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SUSTAINABLE PALM OIL PRODUCTION IN HONDURAS: MYTH OR REALITY?

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Honduras is currently positioned as one of the main palm oil-producing and exporting countries in Latin America. According to FAO, in 2018, Honduras produced 650 thousand MT of palm oil and generated US$400 million in export revenues. Palm oil is produced on over 135,000 hectares of land in the country, mostly in the coastal valleys of northern Honduras. Although it is an industry dominated by only a few corporations, most of the production in Honduras still occurs on small-scale farms. Within areas where it has been adopted, the oil palm industry has become an important driver of land use change, which has followed a trajectory of replacing banana plantations rather than forest lands. Government interventions through targeted policies have had an important part in stimulating the expansion of the industry. These policies are largely justified based on the perceived value of the crop as an engine of economic development. Consequently, oil palm expansion and related supportive policies are often seen through an economic lens only, while questions of who benefits and who controls the industry are often overlooked. The significant social and environmental impacts of the crop's expansion are given limited attention. Using assemblage theory as an analytical framework, the sustainability of the palm oil sector in Honduras is examined to understand power differentials and the effect of the economic, social, and environmental dimensions.

INTRODUCTION

The rapid expansion of palm oil production in Honduras has impacted the economy, society, and environment. Honduras perfectly exemplifies the trajectory of rapid expansion of the palm oil industry, the world's most-produced vegetable oil (Fitzherbert et al. 2015), and, looking at the economic trajectories of other countries and in particular, Malaysia, has come to be seen as an important rural development mechanism (Craven 2011). At the same time, the crop is associated with significant environmental harm because it grows well in tropical areas and puts pressure on forested lands which have previously not been tapped for

agriculture and which have high ecological value, including biodiversity conservation, carbon sequestration, regulation of water cycles, among others. Furthermore, palm oil is often associated with land grabs and social conflicts (Rist et al. 2010). As a consequence, palm oil production has become a contested issue, and those companies and countries that are involved in the industry have taken steps to address these concerns. In an analysis of the global politics of palm oil production, Dauvergne (2018) states that the palm oil industry is increasingly certifying its activities as 'sustainable', 'responsible', and 'conflict-free'. His analysis suggests that this trend does not represent a breakthrough toward better governance but primarily reflects a business strategy to channel criticism toward 'unsustainable' palm oil while promoting the value of protecting rainforests, corporate social responsibility, international trade, industrial production, and industry-guided certi?cation. Hospes (2014) provides similar evidence for Indonesia and Brazil. Dauvergne's work draws attention to a critical challenge the industry poses to producing countries and has been played out with outcomes in different producing states. As they do so, new players face the task of addressing governance challenges posed by the introduction of the crop and of balancing the conflicting demands of different actors and public perceptions concerning the distribution of the economic, social, and environmental costs and benefits associated with the crop. In this paper, we seek to analyze the dynamics of this process in detail. In particular, we focus on the idea that the oil palm industry constitutes a topological space in which different actors seek to negotiate and/or secure outcomes that reflect their interests. Such encounters raise the possibility of contestation and conflict. Understanding the political dimension of these negotiations and the role of power differentials in this process related to the varying economic, environmental, and social impacts of the process are thus central to an adequate understanding of the industry. We illustrate this by examining the evolution of environmental governance of the palm oil industry in Honduras and analyzing if sustainable palm oil production is a myth or a reality.

Central to the discussion presented in this paper are government interventions through targeted policies to expand an industry simultaneously capable of meeting multiple objectives: GDP

growth, the inclusion of smallholder farmers and increased incomes for them, poverty alleviation, creating employment opportunities mainly in rural areas, and at the same time meeting sustainability goals such as environmental protection. The main question under which this case was examined is how the industry, as currently constituted, delivers on these claims. Attention is drawn to the centrality of power differentials in how the industry is shaped in Honduras. To understand how the industry is configured, the assemblage analytical framework will be used to explain how diverse heterogeneous elements are held together by 'practices of assemblage' defined as the ongoing labor of bringing disparate elements together and forging connections between them (Li 2007). The dynamics of this process, including the governance of this chain, will be observed to conclude why diverse elements (i.e., discourses, institutions, social groups, and physical features) have been recombined into assemblages outcomes which were hard to predict and unintended. For this analysis, power is understood as the capacity of certain actors to mobilize and 'govern' the relationships between elements in an assemblage in ways that support their interests. As suggested by Nail (2017), different assemblages are defined by different sets of relations, and these tend to be unstable. Hence, power must be continually maintained through activities and coordination mechanisms through which specific relations between different objects in an assemblage are maintained. Taking a look at the Honduran palm oil industry through this lens, the paper will analyze the expansion of the industry, the governance structure and policy framework that led to this expansion, the current global issues affecting this industry, and the response at the local level to these changes. Finally, the paper will conclude with a discussion on the power differentials in this industry and the implications of policy on the industry and the livelihoods of small-scale farmers.

OIL PALM PRODUCTION IN HONDURAS

Since the introduction of oil palm Elaeis guineensis in Honduras in 1927, the expansion of the production area has been gradual but steady. The first oil palm seeds were brought from Malaysia, initially for exhibition in the Lancetilla Botanical Garden, the first place where oil palm was first planted in the entire continent. The

Tela Railroad Company, a subsidiary of the United Fruit Company, present-day Chiquita Brands International, established the first commercial plantation in the 1930s. The first commercial plantations were started in 1936, and by the 1970s, there were 11,000 hectares planted by United Fruit Company throughout the northern part of Honduras. Since then, the cultivation of oil palm across Latin America has expanded with several countries (Colombia, Ecuador, Honduras, Brazil, Costa Rica, Guatemala, Mexico, Peru, Venezuela) adopting the crop and doubling output since 2001 (Furumo and Aide 2017).

In 2018, Honduras exported 469 thousand tons of palm oil, which generated US$364 million in export earnings, placing palm oil as one of the country's main export products (AIPAH 2018). As the banana sector in Honduras has declined in terms of area and production volume, the palm oil industry kept expanding. Since 2000, the area expansion has been five-fold (Figure 1), and production volumes have shown a similar trend (Figure 2).

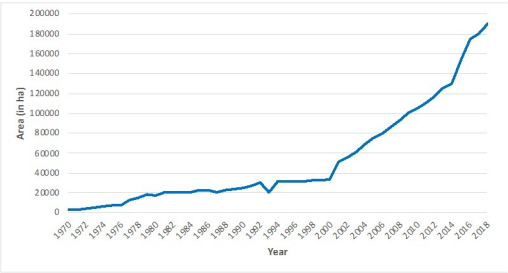

FIGURE 1 Oil Palm Production Area in Honduras (FAO 2018)

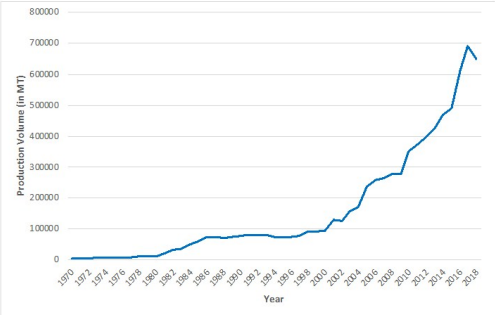

FIGURE 2 Oil Palm Production Volume in Honduras (FAO 2018)

For the last two decades, the expansion of the industry has been a result of targeted economic policies to promote the sector, with the idea to increase the production of biofuels. In 2006, the Honduran government ratified an action plan to increase the competitiveness of the palm oil sector through measures such as access to credit through a special fund, known as "Fondo de Fomento Palmero". Oil palm producers received subsidies. Although there were government subsidies given to support the industry, smallholder producers still faced difficult access to credit and lacked training, especially related to the production of biodiesel (PRONAGRO 2018). Although these measures were taken to support oil palm producers, especially small-scale producers, the legitimacy of these economic policies have come into question as doubt is cast around the environmental and social sustainability of the entire industry.

GOVERNANCE OF THE PALM OIL INDUSTRY: POLICY FRAMEWORK

The past two decades have seen a growing interest in integrating more producers in the palm oil industry in Honduras, legitimized by the argument that increased biofuel production is beneficial for the national economy. According to Craven (2011), the government's legal framework was well suited for developing biofuels. Honduras is the only Central American country that has approved a law and a regulation that treats biodiesel and ethanol production equally. Job creation was also a key motivation underpinning the promotion of biofuel production. With a loan from the Central American Bank of Economic Integration (CABEI) of US$7 million, approved in 2005, it was possible to increase the plantation area during the first stage of the implementation of the national strategy. Additionally, there was a strong focus on integrating smallholder producers. In Honduras, therefore, the apparent industry concentration, which has been associated with the industry in other countries, is not as marked, since primary production of oil palm is not dominated by large producers or transnationals but rather by small-scale producers (Picado 2016) (Table 1).

Since the early 2000s, the expansion of the palm oil industry in Honduras was supported through targeted policies and a

framework agreement promoted by the government (Furomo and Aide 2017). The framework agreement to promote the competitiveness of the palm oil value chain was ratified in 2006. This agreement aimed to implement the action plan to improve the competitiveness and added value of palm oil, particularly in terms of efficiency and sustainability in the production, industrialization, and commercialization stages. It also aimed to consolidate and strengthen the competitive advantages through the development of a strategy and the coordinated execution of short, medium, and long-term actions, such as the creation of the "Fondo Palmero", a fund which provided credits to producers and services in the sector to further its development. A program for small and medium producers of palm oil (PROPALMA) was established, financed by the CABEI. Part of the capital was recovered through interest and capital quotas paid by the beneficiaries of the loans.

A year later, the Honduran government passed the 'Law for the Production and Consumption of Biofuels'. Through this Biofuels Law, a legal basis for assigning funds and expanding production of biofuels was put in place, which promoted the expansion of oil palm production. The legal framework also provided incentives and funds to small scale farmers, extractors, and refineries to purchase equipment, materials, and services for the planning, design, installation, construction, and set-up of biofuel processing pilot plants. In the initial phase of the expansion plan, which also began with constructing a biodiesel pilot plant, 1.7 million oil palm seedlings were imported and distributed among the palm oil producers in northern Honduras. Three ministries were assigned to work on the design and implementation of policies to expand biofuel production and promote them on the market: The Ministry of Industry and Trade (SIC), the Ministry of Agriculture and Livestock (SAG), and the Ministry of Natural Resources (SERNA).

Despite the positive economic effects of increased palm oil production for the food processing and cosmetics industry, the expansion of plantations globally has caused significant negative environmental impacts. These include deforestation, conversion of wetlands, habitat loss, forest fragmentation, biodiversity loss, food chain disruption, soil property changes, water, air pollution, and increased greenhouse gas (GHG) emissions (Khatun et al. 2017).

This has prompted a range of reactions from the scientific community and the industry (Wijeldesa et al. 2016), ranging from measures to limit further industry expansion to a proposal to modify practices to mitigate the adverse effects of the industry (Sayer et al. 2012). In this context, the role of small-scale producers has been centered in debates about oil palm. There is a widespread perception that small-scale production is inherently less environmentally harmful than large-scale systems. In a report by Climate Focus (2018), the importance of integrating small-scale producers is highlighted as a strategy to mitigate the impact on forest loss and land degradation. With oil palm, Jezeer et al. (2019) show evidence of a reduced negative environmental impact through active and inclusive smallholder participation in the certification process in Latin America. Similarly, Saadun et al. (2018) report this outcome in Malaysia. Given the positive environmental outcomes associated with smallholder farming in the oil palm sector and the limited capacity of local and national government to enforce environmental standards, active smallholder participation and engagement has come to be regarded as a cost-effective strategy to maintain protected areas and remaining forest corridors in oil palm-dominated landscapes (Jezeer et al. 2019).

The Honduran government developed a range of measures to promote the growth and integration of smallholders in the palm oil industry. All machinery and equipment used in the production of biodiesel was the tax and import duty exempt for fifteen years. Oil palm seeds from Costa Rica, Indonesia, and Malaysia were imported and given to smallholders and subsidies to buy fertilizers. Other problems affecting the farmers have also been addressed, yet not fully resolved. One of the biggest constraints hindering business in Honduras is the inadequate financial market. Credits are accompanied by high interest rates, and in the case of the agricultural sector, many farmers must use their land as a guarantee before obtaining credit. The initial phase of oil palm cultivation is capital intensive and requires large investments. As oil palms take at least four years before they come into production and plantations require high maintenance, high interest rates on loans discourage investment in its establishment. While government subsidies to support the initial phase of production might seem beneficial, supportive financial markets are also required.

Social problems have also been linked to palm oil production

in Honduras. Social problems linked to the industry include unresolved land rights issues, low industry wages, and the uneven distribution of benefits. Examples of land rights issues are closely tied to the environmental governance of the value chain and have resulted in clashes between different interest groups (Oosterveer 2015, Obidzinski et al. 2012). Different types of land grabbing have been observed in many places where oil palm cultivation is dominated by influential corporations associated with large-scale concession areas and smallholders with no or only customary land titles (Leon Araya 2019, Kerssen 2013, Hirsch 2011, Sikor and Lund 2009). Large corporations like Dinant, which has been at the center of land conflict in Honduras, have ongoing programs to help smallholders acquire these land titles. However, the business has been affected by the conflicts among corporations and farmers cooperatives, which has prevailed for several decades.

GLOBAL RESPONSES TO CONCERNS ABOUT PALM OIL

At a global level, the Roundtable on Sustainable Palm Oil (RSPO), a multi-stakeholder partnered governance approach established in 2004, has emerged as the most recognized international sustainability standard in the palm oil sector, operating a sustainability certification scheme (Dauvergne 2018, Ivancic and Koh 2016, Von Geibler 2013). Initiated with substantial support of Unilever and the World-Wide Fund for Nature (WWF), the RSPO currently includes more than 4000 members, from palm oil producers, non-governmental organizations (NGOs), to consumer goods manufacturers and retailers, financial institutions, etc. (RSPO 2020, Pacheco et al. 2017). By 2016, a Technical Committee for the Roundtable on Sustainable Palm Oil Certification was created by the Honduran Secretary of Agriculture and Livestock. This body has the task of coordinating all the efforts and resources that any public or private, national or international body or institution undertakes or provides for certification. This committee also serves as liaison and manager with the institutions and government agencies linked to RSPO certification. In particular, in Honduras, it has links with the Association of Industrialists of the Oil Palm of Honduras (AIPAH) and the National Federation of African Palm Producers of Honduras (FENAPALMAH).

One of the most recent developments impacting the national policy framework has been incorporating Honduras in the Council of Palm Oil Producing Countries (CPOPC). After the 2nd Ministerial Meeting of Palm Oil Producing Countries held in November 2019 in Malaysia, the Honduran government announced the new 10-year plan to support and develop the industry. As the world price of palm oil has fallen and affected smallholder producers in Honduras, this plan will also include a normative framework for financial assistance.

REGULATORY MECHANISMS AND THE HONDURAN PALM OIL INDUSTRY

While Honduras participates in global regulatory frameworks and shares many of the reputational and sustainability challenges of the global palm oil industry, the industry does so within the national context with unique features and challenges. One particularity of the Honduran example is the trajectory of land use change over the last four decades. Commercial oil palm plantations have been established in former banana cultivation areas (Furomo and Aide 2017). In this case, the gradual diminution of the agro-industrial assemblage organized around the production of the banana has been disassembled, and components of that assemblage have now come to be reassembled in another assemblage organized around the production of oil palm (Li 2007). At the national level, it may perhaps be useful to conceptualize the regulation of the oil palm process as a means by which certain actors (in particular the state) seek to 'fix' relationships between objects and actors that constitute part of the Honduran oil palm assemblage in ways which reflects the interests of the state. However, besides the state, other actors seek to define the relationship between components of the oil palm assemblage in different ways. The extent to which different actors can do so reflects their ability to exercise a degree of power over the process.

Before looking at the regulatory mechanisms and the effects of the measures taken by the state to promote and regulate the palm oil industry, it is important to identify the different actors, their respective role in the industry, and how they are integrated into the oil palm assemblage, to allow us to explore the configuration of relationships between them and how actors confer power for a

particular purpose. Besides the state and international bodies, the palm oil industry in Honduras includes different actors involved in production, trade, processing, and retailing (Table 1).

Table 1 Description of the Palm Oil industry in Honduras (PRONAGRO 2018)

	Number	Characteristics
Producers	>10,000	• Small-scale producers: 1 to 10 ha • Medium-scale producers: 11 to 100 ha • Large-scale producers: over 100 ha • The average price for fruit represents 12-14% of the international price for crude oil
Intermediaries	10	• Located in all production areas • Have invested in transportation and machinery • Extractors have given them credits for their operation • Profit margin about 30% of the national price for fruit • They sometimes offer credit to small producers
Extractors	11	• 3 are cooperatives and have a lower extraction capacity • 8 belong to the private sector and have optimal extraction capacity, as well as technical and managerial know-how
Refineries	4	• 2 are private sector companies • High technological investments • Possess highly qualified management teams
Exporters	9	• Have access to national and international credit • Own trucks and equipment for transportation • Main markets include Mexico and Central America • Sell processed products and crude oil, depending on demand

These categories include varying numbers of individual entities. At the farm level, over 10,000 oil palm producers located in four different departments in Honduras produce a total of 9 million tons of oil palm fruit a year. Most of these producers have contracts with the extractors or are associated with producers' cooperatives. Therefore, the payment they receive for the oil palm fruit is fixed

by contractual agreement, and the paid amount covers production costs and provides a level of income for the producers. Another important actor in the chain is the intermediary. About ten intermediaries are collecting fruits and providing logistics for small producers who have little access to transportation. These are autonomous traders dealing with producers but also extractors. They buy from small producers and sell to extractors. These intermediaries are larger businesses that own equipment for logistics. Power differentials between smallholders, the intermediaries, and extractors exist, and the regulation mechanisms include credits given by extractors to intermediaries and then to smallholders, often through informal agreements (PRONAGRO 2018).

The next category of actors in the industry is the oil palm fruit processors. Known in Honduras in the context of the palm oil value chain as extractors, these firms are either private companies or larger farmers' cooperatives, comprised of local, smaller-scale cooperatives. Out of the 11 extractors located in the country, 8 of them belong to the private sector. The other three started as farmers' cooperatives and expanded into extraction. These firms have acquired sophisticated technology through the years, initially relying on state subsidies, as was Hondupalma and Coapalma. Another actor down the chain is the refinery facilities where palm oil is fractioned. There are four refineries nationwide, and they produce for the national and international markets. It is estimated that at least 50% of the national oil palm production is exported. The nine specialized exporters buy oil palm products (crude oil, concentrate, and other sub-products) and export, mainly to Central America and Mexico (PRONAGRO 2018, SAG 2013).

Management theorists define lead firms as the organizational integrators of dispersed economic activities in the top-down processes (Lee and Gereffi 2015). In assemblage theory, rather than organizational integrators, we can identify key firms that have employed assemblage practices to successfully organize other components of the assemblage in ways that support their goals. While the state may play an important role in the development and formal regulation of the Honduran palm oil industry, the 11 extractor companies exercise considerable control over the rest of the assemblage stemming from their position at a key juncture

between the upstream "producers" and downstream "consumers". Consequently, they play a pivotal role in shaping the relationships between other actors in the oil palm assemblage. This position is strengthened by the high concentration of these firms at this stage of the oil palm value chain, and their essential function for processing a highly perishable crop (the fruit must be pressed 24 hours after harvest) with no other use than the production of oil and resulting derivatives such as biofuel. Firms play a critical, time-limited role as the sole market for the crop and the only processors, since the small number of mills owned by extractors. They are wholly reliant on these facilities buying their fruit, while downstream users rely on these companies for sourcing their raw material. Most, if not all, producers, irrespective of their size, are closely linked to these firms because all the production is sold to one of these extractors. Many producers belong to farmers' associations or cooperatives, so they produce under contracts for the extractors.

Industry Organizations And Regulatory Frameworks

The regulatory governance infrastructure in palm oil was assessed by Hamilton-Hart (2015), and she states that different facets of the industry are potentially affected by several different global and regional governmental initiatives, while a private, partnered governance institution takes the leading role in terms of setting regulatory standards for the industry. In the case of Honduras, there is evidence in the rise of compliance with environmental standards. The Ministry of Agriculture, with the support of the WWF, SNV, Solidaridad Central America, and Proforest, addressed the environmental and social impacts along the palm oil supply chain in Honduras. Mining and palm oil companies formed a consortium to work towards compliance with the RSPO standards for the sustainable production of palm oil, which generated quantifiable benefits such as increased per hectare productivity, reduced threats of deforestation and environmental degradation, and the protection of health and safety of plantation workers. Through the Industrial Association of Palm Oil Producers (AIPAH), ten out of the 11 lead firms have committed to comply with environmental standards. Wilmar Europe and AIPAH have established a partnership to strengthen the good agricultural and

environmental practices of palm oil smallholders in Honduras. The WISSH Program (Wilmar Smallholders Support in Honduras) was created to enhance smallholders' knowledge and technical capacity on best agricultural management practices that incorporate principles of environmental stewardship, which will eventually lead to improved crop yields, lower input costs, and better and more stable income of smallholders. WISSH builds upon the criteria in Wilmar's "No Deforestation, No Peat and No Exploitation" policy (WISSH 2016). This is an example of the range of governance models, which continuously shapes the development of the industry. In this case, there is a crossover between international and national arrangements. However, as the interest in environmental sustainability increases, social conflicts may also increase because of the conflict of interest from different actors.

Craven (2011) affirmed that Honduras did not demonstrate the political experience or dexterity required to simultaneously balance the demands of multinational corporations (MNCs) and local stakeholders. She pointed out that Honduras did not offer international investors and MNCs a stable economic and political environment to foster investments. Concerning the events of 2009, where Honduras was submerged in a political crisis which concluded with the forceful removal of the president, Craven (2011) discussed the ramifications for the energy sector. The Ministry of Agriculture and Livestock, the ministry principally responsible for biofuels development, embarked on its own strategic plan for 2010–2014, discontinuing the older plan. Picado (2016) argues that after the 2009 political crisis, the ramification for the communities in the Aguán Valley has been mostly negative, as conflict over land rights has escalated. In this assemblage, as Nail presents (2017), the relative negative deterritorialization process took place, and distinct power differentials were at the root, long before this political crisis.

PRACTICES OF ASSEMBLAGE

In the two main producing areas – the Sula and Aguán valleys – the initial players and most prominent extractors are Hondupalma and Coapalma. They are examples of how extractors establish power in the assemblage. Hondupalma was officially founded in 1982 as a farmers' cooperative association. This cooperative is a

result of the Honduran agrarian reform and peasant movement of the 1960s and 1970s. Presently, Hondupalma comprises 30 smaller associations and cooperatives and has processing facilities located in Yoro, in northern Honduras. This area has traditionally had economic relevance because of the high agricultural output. Since 1985 the production facilities have produced crude oil, refined oil, various oils for further industrial use, and biofuels (Gonzales 2005). The extraction plant works at an installed capacity of 60 tons per hour, the refinery can produce 70,000 tons of crude oil a year, and the fractionation plant has an installed capacity of 150 tons a day (Hondupalma 2018). The technological level of these processing facilities is high, and rigorous quality standards are implemented throughout the production processes. Hondupalma has various suppliers, mostly the associated farmers, independent producers, and sources from its own plantations (Cotty et al. 2002).

The Aguán Valley on the northern Atlantic coast of Honduras is another major area of agricultural production. In 1982, Coapalma Ecara was founded, the same year when Hondupalma was founded in the nearby Sula and Lean valleys in northern Honduras. It is also a farmers' cooperative, comprised of 13 smaller associated farmers' cooperatives, based in Tocoa, Colón (Coapalma 2020). Currently, Coapalma can extract about 40 tons of crude oil per hour. The refinery has an installed capacity of 100 tons a day, and the fractionation plant has a processing capacity of 100 tons a day. In terms of installed capacity and productivity, Coapalma lags behind Hondupalma (Fajardo 2006).

Hondupalma and Coapalma are the biggest players in each region. Although technically both are farmers' cooperatives, they operate as companies. Both firms play a dominant role in defining activities and monitoring the chain at the local level. Although the core of their business is extracting crude oil, both firms are engaged in defining who and what is being produced. Both firms have plantations, but they also source from associated and independent producers. Not only do these firms coordinate activities, but they also monitor them. It is through the provision of extension services that help farmers improve their production processes.

In many cases, these farmers also receive assistance in the form of fertilizers or pesticides. Both firms also engage in social development activities by providing access to education, vocational

training, health centers, and infrastructure in the local communities. This exemplifies the rendering of technical and knowledge validation to legitimize the relationship between elements of the assemblage, which appear seemingly apolitical, but vest power in the lead firms. The extractors also conduct monitoring activities. Audits take place, and a sample is taken from each shipment of palm kernels and bunches. Producers are penalized if the bunches contain an excess of unripe or overly ripe fruit, for instance. Quality standards are monitored already at the primary production level. The extractors allocate resources to train personnel on quality and safety standards and other aspects of quality assurance.

The coordination to secure a consistent supply among several hundred farmers is complex but efficiently conducted by the lead firms. Elements of reassembling, market efficiency, and new forms of coordination are evident (Li 2007). Because the palm oil industry is highly concentrated and the returns are large, these firms find themselves able to meet the constant demands for quality, reliability, and timely diligence of the supply. The management capabilities of these firms are good. Highly skilled personnel are hired and trained. However, the larger extractors can invest more in management systems to meet such requirements than the smallholders. In addition to coordinating activities along the value chain, these firms have taken over a stewardship role by promoting environmental certifications. A top-down approach in the promotion and implementation of these certifications has been taken, monitored, and enforced by the lead firms.

As opposed to these firms, the profit margin for small-scale producers in the palm oil value chain is lower than other actors in the chain. In general, those on the bottom of the chain are gaining the least, and in agriculture, especially in primary production, this effect is magnified (Shepherd 2016). Humphrey (2005) warned that one of the challenges small producers in developing countries face is exclusion because of the trends in global agribusiness. The first trend is the increasing importance of large buyers in global food chains. Small producers are forced to be more competitive because of the requirements of large buyers (i.e., retailers, processors) for quality, reliability of delivery, and product differentiation have raised the level of competence required.

Second, the concentration at various points in the value chain, including input suppliers (i.e., seeds, chemicals), processors, and retailers, has implications for the questions of access to agribusiness value chains and returns for small producers participating in these chains. The palm oil industry is highly concentrated. Finally, the importance of food safety, social and environmental standards, which are becoming more stringent and are closely monitored, also present challenges for small producers.

The interactions between actors involved can determine the performance of the palm oil assemblage as they forge alignments for their interests. For producers, intermediaries, or processors to add value to farm products by adopting changes in production, handling, and processing practices, new skills and knowledge must be acquired. In the palm oil value chain, crude oil is transformed as it passes through different actors or links in the chain, where value is added until it reaches the final consumer. On the other side of the chain, there is tacit knowledge passed down through the different actors in the form of codified information. A key characteristic of authorizing knowledge is specifying the requisite body of knowledge. The extractors and refineries have a role in the governance and coordination of the activities in the chain through different mechanisms, known in assemblage theory (Li 2007) as anti-politics, or *how* and *what* to govern and the distributive effects of particular arrangements. In this interaction, trust relationships may or may not be formed, depending on the level of interaction between the actors. Arguably, those farmers under contracts may form tighter trust relationships with the extractors (Fromm 2007).

POWER DIFFERENTIALS: POLICY, LEAD FIRMS, AND RURAL LIVELIHOODS

Power differentials in the palm oil industry in Honduras are rooted in the agrarian reform and the peasant movements of the 1960s and 1970s. Even before palm oil cultivation was promoted through target economic policies, the seeds were planted for a fragmented agroindustry, where different actors struggle to control different discourses. The state tried to promote the agro-industrial growth of a sector which is highly regulated, while at the same time setting the stage for conflict through a poorly executed agrarian reform

process. During the agrarian reform, the land was distributed to peasant farmers, who often lacked the capacity to make it productive. Corporations such as Dinant in the Aguan Valley purchased idle land from farmer cooperatives who were willing to sell it (Edelmann and Leon 2014). However, poor regulatory systems and statutory regulations often did not fulfill the role of mediation between different interest groups, and an agrarian counter-reform process allowed for land purchases to take place in the 1990s (Leon 2016, Roquas 2002). Two institutions, the National Agrarian Institute (INA), which provides technical support to farmers, and the National Development Bank (BANADESA), both created in the era of the agrarian reform, were key to the transformation of agriculture but pursued conflicting policies. While trying to boost the cultivation of subsistence crops such as maize and beans by handing out fragmented land titles to small-scale farmers, the government also indirectly promoted the large-scale cultivation of monoculture crops such as oil palm and sugar cane (Cohn Berger and Palacios 2019).

With the establishment of commercial oil palm plantations in the 1980s, farmers' cooperatives became relevant in the success of this agroindustry. As more farmers started reaping economic gains through contractual arrangements with Hondupalma and Coapalma, for example, the expansion of oil palm plantations was justified, as it was perceived to be a crop that could lift smallholder farmers out of poverty and successfully integrate them into an agricultural value chain which could render high profits. Having the security of a constant income motivated farmers to abandon maize and bean production. Although the entry door to the palm oil industry was through cooperatives, issues around land tenure, particularly in the Aguán Valley, were left unresolved (Kerssen 2013). Farmers' cooperatives actively sought to expand the industry, and by the 1990s, large corporations such as Dinant purchased land and expanded production. One key issue was the practices of assemblage, which in this case did not necessarily forge connections between the cooperatives, but rather undermined trust among actors was the distorted definition and understanding of property rights. As Roquas (2002) points out, the state itself, as the institution that defines and protects private property through its laws and legal system, has become an actor in land conflicts because

of its inability to define and protect the private, state clearly, and common property.

Nail (2017) describes a typology of change (i.e., deterritorialization) in assemblages and states that every assemblage is always simultaneously crisscrossed with multiple types of processes. He defines the four processes of deterritorialization as: "(1) *relative negative* processes that change an assemblage to maintain and reproduce an established assemblage; (2) *relative positive* processes that do not reproduce an established assemblage, but do not yet contribute to or create a new assemblage—they are ambiguous; (3) *absolute negative* processes that do not support any assemblage, but undermine them all; and (4) *absolute positive* processes that do not reproduce an established assemblage, but instead create a new one" (Nail 2017, p. 34). In the case of the Aguán Valley, a relative negative deterritorialization process took place, in which assemblages were changed to maintain and reproduce an established assemblage, in particular one which favored a commercial expansion and boom of palm oil regardless of the land tenure conflicts that were taking place.

One missing element in the entire discussion around land tenure issues in the palm oil industry, particularly in the Aguán Valley, is the market liberalization process Honduras underwent in the 1990s. With the promotion of the structural adjustment programs by the World Bank (WB) and the International Monetary Fund (IMF), macroeconomic and structural reforms were introduced, which included the privatization of public enterprises. The land which was handed out to farmers or farmers' cooperatives in the agrarian reform was privatized or sold to private corporations, regardless of the legislation, which considered this land as public lands and, as such, could not be sold. The government gave ownership through private property titles to the cooperatives. Some members of these cooperatives collectively decided to sell the land, and thus, setting the conditions for a generation of dispossessed peasants (Diaz and Zepeda 2012). The practices of some of the leaders of the cooperatives are questionable. They reflect the anti-politics of the assemblage, especially because of the interest of this group to shift the discussion to the actions of private enterprises only.

One critical feature of this case is that regardless of the opposition of certain groups to the expansion of commercial oil

palm plantations, the opposition was not against the crop itself, but emerged as a struggle to recognize land rights. Rural livelihoods have benefited from the development of the palm oil sector, which has created thousands of direct and indirect jobs in historically impoverished areas of Honduras. The palm oil industry has had a re-distribution effect by also bringing in investment to these rural areas. Cohen Berger and Palacios (2019) provide evidence of farmer inclusiveness in the sector. Additionally, efforts by extractors and farmers' cooperatives, supported by policies, seem to engage smallholder farmers in sustainability efforts, especially with the creation of the Technical Committee for the RSPO Certification, which groups different stakeholders to promote sustainable agronomic and processing practices. Regardless of all the agreements, roundtables, or 'negotiation tables' as they are known in Honduras, the private companies and market-oriented farmers' cooperatives (or extractors) have had a strong role in shaping the industry and distributing the benefits. Different elements such as the discourses, institutions, forms of expertise, and physical features are recombined into assemblages on an ongoing basis. The inherent power differentials are central in controlling discourses by the different actors, and this dynamic will continue to shape policy and influence outcomes in future sustainability efforts.

CONCLUSION

This paper posed the question of whether sustainable palm oil production is a myth or reality by examining the unique case of Honduras. Economic, ecological, and social dimensions were studied under the lens of an assemblage. Palm oil production offers economic benefits for the country in terms of export revenues and contribution to the GDP, which also trickles down to small-scale producers in rural areas in Honduras. Considering the current difficult economic panorama, which forces thousands (especially young people under 25 years of age) to leave the rural area and illegally migrate mostly to North America, the palm oil industry does offer the possibility of achieving financial income and promoting inclusive livelihoods. The industry is also evolving, for example, through AIPAH and its commitment to meeting environmental sustainability and the membership of Honduras in RSPO. Although the initial impetus of expanding oil palm production for biofuel use has somewhat lost momentum with the

political conflicts in Honduras, this may be a favorable situation for the industry, as a thorough re-evaluation of how beneficial and at what cost the promotion of biofuels comes, particularly from a sustainability perspective.

No industry can be sustainable if whatever gain in environmental sustainability practices comes at the price of negative impacts at the community level. Failures can be attributed to a misguided and contradictory policy framework that actively promoted economic growth of the sector but was unable to resolve land rights issues from the beginning of the agrarian reform. The weak regulatory framework and institutions which cannot enforce and maintain the rule of law has resulted in a heavy toll for farmers claiming their land rights. In the end, it set the stage for antagonism between different interest groups. It has tarnished the business of corporations like Dinant while also exerting pressure on cooperatives, caught between conflicting discourses over the quest for economic gains and the task of representing and defending the rights of the farmers they represent. If this agroindustry wants to achieve sustainability from the economic, social, and environmental perspective, it is imperative to address these disputes. Until then, sustainable palm oil production in Honduras remains a myth.

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