



# From Agroforestry to Agroindustry: Smallholder Access to Benefits From Oil Palm in Ghana and the Implications for Sustainability Certification

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Oil palm production in Ghana—which is primarily cultivated by smallholders (60%+)—plays an important role in local economies and rural livelihoods. As a multi-functional crop, it is embedded in the everyday life of rural and urban Ghanaians both by individual households and on an industrial level. The sector is currently experiencing a resurgence under Ghana's New Patriotic Party (NPP) rule and is being targeted by the Roundtable on Sustainable Palm Oil (RSPO) for yield intensification and increased export production. End goals of these efforts include poverty alleviation, environmentally responsible development efforts, and agricultural diversification in rural areas. We apply Ribot and Peluso's "theory of access" (2003) to assess the barriers and opportunities for smallholder oil palm farmers, and the degree to which these are addressed by RSPO interventions. Our results highlight how Ghanaian smallholders gain many benefits from palm oil production as a source of regular income, a drought-resilient crop, and a source of cooking oil for household use. However, they also report different levels of access to finance, markets, land, and technical support, along with differing views and visions of the oil palm sector's development. The focus of governmental and RSPO initiatives on international trade-based incentives overlooks this diversity and, in particular, the importance of local markets for Ghanaian livelihoods. This poses a threat to women millers and traders, poorer producers, and the local markets they supply who risk losing access to the palm oil supply chain. More generally, these findings illustrate the importance of understanding how markets interact at multiple local to international scales, in order to design interventions that will more equitably reach and benefit local communities.

**Keywords:** best management practices, rural livelihoods, oil palm, commodities, land use change

## INTRODUCTION

Oil palm (*Elaeis guineensis*) originated in the tropical rain forest region of West Africa (Hartley, 1988). It produces palm oil, which has been cultivated in Ghana for thousands of years (Sowunmi, 1999; Maley and Chepstow-lusty, 2001) as part of a mixed agroforestry system for local and domestic use. The overseas export of palm oil began in the colonial era, when Ghana emerged as one of the world's leading producers. Ghana's global share in palm oil production has since shrunk considerably, but Ghanaian smallholders continue to produce oil palm for a diversity of markets (Fold and Whitfield, 2012).

Over the last several decades, with the globalization of tropical commodity production, palm oil has emerged as the most widely used vegetable oil in the world due to its high productivity per unit land area (Moreno-Peñaranda et al., 2018). During this time, West African smallholder production has been dramatically eclipsed by the expansion of monoculture plantations in other tropical forest countries, most notably Indonesia and Malaysia. The rapid spread of oil palm monocultures in Southeast Asia has led some to label it as “the world's most hated crop” (Yan, 2017) for its role in driving large-scale deforestation and steep biodiversity loss (e.g., Koh and Wilcove, 2008; Gutiérrez-Vélez et al., 2011; Ocampo-Peñuela et al., 2018). This has spurred an array of “sustainability” initiatives, such as the Roundtable for Sustainable Palm Oil (RSPO), headquartered in Malaysia, which sets certification standards to ensure that “palm oil is produced without causing harm to the environment or society” (RSPO, 2018). RSPO has recently made headways into Ghana, aiming to align national production with its international sustainability standards.

This paper provides an in-depth, contextualized assessment of RSPO's sustainability claims, with a particular focus on the implications for smallholder livelihoods in Ghana. Drawing on Ribot and Peluso's “theory of access,” we examine whether and how Ghanaian smallholder farmers are able to gain, maintain, or control access to the benefits of oil palm production, and how RSPO certification is either enabling or constraining this access. Through field studies in southern Ghana's Central and Ashanti regions, we first examine smallholders' perceptions of the importance of oil palm cultivation to their livelihoods, then identify key factors constraining smallholder access to the more lucrative export markets and finally consider access to RSPO certification.

In particular, we are concerned with how RSPO certification prioritizes the intensified production of export quality palm oil as a means to increase yields and profits without further deforestation (Byerlee et al., 2014). In general, Ghanaian smallholders<sup>1</sup> produce lower yields per hectare of land in comparison to industrial plantations, and much of this production does not meet the quality standards set by industry

(Osei-Amponsah et al., 2012). This lower productivity has been attributed to smallholders lack of access to key resources e.g., optimum seeds, fertilizer, storage facilities, and agronomic knowledge (Suhada et al., 2018). At the same time, the framing of less intensive production by smallholders is innately problematic since it overlooks the traditional knowledge and livelihood strategies associated with Ghana's local and domestic markets.

The particularities of deforestation in Ghana also call into question the universalising logics of certification. Ghana has one of the highest deforestation rates in Africa, at 3.2% per annum (Norris et al., 2010), and agricultural expansion contributes to 50% overall of deforestation (Forest Carbon Partnership Facility, 2017). While this resonates with international and national priorities to promote agricultural intensification, existing evidence reveals a more nuanced story for Ghanaian oil palm production. Recent statistics suggest only 7% of deforestation is associated with citrus, oil palm, and rubber expansion *combined*, and as such oil palm production in Ghana is *not* a major contributor to overall deforestation in the country (Forest Carbon Partnership Facility, 2017).

Indeed, if we consider that palm oil production in Ghana is already largely “deforestation free,” and that the majority of oil palm production in Ghana is carried out by smallholder farmers (60%+) (Osei-Amponsah et al., 2012), it would seem Ghana is already performing relatively well according to international definitions of sustainable palm oil. However, where Ghanaian production falls short of the RSPO's mission, is in its ability to supply *international* markets with certified sustainable product. To this end, RSPO states that when certification “is accessible and workable for smallholders, certification has the potential to increase productivity, income and access to new markets” (RSPO, 2017). In other words, the promise is that smallholders will be better off if they can access both international markets and certification. This paper interrogates this claim by first identifying the mechanisms that shape access to international markets within the Ghanaian context, and then considering for whom, how, and under what conditions RSPO strategies are improving access to livelihood benefits for smallholder farmers.

## THEORETICAL FRAMEWORK

This study seeks to answer the following research question:

How does RSPO shape smallholder access to oil palm production systems in Ghana, and with what implications for sustainable livelihoods?

To answer the above question, we organize our analysis around three sub questions, drawing on Ribot and Peluso's “theory of access” (2003):

*How do smallholders perceive the importance of palm oil to their livelihoods?*

*What are the different strategies or mechanisms of access through which smallholders gain benefits from palm oil production?*

*How does the RSPO certification initiative affect access across these mechanisms?*

<sup>1</sup>We use the RSPO definition of smallholder: “farmers who grow oil palm, alongside subsistence crops, where the family provides the majority of labor and the farm provides the principal source of income, and the planted oil palm area is less than 50 hectares” (source: RSPO.org)

Ribot and Peluso (2003) define access as “the *ability* to derive benefits from things... including material objects, persons, institutions, and symbols.” The analytical framework suggests thinking of access as a bundle made up of interwoven strands that together create the “web of benefits” experienced by an individual or a group at a given time (Berbés-Blázquez et al., 2017). An analysis of access may focus on identifying the “mechanisms” or factors that enable and constrain different actors to gain, maintain, or control resource access. This parsing apart of multiple factors shaping access facilitates analyses of who benefits from particular resources, and precisely why and how such benefit is accrued (Beckert et al., 2014). The theory distinguishes between two broad categories of access mechanisms: (1) rights-based access (sanctioned by law, custom, or convention) and (2) structural and relational access mechanisms, which include technology, capital, markets, labor, knowledge, authority, identities, and social relations. Ribot and Peluso (2003) state that the mechanisms are not comprehensive, fixed or unique, rather the authors highlight the role of actor “agency” in pursuing different strategies to gain access, i.e., they emphasize the capacity of individuals to act independently and to make their own free choices (Barker, 2003). In this way, the theory of access engages with questions of power, addressing the powers actors wield to enable them derive benefit from things (Myers and Hansen, 2019).

We adopt a similar approach to Berbés-Blázquez et al. (2017), who focus on access “strands”—which we refer to as mechanisms as used by Ribot and Peluso (2003). They apply the access theory to the case of Costa Rica switching from traditional to industrial agriculture and the consequent distribution of the benefits and impacts of ecosystem services produced from these practices. The strands of access they address are: land, tools and technology, capital and credit, markets, knowledge and information, and labor opportunities. Based on the above study and Ribot and Peluso (2003), and our own preliminary scoping interviews with key informants, we use these same mechanisms as a starting point, and add “authority” as another key mechanism, in recognition of the complexity of overlapping traditional and legal tenure regimes that mediate access to land and resources in Ghana.

As per Berbés-Blázquez et al. (2017), we consider land rights as an additional mechanism. Land is both a rights-based access category and rooted in socially acknowledged and supported claims or rights, whether that acknowledgment is by law, custom, or convention (Ribot and Peluso, 2003), and thus also a structural and relational mechanism. We also engage with questions of gender, which a “theory of access” considers under social identity. A growing body of literature has since expanded on the role of gender in shaping people’s ability to benefit from things (Myers and Hansen, 2019). As this literature makes clear, gender, power, and property are closely linked, since power is exercised differently by women and men in negotiating property relations (Rocheleau and Edmunds, 1997; Lawry et al., 2017).

While the body of literature referring to a “theory of access” continues to grow (Myers and Hansen, 2019), the unique contribution of this paper is to apply these concepts to both palm oil production and its certification in order

to unpack the universalising logics of sustainable tropical commodity production. Such understanding is critical, given its growing relevance to smallholder livelihoods the world over, and growing international demand for environmentally and socially responsible production systems. That oil palm is produced under a diversity of cultivation systems in Ghana and provides important contributions to rural livelihoods offers a major opportunity to go beyond universalist understandings of oil palm as a monoculture crop and a global deforestation commodity. This paper examines these two unique aspects of Ghanaian oil palm production to offer a more nuanced and precise understanding of how different markets and production systems differently shape smallholder access to benefits.

## OIL PALM PRODUCTION IN GHANA

### A Brief History of Oil Palm in Ghana

Ghana was the first country to produce palm oil for export and some of the technology which originated in Ghana for this purpose was later utilized in Malaysia and Indonesia (Fold and Whitfield, 2012). According to Agbodeka (1992), Ghana’s first international commercial trade in palm oil took place in 1820, the direct result of demand generated by the industrial revolution in Europe, making palm oil the country’s principal export. Although the world palm oil price declined in the 1870s and the country could not produce competitively, palm oil accounted for 75% of export revenue by the 1880s (Danyo, 2013, p. 159). Since gaining independence from Britain in 1957, successive Ghanaian governments have continually promoted oil palm as an industrial crop for local consumption and export (Adjei-Nsiah et al., 2012).

There have been several attempts to promote and revitalize the palm oil sector in Ghana since the 1950s, but most of these have either stalled or failed altogether. The most prominent has been the Presidential Special Initiative (PSI) on Oil Palm launched in 2002 by John Kufour of the National Patriotic Party (NPP), the same party currently in power. Kufour envisioned—as part of the PSI—that smallholder production of palm oil could significantly alleviate rural poverty, and that Ghana was well placed geographically and economically to re-develop a viable export industry for palm oil. The aim of the PSI-Oil Palm programme was a government-led expansion of the existing industry by facilitating the expansion of land under cultivation by smallholder farmers, linking these farmers to existing processing mills, inviting strategic investors to upgrade or establishing new processing mills, and encouraging farmer ownership of these new mills. The PSI’s failure after just three years was due to the impact of public and private elite power negotiations in policy decision-making, implementation and outcomes (Asante, 2012). When the PSI-Oil Palm strategy was released, the benefits and support to rural farmers outlined in the strategy conflicted with “behind-the-scenes” public-private stakeholder elite agreements (Asante, 2012). This left the government bereft of both private sector support and private sector funding for the project. Whilst several attempts were made to maintain the programme, efforts were abandoned just five years after initiation. The 2016 re-election of an NPP government has led to renewed interest in oil palm, and this time coupled with a push for environmental sustainability

and certification. The NPP, together with key NGOs, and other actors along the supply chain now promote palm oil with the aim of increasing national development while simultaneously helping rural communities access sustainable and diverse livelihoods.

## Multiple Production Systems for a Multi-Functional Crop

Ghana's long history of oil palm production has created a wide diversity of production systems which co-exist to the present day, ranging from the collection of palm nuts as a non-timber forest product (NTFP), to the domestication of oil palm through agroforestry and mixed crop production for local processing and local trade, to the establishment of industrial plantations and the export of palm oil as an internationally traded commodity (FAO and OECD, 2016). These markets produce a wide range of products, from food to fiber, soaps, and other household goods to bio-energy production.

As a multi-functional crop, oil palm is utilized in the everyday lives and livelihoods of rural and urban Ghanaians and is consumed both by individual households and on an industrial level (Angelucci, 2013; Ofosu-Budu and Sarpong, 2013). The palm can produce two types of oils: oil from the fruit of the nut, referred to as fresh fruit bunches (FFB) and palm kernel oil (PKO) from the nut within the kernel. The oil from FFB has a wide variety of uses—both internationally and in Ghana—including food products, cosmetics, and detergents. The fruits' fiber and shells from FFB are recycled into fuel for mill boilers. Palm kernel expellers are used extensively in the energy<sup>2</sup> and animal feed sector supplied by traditional manual household production and small-scale, informal, semi-mechanized production (FAO and OECD, 2016). PKO is also integral to Ghanaian cuisine where it is cooked in local stews, traditional soups, and used as an all-purpose cooking oil. In Ghana, the sap from oil palm can either be consumed as sweet palm wine or fermented into a more potent alcohol known locally as *akpeteshie* (Amoa-Awua et al., 2007; Phalan, 2010).

Smallholder farmers produce about 60% of crude palm oil production, and account for 85% of the planted area (Opoku and Asante, 2008; Osei-Amponsah et al., 2012), from an estimated total of approximately 400,000 hectares under oil palm cultivation (Foli, 2010 cited in Fold and Whitfield, 2012). The palm oil sector not only provides livelihoods to farmers, but also many other actors along the value chain. These include mill operators, transporters, seed distributors, agro-input sellers, the (primarily female) non-industrial palm oil kernel processors, a few hundred who work at Ghana's five industrial-scale palm processing plants (see both **Figure 2** and the layer added to Rhebergen et al.'s map in **Figure 1**) as well as an additional 1,000–3,000 contractors employed predominantly during harvesting. (Awusabo-Asare and Tanle, 2008).

<sup>2</sup>There is currently little information about the share of oil palm utilized for the energy sector. Ghana's national biofuel policy focuses mainly on *Jatropha* (Duku et al., 2010). Kemausuor et al. (2014) highlight the potential for biofuels of four traditional crops grown in Ghana namely maize, cassava, sweet sorghum, and oil palm, in that these (combined) could potentially replace 9.3 and 7.2% of transportation fuels by 2020 and 2030, respectively.

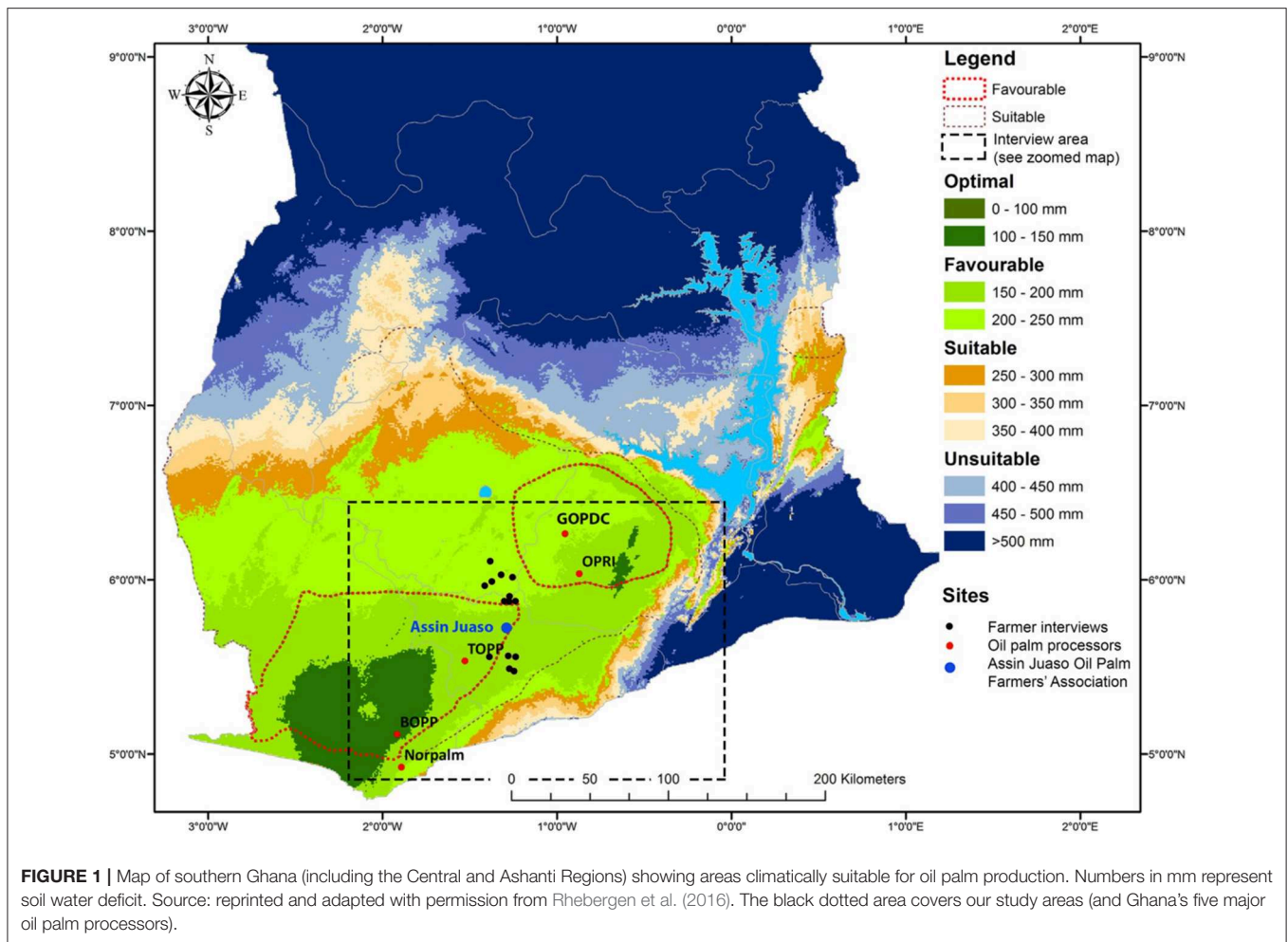
## The Rationale to Create a Viable Export Industry for Ghanaian Oil Palm

Despite Ghana's long history of export production, Ghanaian palm oil producers generally have not supplied the main importers, such as India and China. Instead, Ghanaian exports have been aimed at niche ethnic markets in European countries and the West Africa regional market (Fold and Whitfield, 2012). Crucially, Ghana's current crude palm oil (CPO) production of 245,000 mt, is insufficient to meet national demand. It imports over 30,000 mt CPO annually from Asia to make up its national CPO deficit. In addition, the Economic Community of West African State (ECOWAS) has a CPO deficit of 850,000 mt (Government of Ghana, 2011; MASDAR, 2011; International Trade Centre, 2012), and is a net importer of palm oil (International Trade Centre, 2012). The ECOWAS region is part of the Tropical Forest Alliance 2020 Africa Palm Oil Initiative, working toward producing sustainable palm oil, and already trades between its members (Proforest, 2019), thus providing a ready continental market and an economic incentive toward reviving the palm oil sector in Ghana. The Ghanaian government's plans are to reduce the amount of CPO imported nationally, and to increase exports to ECOWAS and other international markets, via RSPO certified palm oil. In this way, RSPO certification promotes "best management practices" (BMP)—the route to certified palm oil—designed to intensify oil palm production for industrial processing and commercial trade.

Currently there are five major plantations in Ghana which are all RSPO certified. While demand for RSPO certified products is increasing, the land available for plantation expansion is limited. 70% of FFB required by oil palm processing mills are supplied by independent smallholders, thus improving smallholders' productivity and their ability to meet certification requirements have become priorities. These farmers do not have the capacity to pay for assistance to obtain certification, yet without certification they are excluded from the international palm oil supply chain (RSPO, 2019). Since the introduction of the RSPO Smallholders Support Fund (RSSF) in 2013, six initiatives around the world—two of which were in West Africa (Ghana and Nigeria)—have been introduced. The RSSF's intention is to support smallholders with the RSPO certification process. The RSSF intends to facilitate smallholder access to international markets that are increasingly stipulating strict policies of buying only certified sustainable palm oil. The following sections draw on our case study work in Ghana's Central and Ashanti Regions to first examine what shapes smallholder access to palm oil markets, with a particular focus on access to the international industrial markets relevant to RSPO certification. We then consider how RSPO interventions in Ghana are, or aren't improving smallholder access to such markets, as well as their implications for farmers' overall ability to gain livelihood benefits from oil palm.

## GEOGRAPHICAL LOCATION AND METHODOLOGY

There are six regions of Ghana suitable for oil palm production: Eastern, Central, Western, Ashanti, Volta, and Brong Ahafo



(van der Vossen, 1969; Oforu-Budu and Sarpong, 2013)—see **Figure 1**. Suitable conditions for oil palm cultivation exist in southern Ghana's rainforest and semi-deciduous forest zones with high rainfall (van der Vossen, 1969; Rhebergen et al., 2016). **Figure 2** represents the area of villages in which we carried out targeted fieldwork: located around Assin Fosu town in the Central Region, and close to New Edubiase town in the Ashanti Region. Farms surrounding these villages are in areas under oil palm's optimal annual rainfall for yield per hectare, deemed as "favorable," with water deficit areas of between 150 and 250 mm annually<sup>3</sup> (Stephenson, 1998; Rhebergen et al., 2016).

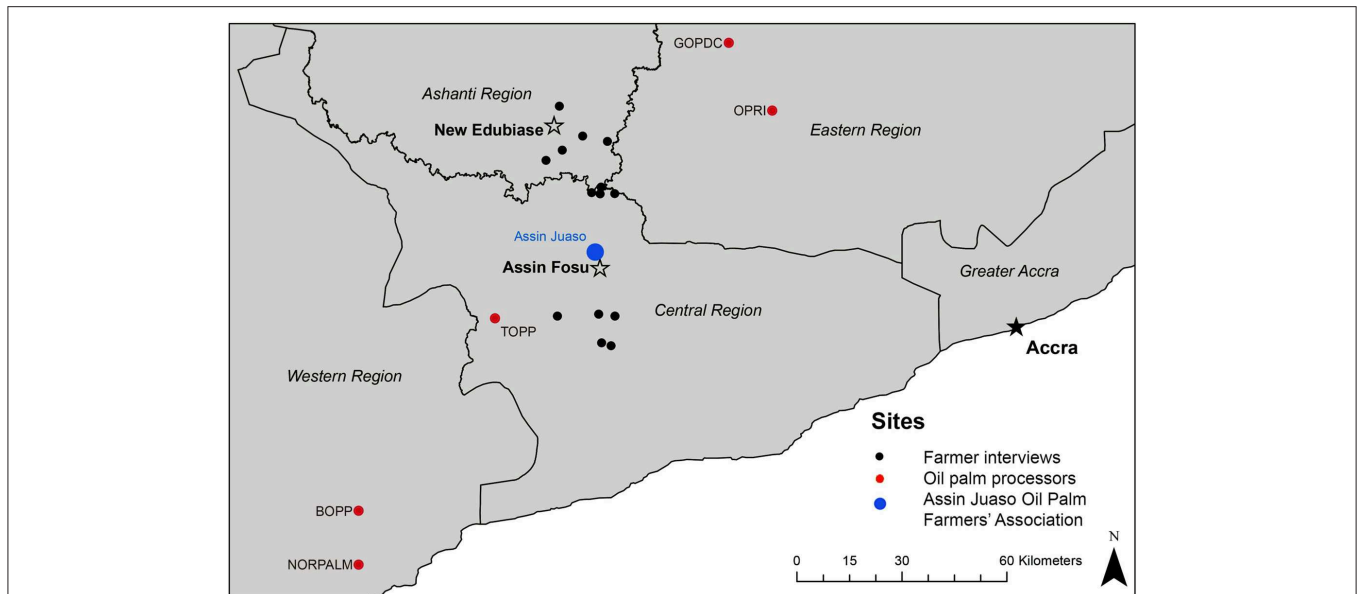
We used a case study approach to answer the research questions and to closely examine the data within a specific context (Zainal, 2007): varieties of oil palm production systems in 15 villages in Ghana's Central (10 villages) and Ashanti Regions (5 villages). The villages in the two regions are within close proximity (adjacent or a few km apart) with the farms being outside the village area (see **Figure 1**). This approach allows for theory application ("theory of access") and also allows the

research questions to be modified during the research process (Bhattacharjee, 2012). We used the following criteria to select our sites: (1) the 15 villages<sup>4</sup> were selected as these were already part of an on-going study (Maguire-Rajpaul et al., 2020) in collaboration with the Nature Conservation Research Centre (NCRC) examining the socio-ecological system of smallholder cocoa cultivation in Ghana: ECOLIMITS<sup>5</sup>, (2) these villages are also located within what Rhebergen et al. (2016) and van der Vossen (1969) classify as either "favorable" or "optimal" oil palm growing conditions; Ghana's oil palm belt, (3) cultivation of oil palm significantly contributes to local livelihoods and (4) the presence of the Assin Juaso Oil Palm Farmers Association, which meets the above three criteria but was also in the preparatory stage for certification. These farmers were participating in the "readiness for RSPO certification" programme (see <https://www.rspo.org/members/4720/Assin-Juaso-Oil-Palm-Growers->

<sup>4</sup>Carrying out research in sites of previous research meant that 'trust building' was already established.

<sup>5</sup>NCRC is a Ghanaian NGO and facilitated this study. ECOLIMITS is an international research project under the UK's Ecosystem Services for Poverty Alleviation (ESPA) programme. For more details, please see: [www.ecolimits.org](http://www.ecolimits.org)

<sup>3</sup>A water deficit of 10mm over a time period means 10mm of moisture was removed from the soil that was not replaced by precipitation during this period.



**FIGURE 2** | Zoomed in area showing our interview sites and Ghana's five major oil palm processing sites. White stars represent the towns of New Edubiase and Assin Fosu, with the black star representing the Ghanaian capital of Accra. Source: own figure.

Association), and were able to recount their experience with the RSPO process.

Throughout September and October 2017, we conducted in-depth semi-structured interviews which served to identify the obstacles smallholders face in “accessing” palm oil production benefits and in sustaining livelihoods. We applied purposeful sampling (Palinkas et al., 2015), where smallholder farmers interviewees were identified through local NGO staff and village chiefs. These farmers had varying socio-economic characteristics and a range of involvement in oil palm production e.g., oil palm as a single crop, part of multi-crop, no crop, and preparing for RSPO certification. Included were those without any oil palm at present but who had either grown the crop in the past or would in the future. Female farmers have long been disadvantaged in Ghanaian cash crop production (Marston, 2016; Friedman et al., 2018), as such, at least a third of our smallholder farmers and almost half from the Assin Juaso Farmers Association were women. It is of note that in our study villages, many farmers interviewed were over the age of 40, as there were very few younger farmers in our case study sites.

The area of land farmed ranged from approximately 0.2 hectares to 23 hectares where the smaller end of the land area range was for subsistence farming of crops such as cassava for domestic use. To understand the household production and local market structures for smallholder farmers, the two lead authors conducted a total of 63 in-depth interviews with smallholder farmers. Socio-economic characteristics are summarized in **Tables 1, 2**.

The 63 farmers included 32 smallholders in 10 villages in the north of the Central Region, and 16 smallholders in 5 villages in the south of the Ashanti Region. In addition, 15 interviews were carried out with members of Assin Juaso Oil Palm Farmers Association, who were asked additional questions

**TABLE 1** | The distribution of gender and age, across the 63 smallholder farmers we interviewed.

Socioeconomic characteristic	Count (n = 63)	%
Male	31	64.6
Female	17	35.4
aged <30	1	2.1
aged 30–39	8	16.7
aged 40–49	6	12.5
aged 50–59	17	35.4
aged 60–69	10	20.8
aged 70–79	3	6.3
aged >80	3	6.3
<b>Assin Juaso Oil Palm farmers Association</b>		
	count (n = 15)	%
Male		53.7
Female		47.3
aged <30	0	0
aged 30–39	0	0
aged 40–49	3	20
aged 50–59	8	53.3
aged 60–69	3	20
aged 70–79	1	6.7
aged >80	0	0

about certification. Questions on socio-economic characteristics regarding, age, land farmed, land owned were asked from all smallholders as shown in **Tables 1, 3**. Semi-structured interviews of approximately 1.5–2 h, were carried in our case study villages in Twi to English via an interpreter. The structured component

**TABLE 2** | Distribution of land farmed by size and gender.

	Total land farmed (divided by sex)			
	>10 ha	5–10 ha	2–5 ha	<2 ha
Male	2	9	26	2
Female	0	3	10	11
% of 63 (male)	3.17	14.28	41.20	3.17
% of 63 (female)	0	4.76	15.87	17.46

consisted of asking respondents the same questions in the same way. The questions were based on themes, including income earned from oil palm, domestic palm oil use, oil palm's overall contribution to livelihood, motivations for land use decisions around crops, and "access" according to the mechanisms identified above. The semi-structured nature of the in-depth interviews also allowed the respondents to expand on any of the thematic questions and express perspectives based on their own particular circumstances.

The lead author also conducted a further 15 in-depth semi-structured interviews with key informants; thus, the primary data of this study contain a total of 78 interviews in all. These 15 key informants included four representatives of government, one large-scale oil palm estate manager, four academics specialized in commodities and land use, one oil palm research institute (OPRI) representative, four NGO representatives from Solidaridad<sup>6</sup> and Proforest<sup>7</sup>, and one mill intermediary<sup>8</sup>. Intermediaries are often women that buy the FFB, process it into oil, and then sell the oil. The interviews helped gauge perspectives on oil palm production and its relation to smallholder livelihoods as well as the certification process itself, in terms of the access mechanisms. The key informant interviews were chosen to represent a range of actors involved in the palm oil sector, to understand their differing interests and perspectives. Additional information was gained through a review of literature (academic and gray), existing policy material, and an analysis of secondary information (such as pilot project data)<sup>9</sup>. Data from the 78 semi-structured interviews were coded thematically using excel worksheets, and analyzed using qualitative data analytical methods, chiefly through content analyses.

## RESULTS AND DISCUSSION

### The Importance of Oil Palm in the Case Study Areas in Central Ghana

All respondents, regardless of their roles and interest in palm oil production, viewed oil palm as a very important crop. The

<sup>6</sup>Solidaridad's main objective is facilitating the development of socially responsible, ecologically sound, and profitable supply chains (source: <https://www.solidaridadnetwork.org/>).

<sup>7</sup>Proforest works with governments, producers, and other private sector partners, throughout agricultural and forest product supply chains to manage and source natural resources sustainably (source: <https://www.proforest.net/en>).

<sup>8</sup>Intermediaries at community level are often locally referred to as "mill ladies."

<sup>9</sup>List of documents and sources can be found after the reference section in **Appendix 1**.

majority of farmers we interviewed stated that they would grow oil palm (even if they currently don't or cannot) for several reasons. Firstly, it is very resilient in that it "survives" droughts, even if water availability impacts the FFB output. Palm is also seen as a long-term investment as well as a "retirement plant," as it can be sold to produce palm wine when it matures. "It [oil palm] is a form of insurance... it will look after you in your old years"<sup>10</sup>. The long-term investment aspect is further corroborated by the quote below by a Ghanaian academic working in the land use and agricultural sector: "They call it the agri-pension: after 14 or 15 years you sell it to another person, they will make palm wine... you can get a lot of money. Some cut it down early just to get that money... palm wine is better when the tree [sic] is older" (Source: interview with a Ghanaian academic).

In addition to using all parts of the crop, growing oil palm provides a regular income: as a perennial crop, it has a peak season (February to May) during which fruits can be harvested every 2 weeks, and a non-peak (or lean) season (September–December) during which the palm still produce but less frequently. Nonetheless oil palm sales provide a regular year-round income.

### Access to Livelihoods From Oil Palm

In each of the following subsections we (1) identify what or who are the critical (i.e., relatively scarce) resources or actors that smallholder oil palm producers seek to access and (2) how they are accessed by farmers aiming to increase the benefits they receive from oil palm. The results are then summarized in **Table 3**.

Interviews with farmers and stakeholders reveal *land rights* as integral to farmers' ability to access land to grow oil palm and reap the associated benefits. Land ownership in Ghana principally falls under two major types: state land, and customary land, with the latter forming about 70% of Ghana's total land area (Larbi et al., 2004). In the case of customary land, which accounts for all our study area, traditional land-owning authorities (e.g., stool chiefs, and clan heads) hold allodial title to land on behalf of their people. Land is allocated to families for use on the basis of perceived need and the political influence of the family, and also to individuals on the same basis (Larbi et al., 2004). Thus, outright ownership of land is still a rare form of land tenure in Ghana (Nyame and Blocher, 2010). Rights-holders enjoy a certain kind and degree of social power. However, the rights associated with law, custom, and convention are not always equivalent (Nyame and Blocher, 2010).

In our case study area, we found that access to land allocated by the village chiefs was influenced by gender, personal networks, and influence with the village's political hierarchy. Rights to land were usually held by men, and male holdings were larger on average than women's. Landholding men also held prominent roles in the community, such as finance officer, village chief, or commodity buyer etc. The following quotes highlight the importance of gender and its link to both land access and land ownership: "When it comes to cash crops in Ghana, it is mainly

<sup>10</sup>Source: interview with an oil palm farmer.

**TABLE 3** | Smallholder farmer access by mechanism; summary of findings from the Ghanaian case study.

Access mechanism	What/who are the critical resources or actors that need to be accessed?	How are they accessed?
Land rights	Wetlands favored	Leased, assigned, or inherited
Tools and technology	Quality seeds (Tenere)	Via brokers, word of mouth and plantations
	Transport	Own or via intermediaries and plantations
	Mills for processing and storage	Via intermediaries
Capital and credit	Initial set up costs and credit	Self funded, borrowed from village elites and credit from plantations
Markets	Local (oil and FFB)	Local markets (FFB or self – milled or via intermediaries)
	National (oil)	Via intermediaries and brokers
	International (oil)	Plantations, intermediaries, or NGOs
Labor	All year, with more required during peak season	Seasonal workers and/or family
Knowledge	Intensification, intercropping, weed and pesticide control	Via farmer to farmer, extension officers and through trial and error
Authority	Access to extension officers	When extension officers visit or come upon request
	Input and knowledge of policy	Via invitation to meetings, and through NGOs (e.g., via certification process)

*male... Women grow palm for subsistence*<sup>11</sup>. If female farmers did want to expand into the cash crop sector, they would require robust land rights, “If you want to go for financing e.g., to expand—you must prove the land is yours, the process is tedious and difficult. A person may have rights but not necessarily land rights”<sup>12</sup>. Having access to land was found to be the overarching factor that impacts access to all other categories, discussed below.

In addition to farm area, the type of landholding was also identified as important by our study respondents. Wetlands were considered the optimal land for oil palm, yet in our study sites there is a shortage of wetlands: roughly fifty percent of smallholders claimed that it would be nearly impossible to obtain more wetlands, while the remainder stated that they could procure additional wetlands, but it would be principally under a sharecropping arrangement. Indeed, many detailed the reluctance of landowners to sell or lease their wetlands was why temporary sharecropping was generally the only way to access more. The sharecropping system also meant that many farmers had to negotiate which crop to plant with the owners at the time the lease was acquired: mainly oil palm or cocoa in our case study sites. This meant that even if a farmer wanted to grow/expand oil palm, they could not until the lease expired and was renegotiated, a period which frequently lasted from one rotation of a current crop to several.

In our case study villages, important channels of access include government agronomic extension officers, RSPO representatives, and others involved in community development projects. The village chiefs and larger landowners (>5 Ha)—both of whom were often also the wealthier members of the community—had access to new policy information for the sector. They were invited to programme meetings on the impact of rural policies and development initiatives, and as such had access to NGOs that were implementing such programmes e.g., certification initiatives and subsequently additional farming knowledge. These programme meetings are a focal point of interaction, and the invitations to village chiefs and larger landowners to attend

them afford them the chance to offer their opinions and provide input into policy formation and development plans about palm oil production. They leveraged the information gained at these meetings to their benefit by, for example, managing their own farms accordingly.

Whilst owning land is not the sole indicator of wealth, land-rich farmers and village chiefs had personal relationships with agronomic extension officers who come on their request. Such access shapes an individual’s ability to benefit from access to information and from agronomic resources deemed essential for livelihoods. The oil palm farmers felt that access to extension services could result in higher yields because they could access better farming management practices. This relates directly to *access to farming knowledge*. All farmers interviewed said that they would increase land acreage for oil palm or grow palm (if they were not doing so already), if they had “suitable” land and/or “more farming knowledge.” Farmers who grew both cocoa and oil palm said they would feel more secure and supported if there were organizations for oil palm as there were for cocoa. For instance, some cocoa farmers are supported by agronomic extension programmes run by cocoa buyers, Rainforest Alliance certification, etc. Farmers organized around such programmes evinced superior farming knowledge which had been provided by representatives of these organizations who also improved opportunities for participating farmers to access fertilizer and seeds without having to travel large distances. Moreover, cocoa is sold at a fixed price set by the government’s national cocoa marketing board, whereas the lack of a fixed price for FFB left oil palm smallholders “at the mercy of intermediaries” e.g., the mill processors.

Size of land-holding also intersected with landowner *access to technology and tools*, which in the case of Ghanaian palm oil includes mills. Landowners with >5 Ha. had the means to travel to plantations to buy seeds and to travel to mills to process the FFB. These larger landowners were generally in a more favorable economic position and could pay for external labor to harvest their oil palm crop. Conversely, many of the remaining farmers (77.78%) had less ability to access the services they need, such as: extension services providing instruction

<sup>11</sup>Source: Interview with an NGO.

<sup>12</sup>Source: Interview with an academic in Ghana.



on improving farming practices, seed provision, and labor. An inability to access these services creates a cycle of “lack.” *Access to agronomic resources*, e.g., obtaining superior quality seeds, was difficult as suppliers visited infrequently and were based far away, as were the plantations which sold a hybrid variety *Tenera*. *Tenera* seeds were deemed by all farmers to be “the best” due to the large amount of FFB produced, with each fruit containing a large quantity of oil compared to the indigenous *Dura* variety. Similar limitations exist for farmers in accessing other agronomic resources such as buying and locating fertilizer.

Growing a crop becomes meaningless if that crop cannot be maintained and harvested. Farmers found it challenging to maintain their farms since weeds must be cleared regularly, fertilizer applied, and land around the crop kept clean. The farms are often far from their village settlements and require long trekking—hours at times—for regular visits. Age played a role in access, and the farmers we were able to interview mostly fell within the 40+ age group: 86% in our study, with 30% being in the 60+ range as shown in **Table 1**. These older farmers struggled to harvest and maintain their crop and to transport the FFB from farm to the local mill (if there was one) without *access to labor*. “*You see only old men and old women—it is really affecting agriculture*”<sup>13</sup>. When an oil palm grows too tall, specialized tools are required to harvest the FFB. Often, farmers chopped down a palm before it has stopped producing optimal fruit, as it was easier to harvest, unlike in plantations where there are palms of varying heights producing fruit.

Our interview data found that within our case study sites, there were few younger members of the community farming as a profession. Many young people had relocated to the urban areas for jobs, and as such, many of our interviewed smallholder farmers were doing the labor themselves, regardless of age, and hiring seasonal workers when and if they could afford to. Help from household members was sporadic, when family members returned home. Farmers stated that perhaps if economic conditions were better for younger community members, they may be motivated to stay on and become farmers themselves. There were a few exceptions, again by the larger landowners and village leaders who had relatively easy access to labor as they can pay for workers to migrate across the country to work on their farms.

Another factor impacting oil palm production is *access to capital and credit* to buy seeds, fertilizer, and other initial set up costs. Oil palm takes approximately 3 years to produce FFB, which makes it an inaccessible crop for farmers who do not have additional crops or alternative livelihoods during this period. Capital is accessed only through self-funding, or on credit from plantations or borrowed from village elites. Smallholders with less land <5 Ha. were able to only sell the FFB, with the intermediaries selling the processed oils, which have a greater profit margin. “*The bunches have very low value . . . The processors are getting four products and these four products are of equal value. Farmers think only the palm oil is of value*”<sup>14</sup>. Moreover, intermediaries decide the price of the FFB—often based on the

“hardship” of the farmer—with the poorest accepting the least favorable conditions. Farmers felt they had no choice but to sell, especially if they had no access to a motorized tricycle to carry the FFB to mills, before the fruit rots (within 24–48 h), as a result, the buyer collects the FFB from the farm. During periods when the supply of FFB from their own outgrowers is low, plantations will buy from independent farmers as well.

Some villages did not have a fully functioning mill, meaning that farmers had to pay more for transport to the next mill. “Better off” farmers (i.e., typically those farming >5 Ha) with transport took the FFB to mills where they could pay to process them into oil and thereafter sell the CPO. CPO sales provided farmers in our study with more favorable margins than the FFB. They sold the CPO during peak season at 60–100 GHS for 25 L, equivalent to approx. 11–18 USD and off-peak at 100–130 GHS equivalent to around 18–24 USD. Thus, the farmers who did not have access to capital also did not have *access to the full range of markets*. They can only access the local market, Ghana’s five large plantations produce for international markets. **Table 3** below summarizes our findings on access across the seven mechanisms of access analyzed.

## The Interaction of RSPO Sustainability Certification With Access

While the history of oil palm production in Ghana is unique and includes a diversity of production systems and demand mainly from local markets, our analysis of current Ghanaian policy priorities found that they match international trends, with a new focus on exports through intensified production, and certification. The major oil palm plantations and NGOs such as Solidaridad and Proforest are motivated to start the RSPO certification process due to renewed government support for the oil palm sector. However, the Ghanaian oil palm sector excludes smallholder farmers from any sectoral development plans and negotiations, even though they are the largest body of producers and will be key to future plans. Solidaridad has the same objectives as both the government and plantations for palm oil sector growth, management, and distribution in Ghana: certifying palm oil for export. Neither independent smallholders nor outgrowers get “a seat at the table” with the latter’s concerns absorbed in a plantation’s certification process. As such, under certification, smallholders will not have more access to the above access mechanisms than they did prior to such interventions. Our study found that the development of “Best Management Practices” (BMP) and associated plans to revive the sector through certification, including the definition of key opportunities, challenges and barriers are being shaped by the plantations and NGOs, often without input from the majority of smallholders. In contrast, chiefs, as landowners who mediate local community access to farmlands, are included to some extent in policy and certification processes. This would in turn benefit those smallholders with favorable access to these traditional authorities.

In both the Assin Juaso Oil Palm Farmers Association and among the other smallholders we interviewed, few (~10%)

<sup>13</sup>Source: interview with a village chief.

<sup>14</sup>Source: interview with an academic in Ghana.

believed becoming certified will give them improved livelihoods, but nonetheless held positive views toward certification. These were based on making farming the crop easier, through mechanisms of access such as “knowledge” and “technology and tools” as well as “markets” for those involved in the certification initiatives<sup>15</sup>. In Assin Juaso, the community will get a new mill within 2 years, funded by Chanel (the French haute couture and cosmetics company), who will also be the buyer of the certified palm oil in due course<sup>16</sup>. However, none of the 15 farmers interviewed from that association knew if they would receive a premium price from selling certified palm oil. Yet, they were quick to state their preference for having both a ready buyer and a mill, as opposed to relying on intermediaries and local markets.

The five major plantations in Ghana rely on outgrowers and smallholders to supply their mills, as the mills need a more constant supply of FFB than the plantations themselves can grow. These plantations benefit from the certification process—not only as they have access across all mechanisms, but they often control access to seeds and markets for the other two types of producers: outgrowers and independent farmers. Outgrowers may stand to benefit from certification due to their integration with the plantations, which in turn makes it easier for plantations to have “control across the value chain”<sup>17</sup>. Outgrowers benefit from a ready market, and access to all the mechanisms identified in this study, whereas that is not the case for the independent smallholder: “Managing a plantation is quite easy, compared to managing farmers who are on their own. Smallholders may or may not sell to us”<sup>18</sup>. Independent farmers do not receive any training or extension support from the processing mills and even government extension agents. Moreover, they are not organized into recognized groups, and as such they receive no support from NGOs and/or development partners. As part of their certification support efforts, Solidaridad is attempting to group some independent farmers in Assin Juaso. But according to a key informant this “is a drop in the ocean... there are too many independent farmers”<sup>19</sup>. The few smallholders included in group schemes are being treated as recipients of aid<sup>20</sup>.

Farmers’ awareness and perceptions of certification are also influenced by the high prevalence of certified cocoa near the study sites. They associate certification with the governmental and organizational support provided for cocoa (e.g., from Rainforest Alliance), including a fixed price, ready buyers, and extension services, even if smallholder cocoa farmers rarely receive a price premium<sup>21</sup>. One NGO stated that helping the oil palm smallholders improve yields through BMP practices is “reward enough” as they will sell more produce, and hence no other incentives are required. The focus for the NGO is to have “good quality” oil that can be sold for greater profit.

Current land tenure in Ghana neither permits outsiders to buy land nor allows the main plantations in Ghana to expand by

accruing more land. It is important to note that tenure appears as a dimension of access in the above section *Access to Livelihoods From Oil Palm*, but also surfaces in the discussion around the implementation of certification. When asked about the challenges of implementing certification, Ghana’s tenure system often came up which the key informants identified as an obstacle. One example is a plantation representative, who believed Ghana’s tenure system limits national and regional development.

*“I see the failure of the palm oil sector as a policy failure. Why should we support policies that support smallholders instead of plantations? It is because of the years we have been politicizing land use... the Constitution allows the government to acquire any lands for the benefit of the whole country... In Assin Fosu, if the government had consolidated the available land and given it to an entrepreneur to establish a plantation... then the whole country would have benefited”* (Source: Interview with a plantation representative).

Key informant interviewees such as the above, as well as NGOs, and government representatives interviewed were in favor of “reforming” land in ways that enable top-down decision-making about land use and prioritize export over local and domestic oil palm production. They likewise expressed support for expanding plantations in a manner similar to the “Malay model”<sup>22</sup>, arguing that it would help increase GDP as well as development and labor opportunities at production sites. Some advocated that land should be seized by the government for “the greater good” and should be viewed as a “national asset” instead of an individual one, with the justification that land reform that allows outside investors would be “pro-growth for development” through plantation production: “for me the plans that we have are in sufficient, we need investors, we need to sort out the tenure issue”<sup>23</sup>. At the same time, many key informants believed reform of the land tenure system is unlikely due to the historical legacy of customary land rights. In contrast, all of our smallholder farmer interviewees favored the pluralistic nature of the customary tenure system, as it meant it reduced the possibility of land grabs by large companies. The land tenure system in Ghana, while viewed unfavorably by the “stronger stakeholders” is a strong incentive for NGOs such as Solidaridad, to incorporate smallholders into future plans for the sector, and BMP through yield intensification is the chosen mode as expansion is not possible.

Both smallholders and plantation, as well as the NGOs, and government officials we interviewed, were generally hostile to the intermediaries who buy and process FFB in small local artisanal mills. Smallholder farmers and some key stakeholders argued these actors should be phased out, as should all the artisanal mills, due to “bad quality oil” and “inefficiency.” One interviewee (NGO) suggested that “they will be absorbed into new systems... for example as mill sweepers” which would leave only plantations and government-run mills to carry out the processing. RSPO’s principles and criteria<sup>24</sup> support rural livelihoods, excluding

<sup>15</sup>Gauged from interviews with several oil palm farmers.

<sup>16</sup><https://annualreport.solidaridadnetwork.org/2016/en/palm-oil>

<sup>17</sup>Source interview with an NGO in Ghana.

<sup>18</sup>Source: Interview with a plantation representative.

<sup>19</sup>Source: interview with an NGO in Ghana.

<sup>20</sup>Source: interview with an academic in Ghana.

<sup>21</sup>Source: interview with a Rainforest Alliance representative in Ghana.

<sup>22</sup>Industrialized plantation style method of growing oil palm.

<sup>23</sup>Source: interview with an NGO in Ghana.

<sup>24</sup><https://rspo.org/key-documents/certification/rspo-principles-and-criteria>

intermediaries raises the question as to “whose rural livelihood counts?” However, it is more likely that the women who work as intermediaries would be increasingly restricted to local markets and/or be forced into black markets in Ghana and neighboring countries, such as Togo and Nigeria<sup>25</sup>. In sum, access and benefits associated with certification reinforce the existing patterns of exclusion that we identified in the previous section for women and those with less land, and threaten to push the female intermediaries out of the market altogether. More generally, our study highlights how the focus of international and national actors on palm oil production for export ignores the long history and multi-faceted nature of palm oil production in Ghana, and how it is the diverse mix of different types of markets for oil palm that enable a greater diversity of smallholders to benefit from cultivating this versatile crop.

## CONCLUSION

We sought to explore how “access” to different oil palm production systems contributes to smallholder livelihoods in Ghana. To do so, we assessed a range of access “mechanisms” identified by Ribot and Peluso (2003), including land rights, technology, capital, markets, labor, knowledge, authority, identities (in particular gender), and how they shape farmers’ access to local, domestic and international markets. In general, we found access to land to be the most critical factor shaping farmers’ ability to benefit from the cultivation of oil palm, with farmers who have larger amounts of land holding the advantage across all access mechanisms. This is particularly true for industrial production, the benefits of which were primarily accrued by plantations and farmers with larger production areas. Smallholders with less land (<5 Ha) are particularly disadvantaged, since they are: the most vulnerable to price changes; at the mercy of intermediaries; and unable to locate alternative markets, mills, transport, etc.

Our study found that gender shapes all mechanisms of access to both land and resources. Male farmers hold rights (which are usually customary), to larger areas of land, are able to access support from local extension services and are often in direct contact with the local government extension officers. Men are also likely to travel to the plantations to sell the FFB, restock on seeds and fertilizer, and are better placed to hire labor. The current focus of RSPO initiatives on the certification of palm oil for export, particularly to Western markets, overlooks the diversity of oil palm production models in Ghana, and their critical and highly gendered links to local livelihoods. In such interventions gender is often grouped in with other forms of discrimination, or alternatively, gender issues are dismissed as a household or communal matter (Sijapati Basnett et al., 2016).

Our findings show that the oil palm sector is reinforcing a circular agro-industrial dependency, in that the plantations are supplying seeds (hybrid over indigenous), and fertilizer and are often also the buyers thus controlling many aspects of access. This concurs with the findings of Hughes (2006) that it is often the resource-strong stakeholders that dictate the terms of commodity

production and trade. Such new initiatives and their associated BMP align with an international discourse of “sustainability” which equates “deforestation-free” commodities with intensified, industrial production—an equation largely unfounded in the Ghanaian context. Both government and RSPO plans for the sector reduce Ghanaian smallholders to the narrower role of suppliers to industrial mills, ignoring the importance of small-scale, informal and local markets to smallholder livelihoods. This further concentrates authority among government policymakers, international buyers of certified palm oil, as well as third party facilitators such as NGOs. That is, the intensification of palm oil production to serve international markets, enhances the power and authority of the external *individuals or institutions* who hold power and influence in those markets. Smallholders and outgrowers may gain some additional access to international markets under certification, but do not have autonomy in maintaining or controlling such access.

Our findings on the importance of smallholders in sustainable palm oil production are corroborated by other studies. For example, Adjei-Nsiah et al. (2012) and Adjei-Nsiah and Klerkx (2016) have conducted two studies in the Kwaebibrim and the Ahanta West Districts of Ghana which identify and critique the lack of support for smallholders in sustainable oil palm production. These authors argue for the importance of changes in institutional conditions that would encourage smallholder farmers and processors to modernize their methods of production and processing. These conditions include (1) access to land for oil palm cultivation under more favorable terms, (2) access to improved planting material (especially farmers outside the catchment areas of the Oil Palm Research Institute and plantations), and (3) access to industrial and international markets. Adjei-Nsiah and Klerkx (2016) was furthermore the only study we found which addressed small-scale processors and intermediaries. Findings from this study stressed the importance of these middle-level actors in paying upfront for FFB and sometimes providing pre-finance to some farmers for production.

Where we somewhat depart from Adjei-Nsiah et al. (2012) and Adjei-Nsiah and Klerkx (2016), and much of the other research on smallholder production in southeast Asian countries without a long history of domestic production (e.g., Pichler, 2013; van Opijnen et al., 2013; Brandi et al., 2015; Hidayat et al., 2015; Jelsma et al., 2017), is in equating smallholder welfare and access to benefits from oil palm with access to industrial and export production. Instead, we argue, further research is needed that expressly recognizes local and domestic production and markets as legitimate systems in their own right, with their own knowledge systems and unique contributions to local culture and livelihoods. This in turn would form a stronger basis for assessing the impacts of further actions and policies being promoted for the sector. For example, what would be the impacts on the local informal market for palm oil of a “fixed price” for oil palm? which is the aim should an oil palm board be created as with the cocoa sector. This aspect is very much in the discussion phase in Ghana and has yet to consider whether it would apply to the fruit or just the processed oil. Moreover, what implications would this have for the livelihoods of the female intermediaries?

<sup>25</sup>Source: interview with a Ghanaian agricultural official.

In addition to the socio-economic aspects of oil palm production, more research needs to be carried out on the socio-environmental implications of the intensification of oil palm. For example, how does intensification impact the overall productivity of the system and the fertility of the soil, particularly under a future climate scenario of decreasing rainfall? (CBD, 2010).

In sum, the focus on smallholder oil palm farmers currently being discussed in Ghana could potentially help make palm oil—a commodity surrounded by controversy from the industrialized model of production—more appealing to end-users who care about environment, poverty alleviation, and local livelihoods. But if it is to do so, efforts need to be better diversified and tailored to support the full range of palm oil production systems, and to recognize how these complex systems interact in different ways with social identity to shape access to sustainable livelihoods.

## DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

## ETHICS STATEMENT

The ethics committee that approved the study is the University of Oxford's Central University Research Ethics Committee

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- (CUREC) of Wellington Square, Oxford, OX1 2JD. We can confirm that both written and verbal informed consent were requested from participants (verbal when a participant was not able to read and write—with an interpreter present). Both procedures were approved by CUREC in September 2017. Where appropriate, permission was received to use images.

## AUTHOR CONTRIBUTIONS

KK: concept, data collection, analysis, and writing. VM-R: data collection, some analysis, map production, and writing. EA and CM: writing and concept.

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**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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