globalized political economy and the domestic market saturation, stabilizing the internal commercialization of palm oil and expanding exports became a major priority for the sector. *Fedepalma* created a marketing entity in 1991, *Acepalma*, that specialized in selling Colombian palm oil on the international market. The *Fondo de Fomento Palmero* (FFP), or oil palm development fund, was established by national law in 1994 and

internalized an existing government price stabilization mechanism applied across the agricultural sector (Law 101, 1993). The fund helped support Fedepalma's mission of increasing exports by directing 1.5% of palm oil sales from the domestic market to offset export costs (i.e., shipping). From 1991-1995, exports of palm oil products increased from 2,768 to 22,465 tons, directed mainly to Venezuela, Mexico, Honduras, El Salvador, Jamaica, and Great Britain (Ospina and Ochoa 1998: 199). By the end of the 1990s, 22% of palm oil produced in Colombia was exported (Rueda-Zárte and Pacheco 2015).

This intermediate stage of development also focused on increasing competitiveness through improved yields and professional management, heralding large-scale institutional changes that would define the modern era of the Colombian oil palm industry. The FFP financed programs to increase productivity and efficiency. Research and development expanded with the creation of *Cenipalma*; a research institution focused on improving yields through breeding and genetics programs, pest and disease control, and improved agronomic management. Experimental field stations have now been established in each of the four major production zones. Although the opening of the Colombian palm oil market created alternative outlets, the oligopolist conditions of the national industry persisted with just four national companies behind 47% of palm oil sales in the country during this stage (Rueda-Zárte and Pacheco 2015). Despite increased exports, there remained a large surplus, and production costs remained stubbornly high. This hampered the competitiveness of Colombian palm oil on the international market, creating a market barrier for excess national supply. The solution would be the creation of an entirely new domestic market for Colombian palm oil.

Late Stage – Biodiesel Boom And Consolidation (2001 - 2012)

Oil palm expansion boomed during this development stage under strong political support from the Uribe administration (2002-2010). The government introduced a law to provide financial incentives for biodiesel production in 2004; an official B5 blending mandate was passed in 2008 and increased to B10 in 2010. These policies aimed to support a government target of 3 million hectares of oil palm by 2020 (Castiblanco et al. 2013). The area planted grew

from 169,564 hectares in 2001 to 419,870 hectares by 2012 (Fedepalma 2002, 2013). Biodiesel policies practically doubled domestic demand for palm oil, giving rise to an entirely new national market in a short time (Figure 2). The first palm oil sales for biodiesel began in 2008, and at its peak in 2012, the biodiesel market represented 46% of domestic palm oil sales. Biodiesel production is concentrated among a few highly integrated firms, and these companies are among the largest producers of palm oil in Colombia. Five companies represented the entire domestic biodiesel market in 2012, and three of these each accounted for more than 10% of the total market share of domestic palm oil sales that year (Fedepalma 2013). Most of the exported surplus palm oil was redirected to the biodiesel market during this stage (Figure 2).

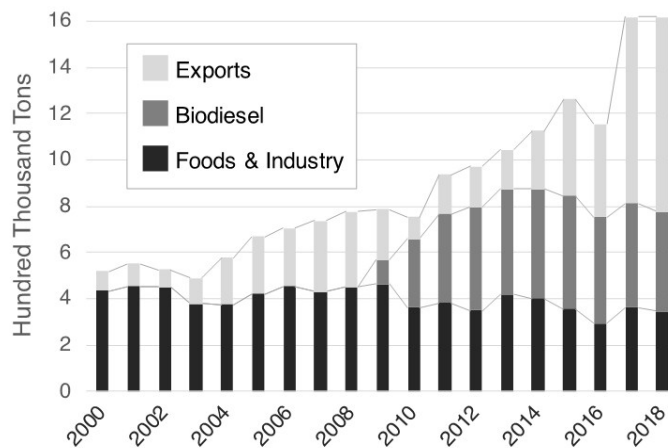


Figure 2 Annual sales of Colombian-produced palm oil to the three major markets from 2000-2018: food processing and other industries, biodiesel production, and exports. Values represent the amount of palm oil sold to each market (hundreds of thousands of tons).

This development stage also saw the entry of a large number of smallholders into production through direct government intervention. As a peacebuilding strategy, the government promoted rural economic development through a model of 'strategic production alliances' (*Alianzas Productivas Estratégicas-APE*) that would incentivize agroindustrial companies to incorporate smallholders into their supply bases (Rueda-Zárte and Pacheco 2015). This built on previous policies introduced in the 1990s

seeking to capitalize and modernize the countryside through agriculture. In the oil palm sector, subsidies and tax exemptions were offered to companies establishing smallholder alliances. In turn, companies would provide low-interest credit for smallholders to establish their plantations as well as technical assistance to improve fruit yields and quality. This nucleus-outgrower arrangement created groups of producers similar to the 'schemed' smallholders of Southeast Asia. Between 1998 and 2006, over 4,500 smallholders representing more than 80 alliances accounted for at least 52,000 hectares of expansion; by 2013, roughly 6,000 smallholders in 116 alliances represented approximately 15% of the total area planted in Colombia (Rueda-Zárte and Pacheco 2015).

Within the framework of the armed conflict, smallholder expansion was further supported by illicit crop substitution programs promoted under *Plan Colombia*—a bilateral effort between the US and Colombia to stop cocaine production and drug trafficking during this period. Forced displacement from the armed conflict reached its height in 2002, with 400,000 people displaced that year (Núñez and Hurtado 2014). By 2007, the USAID funded MIDAS program had established 51,300 hectares of oil palm among 4,800 families in conflict areas (Molano-Aponte 2008). The oil palm area cultivated by smallholders on farms 5-20 hectares in size increased tenfold from 1998 to 2011 (Potter 2020). In summary, government policies fueled expansion during this stage. They helped cement the current Colombian oil palm model: supply bases composed of an anchor company or mill that rely on production from smaller outgrowers upstream, and processing and manufacturing from vertically integrated actors downstream (Furumo et al. 2019).

Current Stage – Sustainability Adoption (2013 – present)

The biodiesel boom rapidly accelerated domestic demand for Colombian palm oil, but with a corresponding increase in supply, the domestic market was again facing saturation by 2013. At this point, the proportion of palm oil being sold to the biodiesel market begins to decline relative to palm oil exports (Figure 2). In this current development stage, producers are left with no choice but to export surplus palm oil. Contrary to the market liberalization

stage of the 90s, sustainability criteria like RSPO certification have increasingly become a barrier to entry for international markets (i.e., European Union). The current strategy of the Colombian palm oil sector has thus become one of demonstrating commitments to sustainability to distinguish Colombian palm oil on the international marketplace and increase the competitiveness of exports.

Although Fedepalma has been a member of the RSPO since its inception in 2004, the first Colombian oil palm grower did not become RSPO-certified until 2010 and remained the only certified company until 2014. Certification adoption lagged in the early years of the RSPO since domestic market demand—particularly for palm oil in biodiesel—still outpaced supply. There was virtually no consumer pressure for certified palm oil in Colombia. However, facing looming saturation of the domestic market, a rush of companies began pursuing certification to access markets abroad. By 2016, six additional oil palm growers had become RSPO-certified, and in 2017 there were ten RSPO-certified producers in total. In addition to RSPO, other voluntary certifications in the Colombian palm oil sector include IFOAM Organic, Rainforest Alliance, and the International Sustainability and Carbon Certification (ISCC). By 2018, Colombia had 88,497 hectares certified by at least one of these standards corresponding to 16.4% of the total area (Fedepalma 2019). As plantations have acquired certification, exports have increased dramatically, from 16% of national production in 2013 to 52% in 2018. Over this same period, palm oil exports to Europe increased from 46% to 63% of Colombia's total exports (FAO 2020). The area planted in oil palm expanded 15% with the fastest growth rate in the East zone (Fedepalma 2019).

To elevate the reputation of Colombian palm oil and increase exports, Fedepalma began an international campaign in 2017 to promote Colombian palm oil as “unique and differentiated” compared to other producing countries (i.e., Southeast Asia), emphasizing the sector's low rates of deforestation. A national campaign, “La Palma es Vida” (“Oil Palm is Life”), was also launched by Fedepalma to increase the dietary consumption of palm oil among Colombians (Fedepalma 2020). The Colombian government has also become more involved in regulating negative trade-offs of oil palm expansion. In 2017, a voluntary multi-stakeholder zero-deforestation agreement was signed in the

Colombian oil palm sector by growers, processors, civil society, and the government. This is the first national-scale zero-deforestation agreement in a commodity sector and aims for all palm oil produced in Colombia to be free of deforestation by 2020 (Furumo and Lambin 2020). Currently, the agreement includes the supply bases of 18 palm oil producers and traders, representing 33% of the national area planted. Most are already RSPO-certified or in the process. Fedepalma is focused on committing more companies to the national zero-deforestation agreement to support its campaign of differentiated Colombian palm oil. The zero-deforestation agreement has roots in peacebuilding and a government pledge to eliminate deforestation in the Colombian Amazon. It is supported by international funding for *Reducing Emissions from Deforestation and forest Degradation* (REDD+). Several other climate-related REDD+ initiatives with a focus on oil palm development have been advanced at the subnational level, including the *Orinoco Sustainable Integrated Landscapes Program*. The initiative is supported by the BioCarbon Fund and targets zero-deforestation palm oil production in the East zone (Furumo and Lambin 2020).

POLITICAL ECONOMY NARRATIVES, REGIONAL ADOPTION, AND LOCALIZED OUTCOMES

The development of the Colombian oil palm industry is distinct from Southeast Asia in that demand was not driven by distal urban consumers. The industry was established to serve the national market, leading to the creation of domestic institutional structures that have ensured the continued growth of the sector despite a history of economic, social, and biophysical challenges. Due to the relatively high costs of producing palm oil in Colombia, international markets were never a strong driver of the sector, but rather a second-tier release valve when the national market became too saturated. Government policies have supported the industry in two main ways: (1) stimulating national demand for palm oil (e.g., import quotas, biodiesel mandates) and (2) facilitating expansion through new models of production (e.g., smallholder alliances, zero-deforestation palm oil). The oil palm sector itself, led by Fedepalma, has played an important role in securing these opportunities from the state and shaping the policy narrative at different stages.

Biodiesel Demand

The biodiesel policies introduced in the mid-2000s contributed to massive industry expansion and transformed the economic and geographic landscape of Colombian oil palm production. Colombian biodiesel policies were embedded in a larger global political economy narrative of expanding biofuel programs in response to rising oil prices and concerns over GHG emissions (Dauvergne and Neville 2010). Most influential was the 2008 EU biofuel policy that stimulated increases in palm oil imports for biodiesel production, particularly from Latin America (Gerasimchuk and Koh 2013). While Colombia does not export large quantities of refined biodiesel due to its strong domestic demand, Europe has become a major importer of Colombian crude palm oil, much of it used for biodiesel.

Biodiesel policies have produced their greatest effect on oil palm expansion in the East zone, where 58% of the country's biodiesel is refined (Fedepalma 2019). The proximity of these plantations to the largest market in the country, the capital city of Bogotá, has driven this demand. Of the palm oil that the East zone sells domestically, 98% ends up in Bogotá. The Central and North zones account for 22% and 20% of biodiesel production, respectively. Several refineries in the North zone produce biodiesel for export, given their proximity to ports. Of the three primary markets for Colombian palm oil—domestic foods industry, biodiesel, and exports—the biodiesel market pays the lowest price to producers. The Ministry of Mines and Energy sets both the blending mandate and price of biodiesel in Colombia, whereas the price of palm oil sold to the foods industry and export markets are regulated by the national price stabilization mechanism. Nonetheless, Colombian biodiesel companies are highly integrated conglomerates, and thus a certain quota of the palm oil produced on their plantations are allocated to their biodiesel refinery.

The current biodiesel blending mandate in Colombia remains at 10% (B10), but there has been intense lobbying by the oil palm sector to increase the blend to 20% (B20). If achieved, this policy would double demand for Colombian palm oil in the domestic biodiesel market and most certainly lead to a contraction of exports. Future exports may also decline if the EU continues with phasing out palm oil-based biodiesel, which has been under consideration

since a 2017 resolution (European Parliament 2017). The EU resolution aims to prevent deforestation from its biofuel feedstocks, particularly palm oil from Southeast Asia. Given the more favorable land use history of the sector in Colombia, there is an environmental potential for Colombian palm oil-based biodiesel if social trade-offs can be minimized.

Peacebuilding Through Smallholder Alliances

Leading up to the boom in palm oil demand for biodiesel, government policies had begun promoting new models of oil palm production. These policies were rooted within a peacebuilding framework and sought to stabilize the countryside by bringing rural economic development through more capital-intensive agriculture. In 1998, an “Investment Fund for Peace” was established (Law 487) that helped finance the production alliances (*APE*) for smallholders (Rueda-Zárte and Pacheco 2015). The *APE* model was designed to be a ‘win-win’ arrangement between palm oil mills and smallholders: mills would receive financial incentives to diversify their supply base while smallholders would receive capital and technical assistance to produce higher quality fruits. Critics of the productive alliances model claim that it is merely a strategy for large rural elites to minimize risk while accessing more land to expand their supply base (Marin-Burgos and Clancy 2017, Potter 2020). For instance, a former Colombian minister of agriculture established one of the largest oil palm supply bases in the North zone largely through the productive alliance model, consolidating over 45,000 hectares of oil palm managed by nearly 3000 smallholders.

The *APE* model is formalized through smallholder contracts that typically apply to the productive lifespan (20-30 years) of the palms that mills help finance (Rueda-Zárte and Pacheco 2015). The extent to which these contracts benefit farmers has been contested. Farmers risk getting locked into oil palm as their livelihood for a long period, losing a degree of autonomy over their land and the flexibility of planting other crops, especially for subsistence. Contracts also require farmers to sell their fruit only to the contracted mill, foregoing negotiation with other mills when prices fluctuate. This particularly benefits mills in years of drought or disease outbreak when regional production is suppressed, and

fruit prices increase. The advantages for smallholders are that they have a guaranteed purchaser of their fruit over a long period, and they receive technical assistance to improve yields and quality. In a survey of smallholder oil palm farmers in the department of Magdalena in the North zone, many farmers regarded the model of production alliances positively, stating they were only able to plant oil palm through the credit provided by the anchor company as part of the alliance (Furumo et al. 2019). Studies have shown that farming oil palm is more profitable than cultivating other commodity crops grown in these landscapes or working as a wage laborer (Potter 2020). Oil palm smallholders across production zones generate an income ranging from 3-8 times greater than the national minimum wage in Colombia (Rueda-Zárte and Pacheco 2015).

Although oil palm is associated with higher incomes in the Colombian countryside, the extent to which this has improved social indicators is more mixed. Castiblanco et al. (2015) found that oil palm municipalities in Colombia had higher fiscal incomes and lower unmet basic needs, but also greater inequality related to land and its ownership. This pattern varied by region, showing the greatest levels of inequality in the East zone where large agro-industrial plantations dominate, and the least disparity in the Central zone where smallholder productive alliances are more numerous. Today, Colombia remains one of the most unequal countries in terms of land distribution, and this has been the source of persistent conflict throughout the country's decades-long civil war. The most recent national agricultural census found that 70% of farmers and ranchers operate on less than 5 hectares of land, representing only 2% of the national rural land area. In comparison, 75% of the rural area is managed under large estates (>1000 ha) by just 0.2% of producers (Oxfam International 2017).

Episodes of violence related to the armed conflict have historically contributed to this pattern of inequality and have been more prevalent in oil palm producing municipalities (Sabogal 2008; Marin-Burgos and Clancy 2017). In this context, armed actors—particularly paramilitary groups—have used oil palm plantations as a mechanism to appropriate land in strategic corridors of the country (Oslender 2008, Castiblanco et al. 2015, Marin-Burgos and Clancy 2017, Potter 2020). There is evidence of this occurring in

each of the major oil palm production zones of Colombia, including the regions of Montes de María and Urabá (North zone), Magdalena Medio and Catatumbo (Central zone), eastern Andes foothills, Guaviare River (East zone), and Tumaco (Southwest zone) (Centro Nacional de Memoria Histórica 2016). These incidents have been most widely reported during the “late stage” of oil palm development (early/mid-2000s) at the peak of forced displacement and rapid oil palm expansion (Potter 2020). More equitable development has thus been obstructed in areas affected by the armed conflict despite the higher incomes brought by the oil palm sector.

On the other hand, less well documented are the cases of the positive impact the oil palm sector has brought to conflict areas. Anecdotal evidence from the Magdalena Medio region of the Central zone suggests the important economic opportunity the sector can provide as an alternative to armed conflict. The town of Yarima in the department of Santander was severely affected by violence between guerilla and paramilitary groups. The arrival of an oil palm company to the region in the late 1980s provided an employment alternative and helped stabilize the social situation by the mid-1990s (Ospina-Bozzi 1998:187-193). Similarly, oil palm farmers in the North zone described how the crop lowered risk during times of conflict as plantations do not require daily visits, and there is less concern over fruit theft.

Given the armed conflict and history of land inequality, land acquisition is one of the biggest barriers to oil palm expansion in Colombia. Without a national cadaster system, it is difficult to know if there are existing claims to land and if previous owners have been displaced. Thus, it is a risky investment for companies to purchase land and invest capital in plantations, only to later find out that there is an existing claim, and the land must be returned. Several such incidents have occurred in the Colombian oil palm sector. For example, in the case of Las Pavas in the department of Bolívar, a consortium of oil palm growers from the North zone purchased land where residents had been forcefully displaced by paramilitaries (Marin-Burgos et al. 2015). Failed land reform attempts by the Colombian government have also contributed to these conflicts. In the Tumaco region of the Southwest production zone, communal afro-Colombian lands were titled and sold to large

oil palm companies (Prieto-Martínez 2016). These communities are still fighting for titles to 70,000 hectares of ancestral lands and the restitution of thousands of hectares of communal lands planted in commercial oil palm (Arenas 2018). The case of oil palm in Tumaco demonstrates how multiple factors—political, socio-cultural, biophysical—can come together to create volatile conditions in the regional assemblage that result in conflict. Historical land inequality in the region resulting from government policies had left many smallholder oil palm farmers marginalized and confined to a small area of cultivation. In the early 2000s, the arrival of bud-rot disease devastated the local oil palm sector. The government-sponsored credit for replanting with the disease-resistant hybrid OxG palm was not made available to smallholders, citing the sophistication and labor-intensive requirements of the new variety (Arenas 2018). As a result, many smallholders began planting coca to supply local guerilla groups, and the region remains a hotspot of coca cultivation and persistent land conflict today.

Government-sponsored crop substitution programs have continued in the current stage of development. In addition to the USAID-MIDAS program introduced under Plan Colombia, another illicit crop substitution program was included in the peace accords signed with the FARC in 2016—the *Plan Nacional Integral de Sustitución* (PNIS). The program promotes perennial crop alternatives like oil palm, cocoa, and rubber, and had enrolled 99,097 families in 56 municipalities of Colombia as of October 2019 (UNODC 2020). Crop substitution programs can lead to unintended, perverse environmental outcomes. In the Catatumbo region of the Central zone, for example, crop substitution programs increased smallholder oil palm expansion in the lowlands of Tibú. They displaced coca growing to the adjacent forested highlands (Granados-Cabrera and Rincón Romero 2019). These are nuanced, indirect land use dynamics that play out differently across regional assemblages.

Contradictory Policies

More contemporary government zoning policies have contradicted smallholder support policies by facilitating large-scale oil palm expansion. An oil palm suitability analysis was conducted by the national rural planning office in conjunction with Fedepalma. It

determined over 16 million hectares of land suitable for future oil palm expansion, equating to 14% of Colombia's national territory (UPRA 2017). Much of these lands are situated in the vast eastern savannas of the Orinoco region, the country's largest oil palm production zone. The region is considered one of the last agricultural frontiers on the planet and is being targeted by the government for further agroindustrial development.

In 2016, a law was introduced that targeted poverty-stricken areas with poor infrastructure as priority zones for rural, economic, and social development (*ZIDRES* in Spanish). Similar to the rural capitalization efforts that have come to define previous periods of agrarian public policy, the rationale for the *ZIDRES* program is to stimulate private sector investment in rural areas that create economic opportunities for smallholders. Soils in the Orinoco region, for instance, are highly acidic and require large-scale, capital-intensive chemical transformations. This is one reason why the East zone has the fewest smallholder alliances among the oil palm production zones (Rueda-Zárate and Pacheco 2015). The *ZIDRES* policy provides financial incentives for companies to establish operations in these remote areas and waives existing legal limits on property sizes intended to prevent land accumulation. Critics argue that the *ZIDRES* are contradictory to the government's stated goals of integral rural land reform and will effectively exacerbate the concentration of land, particularly in favor of the large multinational companies that the law supports. The implications for the oil palm sector are vast. The *ZIDRES* cover 7.2 million hectares of land across Colombia, of which 5.5 million hectares (76%) coincide with areas deemed suitable for oil palm expansion, mostly in the Orinoco (Colombia Plural 2018). Smallholders also have fewer opportunities to access capital. Of the total agricultural loans granted to the oil palm sector by the government in 2018, smallholders received just 3% of finance, the rest going to medium and large-scale producers (Fedepalma, 2019).

Sustainability Commitments to Increase Exports

With domestic markets saturated, the Colombian palm oil sector began adopting sustainability commitments to increase exports. The sector has historically been decoupled from international markets, facing little demand for sustainably produced palm oil.

Instead, European importers of Colombian palm oil have largely initiated this shift. The first companies to become RSPO-certified in Colombia were those with the tightest links to international markets. Producers of the North zone in greater proximity to ports exported a greater share of their palm oil and began pursuing certification earlier than those in the landlocked East zone, where most palm oil is destined for the domestic foods and biodiesel industries. Of the ten RSPO-certified companies in 2018, six were companies in the North zone, and only two were companies in the East zone (Fedepalma, 2019). The high transportation costs of shipping palm oil to ports have made internal markets more attractive to producers in the East zone. However, given increased domestic market saturation, East zone producers are left little choice but to pursue certification to increase exports. In 2013, the region exported only 8% of its palm oil, which increased to 35% in 2018 (Fedepalma 2019). The ISCC, a European standard focusing on GHG emissions from biofuel feedstocks, is also becoming an important certification for Colombian producers selling palm oil to the EU for biodiesel.

The institutional response by the Colombian oil palm sector and state has been to embrace these transnational certification standards in order to increase exports. Fedepalma has promoted the RSPO intending to get 50% of the sector certified by 2021. Furthermore, the national zero-deforestation agreement led by the Colombian government permits RSPO certification to demonstrate compliance. A promising development for the agreement has been its adoption by the largest biodiesel producer in Colombia—a vertically integrated refinery supplied by palm oil from 11 mills in the East zone that process fruit from over 20 plantations covering roughly 40,000 hectares. The company is supporting its entire supply base to become RSPO-certified and zero-deforestation compliant, showing the potential of the vertically integrated production model when committed to the adoption of sustainability standards.

The RSPO often dominates the discussion on the sustainability of the oil palm sector. However, evidence of its ability to generate positive social and environmental outcomes is mixed, particularly for smallholders. In the North zone of Colombia, certified smallholders (RSPO and IFOAM Organic) used fewer chemical

inputs, maintained more natural habitat on their farms, and received a higher price for certified fruits, but had lower yields due to organic management practices and did not show significant livelihood improvements compared to non-certified farmers (Furumo et al. 2019). The RSPO has been contested in Colombia and elsewhere, with opponents concerned that it legitimizes a model of large-scale, agroindustrial expansion that puts the values of local communities at risk (Marin-Burgos et al. 2015, Ruyschaert and Salles 2014). These risks are compounded by power asymmetries in the national interpretation process that favor industry interests and exclude smallholders (Huay Lee et al. 2011, Brandi et al. 2015). The regional context and baseline socioeconomic conditions under which RSPO certification is adopted is increasingly understood as a determinant of its success in mitigating the socio-ecological trade-offs of oil palm cultivation. A national evaluation of RSPO certification on village well-being across Indonesia shows modest or even negative effects of RSPO on livelihoods; villages with commodity markets oriented toward subsistence rather than commercial production showed particularly negative livelihood impacts associated with oil palm expansion that RSPO certification was not able to overcome (Santika et al. 2020). More research is needed to understand the regional outcomes of sustainability interventions in the Colombian oil palm sector, including how certifications and zero-deforestation agreements interact and become mediated by translocal assemblages.

CONCLUSION

This paper has demonstrated the importance of scale when considering the environmental and livelihood outcomes of enabling and regulatory policies in the oil palm sector. Colombia illustrates the different socio-ecological trajectories that oil palm expansion can take, not only between different regions or countries (i.e., Southeast Asia vs. Latin America) but also between different production zones *within* a single country. The major geographic oil palm production zones of Colombia represent translocal governance assemblages of different human and non-human entities that shape the outcome of state-led enabling policies. The economic geography of palm oil production in Colombia influences where palm oil is marketed, with important implications for the

adoption of sustainability commitments. Effective sustainability interventions, therefore, cannot simply be copy-pasted from one region to another. They must be tailored to local settings, highlighting the place-based context of policymaking and transfer. In settings with strong regionalization like Colombia, a jurisdictional approach to sustainability governance might be particularly relevant. Jurisdictional approaches strive to create sustainability havens of standard-compliant actors along policy-relevant boundaries that are enforceable by local governments. These multi-stakeholder approaches have gained prominence in subnational REDD+ and other zero-deforestation initiatives. They have also been applied to the sustainable production of palm oil (e.g., state-wide RSPO certification in Sabah, Malaysia, and Central Kalimantan, Indonesia).

The assemblage of sustainability governance in the Colombian oil palm sector is a valuable case study in policy mobility. It considers the uptake of transnational regulatory mechanisms in an industry that has been historically decoupled from international markets. The state and sector have been important enablers of oil palm expansion in Colombia under the pretense of peacebuilding, rural development, and biodiesel expansion. More recently, the saturation of domestic markets and growing need to export palm oil has led these institutions to adopt a more regulatory role by advancing a sustainability narrative for Colombian palm oil. To this end, RSPO certification has been embraced but also extended with the formation of novel, public-private governance arrangements that link oil palm sustainability with rural development, zero-deforestation, and climate change domains. The multiplicity of actors and scales incites recombination and the emergence of increasingly complex policy assemblages. These assemblages are presented with opportunities to leverage and engage new resources and actors. However, they are also faced with challenges relating to the additionality, interaction, and coordination among interventions at different scales.

In Colombia, oil palm cultivation has created employment opportunities and brought greater income for farmers. However, institutional land conflicts have led to trade-offs that have kept the industry from reaching a greater potential for rural development. These boil down to land access issues and rights,

where the interests of large-scale landholders have often been prioritized over smallholders. In the post-conflict period, there is a major opportunity and imperative to address these inequalities through integral rural land reform. The window for improved governance created by the peace deal—alongside a more favorable land use history—creates an opportunity for Colombia to lead sustainability in the oil palm sector. It will not be enough to simply prevent deforestation and avoid conflicts with communities. The industry needs to proactively seek ways to enhance smallholder inclusion and value-capture, ensure social safeguards, and undertake ecosystem restoration activities to restore forests and biodiversity that have already been lost in oil palm landscapes.

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