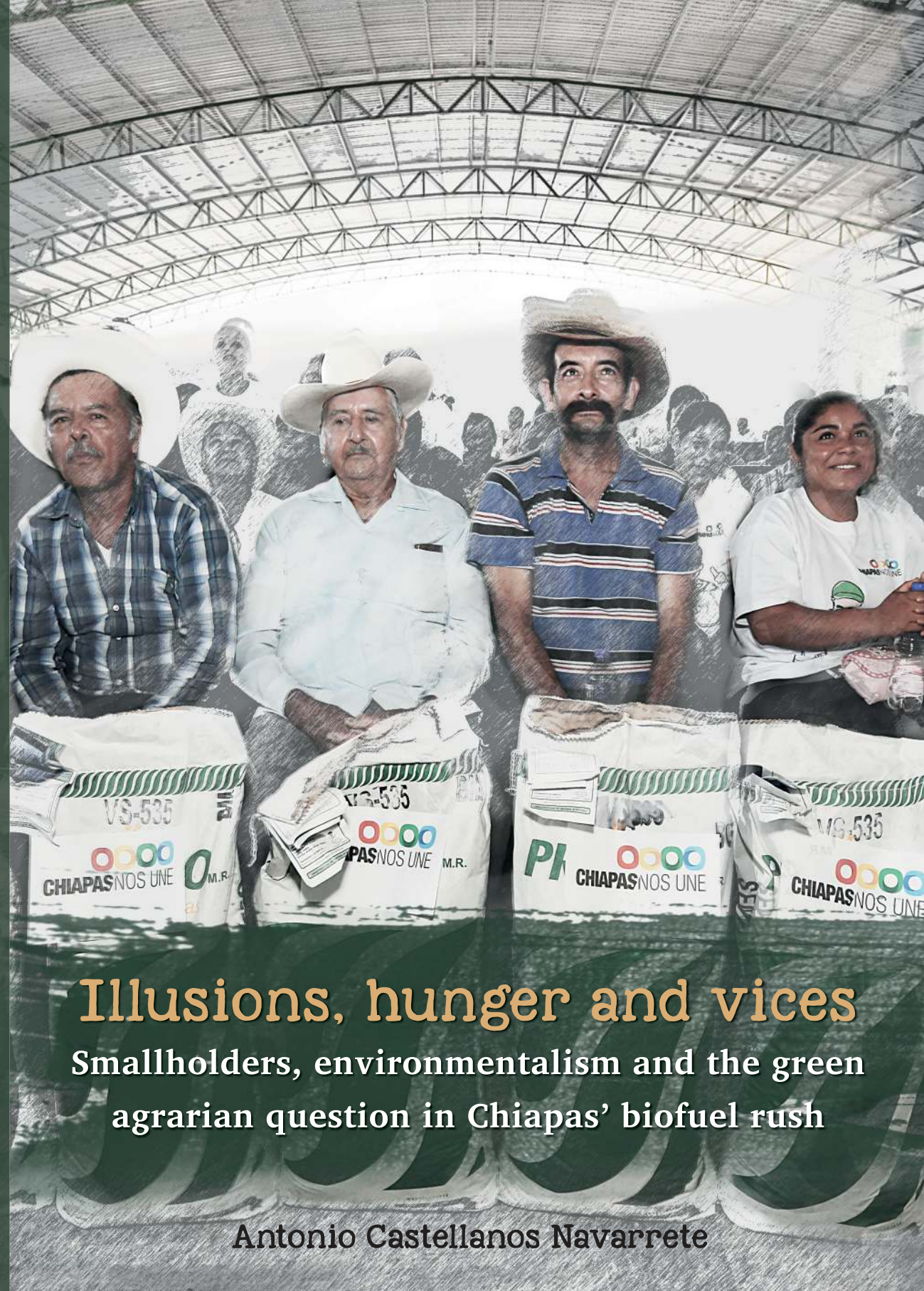




Illusions, hunger and vices

Antonio Castellanos Navarrete

2015



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Smallholders, environmentalism and the green agrarian question in Chiapas' biofuel rush

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Illusions, hunger and vices:

smallholders, environmentalism and the green
agrarian question in Chiapas' biofuel rush

Antonio Castellanos-Navarrete

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A mi padre

'Because we are full of illusions, hunger and vices'

Rural leader on the question of why people plant oil palm
Interview, 13 January 2013, Colonia Hidalgo (Villa Comaltitlán)

Abbreviations

CBMM	Mesoamerican Biological Corridor - Mexico
CONABIO	National Commission for Knowledge and Use of Biodiversity
CONANP	National Commission for Natural Protected Areas
IRBIO	Institute for Productive Reconversion and Bioenergetics
MOCRI	Regional Independent Peasant Movement
NGOs	Nongovernmental organisations
PRD	Party of the Democratic Revolution
PRI	Institutional Revolutionary Party
PROFEPA	Federal Attorney's Office for Environmental Protection
RSPO	Roundtable of Sustainable Palm Oil
SAGARPA	Secretary of Agriculture, Cattle, Rural Development, Fisheries and Food
UCABED	Peasant Union Belisario Domínguez

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Summary

Activists and environmentalists all over the world have been successful in framing biofuel crops as drivers of deforestation, land grabbing and rural indebtedness – effectively reversing earlier promotional pronouncements of biofuels as the answer to ecological problems. The counternarrative has now become the dominant narrative. But one important question has remained unanswered: if biofuels are responsible for a large range of social and environmental impacts, why do so many smallholders and poor farmers participate in the production of these crops?

Foregrounding this research on key principles from agrarian studies and political ecology literature, this thesis addresses this question for the case of the recent biofuel expansion in Chiapas (Mexico). In this region, oil palm and jatropha, both promoted as biofuels, have been embraced and rapidly planted amongst smallholders, thus stirring an environmental conflict that put environmentalists and an important faction of rural communities at odds with each other. Using data gathered in the oil palm plantations of Chiapas, we find that the stream of critical studies that followed the 2000s biofuel expansion has not adequately theorised smallholder participation in the production of biofuel crops and in the biofuel expansion. Research has frequently either focused on the relations between agrarian capital and rural producers or on the environmental impacts of biofuel cultivation, ignoring the interface between the two domains. Seeking to address this research gap and believing that theoretical and not just empirical contributions can be made from interrogating this nexus, we look at these two domains together through the green agrarian question framework. This thesis attempts to provide an interdisciplinary understanding of the local drivers underpinning smallholder participation in the production of biofuel crops in Chiapas.

Through the green agrarian question, this thesis focuses on changes in land access, with particular emphasis on enclosure, on the terms of incorporation of rural producers into the biofuel chain, on state-peasant relations and on environmental degradation. The analysis of these four issues, and how they interplay with each other, provides the basis to understand why smallholders in Chiapas shift to oil palm production. Firstly, the oil palm expansion in this region has not lead to significant

changes in land access. The existence of the *ejido* land tenure in Mexico, a form of tenure in which land ownership is not fully liberalised, limited both processes of land grabbing and ‘dispossession by the market’. Secondly, state intervention in the palm oil sector has provided smallholders with favourable terms of incorporation. It also has permitted the creation and/or strengthening of rural organisations that offered smallholders some opportunities to gain leverage with the state and industrial capital. Third, smallholders have embraced oil production as it harmonised well with local ideologies that considered rural modernisation and agroindustrialisation – historically promoted by the state – as desirable forms of production. And fourthly, oil palm producers have perceived this crop as particularly appropriate to the local environmental conditions and as a possible solution to specific agricultural problems.

In the field of agrarian studies, biofuels, including oil palm, are considered as a particularly detrimental form of agrarian capital for both rural producers and the environment. In this context, smallholder participation in the production of biofuel crops is often explained based on coercion or deception, ignoring the more variegated and nuanced ways that smallholders engage with biofuel. This perspective suggests rural agency is highly limited and unidimensional. The green agrarian question framework as developed this thesis, in contrast, is an attempt to capture the highly uneven character of agrarian capital for the biofuel case as shaped by state interventions or by the particular environmental dynamics of the study regions, and recognises that social responses to capital are as complex as they are heterogeneous. Based on this theoretical framework, rural agency in relation to biofuels is better understood when three different levels are considered. First, at the economic level, it is important to consider rural agency not only in relation to individual responses to short-term economic signals but also as a collective relation between rural classes and agrarian capital. Second, at the political level, this thesis proposes to approach agency through a more balanced understanding of power than that offered by classical conceptions of ideological domination. The concept of hegemony defined as a shared, albeit power-laden, political order seems particularly apt for this purpose. Third, at the material level, social agency by rural producers can also be shaped by environmental change. The focus on material practices can serve to reveal how environmental conditions might modify the relation of rural producers to capital. Thus, smallholder participation in the production of biofuel crops is the outcome of a complex process of political construction in which economics, hegemony, and the environment all play an important role. Under this approach, rural producers are considered key actors of wider social processes linked to capital and power – not passive recipients but active agents who influence the trajectories of development of their regions in complex ways.

Introduction

In 2007, the Chiapas government initiated a programme to support biofuel cultivation amongst smallholders, with particular emphasis on oil palm production. Many rural families embraced this state programme, but it also triggered widespread criticism on environmental grounds. Nongovernmental organisations (NGOs) were among the first in Chiapas to disparage ‘agrofuels’ generally, with particular emphasis on oil palm. This crop, they said, would result in deforestation and further rural impoverishment. Environmental critiques against oil palm also became common at the local level. Cattle ranchers, sugarcane producers, poor families living on wage labour, and even rural teachers criticised oil palm as environmentally destructive. These local groups have long-term disagreements about politics, but they agreed on one thing: oil palm was a threat to them and to their natural resources.

Social tensions emerged between people planting oil palm and disparate groups that opposed the crop. The issue divided close neighbours, extended families, and even, sometimes, church congregations. The case of Don Nico (pseudonym), a farmer in a small community in the southern Lacandon rainforest in Chiapas called La Victoria, is particularly illustrative of these tensions. He was a religious man, but he decided to stop attending the Catholic Church in his community in 2011. ‘*I am busy*’, he told me at first, but further questioning revealed that the priest often preached against the expanding oil palm plantations and spoke of the environmental damages they were causing. Don Nico had invested his few savings to plant oil palm, and he was proud of his small plantation. He also cared about his land and his community. He felt the priest’s sermons portrayed him, in front of his neighbours and family, as a traitor to these values. Don Nico preferred quitting the Church to quitting oil palm.

Social tensions emerging from the biofuel expansion in Chiapas were not only environmental, but also agrarian. A local rural leader interpreted the intervention by the Catholic Church regarding oil palm in the following terms:

[...] the Catholic Church says no to oil palm because this might be a land issue. Look, the land is going to get degraded and the businessmen will come and they will finish off our land, take our wealth. They [the priests] see it from that point of view. (Interview, 24 August 2012, Quiringüicharo)

As this local leader saw it, the Catholic Church was not only concerned about the degradation of natural resources upon which rural communities depended on, but also about the possible impoverishment of rural families engaged in oil palm production. According to these views, oil palm companies would degrade the soil and would simply leave when production would no longer be profitable, leaving a barren land behind. Many critics considered biofuel production the latest expression of agrarian capitalism, with all its possible dire social and environmental consequences.

Local discussions on oil palm in Chiapas reproduced, to some extent, the global debate following the worldwide expansion of biofuels in the 2000s. Biofuels emerged as the perfect solution to mitigate climate change: fuel made of plant biomass would mean lower emission of greenhouse gases (responsible for global warming) when compared to conventional fuel, and it would also serve to reinvigorate rural economies by providing new markets. Government agencies, private sector companies, and even some NGOs promoted biofuels as a solution good for both the people and the environment.

Research soon contested the win-win narrative. Investments in biofuel production by national and transnational companies, often with the support of local or national elites, resulted, in some cases, in land grabbing and dispossession for local populations (Borras et al. 2010; Hall 2011b; Zoomers 2011). Biofuel production proved economically risky for some participating rural producers (German, Schoneveld, and Gumbo 2011). Incorporation into biofuel chain was also associated with social differentiation – that is, the process by which some families become richer and others poorer, given a different capacity to reproduce in relation to capital (Ariza-Montobbio et al. 2010; McCarthy 2010). Biofuel expansion could also cause the substitution of complex agricultural landscapes managed by smallholders with large agro-industrial monocultures, drastically reducing biodiversity levels (Fargione et al. 2010; Perfecto et al. 2009, 5-6, 79). Biofuels were, finally, not necessarily a guarantee for the reduction of emissions, as plantations established in carbon-rich landscapes, such as in rainforests or peat lands, released vast amounts of greenhouse gasses into the atmosphere (Fargione et al. 2008; Hergoualc’h and Verchot 2011).

The biofuel debate has pointed to several social and environmental impacts, but it has not explained why rural families participate in the production of these crops. This thesis addresses this research gap in relation to Chiapas, with particular emphasis on smallholder participation in oil palm production and, to a lesser extent, on *Jatropha curcas* L. (hereafter jatropha) cultivation. Understanding why large numbers of smallholders participate in the production of biofuel crops might help environmental organisations and policymakers prevent or mitigate biofuels’ impacts.

The issues addressed here are of global relevance, in that producers are shifting to biofuels in many places. Rural families and mid-sized farmers in the United States and Brazil provide the corn or the sugarcane that is turned into ethanol (Bain and Selfa 2013; Hollander 2010; Novo et al. 2010). In sub-Saharan Africa, poor rural families have joined, often in great numbers, projects for the cultivation of jatropha (Favretto et al. 2014; van Eijck et al. 2014). Many smallholders have also shifted to the production of oil palm. This crop has often been associated with large-scale plantations (Friends of the Earth 2005; GRAIN 2006), but smallholders are an important actor in the oil palm sector at the global level. According to Solidaridad, a Dutch civil society organisation, small farmers produce about 40% of the global palm oil supply (Solidaridad 2015). While this figure is probably only a broad indicator of the true number, smallholders and medium-scale farmers are involved in oil palm production in all regions where this crop is produced. In Latin America, significant numbers of rural families participate in the production of oil palm in Mexico (Fletes-Ocón et al. 2013), Costa Rica (Beggs and Moore 2013), Ecuador (Potter 2011), Brazil (da Silva César and Batalha 2013; Fabio de Castro, personal communication, 23 June 2015), and, to a lesser extent, in Colombia (Leech 2009) and Peru (Pablo Pacheco, personal communication, 21 August 2014). In Indonesia and Malaysia – the two greatest palm oil suppliers at the global level – small-scale producers account for about one-third of the area planted with oil palm (Casson 2000; Majid Cooke 2012). In western Africa, there has been a recent surge of large-scale plantations growing oil palm (Greenpeace 2012), but oil palm is a traditional crop planted by many family farmers (Adjei 2014; Yemadje et al. 2014). In Chiapas, oil palm was the most planted crop between 2003 and 2013 (SIAP-SAGARPA 2015), often by smallholders.

My own experiences in fieldwork suggest the relevance of smallholder participation in oil palm production. In Chiapas, despite critics, many rural families expressed a desire to participate in the cultivation of biofuel crops, often encouraged by those already involved in production. Recent studies have generally omitted the views of rural families engaged, or eager to participate, in the production of biofuel crops. In the course of my fieldwork, I observed researchers, from both academic and civil society organisations, who came to oil palm regions in Chiapas mainly to interview local actors opposing oil palm. They hardly considered the views of those planting the crop. This observation drove my decision to focus, on a much greater degree than initially planned, on biofuel producers in an attempt to contribute to a more complete understanding of the conflicts brought by biofuel expansions.

The question of why so many producers shift to oil palm in Chiapas is not only empirically relevant, but also theoretically significant. The stream of critical studies that followed the 2000s biofuel expansion have not adequately theorised smallholder

participation in biofuel production (see, for an exception, Semedi and Bakker 2014). This thesis aims to provide an explanation for smallholder participation in biofuel production within the theoretical grounds laid out by the field of agrarian studies and from a political ecology perspective. Research in the biofuel expansion has frequently either focused on the relations between agrarian capital and rural producers or on the environmental impacts of biofuel cultivation. In this thesis, I look, instead, at these two domains together. By doing this, I attempt to provide an interdisciplinary understanding of the local drivers underpinning the biofuel expansion.

Rural agency in biofuel production: theoretical interpretations

There are three main bodies of literature that begin to provide an understanding of the reasons why smallholders might decide to participate in biofuel production: crop adoption studies, agrarian studies, and political ecology. The first body of literature analyses the factors determining farmers' uptake of particular technologies or crops. In the case of biofuels, farmers' decision-making in land use change has been mostly explained in relation to economic considerations, including factors such as economic returns and economic risks, as well as labour and capital availability (Kuntashula et al. 2014; Mogaka et al. 2014; Mponela et al. 2011). In the oil palm case, authors such as Feintrenie et al. (2010) and Belcher et al. (2004) have pointed to economic returns on oil palm as key in explaining its adoption by smallholder farmers. Rist et al. (2010) referred to wider societal change to justify the importance of economic considerations:

In all locations, communities have growing monetary aspirations; desiring a regular source of income to secure greater access to education and health care as well as to purchase motorbikes or electronic goods.

In a context of societal aspirations rooted in modernisation and consumerism, these authors argue that local producers will logically choose the crop offering the highest economic returns. In this field, short-term economic motivations are a vital determinant in explaining smallholder participation in the oil palm sector. While producers clearly consider economic returns when it comes to land use changes, these studies tend to reduce decision-making to short-term considerations at the individual level without explicitly analysing wider social change, and some do not consider in sufficient detail the role of nature in shaping farmers' decisions over land use changes.

The recent biofuel expansion has also prompted a wealth of analyses from an agrarian studies perspective. Two central themes in this field of study relate to biofuel expansions: the 'agrarian question' and the 'second contradiction of capitalism'.

Research addressing the agrarian question focuses on how the development of agrarian capitalism changes relations between agrarian classes, industrial capital (including agribusiness), and the state (Akram-Lodhi and Kay 2010a). In earlier formulations, the agrarian question focused on the fate of peasants in rural areas under capital expansions. In Mexico, this debate was between *descampesinistas* and *campesinistas*. *Descampesinistas* considered that as agrarian capital developed, most peasants would gradually lose access to their means of production, given their lower capacity to compete in capitalist agriculture and would, therefore, turn into wage labourers (see Bartra 1985; Feder 1977). In contrast with this, *campesinistas* considered that capital only partially expanded in poor rural regions, where it co-existed with pre-capitalist economic systems, permitting peasant persistence (see Esteva 1978; Stavenhagen 1976; Warman 1988). More recently, research addressing the agrarian question has focused on analysing the ‘polarising’ effects of new forms of agrarian capital, including the biofuel industry, on rural populations. Participation in biofuel production can benefit rural producers in the short term, but in the long term it can lead to indebtedness (Cramb 2013; Li 2010), loss of land (Kenney-Lazar 2012; Sauer and Pereira Leite 2012; Thondhlana 2015), and growing inequality between classes (Hall et al. 2009; Hunsberger et al. 2014).

Research addressing the agrarian question has two advantages over crop adoption studies. First, it goes beyond the analysis of short-term economic considerations by individuals to also focus on the impact of wider economic processes, or, more specifically, of changing capitalist relations on rural classes. And second, this framework also considers the role of the state as crucial to steer the relations between agrarian capital and rural producers (Watts 1989; Wolford et al. 2013). In this way, this literature allows us to consider the biofuel expansion, not only as an economic process but also as a political one in which diverse interests play into processes of agrarian change.

The second contradiction of capitalism¹ argues that capitalism, as it is not profitable to protect the environment, necessarily leads to environmental degradation and, therefore, to the destruction of the conditions that made profit possible in the first place (see O’Connor 1996). The Catholic Church described by interviewees above has adopted this view of oil palm production. The conceptualisation of capital as inherently contradictory to environmental sustainability has been a central element in political economy, including in agrarian studies, and it was, according to Foster (2000), also present in Marx’s writing. Following the work of Justus von Liebig, Marx discussed the export of massive amounts of soil nutrients, in the form of food and fibre, to cities where waste accumulated instead of being returned to the soil. He

¹ Political economy defines the first contradiction as that between the trend to increase profit at the expense of workers and the need to have a mass of workers able to purchase the products of production.

called this the ‘rift’ in social metabolism (Foster 2000, 153-156)². Recent research has shown a more complex set of relations between capital and the environment. Neil Smith conceived, for instance, the second contradiction of capitalism as a spatially heterogeneous process in which nature was degraded but new nature was also produced (see Smith 1984). At the temporal level, the relationship between agrarian capital and nature is evidently dynamic. Technological development has greatly increased agricultural productivity, especially through the development of fertilisers, pesticides, and hybrid seeds. These solutions have, however, come at a cost with agrochemicals causing, for instance, groundwater pollution or the loss of natural pollinators. Technology has expanded what Meadows et al. (1972) call the ‘limits to growth’ through temporal or spatial fixes, but these impose growing environmental risks as industrial agriculture, in particular, illustrates (Weis 2010). In this same vein, agrarian studies scholars suggest that biofuel production permits capital accumulation, but it does not solve global warming and may worsen it (Dauvergne and Neville 2010; McMichael 2009).

Agrarian studies has deepened our understanding of the impacts of biofuel production, but does not necessarily explain why producers shift, in great numbers, to crops like oil palm. On one hand, the agrarian question provides us with a limited treatment of rural agency. This framework has emphasised the role of rural politics in shaping the development of agrarian capital. Historically, scholars in the agrarian question tradition have, however, privileged the study of mobilisations, contestation, or resistance to capital, with less emphasis on consent and acquiescence (see, as exceptions, Jansen and Roquas 2002; Mamonova 2015). Following Scott, consent is even considered, in many cases, as a façade below which we find covert forms of resistance (Scott 1987). The ‘everyday forms of peasant collaboration’, as White (1986) called them, have been insufficiently analysed, hindering our understanding of why scores of rural families accommodate to agro-industrialisation and to its negative environmental consequences (Lapegna 2015). On the other hand, research addressing the ‘second contradiction of capitalism’ theme also complicates considerations of social agency. If the development of agrarian capital leads to the degradation of nature, upon which rural families depend, producers have few reasons to engage in forms of production driven by capital. Under these circumstances, ‘deception’ or ‘coercion’ emerge as possible explanations for smallholder participation in oil palm production. Deception links, in this case, with theories on ideological domination or control that explain why particular classes might be supportive of, or ‘consent’ to, particular social, economic, or production relations detrimental to their own interest. Within this perspective, a dominant class is able to present their

² This work would become one of the foundations for ecological economics and for the study of energy flows in agriculture (see, for instance, Martínez-Alier 2011).

ideology as ‘common sense’ misleading subordinated classes³. A second explanation considers that rural families have few opportunities to exert agency when trapped in the ‘treadmill of production’ (Cochrane 1979) or subjected to ‘the dull compulsion of economic relations’ (Bernstein 2010). Producers are, thus, forced into biofuel cultivation in their struggles to persist economically in a capitalist economy. These perspectives, which agroecology partially reproduces (see, for example, Altieri and Toledo 2011; Rosset and Martínez-Torres 2012), limits conceptualisations of rural producers in Chiapas as actors consciously deciding to shift to oil palm production for their own reasons. Political ecology might offer a solution to these theoretical limitations.

In its classical definition, political ecology is an approach that combines the ‘concerns of ecology and a broadly defined political economy’ (Blaikie and Brookfield 1987, 17). It links processes of environmental degradation with the wider dynamics of agrarian capital, as studied in the field of agrarian studies. Political ecology offers, in this way, an alternative to ‘apolitical’ ecologies (Robbins 2012, 11-13). In soil erosion studies, for instance, popular environmental explanations have attributed soil erosion to population growth (which made local people indirectly responsible for the destruction of their soils), while political ecology has stressed the influence of agrarian capital, or the role of state interventions, in leading to unsustainable practices (e.g. Lestrelin and Giordano 2007; Moseley 2005). The political ecology field has evolved significantly since Blaikie and Brookfield first defined it. It has added to its theoretical baggage a wide variety of social theories and perspectives, well beyond the initial emphasis on political economy. Scholars of this approach have increasingly turned to post-structuralism, gender theory, or social movements literature in their attempts to explain environmental change (Peet and Watts 1996, 18-23). As a result, political ecology has developed into a complex, critical social science perspective, still loosely rooted in political economy, which serves to analyse a wide array of environmental problems and conflicts. It has dealt with a variety of environmental issues, ranging from deforestation or unsustainable fishing to water grabbing, ecotourism, or conflicts over payment for environmental services (Büscher and Davidov 2015; De Castro 2000; Jansen 1998; Rodríguez de Francisco et al. 2013; Swyngedouw 2014). While ‘political ecologies of conservation’ are, probably, more developed than ‘political ecologies of food’ (Galt 2013b), this approach can prove very valuable in overcoming some of the theoretical limitations of agrarian studies.

Political ecology can serve to bring a more nuanced understanding of why rural producers would engage in the production of biofuel crops for two reasons. First,

³ Deception also connects with old Marxist theories of ‘false consciousness’ that explained consent based on a class’s limited understanding of its social reality due to historical developments or structural processes.

unlike agrarian studies, political ecology is based on a detailed empirical analysis of environmental change. It specifically focuses on how a great variety of social actors, ranging from subsistence producers to cattle ranchers, agribusinesses, social movements, and politicians, manage or influence the use and access of natural resources (Perramond 2010; Porto 2012; Walker and Fortmann 2003). The analysis of resource use and access has permitted researchers to explain the relationship between nature and society as one of co-production in which spatial and temporal heterogeneity is the norm. By moving away from, sometimes, simplistic conceptions over relations between agrarian capital and the environment, political ecology provides the opportunity to consider multiple responses by rural producers in processes of environmental change. And second, political ecology is based on a methodological tradition that offers more conceptual room to consider rural responses to new green interventions. Scholars in political ecology have often used ethnographic methods and in-depth case study analysis. These methods permit the researcher to delve into the interpretations, perceptions, and perspectives of social actors. As a consequence, researchers taking this approach can explain the motivations of rural producers without losing sight of structural processes. The current study uses this approach in constructing its theoretical framework because of its nuanced treatment of nature–society relations and the methodological inclusion of perceptions and interpretations by resource managers.

Theoretical framework: the green agrarian question

This thesis has as its goal to explain the responses of rural producers to oil palm expansions based on the effects of agrarian capital on both oil palm producers and on the environment. In order to achieve this goal, it combines the ‘agrarian question’ and the ‘second contradiction of capitalism’ theses into a single theoretical framework called the ‘green agrarian question’. This section first constructs this theoretical framework based on four concepts or mechanisms (enclosure, terms of incorporation, state–peasant relations, and environmental degradation), and second, it justifies the use of political ecology as the research approach.

The relationship between agrarian capital and rural producers constitutes the central axis of the green agrarian question. This linkage is central to the rural responses to oil palm. This thesis will specifically investigate this relationship through the analysis of two concepts: the changes in land access (of which enclosure is a specific form) and the terms of incorporation of participating rural families in oil palm production. Both concepts are hypothesised as key in explaining the possible social outcomes of oil palm production. In addition to the central conceptual axis, the framework includes two perpendicular axes: the role of the state and the

environment. Both the state and the environment shape the relationship between agrarian capital and rural producers in fundamental ways. The state normally sets up ‘the rules of the game’ when it comes to the relations between labour and capital. In this case, the emphasis will be on state–peasant relations, as the state in Mexico has historically pushed for the incorporation of rural producers into markets. In addition to this, it is important to consider the natural environment. The environment is more than the background where the abovementioned relationships develop. Material processes strongly shape what is socially and economically possible⁴. This thesis focuses on environmental degradation, under the assumption it is a key process of environmental change triggered by agrarian capital. Further, environment degradation might strongly shape rural producers’ responses to oil palm, as they depend on their natural environment to make a living.

Within the green agrarian question framework, the concepts of enclosure and terms of incorporation are key to analysing the polarising effects agrarian capital, including the biofuel industry, can have on rural classes. **Enclosure** refers to the privatisation or appropriation of resources of the rural poor by either corporations or the state. The enclosure of land has been a central concept in the ‘agrarian question’. The term enclosure originally referred to the privatisation of common lands in eighteenth-century England in favour of landlords. For Marx, enclosure and subsequent processes of rural dispossession were ‘primitive’ features of capitalism that permitted the development of capitalist agriculture by ‘freeing’ unprecedented levels of labour needed to trigger processes of capital accumulation. Nowadays, Harvey argues that enclosure is not a foundational but a continuous process in a capitalist economy. He has called this continuous process of enclosure ‘accumulation by dispossession’, and it refers to the privatisation of common resources held by the poor spanning from forest to water or genes (Harvey 2003, 145-147). The privatisation of common resources permits the creation of new exchange values (e.g., a market for genetically modified seeds) and the further expansion of markets boosting economic growth. In the 2000s, the latest round of resource appropriation occurred as countries and investors purchased large amounts of land in the global South (Franco 2012; Zoomers 2010). This latest enclosure has been popularly termed ‘land grabbing’. This thesis focuses on the relationship between oil palm production and enclosure of land. This is an important topic, as recently biofuel expansion has led, in occasions, to the dispossession of local populations (Boamah 2014; Exner et al. 2015) as well as to important changes in land access within particular regions or communities (Curry and Koczberski 2009; Hought et al. 2012). Enclosure refers

⁴ This does not mean that natural conditions determine social processes. The social domain has its own dynamics, unrelated to the material processes, but, as the materialist perspective suggests, the material domain establishes a room of possibility for social dynamics.

in this case to both violent dispossession, but also to dispossession by the market, as the impossibility of competing with other producers might force farmers to sell their land.

In addition to enclosure, the concept '**terms of incorporation**' also serves to understand what consequences biofuel expansions might have on rural producers. This concept specifically refers to the conditions of participation of rural producers within a particular agricultural sector or chain. It was developed as a critical response to rural sociology theories that considered exclusion as the cause of poverty and inclusion as its solution (Du Toit 2009). The 'terms of incorporation' concept serves to critically assess the consequences of participation in biofuel cultivation through the analysis of the specific forms of incorporation (e.g., contract, leases, etc.) and of its outcomes (e.g., social differentiation and rural dispossession). This concept does not only refer to economic or contractual linkages with agribusinesses, but also to political relations, as the state often strongly shapes the linkages between rural producers and agro-industrial capital. McCarthy (2010) illustrates the use of this concept in his analysis of how changing 'terms of incorporation' in the oil palm sector, both historically and between three different villages in Sumatra (Indonesia), resulted in different patterns of social differentiation with, in some cases, rural families losing their land for the benefit of richer neighbours.

The role of the state is essential to this theoretical framework, as it steers or regulates the relations between rural producers and agrarian capital at two levels. First, the state can directly shape the specific linkages between agribusinesses and rural producers. In Indonesia, for instance, the state has historically incentivised a production scheme in which a private sector plantation, called the nucleus, has to outsource part of their production to smallholders, called plasma (McCarthy and Cramb 2009). And second, the state also regulates the capital-labour relation at a more general level through the legal or economic construct. Labour regulations, land tenure laws, and biofuel blending quotas can all have a strong influence in the way rural producers relate to the private sector in the biofuel sector. In line with the work of important state theorists such as Poulantzas, Joachim Hirst, or Bob Jessop, the state is considered relatively autonomous to private sector interests, as it also needs to gain legitimacy among subordinated classes such as the rural producers (see Jessop 1990, 86-91). The state capacity for autonomy is related to the concrete ways state power is built and the degree of dependence over agrarian or other forms of capital. This theoretical position demands a critical analysis of existing relations between institutions, corporations, and popular classes. The emphasis in this study is on '**state-peasant relations**', specifically understood as the relations between the different levels of government and organised rural producers. The key role state agencies play in ensuring biofuel cultivation in the rural communities of Chiapas justifies this emphasis. The concept permits this thesis to explore rural agency in

biofuel cultivation as a collective political process between the state and its subjects.

In the green agrarian question, ‘**environmental degradation**’ plays a crucial role in shaping the relation between agrarian capital and rural producers. Processes of environmental degradation might halt investments in agricultural production by the private sector. Such cases as the historical shifting of locations for sugarcane booms, from Portuguese Madeira to Brazil and later to the Caribbean, as soil degradation and fuel wood scarcity made production far too costly, reveal this pattern (Moore 2000). In the case of rural producers with less mobility than capitalist producers, environmental degradation might result in indebtedness, as crop production increasingly suffers from soil fertility losses or pest outbreaks (Agrawal 2005). In this study, environmental degradation mostly refers to processes of land degradation, with a key focus on both soils and water, and linked processes of land use change, deforestation, and greenhouse gas emissions. It is important to note that environmentalists – from critical grassroots environmental organisations to private sector certifiers – play an increasingly important role in the relationship between agrarian capital, rural producers, and the environment. Critical environmental organisations might force corporations to adopt more sustainable practices. Also, environmental certification can serve to extend the possibilities of production by reducing the extent of environmental impacts or by counteracting environmental critiques. In these circumstances, the processes of environmental degradation become social as well as material processes.

As the environmental degradation case makes particularly clear, the four central concepts in the green agrarian framework cannot be simply considered exogenous processes having an impact on the social domain. Clashes, tensions, and negotiations between the different actors involved inextricably shape these processes. Social agency is conceptualised in this framework as forming part of and shaping the economic, political, or environmental processes under analysis. This study will pay particular attention to the responses by oil palm producers to each of these processes without excluding the role other social actors play. This later focus might serve to shed some light on the causes of the social tensions that emerged in Chiapas in relation to oil palm cultivation. This framework necessarily offers a limited conceptualisation of rural agency, as it focuses on social responses to capital; it does not aim to explain social responses to biofuel crops at all levels. In doing so, it privileges the analysis of rural agency in relation to rural classes, rural organisations (encompassing several rural classes), and, to some extent, in relation to farms as units of production.

Political ecology is a particularly apt research approach for a study based on the green agrarian question. Its focus on resource use and access provides a concrete level of analysis to study the linkages between social processes related to capital (capitalist relations, state intervention, and rural responses) and ecological

change. Scholars in this field have studied how the state, environmentalists, and corporations can shape resource use and access regimes by rural classes with subsequent environmental changes (Haenn 2002; Rangan 1995; Valkila and Nygren 2010). This approach does not only pay attention to top-down interventions in rural regions, but also to rural responses. Local mobilisations and resistance might stop or, even, reverse changes in the forms of resource use and access (McCarthy 2002). In Latin America, for instance, political ecology has emphasised the important role of local mobilisations and social movements in reversing processes of resource degradation or resource dispossession driven by extractive industries (Bebbington et al. 2008; Delgado Ramos 2012; Escobar 1999; Seoane 2006). The political ecology approach is also particularly adequate for the analysis of the green agrarian question, as it considers both material and discursive processes and, in this way, links environmental change to matters of politics and power. Escobar (1996) has shown, for instance, how discourses and narratives are and have been central to the definition of environmental problems. In this way, some social actors are better able to define the ‘rules of the game’ in environmental matters, to the detriment of others. Dominant interpretations can constitute social realities based on which people conceive of and act on the world and are therefore crucial for social analysis⁵.

Problematic conceptualisations: who are the oil palm producers?

This section discusses the concepts normally used to refer to oil palm producers and proposes a concept to be used in the research questions (see below). Many studies and reports use the term smallholders to refer to oil palm producers. According to Bernstein, the concept of smallholders can refer to the size of their holdings or, generally, to small farms characterised by ‘low levels of technology, reliance on family labour, and a “subsistence” orientation’ (Bernstein 2010, 4). The first definition is strictly spatial, while the second is sociological. ‘Smallholders’ as a farm size label might fit the bill for many oil palm producers in Indonesia accessing less than five hectares of land, but it does not properly refer, for instance, to mid-size capitalised families hiring labour in Colombia, either as a spatial or sociological definition. The term smallholder seems, indeed, insufficient to refer to many of the producers involved in oil palm farming in different regions. Other possible terms to describe rural families engaged in oil palm production are family farmers, entrepreneurial or capitalist farmers, or peasants. The case of Chiapas reveals the limits and inadequacies of these categories.

⁵ This thesis takes both material and discursive dimensions seriously into account by means of critical realism. Critical realism is a material philosophy of science initially developed by Roy Baskhar that considers that a single objective reality exists outside us, but, following the phenomenological tradition, there are multiple subjective interpretations of such reality that are crucial to understanding social processes (Sayer 1992, 65-68).

The term family farming, according to the definition by the Food and Agriculture Organisation of the United Nations (FAO), refers to farms owned and managed by rural families themselves. This definition applies to a portion of poor- and middle-income families planting oil palm in Chiapas, but certainly not to most of them. In Soconusco, for instance, some farming operations, such as harvests, are frequently outsourced to local young men who bring their own work gangs. In the southern Lacandon rainforest, Guatemalans in search of temporary jobs supply most of the agricultural labour (for maize and cattle, as well as oil palm) at cheap prices. The term peasant is more rarely applied to oil palm producers. Some authors use the word mostly to refer to subsistence-oriented farming (Barkin 2002; Cid Aguayo and Latta 2015; Isakson 2009). This might disqualify families dependent on cash crops such as oil palm. Other authors do, however, conceive peasants as linked to markets and subject to complex processes of social differentiation (Bernstein 2010; Schneider and Niederle 2010). To avoid confusion with the definition of peasants as subsistence-oriented, Bernstein (1986) proposed calling these ‘petty commodity producers’. This variant of the peasant definition could include most of the rural families engaged in oil palm production, but it might prove counterintuitive for many readers. The term ‘entrepreneurial’ or ‘capitalist’ farmer could also be used to describe oil palm producers. Here, the emphasis is on families fully dependent on markets to achieve a living (Bernstein 2010; van der Ploeg 2009). While some producers could be categorised as such, it is important to note that many families in oil palm production do not totally depend on markets. Many, for instance, derive part of their food from their own maize plots or home gardens, exchange labour in times of crisis, and live in communities with access to forests or wetlands that can provide fish or meat in times of need.

Most rural families engaged in oil palm production in Chiapas have a single common characteristic: they live in *ejidos*. In Mexico, *ejidos* are rural communities articulated through a particular form of land tenure: the *ejido* land tenure. Rural families owning land in *ejidos*, called *ejidatarios*, can only freely sell or transfer their land to other inhabitants of the same *ejido*. They often cannot lease or sell their land to private sector actors or any other actor outside the *ejido* without the approval of the *ejido*’s assembly, a collective decision-making organ in which *ejidatarios* have voting rights. While a law passed in 1992 permits *ejido* land to be turned into private property, few *ejidatarios* have done so (see, for instance, Haenn 2006; Rivera Herrejón 2005). Finally, individuals in *ejidos* can own up to five per cent of the total community lands, regardless of the land tenure form. In this thesis, I mostly refer to oil palm producers as *ejidatarios*. This is a term that alludes to a strongly dynamic social category.

The term *ejidatarios* can refer to peasants working in semi-subsistence maize production who might at times become international migrants working in the suburban United States or domestic workers or students in Mexican cities or towns⁶. This dynamic character is, of course, not limited to *ejidatarios* in Mexico, but to rural producers in general. It poses important challenges in our attempts to define who the oil palm producers are. Henry Bernstein wrote the following regarding the limited reach of actual definitions applied to the rural poor:

The social locations and identities the working poor inhabit, combine, and move between, make for ever more fluid boundaries and defy inherited assumptions of fixed and uniform notions of “worker”, “petty trade”, “urban”, “rural”, “employed”, and “self-employed”. [...] In the face of such diversity and the contradictions and struggles that produce it, it is difficult to adhere to any notion of farmers – whether described as “peasants”, “family farmers”, or “small farmers” – as a single class and, moreover, constituted as a class through any common social relation with capital. (Bernstein 2010, 111)

As Bernstein describes, most of the terms used to refer to farmers become problematic if researchers assume that they refer to a single static class. This line of thinking resonates with Ennew et al.’s (1977) critique of the term peasant, which rejected the possibility that the term refers to an homogenous economic category. Gras (2005) makes a similar point in her book on tobacco producers in northern Argentina. She emphasised heterogeneity as a central defining characteristic of producers engaged in agro-industrial production. In much the same way, *ejidatarios* in Mexico are heterogeneous, and they can hardly be conceived as a single class.

The dynamic character of *ejidatarios* is better understood if we consider reproduction strategies as the objective characteristic defining them. Reproduction, here, is the process of renewal of social and technical elements needed for production (Friedmann 1980). In the process of achieving reproduction, rural producers resort to multiple livelihood strategies that overflow classical categorisations. The success of producers in this process of reproduction leads some to become richer, others poorer, while others experience little change in economic circumstances. In this thesis, I refer to oil palm producers mostly as *ejidatarios*, using the term to encompass the dynamic nature of the group. I also frequently called them oil palm producers, smallholders, or peasants to ease communication with the reader, but referring to the same dynamic conceptualisation.

⁶ Kearny (1996) suggested the term ‘polybian’ to define the highly dynamic Mexican *ejidatarios*. This definition is, however, of limited applicability in this case, as it mostly refers to the complex construction of identities in *ejidos* without much reference to the rural class dynamics.

Research questions

Given that many researchers consider biofuels a particularly detrimental form of agrarian capitalism for both rural producers and the environment, the main research question of this thesis is: ‘*Why do ejidatarios massively shift to the production of biofuel crops in Chiapas?*’ Four sub-questions address various aspects of this question:

- How does **enclosure** shape environmental narratives in the oil palm conflict in Chiapas?
Contemporary oil palm expansions have often been associated with dispossession and subsequent environmental activism. This question asks how the variety of environmental discourses on oil palm in Chiapas are linked to changes in land access triggered by the oil palm expansion.
- How do the **terms of incorporation** that *ejidatarios* experience help explain the social responses to the oil palm expansion?
If critics of oil palm are right, smallholders producing oil palm are subject to adverse incorporation and, therefore, on their way to impoverishment. I examine who and under which conditions of participation (the so-called ‘terms of incorporation’) engage in oil palm production. I pay particular attention to the lessons this analysis might offer to agroecology, as this approach has become central in many of the critiques of oil palm cultivation.
- How do **relations between state and smallholders** shape biofuel expansion?
The state is central in biofuel expansions. This question aims to understand how the relations between the state and *ejidatarios* shape the rural responses to biofuel crops. Did the state impose biofuel cultivation on rural populations? Or were *ejidatarios* able to manage this relationship for their benefit? This sub-question deals with the political dimension of the biofuel expansion in Chiapas.
- How do local processes of **environmental degradation** relate to global environmental discourses on oil palm?
This sub-question addresses the intersections between global environmental discourses on oil palm (environmental activism and certification) with local environmental processes. It explores how global discourses frame the problem of environmental impacts by oil palm and how this relates to local responses to this crop in concrete environmental contexts.

The research questions are designed to provide in-depth insight into the paradoxical adoption of biofuel crops by smallholders by addressing four key elements related to ‘resource use and access’ from a political ecology perspective: enclosure, ‘the terms of incorporation’, state-peasant relations, and environmental degradation. By answering these four sub-questions, I will be better able to provide a feasible explanation of why smallholders might have decided to shift to biofuel crops in Chiapas, with particular emphasis on oil palm.

Research methodology

This study employs the extended case method. This method consist of an in-depth analysis of a particular social phenomenon with the aim of locating it in its extra-local and historical context and to build or ‘reconstruct’ theory when doing so (Burawoy 1998). The focus was, in this case, on biofuel producers and their organisations, with particular emphasis on oil palm producers. The extended case method was a logical choice for this research, as its goal was not to derive universal claims on the reasons smallholders have to plant biofuels, but to explain why they did it in the case of Chiapas and, therefore, to contribute to theories on the impacts of agrarian capital.

The extended case method implies a certain level of engagement or participation that serves to confer insight into the experiences and problems of a particular social group. The first period of fieldwork was carried out through the contacts and networks provided by the Mesoamerican Biological Corridor–Mexico (CBMM)⁷ for which I undertook a research project on the impacts of oil palm in the southern Lacandon rainforest and the possible effectiveness of certification to curb them (see Castellanos-Navarrete 2013). This provided insight into the tensions between environmentalists and oil palm producers, which was the main initial research objective. As research proceeded, the importance of the oil palm producers became increasingly evident, and I started to seek greater access to producers’ perspectives and experiences through oil palm organisations. My initial research with CBMM had particular interest for both leaders and members of oil palm organisations in Chiapas, which saw in certification a possible strategy to counteract environmental critiques. By committing to provide a final report (see Castellanos-Navarrete 2014a, 2014b) detailing each organisation’s social and environmental performance according to certification requirements, I gained significant access to these organisations and their members⁸. Initially, this research project also considered the inclusion of one case study in Guatemala. This work was done in in alliance with the *Centro Universitario de Nor Occidente* (CUNOROC) of San Carlos University (see Tobar Tomás et al. 2014). Research in Guatemala was, however, only partially considered for this thesis, due to time constraints.

Fieldwork was done in four phases. The first phase was an exploratory study carried out in both Mexico and Guatemala between October and December 2011.

⁷ The Mesoamerican Biological Corridor was an environmental project initially funded by the Global Environmental Facility (GEF). In Mexico, this project was converted in 2011 into a branch of the National Commission for Knowledge and Use of Biodiversity (CONABIO in Spanish).

⁸ A similar process was followed to carry out research of an organisation engaged in jatropha production in the southern Lacandon rainforest. This research was initiated by Martha Vanegas Cubillos, who also prepared a report for this organisation (see Vanegas Cubillos 2012a; Vanegas Cubillos 2012b).

In Mexico, this preliminary study was carried out in Chiapas (Mexico) in several municipalities within Soconusco, in the southern Lacandon rainforest, and in the state capital, Tuxtla Gutiérrez. Soconusco and the southern Lacandon rainforest were selected for being, at the time of the research, the most important oil palm producing regions in Chiapas. Within Soconusco, the municipalities of Huixtla and Villa Comaltitlán were selected for being the sites of the first oil palm plantations in Chiapas. In Guatemala, the exploratory study focused first on Alta Verapaz and Guatemala City and, at a later stage, on municipalities with oil palm production in Petén, Quiché, and Izabal. The second phase focused on the study of both the oil palm and jatropha expansions in Benemérito de las Américas and Marqués de Comillas municipalities in the southern Lacandon rainforest in Chiapas (Figure 1). It took place in the period of March through November 2012. The third phase was carried out between May and July 2013 in Huixtla and Villa Comaltitlán municipalities in Soconusco (Chiapas). Within each region in Chiapas, the research took place in 29 locations. Locations included towns, *ejidos*, and private sector plantations. Research in Chiapas was also carried out in cities of relevance to the biofuel expansion: Ocosingo, Palenque, Tapachula, Tuxtla Gutiérrez, and San Cristóbal de Las Casas. The fourth phase consisted of fieldwork in the Northern Transversal Strip (NTS) region in Guatemala between June and September 2013. Research was specifically carried out in 36 locations distributed in the regions of Quiché (Ixcán municipality) and Alta Verapaz (Chisec and Cobán municipalities). These regions were selected for being the regions with most smallholders engaged in oil palm production in Guatemala. Research was also, briefly, carried out in Guatemala City to collect necessary information on the particular study regions and on more general processes associated with the biofuel expansion. The following chapters will provide more details of the study regions.

This study was based on qualitative and quantitative research methods. The methods used were: semi-structured interviews, one focus group discussion, (participant) observation, surveys, archival research, and land use analysis based on satellite images. Semi-structured interviews and observations provided the bulk of the findings. I constructed hypotheses based on the analysis gathered by these methods and then triangulated with other quantitative and qualitative methods. For this thesis, 213 semi-structured interviews were carried out with different actors involved in biofuel production including oil palm producers (46), jatropha producers (58), leaders of rural organisations (41), other rural producers (20), environmentalists (16), government officials (10), private sector representatives (8), wage labourers (7), and technicians (5). Among these, 193 interviews were carried out in Chiapas. The focal group discussion involved an organisation of jatropha producers. Interview questions focused on the production of biofuel

crops (practices, production challenges, organisation of labour, comparison with other crops, and processing facilities⁹), on land use changes and land access (land degradation, deforestation, land tenure arrangements, land transactions, and land conflicts), on farmer incorporation (linkages with private sector, the role of rural organisations, state programmes, innovation, and credit), on conflicts arising from biofuel expansions, and on actors' views on environmental issues, historical processes of agrarian change, and biofuel politics. Field observations consisted of almost daily records of 17 months of fieldwork.

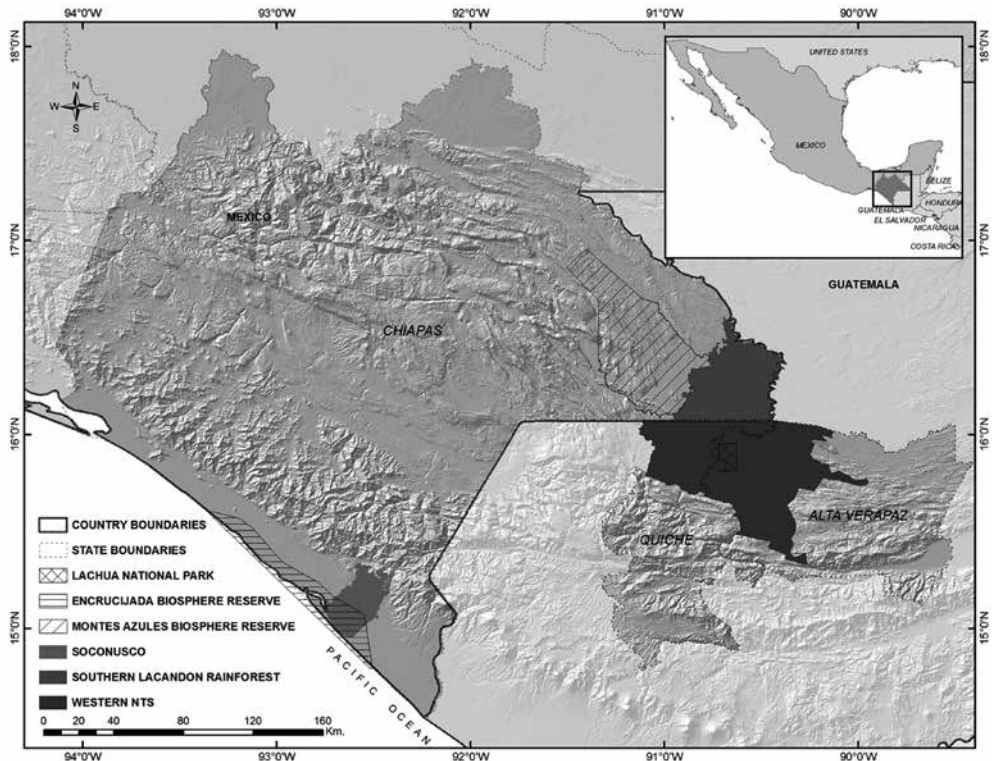


Figure 1. Map of the study regions

The research also included a survey of 335 oil palm producers (of which 10 surveys had to be discarded because of inconsistencies). In Soconusco in Mexico and in the North Transversal Strip in Guatemala, producers were selected from the membership record of oil palm organisations. In the southern Lacandon rainforest in Mexico, producers were selected from an official list compiling names and

⁹ Previous to its transformation into biodiesel, oil palm and jatropha need to be transformed into crude vegetable oil in processing mills. In the palm oil case, crude palm oil can then be converted into edible oil in palm oil refineries (located in all cases outside Chiapas).

locations of those who received oil palm seedlings from the Chiapas administration. Once in the selected communities, producers who were not in the initial records were also surveyed. In the case of the southern Lacandon rainforest, this implied surveying producers who did not receive state support, which was rare. Companies and investors producing oil palm were identified through interviews with key informants, as well as through informal conversations with local actors. Survey questions focused on oil palm production (including date of planting, area, planting density, intercropping practices, soil management, and producers' estimations on inputs including fertilisers, pesticides, fuel, and labour) and farms' characteristics before and after conversion to oil palm (including farm size, cattle ownership, land uses, main income sources, land transactions, and land titling) (see Appendix I). Archival research consisted of the collection of both contemporary and historical documents. Contemporary documents included documents issued by government agencies or public institutions (117), or by civil society organisations (39) and news reports (43). Historical documents were collected at the Historical Archive of the Chiapas Government (44) and at the Congress Archive of the Chiapas Government (29), with a focus on documents from either the government or rural organisations from the southern Lacandon rainforest and Soconusco. A former rural leader in the southern Lacandon rainforest also shared his personal archive (16). All documents were scanned and organised in an off-line document repository. To carry out the land use analysis, two SPOT 5 images of the study regions were acquired on March 2013 and processed through ERDAS Imagine, ArcView GIS, and Quantum GIS. These images were used to establish the location of oil palm plantations across the study regions, as well as to study land use changes in particular cases where survey information was insufficient (see Chapter 4 for more details).

Data analysis followed several different methods. Qualitative information derived from interviews was codified per theme and type of respondent, following Saldaña (2012). Codes used were mostly descriptive. In addition to coding, key documents by environmental organisations in Chiapas were also subject to discourse analysis, following Fairclough's critical discourse analysis approach (see Fairclough 1992). This approach is not limited to text analysis, but it also includes the analysis of discourse practice and events. The analysis was extended in this way to include the processes of production, distribution, and consumption of particular texts. The rest of the documents collected for this research were used to triangulate and confirm or disprove working hypotheses. Following critical realism, and regardless of the method, qualitative information in this research was considered to form part of, at least, one of the following categories: information on processes or mechanisms, events of social interpretation, and instances of theoretical argumentation. Quantitative information was analysed through descriptive statistics, with particular emphasis

on averages, means, and percentages. Quantitative analysis was performed for each region separately because of the disparate processes of agrarian change shaping farms' characteristics and oil palm production. Within each region, producers were categorised according to their social class positioning and market orientation (see Appendix II). The goal of this quantitative analysis was to understand how participation in oil palm production led to context-specific differences in theoretically informed categories (as opposed to quantitative analyses that normally build explanations based on statistical correlations between variables regardless of the particular social context). Finally, part of the survey information was used as data input for a model estimating greenhouse gas emissions. Chapter 4 describes this process.

Outline of the thesis

This thesis is composed of an introduction, four chapters, and a conclusion. Chapter 1 analyses how changes in resource access relate to the emergence of environmental discourses and how these discourses link with local processes of resistance or consent. It focuses on the concept of enclosure and how this concept relates to environmental politics as theorised in influential theses in political ecology – the 'environmentalism of the poor' and the 'green grabbing'. This chapter reveals a variety of environmental discourses in the oil palm case in Chiapas that are unaccounted for by the 'environmentalism of the poor' and the 'green grabbing' theses. It concludes by describing how the overemphasis on dispossession in research studies might have led to losing sight of the multiple and complex rural responses to new 'green' interventions in the global South.

Chapter 2 shows the limitations of the agroecological paradigm to explain the shift of smallholders to biofuel crops. This chapter describes which type of smallholders shifted to oil palm and under which specific conditions they were incorporated into the oil palm sector. It shows how, contrary to assumptions in agroecology, oil palm did not mean a shift from tradition to modernity or from self-sufficiency to exploitation. Smallholders that shifted to oil palm in Chiapas were already linked to commodity markets, either through selling crops or their own labour, with few living on local food production. It explains how smallholders decided to participate in oil palm production, due to a combination of favourable conditions set up by the state and advantageous economic circumstances within the oil palm sector. It also shows how oil palm production fitted particularly well with peasant subjectivities, as modernisation was often a popular ideology among smallholders. This chapter identifies four challenges for agroecology, and it points to the importance of developing a more nuanced understanding of agrarian change within the agroecological approach as the basis to build more viable alternatives for smallholders in a context of agro-industrialisation.

Chapter 3 analyses state–peasant relations in the southern Lacandon rainforest, in the context of the recent biofuel expansion. It relies on the concept of ‘consent’, as a particular form of hegemony, to better capture the type of relations between the Mexican state and the rural organisations involved in the expansions of biofuels (oil palm and jatropha) in the study region. It explains how consent emerged as a historical, shared political practice in this initially isolated region of Chiapas and how such consent contributed to the rapid emergence of an incipient, albeit eventually failing, green economy. This chapter concludes by pointing to the importance of considering the political dimension to understand the particular forms of participation of smallholders in biofuel expansions.

Chapter 4 analyses how global environmental discourses shape conceptions of oil palm in particular regions and describes their social and environmental consequences. It shows that global discourses on oil palm rely on ‘engaging simplifications’ that may not favour smallholders or protect the environment on which their livelihoods depend. It explains why critical discourses on oil palm had unintended effects in the case of Mesoamerica, where it rendered local processes of environmental change invisible and obstructed opportunities to halt actual and potential environmental impacts by this crop. It also shows how environmental certification, which has emerged as a counternarrative to critical discourses on oil palm, does not always serve to ensure sustainability, particularly when it comes to agrochemical usage or greenhouse gas emissions. It even, at times, puts smallholders at a disadvantage, in comparison to large-scale plantations. This chapter speaks to the role of power in relation to global environmental discourses and its consequences for smallholders engaged in oil palm production.

The conclusion discusses the main findings of this thesis. It begins with a summary, broken down by the four research sub-questions, and provides a critical analysis of the concepts employed in this research. It then explores the role of the state and environmental dynamics in shaping the relations between agrarian capital and rural producers, following the green agrarian question framework. In doing so, it shows the uneven character of agrarian capital in the case of the production of biofuel crops in Chiapas and how this opens the possibility to consider the existence of a multiplicity of social responses to oil palm. It focuses on explaining rural agency in relation to capital. It critically assesses three key arguments used to explain smallholder participation in biofuel cultivation, and it proposes a theoretical approach to the study of rural agency based on the insights the green agrarian question framework offers. It concludes by providing recommendations to environmentalists concerned about the consequences of the oil palm expansion in Chiapas.

Chapter 1.

Enclosure And Environmental Narratives In Oil Palm Expansions¹⁰

The rise in the price of palm oil by 412% between 2000 and 2011 (Index Mundi 2014) made oil palm cultivation highly profitable and encouraged its expansion. According to large environmental organisations such growth comes at a cost, as seen in the following statement of Greenpeace (2013): ‘[...] *this phenomenal growth of the palm oil industry spells disaster for local communities, biodiversity, and climate change as palm plantations encroach further and further into forested areas*’. For Greenpeace, the appropriation of forests and lands for oil palm production endangers wildlife as well as the livelihoods of local communities. In the narratives of environmental organisations, oil palm expansion figures as a modernisation process that goes against the social and economic interests of family farmers and only benefits transnational capital. Accordingly one would expect smallholders to oppose oil palm expansion, as shown, for instance, by Gerber (2011) and Alonso-Fradejas (2012). Yet this is not always the case. In Chiapas, state programmes in support of palm oil have gained widespread acceptance amongst smallholders and rainforest settlers, including indigenous people. Support for such programmes, which also promote biofuels, is particularly striking in a region known for its peasant uprisings against the government (García de León 1997), particularly by the *Zapatistas* in the mid ‘90s (Harvey 1998a)¹¹. The question then is why this is so.

The literature on oil palm cultivation confirms to some extent the environmental narrative of oil palm expansion as endangering both the environment and local communities. The expansion of large-scale plantations in Indonesia has resulted

¹⁰ This chapter was published as Castellanos-Navarrete, A. and Jansen, K., 2015. Oil palm expansion without enclosure: Smallholders and environmental narratives. *The Journal of Peasant Studies* 42 (3-4): 791-816.

¹¹ The Zapatista Army of National Liberation (EZLN in Spanish) seized several cities in Chiapas on January 1, 1994 and declared war against the state. The EZLN demanded the fulfilment of basic rights for the Mexican population, with special emphasis on the rights of indigenous people.

in extensive deforestation (Carlson et al. 2012; Lee et al. 2014; Obidzinski et al. 2012) and very significant greenhouse gas emissions (Fargione et al. 2008). Research has also shown how rapid expansion can lead to the loss of land and forest resources by local communities (Maher 2015; Schoneveld et al. 2011; Yengoh and Armah 2014), a phenomenon particularly frequent in regions with weak land tenure regimes (Hall 2011a). Outcomes for smallholders who participate in oil palm cultivation are less clear. On the one hand, agrarian studies stress processes of social differentiation (Cramb and Sujang 2013; Koczberski and Curry 2004) in which poor farmers, indigenous producers or women are sometimes unable to reap the benefits (Julia and White 2012; McCarthy 2010). On the other hand, some researchers point to the high returns obtained from oil palm cultivation (Feintrenie, Chong, et al. 2010; Rist et al. 2010), leading even smallholders to disregard the environment (Feintrenie, Schwarze, et al. 2010). The study of smallholders in oil palm cultivation is particularly problematic for the popular environmental narrative. Despite critiques, smallholders continue to engage in oil palm production and even drive its expansion (Hall 2011a). To be convincing, the narrative informing much environmental activism against palm oil needs to address the following questions: Why do smallholders participate in oil palm expansion? And why do actors involved in this expansion adopt different environmental narratives? This chapter aims to answer these questions by taking the case of oil palm expansion in Chiapas.

The narratives deployed by environmental organisations against palm oil find echo in two predominant critical theses on the relationships between capital and environmentalism in the scientific literature. The first, known as ‘environmentalism of the poor’, focuses on how rural people resist the appropriation of their resources (e.g. Guha 1993; Martínez-Alier 2002). Enclosure in the form of grabbing of forests, water and land by investors, often aided by the state, has a detrimental impact on the livelihoods of the poor who depend on access to such productive resources. On occasion, this has led to popular protests often framed in environmental terms and sometimes undertaken in coalition with environmental organisations (Guha and Martínez-Alier 1997) as seen, for instance, in rural mobilisations against large-scale dam projects in India. The second perspective is ‘green grabbing’ (Fairhead et al. 2012): investors, corporations or the state transform use values of nature into new exchange values (e.g. carbon markets) or appropriate resources on environmental grounds (e.g. claiming ‘marginal’ land for more sustainable biofuel production) (Kelly 2011; McAfee 1999; Osborne 2011). The two positions assign a different role to environmentalists. The first thesis emphasises environmental NGOs struggling alongside rural communities against dispossession (Stonich and Bailey 2000; Veuthey and Gerber 2012). The second thesis usually critically

deconstructs top-down environmental policies, often carried out with the support of ‘environmentalists within the state’, viewing green discourses as a ‘Foucauldian’ tool for disciplining, governing and justifying enclosure¹² (Agrawal 2005; Luke 1997). Enclosure here refers to the exclusion of people from access to the means of production. More descriptively, the term dispossession is also in use. Both in theory and in popular environmental narratives, enclosure is often considered to be the main mechanism explaining the relationship between the environment and capital accumulation.

Enclosure is closely related to the concept of ‘accumulation by dispossession’, indicating that enclosure is not just ‘primitive’ or initial accumulation, as in Marx’s work, but a key mechanism in contemporary capitalism (Harvey 2003). Resources commonly grabbed include common lands, forests, genes or even knowledge (Deibel 2013; Kloppenburg 2010; Toleubayev et al. 2010). Accumulation by dispossession is seen as a recurrent process whereby capitalists open up new profitable frontiers by appropriating common or key resources from the poor. Enclosure as land grabbing is the classic example in which peasants become proletarians, losing their lands to corporations and thereby forced to sell their labour to make a living. Political responses to enclosure have often been conceptualised in terms of resistance (see Borras and Franco 2013 for a critique). Enclosure has been studied within the ‘agrarian question’ framework in political economy, with a focus on capitalism as a process of structuring relations between agrarian classes, the state and other economic sectors (Brenner 1986; Kautsky 1988; Lenin 1967). Recently, the commodification of nature, environmental destruction and associated social struggles have been recognised as key elements of the contemporary agrarian question (Akram-Lodhi and Kay 2010b; Barraza et al. 2013; Gerber and Veuthey 2010; Jansen 1998). From this literature, we derive the need to analyse environmental narratives not just as discursive entities in themselves but also in relation to concrete processes of agrarian change.

The next section describes the two regions in our case study and the methodology employed. The third section discusses the role of the state and shows the uses made of, and the disparity between, an environmentalist ‘oil palm cultivation for biofuel’ narrative and a modernisation practice in which oil palm is planted for conventional purposes. The subsequent section examines the impact of oil palm expansion on land tenure relationships. The fifth section argues that the state favoured rural organisations in the oil palm expansion for political reasons, leading rural organisations to adhere pragmatically to this modernisation project.

¹² In addition to the environmentalism of the poor and green grabbing theses there are other analyses of the relationship between accumulation and environmentalism, such as the role of environmental certification (e.g. Jansen 2004), but this chapter focuses on the first two.

We then examine how environmental NGOs opposed oil palm expansion but had little success in changing practices given the close relationship and in part a shared environmental narrative between small farmer organisations and the state. Where land grabbing is absent and conditions are favourable, small and medium farmers and their organisations may opt to actively engage in oil palm expansion rather than resist, despite critical environmentalist views on the crop. In the conclusions we argue that neither the ‘environmentalism of the poor’ nor the ‘green grabbing’ thesis can explain why small farmers engage in oil palm expansion and that we need to develop a complementary view on the greening of the agrarian question in situations without enclosure.

The study region and methods

This study examines two cases of recent agrarian change involving rapid oil palm expansion in Chiapas: the southern Lacandon rainforest and the coastal Soconusco (Figure 2). The southern Lacandon region, situated in the Marqués de Comillas and Benemérito de las Américas municipalities, is characterised by shrinking tall and medium evergreen rainforests on the edge of the *Montes Azules* Biosphere Reserve. In Soconusco, which stretches from Mapastepec to Suchiate municipalities, we focused on Huixtla and Villa Comaltitlán municipalities. Soconusco is characterized by mangroves and herbaceous marshes, which have been protected since 1995 by the *Encrucijada* Biosphere Reserve. Both regions have been opened to agriculture in the past but at different times and for different purposes. In Soconusco in the early nineteenth-century the state provided incentives for national and foreign capital to introduce large-scale modern capitalist agriculture (García de León 1997). By contrast in the Lacandon rainforest, land was distributed in the early 1970s to landless families as a way of easing agrarian tensions elsewhere (de Vos 2002). While Soconusco is now characterised by commercial agriculture and the presence of large landed private property, the southern Lacandon region is mainly constituted by *ejidos*, often indigenous, living from extensive cattle production (Table 1). *Ejidors* in Mexico are a land tenure form in which farmers are granted parcels and usufruct rights to common lands with restrictions on the right to sell and rent. People living in *ejidos* are often referred to as the ‘social sector’. By including two regions in the study we aimed to widen our understanding of the multiple processes shaping processes of agrarian change in the oil palm sector in Chiapas.

The southern Lacandon rainforest was first populated in the 1970s with peasants from central and southern Mexico. Later in the 1980s landless indigenous peasants from Chiapas moved in. Land grants in *ejidos* ranged from 20 to 50 hectares per adult. Peasant families obtained the legal title to their lands within a few years and

received some government support, a fact that may have deterred their participation in the 1994 *Zapatista* uprising. Early stratification of this group, resulting in some cases from cross border smuggling of cattle or drugs, made a small number of settlers particularly wealthy, with access to between 150 and 200 hectares. These larger farmers specialised in cattle, often entering into cattle raising arrangements with other farmers who lacked capital. Poor farmers, often indigenous, kept few cattle and cultivated a small proportion of their land, sometimes as little as two out of 20 hectares. When oil palm cultivation was introduced in 2005 it attracted both middle farmers, who grew this ‘luxury crop’ on relatively large plots (ten hectares on average), and smallholders, who planted the crop on smaller plots (seven hectares on average) (Table 2). Several farmers sold cattle to invest in oil palm cultivation whereas government subsidies and family labour investments were more important for poorer peasants. Land availability also attracted several investors who set up much larger areas under oil palm (117 hectares on average).

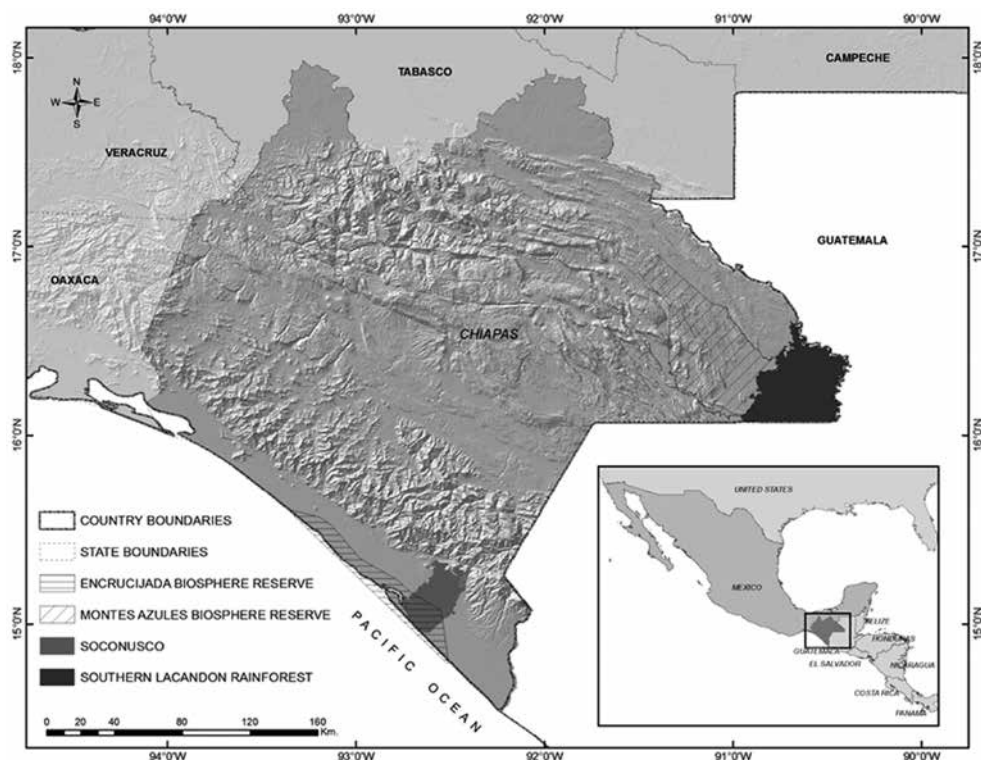


Figure 2. Map of the study regions in Chiapas

In Soconusco, wealthy families or entrepreneurs established *fincas* or large landed properties in the *Sierra Madre*, where they cultivated coffee, and on the coastal plains, where they produced bananas or raised large cattle herds. Railways connected this region to distant markets thereby favouring widespread cash crop cultivation. While landless peasants successfully struggled for land throughout the twentieth-century (Reyes Ramos 1992), over time population growth and land subdivision left peasants in *ejidos* with smaller plots and increased the number of *avencidados* (*ejido* members with no land). The first oil palm plantation in Soconusco was established around 1952, by Johann Bernstorff, a German coffee landowner (interview, 24 May 2013, Finca La Lima). Farmers in *ejidos* started to plant oil palm in the mid 1980s with state support. The crop spread more widely in the 2000s when the Chiapas government intermittently prioritised this crop in the region. A final boost for oil palm expansion occurred in 2007 linked to biofuel production. Poor peasants planted oil palm on medium to small sized plots (three hectares on average). A few private sector companies established large areas under oil palm on private land (436 hectares on average).

The organisation of oil palm processing differed between the regions. In the Lacandon rainforest, two private sector mills in Palenque (240 km away) competed for the oil palm produced by family farmers. One mill ensured supply by entering into a commercial agreement with a large producer organisation with a network of collection sites. The rival mill, which concentrated on individual medium and a few large producers, paid slightly higher prices, provided technical assistance and arranged farm-gate collection. In Soconusco processing relied on three types of mills. First, the Bernstoff family established a small processing plant in about 1958 followed by a second one in 1991. These mills were supplied mainly from their own plantations. Second, in 2000 and 2002 the private sector established two much bigger processing facilities, which were supplied mainly by family farmers, and a few privately owned or leased large *fincas*. And third, three mills were managed by the social sector. One set up in the mid 1980s has since closed down, followed by two others in 1996 (Wolff 1999) and in 2012 (see location of processing mills in Appendix III).

The fieldwork was carried out in three periods (October to December 2011, March to November 2012, and May to July 2013) in both regions as well as in major cities including the state capital – Tuxtla Gutiérrez. In total we conducted 60 in-depth interviews with private sector managers, technicians, producers, workers and environmentalists from NGOs and from the state. Questions focused on the biofuel chain, land use changes, production, farmer incorporation (state programmes, innovation and credit), the organisation of labour, conflicts arising from oil palm expansion and actors' views on environmental issues,

Table 1. Characterisation of the study regions

	Land access				Land uses ^b							
	Land tenure				Pastures	Oil palm ^c	Coffee	Sugarcane	Maize	Other crops		
	People living in poverty ^a	Households relying on agriculture	Farms managed by indigenous producers	Ejido land tenure							Private property	Landless adults in ejidos
(% Population)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Soconusco												
Huixtla	66	91	1	61	39	38	29	1	23	36	7	4
Villa Comaltitlán	83	96	1	62	38	37	41	15	24	7	7	6
Southern Lacandon rainforest												
Benémérito de las Américas	88	87	42	100	0	52	47	24	0	0	13	16
Marqués de Comillas	92	79	51	93	7	17	60	4	0	0	21	15

Sources: CONEVAL, 2010; INEGI, 2007a; INEGI, 2007b; SIAP-SAGARPA, 2014.

Notes:

^a Multidimensional poverty index according to indicators presented in CONEVAL (2010).

^b Approximate percentages as derived from INEGI, 2007a and SIAP-SAGARPA, 2014.

^c Total oil palm owned by farmers in our sample was superior to the official estimation reported for oil palm in Huixtla.

Table 2. Class condition of surveyed oil palm growers in Soconusco and the southern Lacandon rainforest

	Farmers (nr.)	Average farm size (ha)	Average oil palm area (ha)	Family labour (nr.)	Hired labour (nr.)	Average cattle heads (nr.)	Main income source (% farms)				
							Oil palm	Cattle	Other crops	Wage labour	Off-farm income ^a
Soconusco											
<i>Social sector</i>											
Poor	48	4.6	3.3	1	1	0	75	0	6	15	4
Middle-income	43	9.4	5.7	1	1	2	70	2	12	2	14
Wealthy	28	20.2	8.9	1	2	4	64	0	32	0	4
<i>Private sector^b</i>	6	486.3	436.0	0	9	350	50	17	17	0	17
Southern Lacandon region											
<i>Social sector</i>											
Poor	36	17.4	7.4	2	1	0	94	3	3	0	0
Middle-income	47	27.4	10.3	2	2	3	83	0	2	6	9
Wealthy	38	85.9	24.4	1	5	21	79	11	8	0	3
<i>Private sector</i>	4	272.4	116.8	1	13	250	50	25	0	0	25

Source: Survey of 250 oil palm growers in the two study regions.

Notes:

^a Off-farm income refers to income derived from non-agricultural income sources (i.e., other jobs, business and remittances).

^b Private sector comprises both oil palm companies and investors planting in both *ejido* land or under private property. Investors also included individuals living in *ejidos* but who arrived there with the sole purpose of planting oil palm.

agrarian change and oil palm politics following a political ecology approach. Interviews were first organised by type of respondent and codified according to the key themes which emerged; coded fragments were then compared and analysed per type of respondent (Saldaña 2012). We also randomly surveyed 250 oil palm growers in Marqués de Comillas and Benemérito de las Américas municipalities (southern Lacandon region) as well as in Huixtla and Villa Comaltitlán municipalities (Soconusco). We supplemented this data collection with fieldwork observations and the collection of relevant documents and statistical data.

Biofuels and oil palm expansion in Chiapas: a contradictory state project

The recent oil palm expansion in Chiapas can only be explained by the strong intervention of the state. This intervention was characterised by inconsistent or even contradictory narratives. In some government communications palm oil was depicted as a green fuel, and even as a non-food (Gobierno del Estado 2010c). In others, government officials stressed the use of palm oil for food purposes (Gobierno del Estado 2010a). Such contradictions raise questions about the state's promotion of oil palm and the role of environmental discourses.

The recent promotion of oil palm in Chiapas was linked to two state projects. The first formed part of the Mesoamerica Project¹³ in which oil palm cultivation was promoted as part of the expansion of biofuels. In April 2007, Colombia, the only country in the Mesoamerica initiative at that time with significant biofuel production, suggested developing biofuel production in the region. This proposal led to the Mesoamerican Biofuel Programme (MBP) with the aim of setting up both biodiesel processing plants and a research network. With funding from the Inter-American Development Bank and recipient countries, Colombia established biodiesel processing plants in El Salvador, Honduras and Chiapas in Mexico. The state-owned MBP biodiesel processing plant in Chiapas was officially opened in November 2010. The Mexican government also invested heavily in oil palm promotion: from 2007 to 2012, over 80 press releases were issued by the Chiapas government on both oil palm cultivation and biofuels. Government bulletins on using palm oil for biofuel production were picked up by the local media, resulting in a series of newspaper reports praising green plantations and the new green economy. Media coverage and prolific public advertising on sustainable biofuels constructed Chiapas as an environmental vanguard. To this we have to add a second state project derived from national policies.

¹³ This Project was previously known as the Puebla-Panamá Plan and aimed to encourage the economic integration of Mesoamerica.

Oil palm cultivation was promoted as part of the so-called 'Productive Reconversion' initiative, a label derived from the National Development Strategy (Gobierno del los Estados Unidos Mexicanos 2007), which explicitly aimed to deter deforestation through payments for environmental services (PES), for reforestation and for the establishment of commercial tree plantations. The assumption underlying the National Development Plan was clearly stated by the Chiapas governor in 2012: "poverty also has lots to do with environmental deterioration" (public speech, 25 September 2012, San Cristóbal de Las Casas). Increased market involvement by rural people and natural resource valuation were the proposed solutions for halting deforestation. This neoliberal recipe fit well with recent global policy measures (e.g. the REDD +¹⁴ mechanism) and with some green economy postulates fighting climate change. In this context, the oil palm expansion project was shaped by neoliberal ideology and focused on achieving greater integration of farmers into markets (Fletes-Ocón and Bonanno 2013). In Chiapas, the 'Productive Reconversion' strategy was proposed for all regions, with or without rainforests. Both the Mesoamerican Biofuel Programme and the 'Productive Reconversion' project presented oil palm cultivation as the remedy for exhausted soils, burnt forests or climate change.

The formal Chiapas state discourse was heavily environmental: oil palm expansion was held to serve green ends and was linked to sustainability in both state projects. Firstly, palm oil was regarded as a source of 'clean' fuel with biofuels from the MBP biodiesel plant as the political flagship. The biodiesel it produced provided fuel for public buses in two major cities, a fact seized on in public advertising campaigns. And secondly, oil palm was presented as deterring the practice of shifting cultivation. Long standing environmental concerns over slash-and-burn helped to frame this new permanent crop as 'sustainable'. A selective appeal was also made to science. Concepts such as 'soil cover loss' and 'degraded lands' were typically drawn on to refer to the consequences of burning rainforest for maize cultivation whereas oil palm cultivation was depicted as environmentally friendly. However, economic developments gave rise to environmental contradictions.

While palm oil was considered to be a potential feedstock in 2007, by 2011 this option was no longer feasible. Global biofuel production consists of cheap ethanol and expensive biodiesel (Doering III and Tyner 2009; Lamers et al. 2011). Low maize prices in the United States, and especially cheap sugar in Brazil, favoured increased ethanol production. In 2009 this accounted for 73% of all biofuels produced (Lamers et al. 2011). Sugar processing plants in Brazil can flexibly shift between sugar and ethanol production according to changes in market price (Novo et al. 2010). Costly food oils needed for biodiesel production cannot compete with cheap maize or sugar so biodiesel processing requires favourable policies. In 2003,

¹⁴ Reducing Emissions from Deforestation and Forest Degradation.

EU mandatory biodiesel quotas on fuel combined with subsidies and tax exemptions in Germany made it possible to use rapeseed as a feedstock. Later, the withdrawal of German subsidies in 2007 opened up the market for biodiesel imports. While palm oil then appeared as the ideal biodiesel source, being the cheapest food oil, heavily subsidised soybean took the lead limiting palm oil imports into the EU to 11% (Lamers et al. 2011). At the end of the 2000s, rising palm oil prices made biodiesel production increasingly unprofitable (Goh and Lee 2010; Mekhilef et al. 2011). Mexico was not an exception.

Initial state plans in Chiapas relied on crude palm oil as a biofuel feedstock. However, high palm oil prices during 2011 discouraged Chiapas state purchases (interview with processing mill manager, 28 November 2011, Cantón Santa Elena) and resulted in a shift to waste restaurant oils for biofuel processing (interview with Chiapas government official, 1 February 2012, Tuxtla Gutiérrez). Collection of used cooking oil was expensive and its supply insufficient leading to the failure of the biofuel project. The success of biodiesel production normally requires state subsidies for processing to keep costs down or the implementation of a biofuel mandatory percentage of fuel to ensure demand. In Mexico, neither of these conditions was met (SAGARPA 2009)¹⁵, stifling incipient biodiesel investments. By 2012, two private biodiesel processing plants in Mexico, located in the centre and north of the country, had closed down (interview with processing mill manager, 9 November 2011, Acapetahua; Torres 2011). Existing state incentives were directed towards increasing oil palm cultivation rather than its conversion to biofuel. According to a private sector mill manager, the Secretary of Agriculture (SAGARPA in Spanish) agreed in the 1990s with the food industry that oil palm fruit bunches would be priced as 12.5% of the crude palm oil price to favour oil palm cultivation (interview, 21 October 2011, Palenque). To this we have to add the support given by the Chiapas administration to oil palm cultivation through the 'Productive Reconversion' strategy. In this politico-economic context, oil palm has not been used on a large scale for biofuel production, although cultivation has expanded because of state support. This has important implications.

In their communications and actions, the Chiapas administration associated oil palm expansion with sustainability and related green discourses. This was possible by linking oil palm to specific environmental rationales associated with biofuels on the one hand and the 'Productive Reconversion' strategy on the other. As pointed out by the 'green grabbing' thesis, environmental discourses are often used to gain legitimacy and justify interventions (Cárdenas 2012; Fairhead et al. 2012). However we have to be careful not to conflate economic, political and environmental interests. For instance, adverse economic circumstances in Chiapas resulted in the failure of the

¹⁵ In Mexico, it was mandatory to blend ethanol in fuel in only three urban regions.

biofuel initiative. Such failure led to inconsistent government narratives on the use of palm oil. Economic circumstances damaged the public perception of the Chiapas government, which was increasingly seen as promoting a scam (i.e., public money invested in biofuels without results). This points to some key contradictions that can arise from the employment of environmental narratives.

Oil palm expansion and dispossession: changes in access to land

The Chiapas government initiated a massive oil palm planting campaign in 2007, combining extensive advertising with the introduction of improved varieties and free distribution of seedlings to anyone interested. Varieties originating from Guatemala, Honduras and Colombia were made available to regional nurseries. The Institute for Productive Reconversion and Bioenergetics (IRBIO in Spanish) gave farmers a one-off land-clearing subsidy of 1,000 pesos¹⁶ per hectare along with the plant material. Farmers received about four million oil palm plants in just four years (interview with IRBIO staff, 4 November 2012, Tuxtla Gutiérrez). This resulted in a rapid pace of oil palm expansion (Figure 3). Oil palm cultivation was concentrated in the northern and southern Lacandon rainforest lowlands, and in coastal Soconusco. While in many countries landed elites (Marin-Burgos 2014) or transnationals (Borras et al. 2010) have controlled oil palm expansion, in Chiapas poor and middle-income farmers were significant actors. Government subsidies facilitated the participation of the social sector in oil palm cultivation, although initial support did not fully cover the costs.

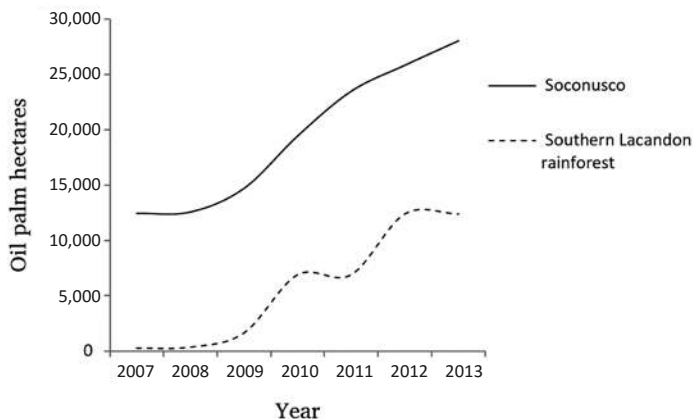


Figure 3. Oil palm hectares in Soconusco and southern Lacandon rainforest, 2007 to 2013
Source: SIAP-SAGARPA 2015.

¹⁶ Equivalent to US\$97 in June 2008.

Additional support to farmers was available through the Humid Tropic programme, created by the Secretary of Agriculture in 2009. This programme, with a special focus on Mexican humid tropical lands, granted subsidies to farmers with approved credit requests. Subsidies were proportional to credit size. In this way, state support further deepened producers' integration into the market. Farmers requesting these subsidies had to employ SAGARPA-approved rural agencies for the paperwork, to enter agreements with certified finance suppliers and to pay interest on credit to the order of 12–13%. Both credit and the subsidies from the Humid Tropic programme were key economic sources enabling many poor families to engage in oil palm production. Financial mechanisms such as credit have typically been associated with loss of land by peasant families but this was not the case in rural Mexico.

Institutions providing credit to rural families in Mexico have few opportunities to recover their investment should farmers default. Land in *ejidos* cannot be legally seized. Credit institutions only have the right to use *ejido* lands to recover their investment. Under these conditions, the private sector rarely supplies credit to *ejido* members. Most credit associated with the Humid Tropic Programme was provided by FIRA, a group of public trusts linked to the Secretary of Finance and Public Credit and the Bank of Mexico. Unlike countries such as Guatemala or India, credit and land in Mexico are not as yet linked when it comes to *ejido* land. While subject to increasing pressure, oil palm growers in Mexico saw credit as a relatively risk free strategy to access capital. Risk for producers was also reduced by collective requests of credit in which the group, and not the individual, was liable. Some small creditors even offered credit only for the period required to secure the Humid Tropic funds. Under these conditions, the increase of credit associated with oil palm hardly leads to loss of land. A related issue is to what extent the land tenure regime in Mexico prevents dispossession.

In the southern Lacandon region, rural lands are mostly held as *ejido*, a social tenure regime arising from the 1910 revolution in which land was owned collectively and members were even legally banned from hiring labour. Tenure changed in 1992 when lands could be owned individually and land transactions were permitted for the first time (Assies 2007; Pérez Castañeda 2002). Land transactions are however often dependent on the approval of the *ejido* assembly, a form of collective decision-making. This has as yet partly prevented land grabbing in this area of Mexico. Some communities blocked land purchases for oil palm cultivation as, for instance, in López Mateos¹⁷ where selling was permitted to '*peasants, like us*' (interview with *ejido*

¹⁷ Some *ejidos* such as Flor de Marqués blocked oil palm cultivation *per se* while other *ejidos* agreed on banning land transactions with oil palm investors.

authorities, 29 August 2012), but not to investors¹⁸. Such agreements were absent in large *ejidos* in the southern Lacandon rainforest where land transactions, such as in Benemérito de las Américas, were considered more of a private affair. In any case, peasant families tended to double or triple land prices for outsiders, discouraging their establishment to some extent. To this must be added the common risk of extortion and kidnapping faced by investors in a region where a drugs economy has been in operation since the 1970s¹⁹. All these mechanisms limited land purchases by the private sector in the southern Lacandon rainforest (Figure 4). Moreover, and somewhat surprisingly, there also were obstacles to the expansion of companies on private lands as seen in the Soconusco region.

Unlike the Lacandon region where 97% is held as *ejido* land (cf. Table 1), Soconusco had lands held as private property as well as *ejidos*. In Huixtla and Villa Comaltitlán municipalities private property averaged 39% of the total compared to 61% under *ejido* tenure. Theoretically this should have allowed the private sector to expand much more in Soconusco than in the southern Lacandon rainforest. Companies willing to purchase land in this region had, however, limited opportunities for expansion. Agrarian law in Mexico stipulates a maximum legal limit of 300 hectares for oil palm plantations held by individuals and 7,500 hectares for limited companies²⁰. In addition to this, banana companies and the sugar cane mill in Huixtla already occupied a significant portion of private land in the region. Furthermore, not all landowners had an interest in selling or even leasing land.

In Soconusco, private sector land was often in the hands of cattle owners who rarely joined in the oil palm expansion. Cattle ranchers, while wealthy, probably lacked the capital to convert their medium-sized properties into intensive oil palm production. Thus, cattle ranchers received offers to either lease or sell their lands. Neither alternative was attractive enough to a sector which, despite being diversified and often urban-based, still had a strong economic and symbolic attachment to

¹⁸ The 1992 land tenure reform certainly left *ejidos* more vulnerable to processes of land concentration. The importance of the *ejido* tenure is, however, evident when compared to rural communities with private property titles as in Rio Salinas in the southern Lacandon rainforest where an investor bought about one third of all community lands (informal conversation with local investment manager, 24 August 2012).

¹⁹ For instance, an agronomist working in a large private sector oil palm plantation was kidnapped and murdered in 2013.

²⁰ By law, any increase in plantation size of 300 hectares requires the participation of an additional partner to the company. A large-scale producer in Soconusco explained the implications of such a law: *'It is difficult to go against that law, the Agrarian Law, it is very difficult. I am outside of that [the law]; I know I am in danger, right? But as I have it [the property] divided in names [front men] is okay; but that also creates an internal problem, right? It is not that easy to handle'* (Interview, 22 July 2013, Tapachula). As evident in this interview, the risks associated with using front men as a way of legally owning a large area posed an obstacle to the growth of plantations.

land. When asked about leasing, one cattle rancher responded in disbelief: ‘How can I let another guy cultivate my land?’ (interview, 12 November 2011, Tapachula). The loss of control over production was simply unacceptable to him. Oil palm cultivation offered few gains to cattle ranchers who became increasingly concerned. An opposition, even framed in environmental terms, emerged. For instance, in a newspaper article the president of the Tapachula cattle association denounced the loss of support for cattle and held the expansion of oil palm to be environmentally destructive. The article specifically stated that ‘[The cattle ranchers] are aware of the damages to the land that continuously expand [because of oil palm] and which leave in a situation of vulnerability the people in communities that were previously dependent on cattle’ (Cuarto Poder 2013). A private sector manager confirmed to us that many cattle ranchers rejected lease agreements, often on environmental grounds (Interview, 3 August 2013, Villa Comaltitlán). At the time of writing, oil palm has not led to drastic modifications in land access.

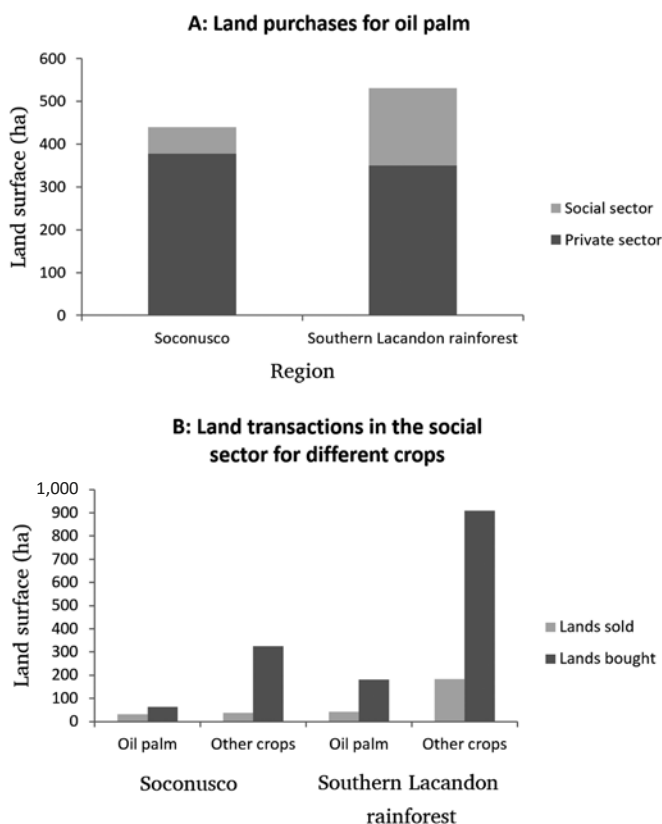


Figure 4. Land transactions in each study region

Source: Survey of 250 oil palm growers in the two study regions.

Note: Land purchases for oil palm cultivation by the social and private sectors per region (A) and land sold and bought by social sector producers (B) per land use in the last 30 years.

At this point we can conclude that enclosure was not the prime mechanism for oil palm expansion. We now ask to what extent social differentiation relates to land concentration. In the southern Lacandon region, oil palm growers, and high-income producers in particular, bought on average more land than they sold, pointing to an incipient land-based social differentiation process (cf. Figure 4). But it is important to note that in 2013 land in this region was still an abundant and cheap resource as it had only recently been opened up to agriculture. The availability of land is illustrated by the significant number of rural families moving to the southern Lacandon rainforest, particularly from Soconusco. They initially moved to engage in cattle production and only recently to cultivate oil palm. In contrast to the southern Lacandon rainforest, there are few opportunities to purchase *ejido* land in Soconusco where the average size of plots purchased was 5.5 hectares compared to an average of 24.6 hectares in the southern Lacandon rainforest. Land is a vital asset in Soconusco so that oil palm growers in economic difficulties avoid having to sell by occasionally leasing out their productive oil palm plots to others for harvesting. Owners retain access to land in this way. Oil palm cultivation in Soconusco was also undertaken by poor *ejido* farmers who sometimes crop as little as one hectare whereas in the southern Lacandon rainforest local leaders who promoted oil palm cultivation required association members to plant a minimum of five hectares²¹. Since wealth is related not only to land access but also to the amount of land a family can cultivate, this ruling excluded those households with little available capital or labour.

This section has explored the possible relationship between land concentration through enclosure and oil palm expansion, a topic discussed elsewhere (e.g. Alonso-Fradejas 2012; Cramb and Sujang 2013). In Chiapas, oil palm has not led to a significant loss of land by poor peasant families. In the southern Lacandon rainforest, investors purchased large plots mainly from high-income families in large *ejidos* with access to more land. In Soconusco, oil palm companies were set up on privately owned land leaving most *ejidos* intact. Surprisingly, cattle owners perceived oil palm as a threat and resisted its expansion. Changes in land access were related more to processes of social differentiation. Purchase of land for oil palm cultivation by high-income farmers point to an incipient process of land concentration. It is however important to note that most land purchases by oil palm growers were concentrated in the southern Lacandon rainforest. As yet oil palm cultivation has not led to a loss of land by poor and middle-income producers, even where they requested credit. Changes in land access in the two study regions are explained by the specific land tenure regime in Mexico, the resistance to a process of enclosure by some *ejidos* and by cattle ranchers and by longer term processes of agrarian change that explain, for instance, the greater availability of land in the southern Lacandon rainforest.

²¹ This minimum was not always strictly enforced.

Rural politics and local environmental narratives on oil palm

Since the 1994 *Zapatista* uprising accounts of rural resistance in Chiapas have focused on struggles for autonomy (Nash 2001) by independent organisations (Harvey 1998a). These studies have sometimes tackled tensions and conflicts with pro-government factions (Leyva Solano and Burguete Cal y Mayor 2007) and directed attention to those resisting government interventions. In this section we identify a different relationship between rural people and the government, one in which farmers negotiate, push for and consent to state intervention. We analyse its importance for understanding agrarian change, in this case the success of the oil palm project in Chiapas. We argue that oil palm interventions by the state are a new and weaker form of the earlier clientelist politics. In this new form the once dominant National Peasant Confederation (CNC in Spanish) has lost its central position in the rural political landscape. The CNC dominated rural politics at the time when the single official party, the PRI (Institutional Revolutionary Party), exerted political control through affiliated or closely related mass organisations. One community leader expressed this phenomenon in typical fashion as follows: ‘[CNC] *was the organisation allied with the PRI. It was like a power formula to win presidential and municipal elections, all those big slices [of pie]*’, (interview, 8 May 2013, Xochicalco Nuevo). The CNC concentrated political power by channelling government support to rural areas and presenting peasant demands as part of clientelist relations. Since the 1970s, changing state policies and mobilisations by independent organisations gradually displaced the CNC opening up alternative and multiple channels (Harvey 1990), including cooperatives and other economic organisations, in some instances state designed.

In this context oil palm organisations rapidly sprang up after the state’s oil palm programme started. In the southern Lacandon oil palm growers were organised in cooperatives and grouped together in a second-tier association. Peasants were aware that the government routinely privileged economic organisations as under the former pattern of clientelist relations. Most support to rural producers was channelled through these organisations. While theoretically any producer was eligible for oil palm seedlings, in practice farmers had to join an organisation to receive them:

In the Soconusco area we have about 35 cooperatives that form the Soconusco Regional Committee. When we have the palm, we already know how big the cake is, how much each organisation gets. [...] There is lots of demand, and if you are not organised, the truth is that it is very hard. (Interview with private sector manager, 9 November 2011, Villa Comaltitlán)

Such emphasis on organisations favoured the incorporation of middle-income and poor peasants, sometimes to the detriment of private sector producers who were not often permitted to join.

The private sector realised that state support targeted other agrarian classes. In Soconusco, cattle ranchers were caught by surprise as smallholders were quick to press for oil palm expansion. A talkative *ranchero*, president of a cattle association, commented sarcastically: *'we will just be left to witness the winners passing by'* (interview, 27 November 2011, Villa Comaltitlán). He saw the increasing number of palm growers favoured by government subsidies as being in stark contrast to their decaying cattle association. He painted a gloomy scenario: associations closing down, stricter enforcement of existing cattle regulations while cattle were constantly smuggled from Guatemala, and cattle ranchers giving up cattle production. Those with wealth it seems are not always favoured by government. *'I am not bitter with the government anymore'*, said Fernando, a northern blue-eyed farmer living in Tapachula who along with some other large-scale producers established 840 hectares of oil palm plantation in 1992. The Chiapas governor at the time had *'insisted and insisted'* on their taking up oil palm cultivation but their promises of support had not materialised. *'They offered us credit but it was never given, they offered us a processing mill, but it was never built'*, added Fernando (interview, 12 November 2011, Tapachula). They all suffered losses with two farmers even going bankrupt. While some profited, state support for oil palm cultivation in Chiapas was not specifically intended to benefit the rich. The focus of the state's programme meant that oil palm cultivation was taken up by the social sector and the emphasis on organised farmers ensured widespread expansion of the crop.

Government support to social organisations had a double rationality: from a technical and managerial perspective, the inclusion of the social sector ensured that a significant area was planted with oil palm, an important measure of success in the predominantly quantitative government evaluations; from a political perspective, embracing farmers from the social sector enhanced popular electoral support. Scale was in fact a recurrent topic in negotiations between organisations and the technical agency:

We wanted to establish 1,000 hectares and then IRBIO's director said that we should aim for 2,000 hectares. At the end IRBIO said 1,000 hectares was OK, but they left us a nursery of about 5,000 hectares. He got me into a hell of a mess (smiling). (Interview with organisation leader, 18 October 2011, Zamora Pico de Oro)

Negotiations between the Chiapas state and rural organisations over the amount of hectares to be planted also took place for other 'biofuel' crops, in particular *Jatropha curcas*. The indigenous leader of a *Jatropha* producer organisation told us how their first proposal was rejected and the area doubled by government officials. He then consulted the participating rural communities, leading to yet another increase in size.

The oil palm programme, and biofuel interventions in general, also had political goals. Given their influence over the social masses, the state regards leaders of organisations as desirable allies both for political ends and for implementing programmes. The government often turns leaders into state supporters by making special concessions to them and their organisations. *'The government craves you when you are organised because you are united'*, explained a local leader in Soconusco (Interview, 8 November 11, La Alianza). In a context of multiple organisations and competing political parties, this strategy is however far less efficient than in the past. As a leader from the southern Lacandon region put it:

In the first election I said I had 800 [supporters], but in reality they were a maximum of 400, 250 for certain. Leaders from productive organisations sell votes, but nowadays people do not follow them much. People already know that the vote is free and secret. They take whatever is handed to them and then vote for another candidate. (Interview, 7 March 2013, Huixtla)

In this new political context, the government in Chiapas was less able to reap the benefits from supporting organisations. Clientelist actions under these new corporative forms bear higher costs than in the past. An IRBIO official stated cautiously: *'They [the peasants] are more organised, but they demand more'* (interview, 4 November 2011, Tuxtla Gutiérrez).

The rapid build-up of organisational capacity in southern Lacandon region allowed farmers to negotiate better terms with both the government and the banks. For instance, leaders could avoid the need for members to provide collateral for credit by securing public and even private sector funding. Organisations are indeed not passive in the political game as shown at election time by an organisation managing state projects in the northern Lacandon region. *'We do not support any party, it depends on how good the rooster [candidate] is'*, explained one of its local leaders, *'But when there is an assembly we decide what is good for us'*. He then explained how a candidate for governor had offered them four undersecretaries at the Chiapas agriculture secretary:

We [the leaders of the organisation] would give the money to [the organisation] so that support would reach the people. Not like the PRI that gives nothing. We would deliver to gain social capital. I explained this to the organisation leaders, and I told them we could get our people in as deputies, municipal presidents and even senators. (Interview, 1 November 2012, Ocosingo)

The PRI party in Mexico was well known for its concessions to leaders, often in the form of offering public offices in exchange for the political support of their organisation. This leader refers to such a mechanism for obtaining political power but argues that in addition leaders now struggle to obtain support for their members. Who is manipulating who, as Scott (1987) asked, is not a simple question. While co-optation is part of political practice, the rank-and-file are able to exert pressure. Some oil palm organisations are certainly hierarchical, oblivious to democratic procedures and lacking in cohesion. Leaders also reproduce relations of domination. But the leaders'

political power ultimately rests on their members. Farmers continually charge leaders with corruption, though members accept that leaders make a living as ‘managers’ and support them so long as they continue to deliver projects (see Chapter 3). In other words, rank-and-file concede power to others, including the Chiapas administration, but place social limits on its abuse. Consent is accompanied by social pressure.

Political dynamics also explain the different forms of using environmental jargon. In both the study regions, middle-income and poor farmers engaged in oil palm production in the face of heavy environmental criticism from both wealthy cattle ranchers and non-participating poor peasants. Oil palm cultivation, they said, degraded lands and dried rivers. One dramatic claim, that the roots of the palm spread for several hundred metres or even kilometres, could generate tensions between neighbours who feared that their land might be degraded by adjacent oil palm plots. This kind of environmentalism came from several sources: internet sites, particularly those of the alternative media, critiques by conservationists as well as by Catholic activists, including church sermons. The Catholic Church also organised meetings in some indigenous communities. For instance, in La Nueva Unión in the southern Lacandon rainforest, the Church invited a group of European activists who argued that oil palm cultivation was a source of poverty and land degradation. Their critiques discouraged quite a number of farmers from planting oil palm. Once oil palm cultivation proved profitable and the lands were not degraded, an indigenous oil palm grower stated:

People [in the community] said: maybe these people [the European activists] were sent by their governments, so that people, people here do not work, so that people here become consumers, ... so people consume in order that they [people from other countries] benefit because they now sell their product. (Interview, 1 September 2012)

The fact that the assertions of the European activists proved false demonstrated to this indigenous producer that environmental arguments could disguise economic motivations. More generally environmental positions were recognised locally as being loaded with political and economic interests. This was evident in López Mateos in the southern Lacandon region where the *ejido* assembly banned the sale of land for oil palm production for environmental reasons but allowed land sales for cattle pastures, even where the land being used was forested. This inconsistency in the way environmental arguments were translated into local land use politics seemed linked to economic concerns. Accumulation in this *ejido* depended heavily on cattle production and oil palm cultivation was perceived as an economic and environmental threat by key *ejido* leaders. While the data presented do not allow us to draw conclusions about the motives underlying the use of environmental critiques, they do reveal a locally shared sense of unease with the economic changes brought about by oil palm expansion. Hence, different local interpretations of these changes co-exist, depending on how production relations are understood.

Rural organisations echoed to some extent the government narratives on the beneficial environmental effects of oil palm cultivation. As a permanent crop, oil palm was presented as an alternative to shifting cultivation (the latter seen as synonymous with deforestation and burning). Interestingly, many farmers used similar perspectives themselves when interviewed. During our fieldwork many farmers referred to oil palm cultivation as ‘reforestation’ and spoke of how oil palm ‘kicks out oxygen’ or ‘captures water’. As oil palm was planted on pasture land, this reinforced environmental narratives, which depicted oil palm as resembling forests. This was particularly the case for the southern Lacandon region, historically subjected to intensive environmental pressure²² by government agencies. Some oil palm growers expressed concern about environmental degradation and the changes in the region brought about by agriculture. Other oil palm growers, however, seemingly used environmentalist narratives to protect their moral standing in the face of environmental criticisms. And finally, some seemed to copy official discourses on the beneficial environmental impact of biofuel crops for political convenience. For instance, in Tulijá, an indigenous community in northeast Chiapas, the governor received a signed community agreement in which peasants promised to change their crop from maize to oil palm. ‘*We are convinced of taking care of nature, as our forefathers did*’, argued the community leaders (Gobierno del Estado 2009). Environmental discourses were indeed strongly shaped by political practices.

Rural politics and the relationship with the government explain the significant rural support for oil palm expansion. Rural organisations have been the preferred partner of the Mexican state for resource redistribution (Mackinlay and Otero 2004). While changes disquieted some who resisted planting oil palm because of environmental degradation, large numbers in communities enrolled in oil palm cultivation. Beyond resistance, we also found a pragmatic adherence to the government’s oil palm modernisation project that was also justified by a green narrative. The relation with the state shaped local environmental narratives (Trench 2008). By omitting to consider the specific role played by the state, the ‘green grabbing’ or ‘environmentalism of the poor’ thesis fail to grasp the complexity of peasant-state relations and how these may influence environmentalism. Rural people can neither be perceived as easily dominated, ruled by an inescapable environmentality, nor as actors always defending their sustainable livelihoods vis-à-vis the state. While environmental discourses were dominant, and shared by all actors (Cano Castellanos 2014), they were accommodated to different purposes, concerns and political practices. This brings us to the question of how global environmental narratives have been adapted to fit more specific local political contexts.

²² Environmental pressure dates back to the period immediately after land distribution. For instance, in 1989, the Chiapas governor, Patrocinio González, introduced a deforestation ban. State interventions also often prioritised productive activities considered compatible with rainforest conservation, such as cocoa or vanilla production.

The wide gap between environmental NGOs and peasants

Environmentalists attempt to shape resource use by contesting existing perceptions of nature or by pressing to ban or change certain practices. This section explores how the interventions of environmental NGOs in Chiapas and of environmentalists within the state, interacted with the objectives of rural organisations. The two most outspoken, though small, environmental NGOs were *Maderas del Pueblo del Sureste* and *Otros Mundos Chiapas*²³. Both *Maderas* and *Otros Mundos* shared a common anti-capitalist stance according to which peasant dependence on markets and transnational companies results in impoverishment, environmental degradation and dispossession. Both contested, albeit in different languages, the way the Chiapas government conceived nature. *Otros Mundos* drew on a scientific narrative (e.g. CO₂ emissions, water pollution, etc.) to distance oil palm from nature (Castro-Soto 2009) whereas *Maderas* relied more on a political economy discourse.

In 2009, *Maderas del Pueblo* published a leaflet in everyday language pointing out the dangers of oil palm production (García 2009a). The text is quite subtle when describing the local situation but superficial when describing the wider context. The first part of the leaflet pits maize against oil palm production and includes a conversation between a young coastal farmer who is enthusiastic about oil palm, a curious indigenous woman, and a sceptical old man. The young farmer casually rejects maize, arguing that palm oil is such a ‘*negociazo*’ (sweet deal). He represents the desire for material gain, depicted as the concern of many young people. This view is carefully balanced against that of the old farmer who conceives of modernity and development as destructive for nature and profitable only for the rich. To temper the youngster’s excitement, the old man recalls the coffee crisis. The leaflet captures quite well the tensions and conflicts created by oil palm modernisation programmes, pitting traditional agriculture, including indigenous, against modernity. Herbicides are presented as both destructive and labour saving. When turning to address wider issues, however, the language becomes more simplistic, raising rhetorical questions that equate oil palm with deforestation, poverty, human rights abuses and land grabbing. These questions originate from an earlier lengthy report on biofuels that reflects *Maderas*’s position (Arellano Nucamendi and García 2009). This 2009 report conceptualises oil palm expansion and agrofuels as yet another capitalist project leading to land privatisation, pollution and poverty (see, also García 2009b). It emphasises how traditional knowledge can hamper such developments. The

²³ Both *Otros Mundos Chiapas* and *Maderas del Pueblo del Sureste* are two small Chiapas-based NGOs, which often rely on European funding. While *Otros Mundos* is part of Friends of the Earth, *Maderas del Pueblo del Sureste* arose from the division of a larger organisation due to internal conflicts. There are many other environmental NGOs active in Chiapas but most did not lobby against oil palm or intervene in any way to modify the process of oil palm expansion.

report insists on self-sufficient communities and refers to concepts such as food sovereignty, which circulate in the international arena amongst transnational agrarian organisations such as *Via Campesina*. How does the general picture, which imagines rural people as mere victims of an external world, relate to farmers' views and activities?

A closer look at why farmers do what they do shows that there is often a wide ideological gap between rural people and green activists. Oil palm changed to some extent the livelihood opportunities of poor farmers. Emilio, an indigenous peasant in La Nueva Unión, explained the change:

I want clothes, shoes and education for my son; but there is no way of getting it because maize and beans do not have a [market] price. To eat yes, but in the economy it does not work. Therefore we planted rubber and oil palm, to change [our situation]. And yes, something is gained, you can dominate the [economic] need. (Interview, 5 September 2012, La Nueva Unión)

Given high returns per hectare in 2012, oil palm cultivation benefited those smallholders who took it up. In coastal Chiapas some farmers planted oil palms within the protected mangroves of the *Encrucijada* Biosphere Reserve, not as a survival strategy but because it had the best soil: *'there is the mangrove, and in the middle there is the island; in between we plant. The advantage is that the soil is black and it holds the moisture for at least three months after the rains stop'* (interview with smallholder farmer, 9 November 2011, Palmarcito). According to a government official, unpermitted planting in both buffer and nucleus regions amounted to 263 hectares (interview CONANP²⁴ official, 9 November 2011, Acapetahua). Oil palm cultivation opened up opportunities for farmers, as well as for the private sector, during seasonal floods as the crop thrives in humid soils. Interviews with oil palm farmers showed their demands to be more mundane than resisting capitalism: technical support, subsidies, higher prices and better commercial agreements. Peasants were willing partners in state modernisation programmes thereby widening the gap between them and environmental NGOs.

In Soconusco, the *Centro de Agroecología San Francisco de Asís* (CASFA), an organisation focused on agroforestry and organic production, preferred to work with 'old-fashioned' farmers who did not participate in oil palm expansion. They did so because the level of economic support they provided could not compete with government programmes (interview, 11 November 2011, Tapachula). A troubled environmentalist from *Otros Mundos* highlighted the dominance of the government's environmental productivist discourse, recalling a meeting with agrarian organisations in the Lacandon heartlands:

²⁴ National Commission for Natural Protected Areas (CONANP in Spanish).

The people at the meeting were against mining, they had learnt the discourse well, and when we spoke about palm it ended up that some organisations copied the governor's discourse, the Productive Reconversion, the green alternative... [...]. I think it is a lack of information. Also, in many cases it is about patronage relationships with the government in which the leader of the organisation goes to CDI [National Commission for Indigenous Rights, in its Spanish acronym] or to another position in the government. Finally, they receive lots of projects, and well, you don't bite the hand that feeds you. (Interview, 3 October 2011, San Cristóbal de Las Casas)

The political system in place, with its close relationship between rural organisations and the state, leaves environmental NGOs with little room for manoeuvre. Without rural allies, these organisations cannot succeed in advancing their claims and views. Yet the demands of the environmental NGOs have little overlap with the demands and strategies pursued by many peasants and farmers' organisations. However, the ideological gap between farmer organisations and most environmentalists does not necessarily preclude alliances (see, for example, Conklin and Graham 1995; Doane 2007). In this context, environmentalists within the government were in a better position to advance environmental concerns.

'Environmentalists within the government' refer in particular to those officials active in the Mesoamerican Biological Corridor – Mexico (CBMM)²⁵ belonging to the federal government. Their intervention was uneven. While both Soconusco and the southern Lacandon region are priority regions for the Secretary of the Environment (SEMARNAP in Spanish), in practice CBMM and other environmentalists have targeted the Lacandon rainforest. Large rainforest areas still exist as the area was only recently colonised at a time when environmental concerns first entered public policy debates. Continuous media attention and the emergence of agro-ecological discourses following the *Zapatista* uprising have constituted the region as the last Mexican paradise to be preserved. This environmental concern for the Lacandon region contrasts with the scant attention paid to the Chiapas coastal wetlands. It is in this context that CBMM concentrated on the southern Lacandon region where opportunities for environmental conservation were greater.

CBMM, originally the product of conservationists, was instrumental in shifting the focus from protected areas for nature conservation to a territorial approach that considers multiple land uses, including agriculture. While the emphasis on agricultural production was at odds with the views of some important conservationists, CBMM staff justified their position as follows:

The question is to recognise that there are needs in the territory. This is, for instance, the case with cattle. We as conservationists cannot deny these needs. It happened that with cattle, there was neither support nor regulation. But everybody went for it, as it was the only thing that made [money]. (Interview, 4 October 2011, San Cristóbal de Las Casas)

²⁵ While CBMM emerged as part of the Puebla-Panama plan, it was later incorporated as the General Coordination for Corridors and Biological Resources into the National Commission for Biodiversity Knowledge and Use (CONABIO in Spanish).

CBMM explicitly attempted to modify resource use in agriculture, considering agro-ecology to be the key tool. They did this by securing the position of ‘technical agent’ for both agriculture and forestry secretaries (SAGARPA and CONAFOR, respectively) and thus being responsible for the distribution of state resources. They then requested groups interested in receiving SAGARPA support to sign agreements on zero deforestation, reduced burning and reduced agrochemical usage. This, and the reduction of agrochemical inputs in particular which many farmers benefiting from CBMM support regarded as unfeasible, inevitably created tensions (interviews with farmers, July-August 2012, southern Lacandon region). Oil palm growers were however unaffected as they received state support directly from SAGARPA. In this context, CBMM staff could not shape resource use within oil palm production but could exert a degree of control over it at the political level. The CBMM mandate for biodiversity conservation granted them some power over other institutions active in the region. For instance, SAGARPA sought environmental approval for their Humid Tropic Programme from CBMM and SEMARNAP, who both ignored the request. This granted what CBMM staff called ‘*a little power*’. ‘*If CONABIO [i.e., CBMM] says that they [farmers] are deforesting, that oil palm is destroying biodiversity, then SAGARPA has a problem*’ (interview with a CBMM staff member, 22 August 2012, San Cristóbal de Las Casas). Such soft power enabled environmentalists within the government to exert some pressure on government agencies promoting oil palm and indirectly shape its expansion to some extent²⁶.

In short, environmentalists within the state were found to be important but not in the sense predicted by the green grabbing thesis (i.e., founding environmental governance on neoliberal market mechanisms) (Fairhead et al. 2012). They intervened in ways that sometimes went against accumulation, as when advocating agro-ecological practices or indirectly constraining support for oil palm planting. Personnel in CBMM considered oil palm cultivation as an environmental threat and reiterated views that held this crop responsible for deforestation and land degradation. However, they recognised the need to adapt to some extent to on-going accumulation processes that were driving farmers’ decisions on land use change in the region. By contrast, more radical green organisations, such as *Maderas* and *Otros Mundos*, were unable to form coalitions at the local level with the result that their critical environmental narratives, which are similar to those of large environmental

²⁶ An example is a small farmer group pioneering oil palm cultivation in the region: ‘*There were lots of obstacles. At slash and burning time, the [Chiapas] government did not want to approve the project because the forest would be devastated*’, explained a leader of this oil palm organisation (interview, 18 October 2011, Playón de la Gloria). In the absence of regulation over land use but under environmental pressure, the organisation self-regulated land use by limiting planting to degraded pastures and secondary vegetation patches. Government agencies accepted this as a *de facto* rule. As a result the organisation was finally able to access Chiapas government support for oil palm.

organisations, found little local resonance. As shown in the previous section, the success of certain environmental discourses is related to the effectiveness of political practices.

Conclusions

Rural interventions in support of smallholders in oil palm production appear paradoxical. Environmental organisations and other civil society actors often hold oil palm cultivation in particular and biofuels in general as responsible for rural dispossession and environmental destruction. Involving smallholders in the expansion of this crop would thereby seem to go against their interest. We studied this issue in Chiapas, where a state programme for oil palm planting has left land ownership largely intact, although it has deepened farmers' integration into markets, especially through credit. We showed how in the absence of dispossession, poor and middle-income farmers supported an oil palm programme that was perceived to be economically beneficial to them rather than to wealthy private sector producers. Smallholders' access to land remained relatively secure for three reasons. First, state support was biased in favour of social sector producers through the preferential distribution of free oil palm seedlings and economic support. Second, the existence of *ejido* land tenure constrained dispossession by capital and ensured favourable conditions for smallholder participation in the oil palm boom. And third, the rejection of and disaffection with oil palm by cattle ranchers, a key economic power group in Chiapas, limited the emergence of large-scale plantations on private land. In the absence of enclosure and land concentration, farmers pressed for improved terms of participation in oil palm expansion rather than resistance. Small farmers considered oil palm cultivation as the road to betterment compared to the meagre benefits offered by previous production systems, and willingly participated despite their awareness of environmental critiques. Our analysis suggests that a green agrarian question that focuses exclusively on enclosure as the main driving force behind agrarian social relationships is unable to explain agrarian dynamics. This may have consequences for interpretations of contestation and the multiple uses of environmental narratives.

Dispossession remains central to environmental and social critiques of oil palm cultivation as well as to such influential theses as 'environmentalism of the poor' and 'green grabbing'. This focus, in our opinion, limits our understanding of environmental conflicts. The 'environmentalism of the poor' thesis assigns a central role to the local formulation of environmentalist narratives in building resistance to enclosure. In the 'green grabbing' thesis, the focus is on the use made of environmental discourses by powerful actors to justify dispossession. These perspectives have certainly extended our understanding of the role of environmental politics in

resource access. The arguments, however, lose force where enclosure does not take place. In the absence of land grabbing, farmers and their organisations may opt to engage in oil palm expansion rather than resist it. This has important theoretical implications. In the absence of enclosure, the articulation of environmentalisms is more complex as processes other than resource access become significant. This is well illustrated by the cacophony of environmentalist voices arising from oil palm expansion in Chiapas: government officials, technicians, NGO workers and farmers adopted green vocabularies for multiple reasons. For instance, critical green narratives were drawn on not only by poor indigenous farmers, as would be expected by the 'environmentalism of the poor' thesis, but also, unexpectedly, by wealthy cattle ranchers and even high-input sugarcane producers on the Chiapas coast. Differently from the 'green grabbing' thesis, we found 'environmentalists within the state' aiming to curb the environmental degradation associated with oil palm expansion without dispossessing peasants. It is not dispossession but the particular role of the state, the social relations of production and wider market changes that are more important for understanding the variety of environmental discourses in play as a result of oil palm expansion in Chiapas. Only by developing this perspective is it possible to understand why specific actors employ a particular form of environmentalism.

Large environmental organisations have been extremely effective in stirring up a debate on the environmental impacts of oil palm cultivation (Gilbert 2012; Koh and Wilcove 2007). Oil palm has become synonymous with deforestation, poverty and even labour abuse, particularly in Southeast Asia. Their campaigns have forced companies purchasing palm oil to monitor their suppliers, often through certification (Pye 2010). This popular environmental narrative, however, largely portrays smallholders as victims. Such a view, which implicitly links smallholders with sustainability, cannot explain, for instance, rural mobilisation in favour of cheaper pesticides (Bernstein 2010) or indigenous communities bidding for nuclear dumping sites (Ishiyama 2003). These cases indicate a greater complexity in rural engagements with capitalism and the environment. The overemphasis on dispossession in both theory and in environmental campaigns against the spread of palm oil limits our understanding of the material and political responses of vast numbers of peasants to new green interventions. The neglect of the significant role played by smallholders also weakens attempts to reduce the environmental impacts of oil palm cultivation.

Chapter 2.

Smallholder Incorporation And The Limits Of Agroecology In Chiapas²⁷

Paradigms for analysing oil palm expansion in many parts of Latin America can be divided into a conventional development approach and agroecology. Within the conventional approach, the solution to poverty is seen to lie in technological modernisation and increased participation of smallholders in markets (AGRA 2008; CGIAR 2013; World Bank 2008) – a perspective that fits well with the current emphasis on smallholder incorporation into oil palm production in Latin America. In contrast, agroecology sees peasant knowledge, ecology and social justice as being central to rural development. According to these premises, oil palm is considered to be a cause of rather than a solution to rural poverty. Smallholders or ‘peasants’ who participate in planting new industrial crops are held to be adversely incorporated into markets (McMichael 2012; Rosset and Altieri 1997) and to become over reliant on external technology such as agrochemicals (Rosset and Martínez-Torres 2012). In Chiapas oil palm, the most rapidly expanding crop between 2003 and 2013 (SIAP-SAGARPA 2015), has proved very popular with smallholders. Such an expansion does not fit well with an agroecology approach that upholds traditional production systems as the preferred development alternative (e.g. Perfecto et al. 2009; Toledo 2000). This study analyses the circumstances and motives behind the success of oil palm in Chiapas and attempts to derive lessons for the agroecological approach adopted by many civil society organisations opposing oil palm cultivation in Latin America.

Local actors and organisations who promote agroecology in Chiapas often explain the smallholders’ shift to oil palm as arising from manipulation and imposition. For instance, a leader from UNORCA, a member organisation of *Via Campesina*, stated at a forum held in Chiapas:

²⁷ This chapter was submitted to the Journal of Agrarian Change as Castellanos-Navarrete, A. and Jansen, K. Is oil palm expansion a challenge to agroecology? Smallholders practising industrial farming in Mexico.

[...] these small producers are not guilty of making the wrong decision; instead, they are the victims of the actual system imposed upon them [...] They have been manipulated; they feel forced to use their land to produce those *damned fuels* [in the sense of oil palm as a biofuel crop]'. (Ríos Ramírez 2008; our emphasis)

This quote reflects the view of smallholders as victims of systemic imposition. Likewise, a report by the National Biodiversity Commission in Mexico frames oil palm cultivation in the Lacandon rainforest as being against the interests of smallholder farmers and assumes local producers have been deceived (CONABIO 2012, 34). Surprisingly scholars and practitioners within the agroecological field, who normally see smallholders as actively shaping production systems, seem to grant them little agency in the case of agro-industrialisation through oil palm planting²⁸. In this chapter, we discuss how the current process of agrarian change in Chiapas, characterised by significant smallholder participation in oil palm expansion, presents a challenge to existing agroecological views.

It is timely to pay attention to the implications of oil palm expansion in Chiapas for agroecology as this approach has become a powerful alternative paradigm for agricultural development. Recently, there has been a shift within agroecology from an approach that is interdisciplinary, recommendation-oriented and focused on improving agricultural production, to one that is transdisciplinary (integrating different scientific disciplines but also integrating other types of knowledge systems, such as indigenous knowledge), participatory and politically engaged (Chappell et al. 2013; Méndez et al. 2013). This shift reflects a change in focus from an agroecology that aims to bring about 'relatively small changes in practices within dominant production systems' (Tomich et al. 2011) to one that seeks to transform agro-food systems (Méndez et al. 2013; Ruiz Rosado 2006). Within the latter focus proposals have emerged to reduce input dependency and attain low to zero external input agriculture, to incentivise local food markets and promote a rights-based agenda for rural development, often articulated through the concept of food sovereignty (Altieri and Toledo 2011; de Schutter 2010; Ferguson and Morales 2010; McMichael 2008). We think that a transformative agroecology could be a valuable alternative to the unwarranted technological and market optimism of conventional development paradigms provided it goes beyond some simplifying oppositions, such as that between agro-industrial and traditional or local farming. We argue that agroecology has some conceptual problems given its excessive reliance on systems analysis perspectives.

Systems analysis has proved influential in agroecology (Astier et al. 2012; Toledo 1990), being drawn on to understand ecological processes in crop production (Castellanos-Navarrete et al. 2012; Castellanos-Navarrete et al. 2015;

²⁸ Agro-industrialisation refers here to the employment of inputs and new standardised, mostly scientific farming techniques, and to the production of crops that are processed by agroindustry.

Pulleman et al. 2012; Tiftonell 2014) as well as to study the detailed ecological knowledge of smallholders. The systems perspective is, however, less appropriate for conceptualising social change (Gonzalez de Molina 2013; Jansen 2009). Our analysis of the shift of smallholders to oil palm production follows the field of critical agrarian studies in viewing rural producers as historical subjects enmeshed in complex, and often far-reaching, social relations. Such an approach has proved particularly fruitful for capturing the complexity of agrarian change and its unexpected outcomes. For instance, Worby (1995) shows how historical transformations in communal labour institutions served, surprisingly, as the basis for the adoption of high-input cotton production by smallholders in Zimbabwe, and Friedmann (1978) explains how family farming displaced large-scale capitalist plantations across several countries during the emergence of the globalised wheat market in the nineteenth-century. In our analysis of oil palm expansion from an agrarian change perspective, we pay particular attention to the role of the state (Vergara-Camus 2009; Wolford et al. 2013), to ideological considerations (Akram-Lodhi and Kay 2010b; Li 2002) and to social differentiation, partly regulated through land tenure regimes (Gray and Dowd-Urbe 2013; Isakson 2009; Scoones et al. 2012).

The next section presents the two study regions and the research methods. Subsequently, we analyse who has planted oil palm in Chiapas and what types of producer are involved in oil palm production. We analyse how the state has shaped smallholder participation in the oil palm sector and assess the impact of market relations on participating smallholders. We also consider the knowledge and subjective outlook of oil palm producers. This is followed by a discussion of four challenges that oil palm expansion poses for current thinking in agroecology. We conclude by calling for a better understanding of smallholders' willingness to engage in industrial farming and its practical implications for agroecology.

Research methods

We conducted 108 semi-structured interviews with government officials, private sector informants, rural workers, smallholders and their representatives in the two most important oil palm regions in Chiapas: coastal Soconusco (Huixtla and Villa Comaltitlán municipalities) and the southern Lacandon rainforest (Benemérito de las Américas and Marqués de Comillas municipalities). We also recorded informal conversations and observations over a 13 months' period of fieldwork (2012-2013). We carried out a random survey of 250 oil palm producers. Survey questions focused on oil palm production (including planting area, density, intercropping practices and estimated inputs such as fertilisers, herbicides and fuel) and farm characteristics before and after conversion to oil palm (including farm size, cattle ownership, land

use and main income sources). Quantitative survey data were analysed through descriptive statistics while qualitative data were codified by theme and responses compared by type of actor (Saldaña 2012).

We classified producers by private and social sectors. The 'private sector' refers to companies and investors (wealthy individuals who entered a particular region with the sole purpose of producing oil palm), whereas the 'social sector' refers to producers in *ejidos*: the so-called *ejidatarios*. *Ejidos* in Mexico are a land tenure form in which farmers have restricted rights to sell and rent. In many ways *ejidatarios* correspond to smallholders as conceptualised by agroecology. We categorised social sector producers according to social class and to market orientation prior to oil palm cultivation in order to pinpoint the type of smallholder who shifted to oil palm production. Farmers were classified as rich, middle and poor according to land access and main income source including the type of labour sold. We also analytically differentiated farms according to market orientation. Farms were classified as 'market-oriented' when more than 50% of their land was devoted to pasture and/or cash crops, and as 'subsistence-oriented' when more than 50% of their land was dedicated to maize, non-agricultural land uses or rented out as pasture. Maize was considered a subsistence crop given its predominance in family consumption and its low market price. Only farms with more than 15 hectares of maize were considered to be market-oriented. While land use is not a wholly reliable indicator of market integration, it was the most feasible research strategy in the context of our survey.

Who planted oil palm in Chiapas?

The characterisation of different farm types helps to illuminate who planted oil palm in Chiapas. Private sector involvement is composed of companies and investors. In Soconusco, companies expanded where private sector land was available for purchase. Companies bought on average 486 hectares of land with 436 hectares being later planted with oil palm (Table 3). Private sector mills²⁹ established several medium-size plantations to ensure at least part of their supply (Interview with processing mill manager, 9 November 2011, *Ejido Barrio Nuevo*). In the southern Lacandon rainforest, a small number of investors expanded onto *ejido* lands. Investors purchased on average 272 hectares of land planting 117 hectares of oil palm. Their expansion was in some cases limited by *ejido* agreements, which prohibit land transactions with investors, as well as by the risks posed by local crime networks (see Chapter 1).

²⁹ Mills process the fruits of the oil palm into crude palm oil. Further refinement is carried out by refineries outside Chiapas.

Within the social sector there were clear differences between *ejidatarios* in Soconusco and those in the southern Lacandon rainforest. In Soconusco, *ejidatarios* who shifted to oil palm held on average 9.8 hectares of land. Prior to oil palm participation, poor farmers lived from maize, cash crops and wage labour. Poor market-oriented families with an average of 3.6 hectares of land devoted 73% of their land to cash crops (Table 3), particularly bananas. Middle-income and rich farmers had sufficient land for cattle and in, some cases, high-input sugarcane production. Prior to their involvement in oil palm, one third of both poor and middle-income families obtained their main income off farm, by selling their labour, petty trading or fishing. In the southern Lacandon rainforest, rural producers who shifted to oil palm had on average 42.8 hectares of land. Land access amongst *ejidatarios* varied greatly, sometimes by as much as 25 fold between the poorest and richest. Before turning to oil palm, poor subsistence farmers in the southern Lacandon rainforest depended more on wage labour than on maize (Table 3). Market-oriented farms relied largely on cattle with very little involvement in cash crops. Cattle production was basically extensive with those who accumulated more land accruing more profits.

Differences in the social sector before oil palm cultivation were partly related to the distinct agrarian histories of the two study regions. Soconusco opened up to agriculture in the nineteenth-century when development postulates considered foreign capital to be the key to development. The state offered advantageous conditions for agrarian capital in Soconusco leading to the emergence of large-scale plantations (García de León 1997). The situation changed during the Cardenas presidency (1936-1940) when agrarian policies emphasised land redistribution to landless peasants (Reyes Ramos 1992). More recently, population growth has led to land scarcity and land fragmentation in *ejidos*, with off-farm income becoming important for many *ejidatarios* (Table 3). In the southern Lacandon rainforest land distribution took place much later, in the 1970s, and was geared towards peasants (de Vos 2002). The combination of initial economic differences between settlers and differential land distribution in the region (i.e., 20 hectares in *ejidos* and 50 hectares in new population centres) led to incipient land concentration. Intervention by the Mexican government also resulted in historical differences between the two study regions in their orientation to markets. The government provided incentives for market integration in Soconusco from early on (Fletes Ocón 2009), thereby explaining the current widespread cash crop planting by *ejidatarios*. By contrast, in the southern Lacandon rainforest, producers lacked reliable transport routes to markets. Even today, some communities do not have access to year round passable roads. In these conditions cattle, which can be more easily transported along paths and dirt roads, even during the rainy season, became an alternative.

Social sector producers seeking betterment faced different obstacles in each region. In Soconusco it was lack of access to land; in the southern Lacandon rainforest lack of capital and labour were more common. In both cases, poor families had to work for richer farmers, engage in petty trade or, in emergencies sell basic assets such as land to procure cash. Wage labour was particularly important for the reproduction of poor farmers (Table 3). For these *ejidatarios*, the shift to oil palm meant an improvement in their livelihoods as voiced by a *Zoque* peasant from the southern Lacandon rainforest:

The change is that we work for ourselves now. My body never had rest before. But now with things changing I am happy with my work. When you work for someone else you have to come at the time he wants. Now if the sun is hot you can go and it is ok: we are our own bosses. I noticed a lot of change. A hard life has ended. I feel it is a bit better now. (Interview with a producer categorised as 'poor-subsistence' before oil palm cultivation, 1 September 2012, La Nueva Unión)

For this producer, oil palm provided an exit strategy from labour exploitation by richer neighbours. Similar views were expressed in Soconusco:

When the [oil] palm came, we got away from the wage slavery, we are now '*patroncitos*' (small bosses)... We used to earn 40, 50 pesos, for cleaning pastures with machetes, for weeding; some jobs that the rich had; others used to leave [migrate]. When the palm came, no more. This was a change that [oil] palm made. (Interview with a 'poor market-oriented' producer, 7 April 2013, Xochicalco Nuevo)

Oil palm secured the reproduction of these farmers more readily than wage labour or migration.

Oil palm also offered opportunities for *ejidatarios* living off their own farms. The life of maize producers, for example, became increasingly difficult when prices fell after neoliberal reforms and the North American Free Trade Agreements (Yunez-Naude 2003). Under these conditions, some *ejidatarios* shifted to oil palm. While many oil palm producers still produce some maize, its economic importance is negligible when compared to oil palm (Table 4). Among *ejidatarios*, those who were cattle owners and sugarcane producers were probably in the best economic position to shift to oil palm.

Cattle owners, especially those with sufficient land, could rapidly access capital by selling some animals. Sugarcane producers had a profitable crop and some advantageous economic conditions such as the right to a pension. Some of these producers had high-paid jobs or profitable off-farm income activities, such as cattle trading. Many cattle owners in the southern Lacandon rainforest shifted to oil palm as soil quality had deteriorated for cattle production (Castellanos-Navarrete 2013). Sugarcane producers were highly dependent on a single mill that exercised significant control over production processes, thereby reducing profit margins for growers. Some sugarcane producers considered oil palm to be more profitable as various mills, not one, competed for their produce. In short, the reasons for shifting to oil palm varied widely.

Table 3. Rural producers by type before their shift to oil palm

Types	Average farm size		Average cattle heads (nr.)	Main income source				Average farm surface					
	n	(ha)		On-farm income source		Off-farm income source		Maize Pasture (%)	Other (% farms)	Maize Pasture (%)	Cash crops (%)		
				Maize (% farms)	Cattle (% farms)	Cash crops (% farms)	Non-skilled ^a (% farms)					Semi-skilled (% farms)	Skilled (% farms)
Soconusco													
<i>Social sector</i>													
Poor													
Subsistence-oriented	20	4.8	0	45	0	20	25	0	0	10	47	0	5
Market-oriented	28	3.6	1	21	0	43	18	0	0	18	7	19	73
Middle													
Subsistence-oriented	21	8.8	12	14	29	19	5	24	0	10	35	28	10
Market-oriented	22	10.1	13	14	27	32	0	9	0	18	2	39	52
Rich													
Subsistence-oriented	8	27.1	16	13	25	38	0	0	13	13	6	21	11
Market-oriented	20	18.4	25	5	50	40	0	0	0	5	5	45	45
<i>Private sector</i>	6	486.3	530	0	33	50	0	0	0	17	0	49	50
Southern Lacandon rainforest													
<i>Social sector</i>													
Poor													
Subsistence-oriented	24	16.9	1	33	0	0	67	0	0	0	17	5	4
Market-oriented	12	18.1	7	25	33	8	33	0	0	0	13	58	15
Middle													
Subsistence-oriented	22	28.0	9	18	23	5	14	14	0	27	8	28	4
Market-oriented	25	24.4	20	8	80	4	0	8	0	0	10	69	6
Rich													
Subsistence-oriented	18	66.7	43	6	94	0	0	0	0	0	6	36	3
Market-oriented	20	97.4	73	10	75	15	0	0	0	0	9	64	5
<i>Private sector</i>	4	272.4	300	0	50	25	0	0	25	0	0	40	0

Source: Survey of 250 oil palm growers in the two study regions.

Note: ^a Wage labour.

Table 4. Rural producers by type after their shift to oil palm

Types	Average farm size		Average cattle heads		Main income source				Average farm surface							
	n	(ha)	(nr.)	(% farms)	On-farm income source		Off-farm income source		Oil palm (%)	Maize (%)	Pasture (%)	Cash crops (%)				
					Oil palm (%)	Maize (%)	Cattle (%)	Cash crops (%)					Non skilled ^a (%)	Semi-skilled (%)	Skilled (%)	Other (%)
Soconusco																
<i>Social sector</i>																
Poor																
Subsistence-oriented	20	6.0	0	68	5	0	5	16	2	0	0	5	75	11	1	7
Market-oriented	28	3.6	0	100	0	0	0	0	0	0	0	0	89	1	1	8
Middle																
Subsistence-oriented	21	8.8	2	83	0	0	0	0	11	0	0	6	72	1	3	11
Market-oriented	22	10.0	2	58	0	5	21	5	11	0	0	0	59	1	11	25
Rich																
Subsistence-oriented	8	26.2	6	40	0	0	40	0	0	20	0	0	39	9	8	22
Market-oriented	20	18.9	3	68	0	0	32	0	0	0	0	0	48	4	15	29
<i>Private sector</i>	6	486.3	350	50	0	17	17	0	0	0	0	17	92	0	8	0
Southern Lacandon rainforest																
<i>Social sector</i>																
Poor																
Subsistence-oriented	24	17.0	0	90	3	0	0	7	0	0	0	0	44	9	2	7
Market-oriented	12	18.1	1	76	0	0	12	6	0	0	0	6	58	6	8	19
Middle																
Subsistence-oriented	22	30.0	2	83	0	0	0	0	11	0	0	6	43	5	15	9
Market-oriented	25	25.1	3	100	0	0	0	0	0	0	0	0	44	6	23	9
Rich																
Subsistence-oriented	18	67.8	14	83	0	6	6	0	0	0	0	6	31	5	16	5
Market-oriented	20	102.1	27	75	5	15	5	0	0	0	0	0	28	7	35	15
<i>Private sector</i>	4	272.4	250	50	0	25	0	0	0	0	0	25	62	0	18	0

Source: Survey of 250 oil palm growers in the two study regions.

Note: ^a Wage labour.

Contrary to the commonly held view of oil palm as being synonymous with large-scale farming (e.g. GRAIN 2006) in Chiapas we found a more complex process. The social sector, constituted by a diverse group of *ejidatarios* in terms of reproduction strategies and regional production conditions, is a significant actor in oil palm production. To analyse the diversity within the social sector we distinguished between poor, middle, and rich smallholders, and between those with a subsistence outlook as compared to a market orientation. We used these categories, together with a regional comparison, to uncover the diversity of reasons underlying the shift to oil palm. Prior to oil palm, many *ejidatarios* lived from selling crops or cattle while the poor sold their labour to survive. Some *ejidatarios*, such as those in sugarcane production, already made use of hired labour, sometimes in complex labour arrangements resembling plantation work, before they took up oil palm. Our results point to the importance of prior involvement in commodity markets, be it for labour or agricultural products, for many producers who later became oil palm producers. In this sense, the shift to oil palm was for many a shift within the market. However, we do not want to imply that this shift can be understood solely as an outcome of farmers' choices. We have already briefly mentioned the role of the state in agrarian change and the following sections describe in more detail the politics and policies of the Chiapas government regarding oil palm industrialisation.

The role of the state in oil palm expansion

The first oil palm producer in Chiapas, and probably in Mexico as a whole, was a German migrant named Johann Bernstorff. According to his family, the Undersecretary of Agriculture Jesús Patiño Navarrete donated the first oil palm seeds to Johann in 1952 (Interview, 24 May 2013, Finca La Lima). Johann became interested in oil palm and went on to acquire other varieties and in 1957 a Dutch palm oil-processing mill. However, with low prices and little demand for palm oil, Johann based his living on coffee and kept oil palm as a 'hobby'. When in the 1980s the government began to support oil palm, it favoured the social sector rather than large landowners like Bernstorff. Government agronomists established oil palm nurseries in Soconusco, distributed free seedlings, and granted small subsidies and credit to interested *ejidatarios*. State technicians also supervised planting in *ejidos* and occasionally brought in Caterpillar tractors to clear forests. While projects did not specifically rule out the private sector, in practice *ejidatarios* were the most important beneficiaries as confirmed in interviews with local growers. One couple, owners of a large private sector oil palm property, expressed their views on state intervention in the oil palm sector as follows:

'They [the government] supported the *ejidatario* to become an [oil palm] fruit producer', the husband said, 'they also supported them at first to become processors, but it failed [...]. Because the vision of the state has always been to support the social sector [...]. It was always a bit on the left, it has always supported the most...' - the wife then completed her husband's sentence by adding 'the least protected, the most unprotected sectors'. (Interview, 24 May 2013, Villa Comaltitlán)

They were incensed that before their very eyes the government distributed large amounts of oil palm seedlings to nearby communities while they in turn received nothing from the state. Producers in *ejidos* also considered themselves as favoured, as stated by a large *ejido* producer:

I have now 23,000 plants seeded, at 70 pesos each; when the hell do I buy them? Never and it is with government support that we have improved and the peasant has improved, it is not the businessman who has advanced, but the peasants, and for this we have to thank the governments both federal and state level. (Interview, 24 October 2012, Benemérito de las Américas)

Both large landowners and the social sector recognised that *ejidatarios* were more favoured by the government.

The degree of state support to the social sector is well illustrated by government attempts to incorporate the *ejidatarios* into the palm oil agro-industrial chain. In 1985, the National Fruit Commission leased an oil palm processing mill for four years to the Luis Espinosa "El Arenal" community with an option for purchase. The community built the mill and planted oil palm. Interestingly, the *ejidatarios* did not activate the purchase option within the agreed time limit (CONAFRUT 1992). The community probably thought that once established the donation was likely to happen. If this was the case, they were not wrong. In 1992, the Chiapas government bought the mill from the National Fruit Commission³⁰ and passed it on to the community through funding provided by PRONASOL, a poverty alleviation programme (Gobierno del Estado 1992). While mismanagement finally led to the closure of the mill, the delivery of this and a second mill to the social sector in 1993 reflects government determination to support the social sector in agro-industrialisation.

State support to the private sector was of a different nature. The government in Chiapas mainly attracted private companies into oil palm processing without providing assistance for oil palm production. This is well illustrated in the following quote from a mill manager:

This mill started without production. For three years we almost did not have any processing; we suffered quite a lot [...]. It was an arrangement with the government, with commitments from the industrialists and shareholders of the firm [with the government]. (Interview, 21 October 2011, Palenque)

³⁰ At that time, the Commission no longer existed and arrangements were made with those in charge of its liquidation.

Incentives to the private sector in Chiapas typically included land and funding to establish mills, and occasionally support for fruit collection (Interview with a SAGARPA³¹ official, 4 November 2012, Tuxtla Gutiérrez; Fondo Chiapas 2009) but did not extend to incentives for plantations. This policy and the '*arrangement with the government*' probably explain why the company cited above established a mill without fruit supply and did not engage in production beyond a medium-size plantation area around the mill. The Chiapas government has historically appealed to the private sector to set up palm oil mills, promoting Soconusco as a region where fruit was available for processing (Gobierno del Estado 1984, n.d.).

While the government targeted the social sector to be the key beneficiary of state programmes, not all producers in the social sector benefited equally. Programmes that distributed free oil palm seedlings, and granted small subsidies and credit according to area planted favoured *ejidatarios* with greater access to land and capital. The wealthy *ejido* producer cited above who spoke of the importance of government support also pointed out the problems for those lacking capital:

Those that are [economically] broken, they do not make it, because you have to take care of it [the oil palm]. You have to weed it, you have to fertilise it, lots of things [...]. They [the poor producers] can sustain three, four hectares, maybe five, but he has to tie his pants [make an effort] because after planting, he has to go somewhere else to earn, for food [...]. When I started, I did not start on zero, I already had an old truck, a tractor, an old Ford, now I have a new one, I sold two old little Fords that I had and bought a new one. (Interview, 24 October 2012, Benemérito de las Américas)

This quote highlights the processes of social differentiation whereby *ejidatarios* with enough initial resources can expand their production whilst others can barely secure reproduction (see McCarthy 2010 for a similar process in Indonesia). Government support for oil palm cultivation was directed to the social sector but within this sector biased towards those with land and other resources.

In short, the state has played a central role in making the social sector a key actor in oil palm production. The relationship between smallholders, agrarian capital and the state is often a complex one (Cordoba and Jansen 2014) and takes different forms. In Southeast Asia the shift in state policies from developmentalism to neoliberalism created particularly favourable conditions for the private sector in oil palm production alongside increased vulnerability for smallholders (McCarthy and Cramb 2009). Yet, this general trend has been reversed in some special circumstances. In Riau province in Indonesia, a group of socially committed government officials were able to support smallholders in oil palm production after the central government increased the budget for this region in order to counteract separatist political movements (McCarthy et al. 2012). In Chiapas, oil palm expansion has not taken place at the expense of the social sector but on the contrary

³¹ Secretary of Agriculture, Cattle, Rural Development, Fisheries and Food (SAGARPA).

favoured its participation. Although state programmes are biased towards better-off *ejidatarios*, they still permit poor rural families, who had previously lived from selling their labour, to participate in oil palm production. The next section delves into the historical processes that explain why the state supported peasants over other classes in the rural agro-industrialisation of Chiapas.

State support: peasants over landowners

Preferential state support to peasants in Mexico has to be understood in the context of a long tradition of building political power through concessions to large social organisations. Starting with President Lázaro Cárdenas (1934-1940), the government organised peasants, workers and ‘popular masses’ in large organisations, which received state donations in exchange for political support. Peasants became the ‘regime’s favourite sons’ (Warman 1973) under a political mechanism which maintained Cárdenas’ party, the PRI, in power for the next 71 years (1929-2000). While the rural private sector was also organised in state controlled organisations, its position was much weaker than their social sector counterparts (Mackinlay 2004)³². Unlike peasants, landowners were the losers of the 1910 agrarian revolution and their interests were only marginally represented within the government, particularly during the early PRI years. The alliance between peasants and the state was cemented through the agrarian reform (a process that started relatively late in Chiapas). Cárdenas’ ambitious agrarian reform turned 18 million hectares of private property land over to *ejidos* throughout the country (Barnes 2009). Up until the end of the agrarian reform in 1992, private sector opponents of government policies even risked land expropriation. In post-revolutionary Mexico, peasants were the symbol of national identity and social justice.

The historical coalition between peasants and the state explains the position of peasants in the oil palm sector and still leads to tensions between the social and private sector when it comes to accessing government resources. While government support for oil palm production was largely allocated to social sector organisations, several private companies were able to access state resources by forming *Sociedades de Producción Rural*, a legal cooperative form in Mexico. For some *ejidatarios*, even such a low level of state support for the wealthy private sector was unacceptable. The well-mannered Don Chucho³³, a peasant with a past of agrarian activism, stated ‘oil palm is for the poor’ and when ‘the wealthy saw that it was profitable they hugged the big programmes for oil palm’ (Interview, 7 April 2013, Xochicalco Nuevo). The tension between the social and private sectors was most visible in Soconusco given its recent history of agrarian struggles, but many rural families in the southern Lacandon

³² Only cattle ranchers and their *Asociaciones Ganaderas* received preferential treatment given their unequivocal support for the PRI (Mackinlay 2004).

³³ Pseudonym.

rainforest were also wary of investors, remembering their own lack of access to land in the past. Private sector people were often only too well aware of such narratives. A plantation manager from Tapachula recalled a meeting with social sector producers: *'there are people who wanted that [state] support only goes to the social sector. Maestro, I said, the constitution says I am Mexican and I have the right'* (Interview, 2 August 2013, Tapachula). This private sector manager felt it necessary to justify state support for their participation in oil palm production. In the oil palm sector old agrarian struggles have resurfaced in new bottles.

For Don Chucho the aspirations of large landowners were clear: *'If they could, they would kill the people that do not do what they want'* or *'if it were up to the wealthy, they would have us only as workers'*. These quotes are a good reflection of the degree of agrarian tension between peasants and landowners in Soconusco. The agrarian reform by Cárdenas encouraged many landless families to claim land and invade *fincas* (known as *haciendas* in other parts of Latin America) in Soconusco. Don Chucho, a wage labourer in his youth, only gained access to land after many years of struggle. State support for such peasant struggles for land explains how private sector land in this region was reduced from absolute dominance in the nineteenth-century to 44% in 2007 (INEGI 2007a) (see, also, Appendix IV and V). In the 1950s, the agrarian reform shifted from land redistribution to the distribution of unused state lands (Reyes Ramos 1992). This policy resulted in the opening of the agricultural frontier in the southern Lacandon rainforest. The subsequent migration of peasants from regions where land was unavailable to this remote region where they participate in oil palm cultivation reinforced the peasant-state alliance.

Landowners responded to what for them were adverse state policies and political isolation, by launching land claims of their own, sometimes accompanied by violence. For instance, in the 1970s a group of large landowners created the *Mano Negra* (Black Hand) in Villa Comaltitlán – a violent organisation that targeted peasant leaders who mobilised people to occupy land. A landowner and oil palm grower justified this strategy as follows: *'We got organised to defend ourselves. We hired gunmen to frighten the ejidatarios, but we did not kill anybody. The government stood there with their hands in their pockets. We have never had a correct government, they are a bunch of crooks'* (Interview, 27 May 2013, Villa Comaltitlán). Landowners justified the use of violence by referring to a state that failed to intervene to stop land occupations³⁴. Peasants recalled a very different situation, one in which leaders were killed or tortured, sometimes along with their families, because of their struggles for land and for a better life. Given this historical agrarian context, many peasants consider landowners' attempts to access state support for oil palm production to be illegitimate.

³⁴ In some cases landowners were able to derive some state support for land restitution. For instance, the family who owned the first plantation to be planted with oil palm, mustered support from the then governor Absalón Castellanos to reclaim their property invaded in 1986.

As large landowners lost power in Soconusco, they were forced to establish a working relationship with peasants. The same landowner who had joined *Mano Negra* stated:

[...] Now we have an alliance with the people of *ejidos*. I came to break the ice with the *ejidatarios*. I gave candy to children, paid for the boys' schooling. I gave fans to the clinics. Before they said that the landlord gave nothing away, that he was inaccessible, but I changed all that; [...] I changed the relations - to have a shield. (Interview, 27 May 2013, Villa Comaltitlán)

For this large landowner, bad relations with peasants brought the threat of land occupations or even being '*venadeado*' (literally, killed like a deer). Good relations were cultivated as a defence measure, what he called a 'shield'. Without state support, the private sector saw itself increasingly dependent on *ejidatarios*. A plantation manager recognised that '*if the social sector does not obtain support, this [expansion of oil palm] stalls*' (Interview, 2 August 2013, Tapachula). Large producers in Chiapas needed the social sector as otherwise the state would not subsidise the oil palm sector. Given their vulnerability, companies and large landowners had few options but to build alliances with the social sector to secure access to state resources.

Today, the conditions that made peasants a key political force in Mexico (mass organisations, a high level of state intervention, land distribution and the one-party regime) have mostly disappeared. Nevertheless peasants are still a 'son' of the new regime. In the case of our two study regions, the state historically favoured rural families with land first and support for production later, including support to enter oil palm production. For *ejidatarios* in Soconusco and in the southern Lacandon rainforest, past agrarian struggles and post-revolutionary state policies are still a living memory, one which confirms their right to land and state support, and their opposition to claims by corporations and large landowners. *Ejidatarios* do not just welcome state support for oil palm but consider it to be their prerogative. The state thus shapes a process of agrarian change in which the social sector considers state support for agro-industrialisation not only as an opportunity but also as a right.

The 'terms of incorporation' in oil palm production

In agroecology industrial farming is often seen as detrimental to rural families. This raises the question as to why social sector producers should enter oil palm production. The following quote reflects the view of an *ejidatario*, Don Chucho in coastal Chiapas:

We planted the [oil] palm; there was government support. At that moment, we were looking for something helpful in our *ejido*, we considered the different possibilities [at a community meeting] and judged that [oil palm] was our best option. And we were not wrong. (Informal conversation, 4 April 2013, Xochicalco Nuevo)

This quote reflects how this rural community consciously adopted oil palm as an alternative. Don Chucho recalled why they entered oil palm in 1991 and why he still regarded it as a good choice 22 years later. This view does not sit well with a critical agrarian change narrative that sees oil palm as necessarily leading to indebtedness and dependency. It questions the idea that industrial farming is neither economically profitable nor viable for peasants and small rural producers.

The oil palm sector has changed drastically in Chiapas over the course of three decades. Up until 1990, there was only one small processing mill adjoining the first oil palm plantation. The first *ejido* farmers producing oil palm found it very difficult to sell their produce. By 2014, there were eight processing mills in Chiapas: six in Soconusco and two adjacent to the Lacandon rainforest. Mexico's dependency on vegetable oil imports fuelled the development of the oil palm sector (Mexico imported 91% of its total vegetable oil consumption according to Martínez 2010). Palm oil, the most important vegetable oil imported into Mexico between 2003 and 2013 (SIAVI 2014), became increasingly expensive as the commodity boom led to a four-fold price increase between 2000 and 2011 (Index Mundi 2014). Boosting national palm oil production was a way of reducing costs for the food industry. *Ejidatarios* involved in oil palm production now have a number of mills to choose from, particularly in Soconusco. To guarantee supply, mills compete for *ejidatarios'* produce by offering higher prices, farm gate collection and, occasionally, discounted fertilisers. In 2012, average net returns for the social sector were 1,487 US dollars per hectare (Table 5), compared to an average for oil palm of 8,179 and 20,521 US dollars per year in Soconusco and the southern Lacandon rainforest, respectively. Economic returns are lower than those reported for Indonesia (Rist et al. 2010) but still considerable when compared to other crops.

The impact of a crop on rural livelihoods should not be measured by price or economic return alone. Prices can be highly volatile³⁵ and, for example, the type of linkages between smallholders and the processing industry has also to be taken into account. Oil palm only becomes productive after three years during which there are significant expenses and once harvested the produce must be processed within 48 hours. Because of these characteristics, the production of oil palm has been associated with producers' economic vulnerability. Smallholders may be tied to a single company in a long-term contract in order to ensure the rapid sale of their produce and, especially, to access loans to cover initial production costs. In cases of harvest failure or market changes, producers may be unable to pay back their loans and thus become heavily indebted or even dispossessed of their land. This was not so common in Chiapas where contracts and loans, binding producers to mills, only played a marginal role. State support, especially the provision of free oil palm seedlings and credit, permitted most smallholders to enter oil palm

³⁵ 2012 was an exceptionally good year in terms of prices. In 2014 palm oil prices fell by 21% (Index Mundi 2015).

production as independent growers³⁶ and to sell their fruit to the highest bidder. Mills provided agrochemicals on credit but avoided excessive indebtedness as they could not legally seize *ejido* land should the borrower default (see Chapter 1). Under these circumstances, the public sector provided most of the credit to *ejidatarios* in oil palm production, often to organisations or groups of producers who were more able to renegotiate terms if necessary. State conditions for credit have been historically favourable for *ejidatarios* – for a long-time public credit was even considered to be an “unofficial” subsidy (Mackinlay and de la Fuente 1996) - and debts were often cancelled late. To this day, government officials maintain a lax attitude towards peasants’ obligations to the state. For instance, when questioned what they did when a producer uprooted plantings delivered and subsidised by the government, an official responded: *‘The only thing we do is to arrive there and file a disaster report. [...] We haven’t adopted that drastic policy that says: You know what? You are out of all government support’* (Interview with IRBIO³⁷ official, 1 February 2012, Tuxtla Gutiérrez). This quote reflects how peasants can access state support with little fear of sanctions. These circumstances made *ejidatarios* in oil palm production less economically vulnerable than would otherwise have been the case.

Table 5. Net economic returns for mature oil palm (> 5 years old) in social sector farms in 2012

	Income			Costs				Net returns	
	Plots	Yields 2012	2012 FFB ^a price	Inorganic fertilisers	Herbicides	Fuel	Labour		
							Weeding		Harvest
n	(tonnes)	(US\$)	(US\$)	(US\$)	(US\$)	(US\$)	(US\$)	(US\$)	
Poor	32	17.2	2,021	16	16	160	49	54	1,828
Middle	50	15.6	1,833	21	15	230	64	52	1,482
Rich	27	13.6	1,598	11	9	684	83	40	733
Average		15.6	1,833	17	13	315	64	50	1,487

Note:

^a FFB = Fresh Fruit Bunches of oil palm.

There is a second reason why producers in Chiapas have been able to buffer possible economic pressure arising from their participation in oil palm production. The three key elements of peasant reproduction (land, labour and credit) are not fully dependent on markets. Land access in *ejidos* depends, to a large degree, on

³⁶ In some cases social sector organisations reached collective commercialisation agreements with particular mills. Producers did not, however, always respect such agreements.

³⁷ IRBIO stands for Institute for Productive Reconversion and Bioenergetics. This institute distributed seedlings of crops such as oil palm and *Jatropha curcas*.

inheritance and it cannot be considered as fully liberalised. In addition, oil palm farmers, especially in the southern Lacandon rainforest, have land available for other uses. Access to forests or swamps along with small maize plots, which provide food (grains, game or fish) and, increasingly, income through payment for environmental services, reduce producers' dependence on commodity markets. It is not through land but through labour that *ejidatarios* are more closely tied to markets. Most rural families are either buyers or sellers of labour (although many producers are able to mobilise labour from their families or neighbours in times of crisis). This partial commodification of key resources for livelihood making in Chiapas limits the reach of the 'simple reproduction squeeze' (Bernstein 1979). The ability to resort to non-economic reproduction strategies such as shifting to food production for household consumption or resorting to family labour weakens the grip of economic pressure which producers might otherwise face in oil palm production.

In sum, participation in oil palm does not necessarily push *ejidatarios* into a cycle of debt. Whether or not this occurs depends on the specific 'terms of incorporation' (Borras et al. 2010). In the two study regions smallholder participation in oil palm expansion took place under relatively advantageous terms of incorporation. The lack of a 'simple reproduction squeeze' makes it easier to explain why *ejidatarios* can be active agents in industrial farming. Their capacity to act was particularly evident in the following comment by an *ejidatario*:

In [vegetable] oil we are not self-sufficient; because all that oil is imported. So then, to produce palm for oil is a business. I mean it is a business that has a long period... that is going to have its long-term stability. As with any crop, at some point it will stagger, but you learn and by that time we should be ready for something else. (Informal conversation, 29 July 2013, Ejido Tzinacal)

This peasant was not alone in his assessment; many considered oil palm as something useful for the time being and aimed to profit from it as long as possible. This quote does not mean that oil palm plots can be easily abandoned should circumstances change but that these producers did not consider themselves to be captive to this crop through debts, contracts or its growth characteristics. We explore next, in more detail, the agency and rationale of *ejidatarios* engaged in oil palm production.

Knowledge and agro-industrialisation

Oil palm plots, including those of social sector farmers in Chiapas, are a monotonous sight; rows and rows of palm trees planted at regular intervals in more or less straight lines. Only 3% of producers combine oil palm with another tree crop and 22% temporarily intercrop oil palm with maize and bananas. The applied agrochemicals are mostly inorganic fertiliser and herbicides. Pests in oil palm are still rare in the region and *ejidatarios* only resort to pesticides occasionally (Interviews with oil palm

producers; Interview with oil palm certifier, 17 January 2012, Guatemala City). On average, *ejidatarios* add 30 kilograms of nitrogen, 20 kilograms of phosphorus and 28 kilograms of potassium per hectare each year. The social sector applies on average 11.8 kilograms of herbicide (active ingredient) per hectare each year. Producer estimates indicate an unprecedented level of agrochemical use in the southern Lacandon rainforest (Figure 5). This is largely accounted for by herbicides since most palms were less than five years old and still not large enough to shadow the forest floor and suppress weed growth. In Soconusco, producers estimate the use of agrochemicals in oil palm cultivation to be much lower, because of the greater maturity of the plantations and because other crops, even maize, are produced under high-input schemes. Regardless of the precise level of agrochemical usage, the simplicity of oil palm plots and the techniques employed in both regions reveal a strong agro-industrial rationale among oil palm producers.

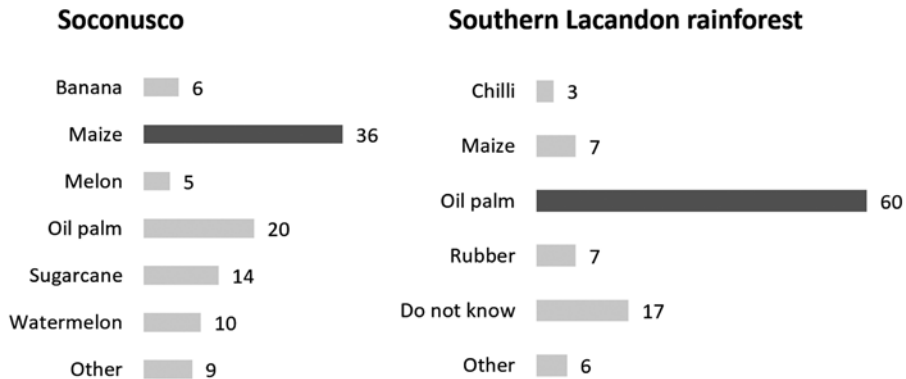


Figure 5. Crops demanding highest agrochemical usage according to oil palm producers

Source: Survey of 250 oil palm producers in the two study regions.

Note: Data expressed as percentage of smallholders.

A pertinent question concerns the extent to which this agro-industrial rationale was imposed on, rather than freely chosen or even developed by, social sector producers. The two state programmes supporting the social sector, the Productive Reconversion programme and the Humid Tropic programme, required the adoption of agro-industrial practices such as a high planting density that made long-term intercropping and agroforestry alternatives impossible. The Humid Tropic programme relied on a technological package designed by INIFAP³⁸ (Sandoval Esquivel n.d.) that largely followed an agro-industrial production model. Technicians had to recommend the official technological package based on inorganic fertilisers and pesticides. The official recommendations ignored the possibility of employing agroecological techniques and their potential role in sustaining soil fertility or controlling pests.

³⁸ INIFAP is the National Institute for Forestry, Agricultural and Livestock Research (INIFAP in Spanish).

Although recommendations do not necessarily translate into automatic compliance, *ejidatarios* themselves do not uniformly reject agro-industrial ideas. Our findings suggest that many *ejidatarios* willingly and knowingly followed the agro-industrial paradigm. It is true that oil palm producers in *ejidos* rarely apply the level of inputs officially recommended. For instance, the amount of fertilisers applied was routinely inferior to the level recommended by INIFAP, as a scientist in this institution acknowledged with some frustration (Informal conversation, 10 May 2013, Rosario Izapa). But in interviews, *ejidatarios* explained this discrepancy by referring either to a lack of capital to buy inputs or to a lack of information about the recommended practices. More positively, a significant number of interviewees consider agro-industrial practices to be desirable, as reflected in the following comment by an *ejido* producer in the southern Lacandon rainforest:

If I had money, this [the floor] would be like a mirror [without weeds] to play marbles on wherever you want, and well fertilised, but you need to have [money], and it is not that I did not have any, but I got sick twice, everybody knows that I was very sick. (Interview, 13 August 2012, La Victoria)

For this producer, the logic of an artificially smooth landscape was a desirable goal; he even felt it necessary to apologise for not having been able to achieve this himself. A positive attitude towards agro-industrialisation was also evident in people's views of the first oil palm planter in Chiapas. While land struggles in Soconusco led peasants and former rural workers to scorn most landowners, they expressed respect for Johann Bernstorff, the landowner who initiated oil palm cultivation. His plantation was praised for being well organised, highly productive and as having a floor as 'clean' as a 'mirror'. The social sector positively evaluated the agro-industrial paradigm followed by Bernstorff. The *ejidatarios* in the two study regions considered neatly weeded monocultures as a symbol of hard work.

The government's modernisation agenda has without doubt influenced perceptions of what is adequate production and what is not. But this does not mean that agro-industrialisation can be conceptualised as a set of external ideas that are uncritically followed by local people. The external modernisation interventions combined well with a local work ethic based on physical labour and the capacity to transform nature, and with a local viewpoint that reinterpreted agro-industrialisation as being equivalent to 'industriousness'. In other words, *ejidatarios* supported agro-industrialisation for reasons of their own. Much of the underlying motivation was very practical as in the following quotation from a wealthy *ejidatario* participating in environmental projects in the southern Lacandon rainforest:

[...] There is a need, really, to spray liquid [herbicide]. We are not just going to spray stupidly, because everything implies costs, it costs money. If it is a weed that can be uprooted, let's say, a weed with a root [versus one spreading laterally through stolons and rhizomes], then I say I am going to uproot it, there the weed dies. It never is going to regrow because I uprooted it... but if we are pulling, who knows where the weed is [because it grows laterally], over there, we keep pulling, and a piece of weed remains there... I think we will spray it. (Interview, 15 August 2012, López Mateos)

For this producer, the presence of persistent weeds justifies the use of herbicides. Local knowledge depicted these herbicides as an effective technology for weed control and for helping producers save both labour and money when compared to manual weeding³⁹. For this reason, local people often derided those few producers who adopted agroecology or organic practices as 'fools' and mocked their techniques as ineffective or impractical. Likewise, peasant views rooted in the agro-industrial paradigm clashed with those of a group of state-related technicians in Soconusco who promoted organic fertilisation and less herbicide as a way of lowering production costs in oil palm production. Linking modernisation to a specific social group seems unwarranted at this historical juncture (cf. Stone 2007). Agro-industrialisation cannot be regarded straightforwardly as external to peasants' subjectivities, as agroecology often assumes. Both the agro-industrial and the agro-ecological paradigms are the outcome of a complex interaction between internal and external drivers.

Oil palm expansion as a challenge to agroecology

The above analysis of agro-industrialisation in the oil palm sector in Chiapas presents a challenge to four notions prevalent in agroecology (at least in the agroecological literature that touches on social aspects). These interrelated notions concern types of knowledge (differences between local versus agro-industrial knowledge), smallholder subjectivities, dependence on inputs and smallholder participation in oil palm as a form of deception.

With respect to knowledge, the revaluation of local knowledge by agroecology is a legitimate response to development interventions that ignore or dismiss local perceptions as a product of ignorance (see Apffel-Marglin 1996). Agroecology works on the premise that traditional smallholders, possess a wealth of agroecological knowledge. For many scholars, traditional knowledge and complex farming techniques make smallholder practices clearly distinct from, or even antithetical to, the requirements of industrial agriculture (Perfecto et al. 2009; Rosset and Martínez-Torres 2012; Toledo 1990). Our findings, however, show that agricultural 'performance' might have important implications for knowledge development (Jansen and Vellema 2011). The importance of practice for the construction of knowledge can be seen in two ways. First, smallholders gain knowledge through interaction with the environment; learning

³⁹ People knew that agrochemicals can cause health problems but were not deterred, regarding resistance to agrochemicals as proof of peasants' physical strength and vigour (see Barraza et al. 2011; Galt 2013a).

can take place not only when employing traditional farming techniques but also when using modern inputs such as herbicides. In this way, many producers can acquire a combination of agroecological and agro-industrial related knowledge. Second, the production of knowledge is a social activity and it occurs as much through *campesino a campesino* (farmer to farmer) interaction as between smallholders and skilled technicians (cf. Crane 2014; Toleubayev et al. 2010). A practice-based understanding of knowledge defies rigid categorisation such as that made between traditional peasants and agro-industrial minded technicians. The data presented above suggest that agro-industrialisation, and modernisation ideologies cannot always be regarded as external to contemporary peasant subjectivities. This is likely to be the case for many regions in Mexico where the Green Revolution model has been consistently promoted by government agencies since the 1940s (Edelman 1980).

Turning to the second challenge, smallholders in agroecology tend to be conceptualised as a more or less coherent group, loosely articulated to tradition, ethnicity and local food production and in the process of being 'displaced' by modern food systems (cf. Álvarez-Solis et al. 2012; Cid Aguayo and Latta 2015; Gliessman 2013; Putnam et al. 2014). While agreeing that modern food systems can have a negative impact on sustainable forms of smallholder agriculture, we argue that smallholders cannot be seen as being located completely outside conventional forms of agriculture. To elucidate this further, we need to analyse systematically processes of social differentiation within smallholders and existing linkages between smallholders and commodity markets (Holt-Giménez and Altieri 2013). In Chiapas, the livelihoods of most small producers who shifted to oil palm had already been dependent on the production and exchange of commodities, including their own labour (Table 3). In this case, participation in oil palm did not mean a shift from self-sufficiency to exploitation but a shift in commodity production, a shift which challenges popular definitions of smallholders as being subsistence rather than commercial producers (cf. Oya 2001; Sherwood et al. 2014). Paying more attention to the heterogeneity and dynamism of smallholder agriculture will strengthen agroecology's attempt to build more solid alternatives for rural development.

Thirdly, the agroecology literature argues for low external input farming to avoid dependency or dispossession. Input dependence in industrial farming may lead to indebtedness of rural families and dispossession (McMichael 2012; Rosset and Altieri 1997). This observation has motivated advocacy for self-reliance and endogenous development (International Forum of Agroecology 2015; Via Campesina 2013). This is a politically relevant position in a context in which markets, especially speculative ones, impact negatively on the rural poor. It is also an ecologically relevant position given the environmental and health hazards caused by external inputs. However, this position becomes problematic in contexts where the terms of incorporation (including, for example, the relative prices of agrochemicals, labour, and output) are favourable

to rural producers. What if markets, or the state, are enabling rather than constraining, or a mixture of both, as for the *ejidatarios* in Chiapas? As in the case of cocoa producers in Sulawesi (Indonesia) described by Li (2014), the expansion of commercial crops led to winners and losers but overall many poorer farmers participated in crop booms in the hope of improving their livelihoods. In Indonesia there is also great diversity amongst smallholder participation in oil palm production with considerable variation in state support and private sector control over smallholders' resources (Cramb and Curry 2012; McCarthy et al. 2012). In sum, the case of oil palm expansion in Chiapas, and elsewhere, points to the need for agroecology to consider the particular terms of smallholder incorporation at play in processes of agro-industrialisation.

Fourthly, while agroecology highlights the skills, knowledge and agency of smallholders in traditional agriculture, it does not grant an equivalent level of agency to producers in industrial farming. Smallholders practising industrial farming are often portrayed as having been 'deceived' (or dominated by 'external interests'; CONABIO 2012) making them passive victims of agro-industrialisation (Jansen 2015). Our findings above show that the social sector knowingly and willingly engaged in oil palm production and in agro-industrial farming practices. *Ejidatarios* in Soconusco and in the southern Lacandon rainforest pressed themselves for state support rather than being duped by the state. Notions of knowledge as static, of industrial farming as external to smallholders' agriculture and of deception miss out the way in which small farmers' agricultural knowledge, economic aspirations and politics might be compatible with agro-industrialisation. For agroecology to overcome the industrial farming paradigm and be more responsive to rural needs, it has to acknowledge and understand the consciousness and agency of peasants embracing agro-industrialisation.

Conclusions

The challenges that modernisation and agro-industrialisation pose for agroecology are poetically expressed by one *ejidatario*. When asked why everybody was turning to oil palm in Soconusco, he replied: '*because we [peasants] are full of illusions, hunger and vices*' (Interview, 19 January 2013, Colonia Hidalgo). His words reflect a desire to modernise and advance economically. Rather than a call to resist, his words speak of peasants exercising some power to meet their needs, and include a level of self-critique and acknowledgement of mistakes made rather than adhering to some archetypal purity. In this quote, smallholders involved in oil palm are not portrayed as innocent or passive victims. It is this agency and complexity that agroecology needs to bear in mind when drawing up development alternatives for peasant families.

In analysing oil palm expansion in the context of wider agrarian change we pointed out the importance of identifying different producers and seeing how they changed in the process. The *ejidatarios* in Chiapas who shifted to oil palm had lived predominantly

from commodity production, either by selling crops, cattle or their own labour. They accepted, or, sometimes, actively sought, agrochemicals and market incorporation to improve their livelihoods. This type of producer does not easily fit with agroecological conceptions of smallholders as producers of low input local food. In Chiapas, smallholders opted for agro-industrialisation as the terms of incorporation were more favourable than adverse. This shift also took place in a context of state support for the agrarian modernisation of the peasantry under a land tenure system (*ejidos*) that constrained the full commoditisation of land. The shift to industrial farming was also facilitated by ecological conditions that were conducive to planting oil palm and by the existing farming systems in these regions.

In conclusion, oil palm expansion in Chiapas presents four challenges to agroecology. First, agroecology needs to address a smallholder sector that adopts both agroecological and agro-industrial techniques. Second, it needs to acknowledge that rural smallholders are a heterogeneous sector encompassing a wide array of, sometimes contradictory, interests. In this sense, it is important for agroecology to question the assumption that the smallholder sector is automatically aligned with an agroecological viewpoint but may *potentially* hold such a worldview if properly approached. The third notion, which questions the idea that industrial farming is always detrimental to smallholders, calls for a better understanding of industrial farming within agroecology and for more effective strategies for ensuring the uptake of sustainable practices in a context of agro-industrialisation (see, also, Woodhouse 2010). And fourth, it is important to understand how agro-industrialisation appeals to smallholders in particular circumstances, how it contributes to solving some of their problems. These four challenges leave many questions unanswered: should agroecology provide better alternatives to smallholders already engaged in agro-industrialisation? Should efforts be expended to make oil palm production agroecological? And if not, why not? Or should agroecologists restrict their focus to traditional subsistence smallholders? Should the paradigm more readily embrace new technologies and markets as some smallholders do? And which technologies or markets should be selected and why? These are difficult questions to answer but are an important matter of debate for the development of a stronger agroecology.



[Picture 1&2]: Smallholder in his recently planted oil palm orchard in Soconusco (above) and credit verification visit to oil palm producers in the southern Lacandon rainforest (below) (Photos: Antonio Castellanos).



[Picture 3&4]: Oil palm orchard in Soconusco (above) and deforested plot planted with *Jatropha curcas* in the southern Lacandon rainforest (below) (Photos: Antonio Castellanos and Martha Vanegas).



[Picture 5&6]: Worker harvesting oil palms' fruit (above) and truck with oil palms' harvest in the southern Lacandon rainforest (below) (Photos: Sergio García Mateos).



[Picture 7&8]: Jatropha producers in a meeting in the southern Lacandon rainforest (above) and plantation manager supervising the daily tasks performed by a worker in Soconusco (below) (Photos: Martha Vanegas and Antonio Castellanos).



[Picture 9&10]: Oil palms replanted in an old plantation in Soconusco (above) and palm oil mill in Petén in Guatemala (below) (Photos: Antonio Castellanos).



[Picture 11&12]: Embanked river tract in Soconusco (above) and overflow of river reaching an oil palm plantation (below) (Photos: Rafael García from Google Earth®).



[Picture 13&14]: Peasants holding an owl in Soconusco's mangroves in the 1970s (above) and peasants and cattle rancher representative negotiating on land tenure conflicts also in the 1970s in Soconusco (below) (Photos: Unknown).

Chapter 3.

Biofuel Crops And The Politics Of Consent⁴⁰

State intervention has been crucial to the worldwide expansion of biofuels. In India, for instance, the state of Chhattisgarh distributed 380 million seedlings of *Jatropha curcas* L. (hereafter referred to as jatropha) to farmers (Fairless 2007). In the United States, favourable policies for maize-based ethanol and rising prices led to the largest maize area planted since 1944 (Gillon 2010). In the Mexican state of Chiapas, the government promoted the cultivation by smallholders of both oil palm and jatropha as potential biofuels through subsidies, free plant material, and technical assistance (Soto et al. 2015; Valdés Rodríguez et al. 2014). Government support for these crops contributed to an increase of 31,892 hectares in the oil palm area (SIAP-SAGARPA 2014) and about 10,000 hectares for jatropha (Gobierno del Estado 2012). State support in different countries has included material donations (e.g., seedlings, mills), credit, infrastructure, tax incentives, and blending mandates (e.g., biodiesel or ethanol to be blended into conventional fuels) (Clancy 2008; Franco et al. 2010; Skutsch et al. 2011; Slingerland and Schut 2014).

Despite widespread recognition of heavy state involvement in the expansion of biofuel crops worldwide, local level explanations of biofuel planting often emphasise economic and technical factors. Some researchers tend to explain farming practices by referencing individual and rational economic decision-making (e.g. Pannell et al. 2006; Pattanayak et al. 2003). Economic and technical factors cannot, however, entirely explain the dynamics of expansion. Hunsberger (2010) showed the importance of local political dimensions for explaining biofuel expansion in Kenya. She showed this in her analysis by contrasting international- and local-level objectives in relation to jatropha projects, including divergent positions of dissent, acceptance, and adaptation to such projects at the local level. This chapter expands on these insights to propose a framework to explain biofuel planting that combines

⁴⁰ This chapter was submitted to Political Geography as Castellanos-Navarrete, A. and Jansen, K. Biofuel crops and the politics of consent: Local rural organisations and the state promoting oil palm and jatropha expansion in Chiapas, Mexico.

both economic and political considerations, whereby politics includes processes at the local level, which, in concrete situations of practice, are very much intertwined with technical/environmental and economic factors, as well as state-level decision-making. Political ecology serves this purpose.

We build on the political ecology approach by analysing how land use decisions and farming practices are embedded in social and political processes (Peet et al. 2010; Zimmerer and Bassett 2003). Political ecology aims to understand nature – society interactions in relation to political dynamics at different levels, including within particular rural communities (Lakerveld 2012), at the interface between local strategies and state policies (Hecht and Cockburn 2010) – sometimes with emphasis on peasant politics and local ideology (Jansen 1998; Kull 2002; Mukherji 2006) – and at the level of relationships between technical or environmental and political domains (Jansen 2003; Toleubayev et al. 2007). We identify within political ecology the ‘domination and resistance’ paradigm as the main position with regard to the conceptualisation of local politics and state–peasant relationships. Within this paradigm, the state imposes particular agricultural production systems or ways to manage nature on rural populations (Ariza-Montobbio and Lele 2010; Bryant 1996; Neumann 1992; Ybarra 2012). Local farmers or resource users are, in this perspective, either passive victims or, when viewed as actors with political agency, people that resist such state interventions (Gerber 2011; Mariki et al. 2015; Nygren 2004; Spaeder 2005). In the case of oil palm in Chiapas, literature refers to the state as imposing biofuel plantations and peasant communities as opposing or resisting them (e.g. Rocheleau 2015; Wilson 2013). The domination and resistance paradigm tends to frame the state as coercive and local discontent as a common occurrence. James C. Scott has been very influential in this area of the literature. ‘*Seeing Like a State*’ (Scott 1998) analysed how states impose simplifying large-scale developmental schemes on their populations. In ‘*Weapons of the Weak*’ (1987) and ‘*Domination and the Arts of Resistance*’ (1990), Scott focuses on the strategies subaltern peasants use to confront domination. This view reverberates in recent studies on ‘governmentality’ that analyse how the state renders rural subjects governable (Baka 2013; Córdoba et al. 2014; Li 2007). Studies on governmentality, however, also link to a second view that identifies subjects as having political agency and therefore as active actors in relation, for instance, to state interventions. This second view questions the ‘deep scepticism of the state’ of many scholars in political ecology (McCarthy 2002), who often consider the state as detrimental for rural populations. Although the second view accepts the possibility that states impose modernisation ideas or agendas on rural populations and that local people might resist them, it assumes that thinking in terms of coercion/domination and resistance does not cover the full complexity of state – peasant relations in specific material and economic contexts (Knight 1994).

In order to shift the overemphasis on domination and resistance, we analyse the political dimension of the biofuel expansion through the concept of hegemony. Hegemony in this study is not simply another word for domination or for top-down control, but reflects the idea that ‘every society is the product of a series of practices attempting to establish order in a context of contingency’ (Mouffe 2005, 17). As we will argue below, the political practices are not only those of the state promoting oil palm or jatropha, but also include political practices of smallholders and rural leaders, who, in this case of biofuel expansion in Chiapas, struggle to convince state agencies to introduce support for biofuel crops in their region. Political order is a result of a ‘war of positions’ (Gramsci 2011) and, therefore, is open-ended, vulnerable to change, and constituted not only through domination and coercion but also through consent and acquiescence. Hegemony is more than a shared political order; its success depends on its capacity to respond to material and economic processes that also strongly structure social order (Joseph 2003, 32). In this chapter, we address how biofuel crops became widely accepted at the local level in the southern Lacandon rainforest in Chiapas – a process that includes the ultimate rejection of jatropha – and also examine the shared political strategies that emerged in this particular economic and productive context.

Data were collected through 133 semi-structured interviews with government officials, rural leaders, oil palm and jatropha producers, and other key informants. Questions revolved around historical and contemporary state interventions in the southern Lacandon rainforest, the role of local organisations, and economic and productive aspects of land use. We also conducted a one-day workshop with jatropha producers on 1 February 2012 in Zamora Pico de Oro. Fieldwork was spread over 11 months between 2011 and 2013, and during the whole period, field observations of farming practices and social interactions were recorded. We also undertook archival research on both contemporary and historical governmental interventions at Chiapas’ state archives.

The next section describes the context of the study region and why producers considered biofuel crops as an option. The second section analyses how, why, and by whom oil palm and jatropha were promoted in the southern Lacandon rainforest. Subsequently, we address the intertwining of interventions that support jatropha and oil palm with the construction of hegemony and political order, elucidating the fact that project failures do not necessarily threaten the political order. This chapter argues that productive development projects, such as biofuel expansions, need to be understood as processes recreated at the local level and in connection with evolving state–peasant relations.

The context of the biofuel expansion

The recent politics incentivising biofuel crops in Chiapas have been shaped in the southern Lacandon rainforest by historical state efforts to combine agricultural modernisation and environmental conservation in this region. The southern Lacandon rainforest, comprising the municipalities of Benemérito de las Américas and Marqués de Comillas (Figure 6), was opened to agriculture in the 1970s. In this region, the state granted 20 to 50 hectares of land per adult person to rural families, first from other parts of Mexico and later from Chiapas. Initial settlement was concentrated along the Usumacinta and Lacantún Rivers, due to the fertility of the soil and the accessibility of the area. Later, areas near the Guatemalan border toward the south began to attract rural families. The central part of the rainforest was difficult to access due to the lack of roads, and it was the last part to be claimed, largely by indigenous families from Chiapas who reached the region in the 1980s. The central part remains the least developed, as government interventions mostly targeted the region next to the Lacantún River for agricultural development projects, where the first settlers organised to demand government support. Three fundamental processes have configured the conservation – development nexus in this region.

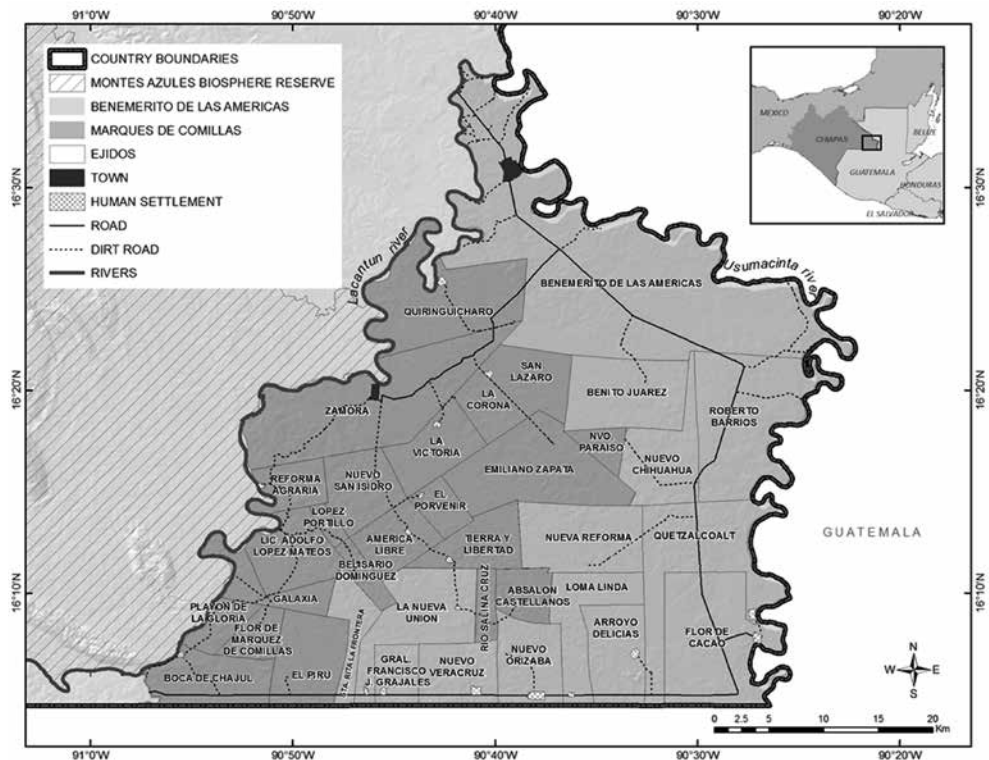


Figure 6. The southern Lacandon rainforest

First, while initial colonisation occurred without much state intervention, this situation changed in the 1980s when the government, in line with the global trend of growing environmental concerns, initiated attempts to put a limit on deforestation. Agroforestry development became a priority with projects incentivising cocoa, vanilla, and cardamom production under the forest canopy (Table 6). Most of these agroforestry development projects failed due to technical and commercialisation problems. For instance, cocoa yields were often very low. Producers attributed this to poor varietal selection, excessive shade, and pest incidence under the forest canopy (Interview with producers; UEJS 1984a). Projects also lacked proper consideration of commercialisation possibilities (see COPLADE 1993a). In extreme cases, as for cardamom, there were simply no buyers for the planted crops. State agencies also supported rubber in the 1980s, and even supported oil palm once in that decade, both of which tended to further deforestation.

The second process concerned efforts to rationalise forest use. Logging became legal in 1987, when the government granted the first permits to rural communities in the region (Harvey 1998b; PROFEPA 1994). Mahogany and other tree species that farmers had previously felled and burnt became valuable. Despite obstacles, such as the lack of roads, timber commercialisation rapidly took off as an income alternative. On October 4, 1989, however, the Chiapas government imposed a forestry ban for the Lacandon rainforest to prevent further deforestation (see Appendix VI). Logging continued illegally. In 1991, the Chiapas government took action against illegal trade, leading to a major conflict in the region (see below). In 1995, the state re-opened the possibility of logging through the Forestry Pilot Plan (Harvey 2005), which aimed at diversifying timber sources and implementing rotational logging with sustainable tree regrowth. This project failed given market demands exclusively for mahogany, overexploitation, and poor forest management. The Chiapas administration has not granted forestry permits since 2000.

A third process was a renewed interest in cattle. The failure of agroforestry projects and the obstacles to logging gave new impetus to cattle production as a secure way to get an income⁴¹. Contrary to government plans, peasants increasingly cleared land for pastures. A leader of a historical organisation in the region recalled the moment: *'Here, there was a barrier [to cattle production], [and] the government did not provide a solution. Their solution or system was to plant cocoa [...], or cardamom, or vanilla, or rubber, all mixed up. Then people insisted and insisted in breaking the [symbolic] fence against cattle, until a few openings [in the sense of government support] appeared for cattle'* (Interview, 4 November 2012, Quiringüicharo). This quote illustrates the

⁴¹ Drug cultivation and, especially, trafficking have also been important sources of income in some communities.

Table 6. Government agricultural projects in the southern Lacandon region*

Project focus	Year	Amount (MXN \$)	Donor institution	Source
Cattle	1979	6,000,000	FONAFE ^a	(SARH 1990)
Cattle	1981	68,500,000	SPP ^b	(UEJS 1984b)
Cocoa	1981	30,798,000	SPP	(UEJS 1984b)
Cocoa	1981	12,300,000	SPP	(UEJS 1984b)
Maize and beans	1981	13,518,000	SAM ^c	(UEJS 1984b)
Cocoa	1983	Unknown	BANCRISA ^d	(UEJS 1984b)
Oil palm	1983-1984 (?)	Unknown	CONAFRUT ^e	(Interviews) ¹
Cattle	1984	15,600,000	BANCRISA	(UEJS 1984b)
Cattle	1984	13,000,000	BANCRISA	(UEJS 1984b)
Cattle	1984	2,600,000	BANCRISA	(UEJS 1984b)
Cardamom	1985-1986 (?)	Unknown	Unknown	(Interview, 4 November 2012, Quiringüicharo)
Rubber	1989	Unknown	FIDEHULE ^f	(UREPCC 1989)
Cocoa	1990	160,000,000	SARH ^g	(SARH 1990)
Cocoa	1991	750,000,000	SARH	(SARH 1990)
Multiple	1992	393,400	SDRyE ^h	(UEJS 1984b)
Vanilla	1992	58,500	SDRyE	(COPLADE 1993a)
Honey production	1992	176,700	SDRyE	(COPLADE 1993a)
Cocoa	1992	519,000	SDRyE	(COPLADE 1993a)
Cocoa	1992	120,000	SDRyE	(COPLADE 1993a)
Cocoa	1992	46,100	SDRyE	(COPLADE 1993a)
Chilli	1993	4,050,000	SDRyE	(Contraloría General del Estado 1993)
Cocoa	1993	Unknown	SDRyE	(COPLADE 1993b)
Vanilla	1993	Unknown	SDRyE	(COPLADE 1993b)
Rubber	1995	Unknown	Chiapas gov't.	(Gobierno del Estado 1996)
Cattle	1996	500,000	FONAES ^j	(Interview, 13 August 2012, La Victoria)
Chilli	1997	1,987,000	COPLADEM ^k	(MOCRI 1997)
Beans	1997	1,325,000	COPLADEM	(MOCRI 1997)
Maize	1997	3,950,000	COPLADEM	(MOCRI 1997)
Xate palm	1997	Unknown	COPLADEM	(MOCRI 1997)
Timber	1997	1,872,675	Unknown	(CODESSMAC 1998)
Rubber**	1999	Unknown	Chiapas gov't.	(INIFAP and SAGAR 1996)
Oil palm**	2000	26,000,000	Chiapas gov't.	(Gobierno del Estado 2000)

Notes:

*This list is not exhaustive, as not all project documents could be retrieved in the Chiapas state archives.

**These were projects not exclusively focused on the southern Lacandon region.

^a National Fund for *Ejido* Development (FONAFE in Spanish).

^b Secretary of Programming and Budgeting (SPP in Spanish) belonging to the federal government.

^c Agrofood Mexican System (SAM in Spanish) belonging to the federal government.

^d Rural Credit Bank for the Isthmus (BANCRISA in Spanish). This bank was supported by the federal government.

^e Centre of Fruit Development (CONAFRUT in Spanish) belonging to the federal government.

^f Trust for Research, Cultivation and Rubber Commercialisation (FIDEHULE in Spanish). It was supported by the federal government.

^g Secretary of Agriculture and Hydraulic Resources (SARH in Spanish) belonging to the federal government.

^h Secretary for Rural Development and Ecology (SDRE in Spanish) belonging to the Chiapas government.

^j National Support Trust to Social Enterprises (FONAES in Spanish). It was supported by the federal government.

^k Planning Committee for Municipal Development (COPLADEM in Spanish).

¹ Interviews in Quiringüicharo: 18 October 2011, 4 November 2012; Interview in Palenque: 3 November 2012.

tension between local demands for income and the state's environmental considerations. Between 1985 and 1995, government agencies strongly limited their support for cattle, but gradually came to see cattle production intensification as a solution to reduce deforestation through reduced grazing areas, while permitting rural families to generate income (Villafuerte Solís 2001, 254). Local organisations had already proposed cattle production intensification at various times after the mid-1980s (see, for instance, UEJS 1984b), but the government only accepted the proposal once cattle had become a fundamental livelihood strategy in the region. By the 2000s, most producers were selling calves to be fattened in central and northern Mexico for meat and old cows to the Chiapas meat market. Cheap yellow maize imports from the United States recently strengthened the northern Mexican cattle industry (Peel et al. 2011), increasing the demand for cattle from Chiapas, where the southern Lacandon rainforest has become the main cattle supplier (Galván-Miyoshi 2014). However, cheaper prices for cattle smuggled to the region from Central America and poor soil in most of the region limited the benefit local producers could derive from cattle. Thus, cattle producers were ripe to consider raising biofuels as an alternative.

In 2007, the Chiapas government initiated the statewide 'Productive Reconversion' programme, which promoted jatropha and oil palm cultivation with an environmentalist biofuel discourse⁴². In the southern Lacandon rainforest, farmers started to perceive these crops as new economic alternatives. In our jatropha workshop, a producer stated: '*we hope it is the fuel of the future*' (20 January 2012, Zamora Pico de Oro), expressing how they thought of biofuel crops as a significant economic opportunity. Many producers in the study region started to sell their cattle to fund their conversion into these new biofuel crops; for instance, producers sold 19 cattle heads, on average, in their shift to oil palm (Figure 7). It is surprising that so many producers sold cattle (as cattle was a main source of income) and joined the 'Productive Reconversion' programme in a context in which numerous past state development programmes failed. Producers' dissatisfaction with their profits from cattle partly explains their decision to participate in new biofuel crop projects, but this decision, as it is argued below, was also political.

⁴² While both crops were initially supported as biofuels, rising prices for palm oil impeded its use as a biodiesel source (see Chapter 1).

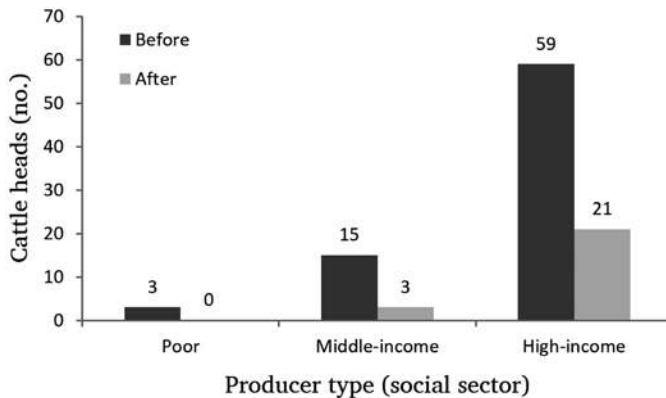


Figure 7. Cattle ownership before and after oil palm cultivation
Source: Survey of 125 oil palm growers in the southern Lacandon rainforest.

New crops and old politics

The Chiapas government provided incentives, or created conditions, for planting biofuel crops in the southern Lacandon rainforest, but it was local actors, with their own political motivations, who became the most important promoters. We will discuss this first for oil palm and then for jatropha. The mayor (*presidente municipal*) of Marqués de Comillas, a known leader in local rural organisations, was the first actor to promote oil palm in the southern Lacandon rainforest in 2005. He and his political allies set a goal to, in his words, ‘*find an [economic] alternative for all people*’ in the region (Interview, 27 August 2012, La Victoria). They considered sugarcane and timber, but concluded oil palm had more potential. To gather support for this initiative, they arranged visits for local leaders to oil palm regions elsewhere in Chiapas. Leaders included heads of rural organisations, local politicians, and proactive producers, some of whom were quite sceptical. These visits proved effective. A local politician in Benemérito de las Américas, who was particularly sceptic of oil palm, recalled telling the people in his community after such a trip: ‘*Plant oil palm, gentlemen, because I am going to plant*’ (Interview, 24 October 2012). Through this initiative, oil palm gained the backing of many local leaders who became promoters of the crop in their own communities. This occurred before Chiapas state support was available for oil palm planting through the Productive Reconversion programme in 2007. In fact, local leaders had to work hard to convince the state agencies to provide assistance. In 2005, officials at the Chiapas government rejected these requests, arguing lack of funds. In these circumstances, the mayor secured credit from the private sector, and the first 79 hectares of oil palm in the region were planted in 2006. The mayor’s term had

ended when the new Chiapas government finally gave in and began to support the process, establishing a nursery for about 5,000 hectares of oil palm in 2007. The oil palm expansion in the southern Lacandon rainforest was therefore the result of pressure by local proponents of this crop.

The mobilisation of rural leaders and local organisations to access state support for planting biofuel crops was also observed in the case of jatropha. Members of the Peasant Union Belisario Domínguez (UCABED) started planting jatropha in the southern Lacandon rainforest in 2011. The leadership of this organisation focused on channelling state resources to poor indigenous peasants in the central part of the southern Lacandon rainforest, but since 2009 they failed to access any government support (UCABED 2012b; Vanegas Cubillos 2012b). In that period, the state was advertising the Productive Reconversion programme, which promoted cultivation of several crops including biofuels such as jatropha. Emilio (a pseudonym), the then indigenous leader of UCABED, considered jatropha as an opportunity to access state support, and he started travelling to the Chiapas capital, along with other members of the organisation. Their first proposal to introduce jatropha in their region was, however, rejected by the Chiapas government. One of the UCABED representatives recalled the reaction by government officials: *'[...] we started going to Tuxtla [capital of Chiapas] to the Secretary of Agriculture [part of Chiapas government], and they did not want it [us to plant jatropha]; they only offered oil palm. We do not want oil palm'* (Interview, 17 December 2011, El Pirú). Government officials initially rejected requests, arguing that jatropha would not grow properly in the southern Lacandon rainforest. As for the oil palm case, government support was only gained after negotiations and pressure. Leaders at UCABED finally gained access to the government's free jatropha seedlings in 2011, as well as to some technical and administrative support for the organisation. For both oil palm and jatropha, local leaders did two things: they lobbied the government to access state resources and convinced local people to enrol in biofuel crop planting in order to justify government support.

Local organisation and action toward the state were thus a condition for biofuel crop expansion, but the biofuel crop expansion also supported the development of local organisations. This double relation was particularly evident in the negotiations with government officials in the area to be planted with jatropha: *'My initial proposal was 250 hectares'*, recalled Emilio, *'but they [the government officials] said no; it had to be 500 hectares. Then I went to check with the producers, one with 2 [hectares], another with 5, another with 10, and we finally registered 720 hectares'* (Interview, 19 October 2011, Palenque). Emilio and other leaders at UCABED pressured the government to access state support and promoted the crop among local people. For both oil palm and jatropha, once leaders were granted official support by the government, they

were able to create or enlarge their rural organisations. A leader in the oil palm project recalled the moment: *'Then it started [...], we organised meetings everywhere, in all communities [...]. I remember one meeting that was massive [...], [the people] filled a big hall. Here, people were told that a financial firm had agreed to participate. They were also told that the new government [...] was also interested in the project'* (Interview, 29 August 2012, Nuevo Orizaba). Having secured support and credit, leaders promoted the project in every community. While the oil palm organisation started with a few informal groups in 2005, by 2012 the organisation was constituted by several cooperatives, managed by local leaders and encompassing more than 900 producers. Cooperatives were all organised centrally through a second-level organisation, the Rural Association of Collective Interest (ARIC)⁴³, chaired by the former mayor who had initiated the project. The strengthening or creation of rural organisations following the Productive Reconversion programme was a key political moment of the biofuel expansion, as these organisations both served to ensure the local "success" of the biofuel project as measured by the government (i.e., number of participants and area planted) and to fulfil local goals.

Two interrelated factors drove the political process at the local level: the ambitions of local leaders and the interests of farmers. In formal settings, especially with government officials, UCABED leaders presented jatropha as a way to address local economic needs and environmental problems, in-line with government discourses, and they made only vague reference to social or political issues. Locally, however, leaders presented UCABED as a political organisation. For example, they wrote in a letter distributed in the region:

We invite you to form part of this organisation with the goal of better organising ourselves and to remain protected from any violation of our constitutional rights and from any political phenomenon [disruption or imposition] of our government system. We are a left-wing organisation; we fight, we walk together, and with the consensus of our people. (UCABED 2012a)

This letter expresses a clear political goal for UCABED. The organisation had, in fact, ties with the Party of the Democratic Revolution (PRD in Spanish), and Emilio had aspirations to become the municipality's PRD candidate for the 2012 municipal elections. Emilio and other leaders in UCABED considered the jatropha project as instrumental, a means to obtain political gains. The project did indeed lead to rapid growth of UCABED membership months before the elections and, therefore, to possible electoral support. Leaders in the oil palm organisation also had ambitions. ARIC's leadership envisioned establishing their own palm oil mill and agrochemical supply facilities as part of a wider project pushing agro-industrialisation. A successful project implied political visibility for leaders as well as a solid economic position as entrepreneurs. In this sense, securing state support and creating larger organisations

⁴³ This is a legal form that allows organisations to access state support.

served leaders' goals. Leaders in both organisations seemingly conceived biofuels as a means to an end.

The interests of producers also strengthened the formation of local organisations. The fact that organisations such as UCABED provided a means to receive jatropha seedlings and support for production supplied a reason for producers to become involved. Producers expressed the need of organisations such as UCABED '*to have the strength to request support*', '*because we want to look for support and to be served by the government*' (Workshop, 20 January 2012, Zamora Pico de Oro). Farmers saw organisations as a means to gain access to state resources. Access to the state was also deemed important in a less material way, as reflected in the following comment by an oil palm producer:

[...] you need resources, or you have to be with several people; be with several people in order to be big, right? In this case, [the mayor that started the oil palm project] [...] had the chance to be where he could do something with his experience, initiative, and vision. He said, "let's do this", and it was good. (Interview, 10 August 2012, La Victoria)

This oil palm producer saw the government as the place '*where you can do something*' and organisations, by bringing people together, as a means to have a large developmental impact. Like many others, he saw the state as an important target to realise change in the region.

These two factors – leaders' broader political interests and farmers pressuring the state for support – connect with the way the Mexican state generally operates in rural areas, often labelled as corporatism (Fox 1994; Mackinlay and Otero 2004; Otero 2004). Corporatism has traditionally sought to advance state goals and achieve consent by providing sufficient incentives, often material, to all actors involved. State resources are often allocated to organisations in an arbitrary way, without transparency, which explains why local leaders have to mobilise to access state support. To a large degree, corporatist politics explain the local responses to the biofuel programme in the southern Lacandon rainforest. Rural leaders in the region knew how effective corporatism could be and used it as early as 1981, when a group of settlers founded the *Unión de Ejidos "Julio Sabines Pérez"* (see Appendix VII). This organisation was devised from the start as a partner to the state in development efforts. As one of the founders told us, '*the name that we put was mostly to please the governor*' – whose father was named Julio Sabines Pérez – '*and to be able to get support from him; that is the reality*'. The gesture was a typically corporatist move, and it paid off: '*We were, in that six years term, as it is said in political jargon, we were door handle visitors*' (Interview, 3 November 2012, Palenque). This leader referred to their easy access to the governor, with them simply "opening his office door" and him being readily available to have a meeting. The *Julio Sabines*, as the organisation was known, often aligned with state interests. For instance, in 1993,

the organisation's leaders declared allegiance to the party in power in a letter to the Secretary of Social Development and committed to '*safeguard the political stability in the region in coordination with the municipality and the state capital*' (UEJS 1993). Political stability implied that the Institutional Revolutionary Party (PRI in Spanish) would retain power in the 1994 elections. In exchange for their political support, the governor helped the *Julio Sabines* shape the region's development. The government provided this organisation with many development projects, which led to a large social membership. This organisation monopolised state support in the region for about a decade. While other organisations followed, such as the *Unión de Ejidos Fronteriza del Sur* later founded in the borderland region, none of them would become as important. Part of the *Julio Sabines*' success lies in always seeking a balance between state goals and local development needs.

The *Julio Sabines* showed local actors the advantages brought by aligning with the state. The organisation's leadership grew increasingly powerful and rich, and some of them became local political bosses, also known as '*caciques*' (Knight and Pansters 2005). Under Mexican corporatism, leaders often pocketed part of state resources for their personal gain. This led to some tensions in the more recent biofuel case, and one producer expressed his frustration in relation to this: '*we [producers] have always distrusted the people that ended up in front [in local leadership]. They are parasites that have always lived from projects, from other people. The truth, the truth is that I have never been in agreement with that*' (Interview, 17 July 2012, Quiringüicharo). He saw leaders as middlemen and was suspicious of their role. Many local people shared a similar viewpoint, but often accepted this state of affairs as they also had some gains. An oil palm grower in La Victoria stated the following:

[...] it is logical that there is an organisation, a leadership. Leaders dedicate themselves to management, and, well, they have to cover their per diem allowances, their expenses; they do. It is logical: nobody is going to put money from their pocket [...]. Otherwise there is nothing either: if nobody is leading, this [oil] palm thing is going to be, as they say, yellow [unproductive]. (Interview, 1 August 2012)

For him and several other producers, access to state resources to make oil palm productive was more important than demanding leaders' accountability. This acceptance of corruption probably reflects the fact that organisations were one of the few means producers had to access state resources. Many local producers in the southern Lacandon rainforest had a clear understanding of how the political system worked and decided to reproduce corporatism in their attempt to scratch some gains. In this sense, the politics making biofuel expansion possible in the southern Lacandon rainforest were co-produced and legitimated at the local level. It cannot be seen as a simple top-down imposition on the rural people by the state.

Hegemony as a shared political order: between conservation and development

While corporatism was particularly effective in achieving consent to biofuels, it is not a perfect mechanism for the state to achieve full political control. Corporatism grants power to leaders, and these leaders can run against the government's political or economic agendas. The leader from UCABED, for instance, intended to use state resources to advance an alternative political project that sought to benefit the poor indigenous families in the central part of the southern Lacandon rainforest. Corporatism also offers room for collective action and politicisation. Some rural organisations in Mexico, such as UNORCA, the Mexican partner of the transnational peasant organisation *Via Campesina*, have worked their way within the corporatist model to push for political reforms (Fox 1992). Producers belonging to the oil palm organisation valued the political opportunities offered by biofuel projects:

We are above the municipality. I tell you clearly, we are above the municipality because we are not people who depend on the town hall [to access state support]. If it is not possible [to gain access from the municipality], OK. Then I go to Mexico [City], I go to the north; I don't know where, but I know the doors [to institutions]. We are not blind anymore. [...] we also can do it on our own. (Interview, 2 August 2012, La Victoria)

This producer had no leadership role in his organisation, yet he valued the power local organisations had gained in the political realm through biofuel projects. The expression that people '*are not blind anymore*' refers to this producer no longer feeling disempowered and dependent on particular government officials and institutions. While Mexican corporatism has often led to co-optation and corruption, it also offers peasants and their organisations room to exert political leverage. In this sense, corporatism is better understood as an open-ended political project subject to pressure, contestation, and change. In this section, we explore how corporatism was historically built in the southern Lacandon rainforest.

The corporatist political relation between the state and the rural population was built in the southern Lacandon rainforest around a consensus over the need to achieve both economic development – to be obtained through agricultural projects – and environmental conservation aiming to limit deforestation. The *Julio Sabines* was the first organisation to enter the corporatist relationship, aligning with state interests and, in doing so, committing to the government's environmental goals for the region while retaining an interest in local livelihood needs. In 1984, the organisation declared in a letter to the Mexican president:

We want the resolute support of the agricultural and livestock [governmental] sector to elaborate productive projects based on complete studies and in this way get the support and infrastructure needed to halt rainforest degradation and to make the most of our resources for the benefit of our communities, Mexico, and the state. (UEJS 1984b)

This letter presented people's development as compatible with the state's environmental considerations. The early use of environmental discourse had a lasting impact in local politics.

Much in the same way that the *Julio Sabines* did it, organisations in the southern Lacandon rainforest supporting oil palm and jatropa privileged environmental narratives in their relations with the state to justify the importance of their initiatives. Leaders and producers referred to the environmental advantages of oil palm and jatropa when compared to cow pastures, presenting both crops as reforestation and even as solutions to climate change. Oil palm and jatropa were promoted in similar terms by the Chiapas government (see Chapter 1), but locally, environmental arguments were used in different ways. For instance, leaders who promoted jatropa criticised oil palm for causing land degradation through roots that grew in excess and that absorbed all water in the soil. The leadership of UCABED attempted to keep a distance between them and the oil palm organisation, as they belonged to different political factions in the region⁴⁴. The privileged role played by environmental discourses in local politics is evident in the following quote by Emilio recalling a meeting with the government:

But I spoke in the meeting about climate change. Let's accept that blame lies on all [both peasants and the government]. But what can we do? What was I proposing? I told them [the government], I want to plant 500 hectares of *piñón* [jatropa]. Are you going to help me? Are you going to reforest something? The ozone layer is, perhaps, already broken. If I have 200 hectares [of jatropa], we are going to make people conscious we are reforesting, but we also have to eat; we cannot live from reforesting. Then we considered the *piñón* [as the solution]. I build a house, they [the government] build another. (Interview, 19 October 2011, Palenque)

For Emilio, their goal (making a living) was compatible with the government's goal (environmental conservation). This is illustrated by his metaphor of the two houses with each – the government and peasants – living in a different house out of a common effort. Development goals were UCABED's priority, while, according to Emilio, environmental conservation was the priority of the state. As other local leaders did, he adapted to the recent political history of the region in which hegemony has been built on combining or balancing between development and conservation goals.

Political hegemony can be, however, fragile. The 1989 forestry ban and the ensuing political conflict had been disruptive to the local conservation/development consensus. The ban privileged conservation goals by the state over local development goals. On July 6, 1991, the Chiapas government enforced the logging ban by sending five trucks to Benemérito de las Américas, with 28 policemen and 24 peasants hired in Palenque to seize timber that peasant families had cut. A similar convoy went to

⁴⁴ Interestingly, producers in these two organisations did not consider themselves as different, with them all being *campesinos* (peasants).

Marqués de Comillas (MOCRI 1991). The *Unión de Ejidos Fronteriza del Sur* blocked the road and mobilised local people in response (Interview with MOCRI leader, 5 November 2012, Nuevo Paraíso; MOCRI 1991). Peasants took the police hostage in Nuevo Chihuahua in an unprecedented action against the state. When the governor refused to meet with the mobilised peasants, they marched to Mexico City on 12 July. The *Movimiento Campesino Regional Independiente* (MOCRI)⁴⁵ was founded in the course of these events, and on 22 July MOCRI sent a letter to the Mexican president demanding payment for the seized wood and respect for '*the need to work freely [on] our plots and to manage our forest resources properly to subsist and to have a dignified life*' (see Appendix VIII). Livelihood considerations and the right to logging took centre stage in MOCRI's demands, in response to the government prioritisation of conservation goals.

MOCRI's demand for restitution had no effect, but the organisation effectively challenged the political hegemony in the region in two ways. First, the use of roadblocks, marches, and protests to pressure the state challenged the corporatist arrangements between the state and rural organisations. Their rejection of corporatism was explicit: '*our principle was to defend, to put it that way, peasants from the claws of the Fronteriza del Sur and the Julio Sabines*' (Interview with former MOCRI leader, 5 November 2011, Nuevo Paraíso). MOCRI leaders argued corporatism favoured leaders and the state but not the peasants. And second, MOCRI did not seek a balance between their goals and the state's goals. They considered livelihood as the priority and showed little concern for environmental conservation. When interviewed on the issue of logging, the leader in MOCRI recalled: '*The sad thing is that we saw that the rainforest had a great price and that human life had no price. But to be able to live, to be able to conserve, one has to first see how human life is going to be preserved*' (Interview, 5 November 2011, Nuevo Paraíso). For this leader, the state had to first cover livelihood needs, and conservation aspects could only be addressed later. This position generated criticism by traditional leaders in the region. Leaders in organisations such as the *Julio Sabines* regarded mass mobilisations as a last resort in dealing with the government. They ridiculed MOCRI's leaders for not understanding the political game. However, MOCRI's critiques struck a chord in the region, and many people, particularly from the central area of the region and the borderlands with Guatemala, joined the organisation. MOCRI grew rapidly, as it appealed to peasants angry about the forestry ban and restrictions on cattle production and dissatisfied with what they saw as the limited benefits of existing corporatist organisations.

The response by the state to MOCRI's challenge of the political order was first repression. But after a period of time, this was followed by negotiations and

⁴⁵ In English, this organisation was called the Regional Independent Peasant Movement.

incorporation of some of the demands, where the heterogeneity of the state played a role. The Chiapas government violently repressed the march to Mexico City in Palenque, and many participants were detained and tortured (MOCRI 1991). Despite protests, the forestry ban remained valid for several years. In August 1994, in the context of the *Zapatista* uprising and in a period of intense mobilisation by rural organisations (Van Der Haar 2005; Villafuerte Solís et al. 1999, 131-138), the government finally granted permission to commercialise dead and felled trees for four months. However, deforestation continued, and the conflict between MOCRI and the government did as well (Harvey 1998b). Leaders from MOCRI struggled for new permits to commercialise timber, while two different positions emerged within the state to deal with both MOCRI and logging (Harvey 1998b). On one hand, the Federal Attorney's Office for Environmental Protection (PROFEPA in Spanish) in Chiapas recommended granting permissions for the commercialisation of remaining timber. PROFEPA officials took livelihood needs seriously. They also acknowledged that the alliance between the state and the *Julio Sabines* had compromised the state's legitimacy, as both local peasants and, even, the federal state considered the organisation corrupt (COPLADE 1993a; PROFEPA 1994; cited by Harvey 1998). On the other hand, the Chiapas office of the Secretary of the Environment, Natural Resources and Fisheries (SEMARNAP in Spanish) favoured sanctions and fines for exceeding timber quotas and proposed monitoring schemes that classified communities according to their level of compliance and willingness to respect regulations. This agency privileged conservation and considered excessive logging '*from any point of view, a serious questioning of the authority*' (quoted in Harvey 1998b). SEMARNAP's priority was to restore state authority with little regard for livelihood demands. Over time, the interplay of the two agencies established an equilibrium that resembled, to some extent, the pre-MOCRI period.

In 1995, the state started implementing the Forestry Pilot Plan in the southern Lacandon rainforest. The goal of this plan was to establish a sustainable logging scheme that offered an income alternative for locals. Instead of supporting a single organisation like the *Julio Sabines*, the state distributed resources to multiple organisations, especially to those committing to government goals and political practices. This policy shift was well-illustrated by support to CODESSMAC⁴⁶, a new umbrella organisation gathering several community-level groups, with its leader arguing: '*We were peaceful, we did not strike, we did not have fights, it was management, management, management...because SEMARNAP gave to us cars to move, trucks and funds*' (Interview, 4 November 2012, Quiringüicharo). This leader described rejecting radical politics as a means to obtain access to state resources.

⁴⁶ Council for the Sustainable Development of the Marqués de Comillas Rainforest (CODESSMAC in Spanish).

State support to multiple organisations reduced the concentration of power by a single organisation, and it also weakened radical organisations such as MOCRI. Rural people could now join a variety of organisations and more easily access state resources. In this new context, MOCRI (which lacked access to state funds) lost its social support, and with it, its political influence⁴⁷. The state regained, in this way, its legitimacy in the region. While the Pilot Plan intervention was environmental, it did include local livelihood demands re-establishing the historical conservation/development consensus. This plan also contributed to the erosion of old state corporatism, articulated through a single strong organisation. It led, in-line with a wider political shift, to the establishment of neo-corporatist politics in which state resources were distributed to multiple organisations, as long as these were aligned with state goals (Fox 1996).

The MOCRI defeat provided an important lesson for local leaders. Emilio, the leader of UCABED carrying out the jatropa project, had been a MOCRI member. He derived his political lesson from the MOCRI experience: *'The time for sit-ins is over. With the government, there are only two ways: to suck up to or to threaten. I personally don't like the suck up, but I don't see any other way'* (Interview, 11 October 2011, Zamora Pico de Oro). For Emilio, a socially committed leader, corporatist arrangements became acceptable if it meant securing state support for his people. Emilio was not an exception. Many leaders in the region with a past of radical politics, including leaders in the *Julio Sabines*, accepted at some point a good degree of subordination to state politics. This does not mean that the new corporatist politics in place are absolutely stable, as not all leaders reproduce the political order for their own benefit. Leaders like Emilio attempted to exert change through the established order.

The rise and decline of MOCRI shows that hegemony is not an imposed political order. Instead, social actors recreate it continuously or modify it through political contestation when they find this advantageous. Hegemony in the southern Lacandon rainforest was first built as a corporatist political order – in which state interventions were implemented in alliance with a few strong and self-appointed local organisations that the state accepted as valid representatives of the rural population – articulated through a consensus over the need to support both economic development and conservation. This political order came to an end in the early 1990s, as the Chiapas government privileged environmental conservation over livelihood demands and kept channelling its resources to an already delegitimised local organisation. This led to what Gramsci called 'a crisis of authority' (Gramsci 2011, 32-33), in which local

⁴⁷ In an effort to keep their social base, MOCRI negotiated with timber companies, both national and international, to achieve better timber prices for their members, but no agreement was reached (Interview, 5 November 2012, Nuevo Paraíso; MOCRI 1996).

consent withers and hegemony is lost. These circumstances favoured the emergence of MOCRI. The crisis was partial, as radicalisation led by MOCRI, an organisation that no longer played according to the rules, did not lead to participation of the local population in this particular region in the 1994 *Zapatista* uprising. The state gradually re-established its legitimacy through political and economic concessions by means of the Forestry Pilot Plan. Development was again conceived as a mixture of conservation and livelihood goals, but under a new corporatist arrangement (Mackinlay and Otero 2004) with more participating organisations.

Intervention failures and rural consent

The new political context was highly conducive to the biofuel expansion, as it fit well with the political practices of some of the state and non-state actors. While oil palm successfully expanded, with 12,315 hectares planted in the southern Lacandon rainforest in seven years (SIAP-SAGARPA 2015), *jatropha* producers were uprooting their biofuel shrubs only two years after planting. This section first describes the causes of the *jatropha* failure and then identifies its consequences at the political level.

Members of UCABED who had planted *jatropha* were confident about its commercialisation possibilities. The state agency delivering *jatropha* seedlings committed to purchasing harvested seeds. According to the government, oil from seeds would be extracted and transformed into biodiesel. In 2010, the Chiapas government opened a state-owned biodiesel plant in Puerto Chiapas and had a smaller unit available in Tuxtla (Gobierno del Estado 2010b, 2010d). It also announced that several companies had expressed an interest in purchasing biodiesel (Gobierno del Estado 2007). Among other uses, *jatropha*-based biofuel was promoted as a potential sustainable fuel source for airplanes (Gobierno del Estado 2011). In 2011, the first biofuel test flight took off in Mexico City with Chiapas as its destination, as it was this state that had provided the *jatropha*-based biofuel for the flight. Statements in the media spoke of a historical step. Yet, only one year later, the opportunities for selling *jatropha* seeds had vanished. In February 2012, the state agency in charge of biofuel purchases was seriously downsized and absorbed by the Chiapas Secretary of Agriculture without official explanation. It was no longer able to purchase *jatropha* seeds as promised. The mill for extracting *jatropha* oil officially opened in 2012, but was never put into operation. Without the mill, and according to a government official in the biofuel programme, the *jatropha*-based biodiesel used for the much-advertised test flight in 2011 had to be processed in Egypt (Interview, 1 February 2012, Tuxtla Gutiérrez). The biofuel chain was incomplete, and the *jatropha* boom went bust.

Besides commercialisation problems, producers also experienced cultivation difficulties. *Jatropha* has often been promoted as a robust crop with potential good yields on marginal soils with few or no inputs (Becker and Francis 2005; see Baka 2013 for a critique). However, producers experienced problems with pests, and there was no seed production after one year of planting. Early promotion campaigns tended to ignore the fact that this plant is not domesticated and that yields are hardly predictable (Fairless 2007). To be productive, *jatropha* plants require sustained fertiliser inputs (Achten et al. 2008) and adequate rainfall and soil moisture levels, especially during planting time (Iiyama et al. 2013). The consequences of *jatropha* cultivation without proper farm management were evident in Kenya where this shrub did not yield seeds in 41% of the surveyed smallholder farms in a large study (Iiyama et al. 2013). In this sense, state agencies in Chiapas and producers made several mistakes when it came to *jatropha* cultivation in the southern Lacandon rainforest. Rainfall in the region exceeds the optimal range for *jatropha*. The region lies outside the official area with production potential for this crop (INIFAP n.d.). Worsening the situation, seedlings were distributed late so that many producers planted the crop during the dry season, causing water stress to the plants. Government agencies distributed both local seedlings and imported Indian varieties without adequate consideration for variety adaptability. Most producers lacked technical support and did not fertilise their crops, which may explain the delayed seed production (see, also, Valero Padilla et al. 2011). The *jatropha* expansion could therefore be considered a failure.

The problems with *jatropha* production had more political consequences for UCABED leaders than for the government. Producers in UCABED knew that Emilio was using *jatropha* to gain political support. In the workshop we held with *jatropha* producers, some of them stated in front of Emilio their intention to vote freely regardless of their UCABED membership. Other producers who accessed *jatropha* seedlings through UCABED kept their distance, as they disagreed with the organisation's political project. These two responses can be interpreted as a weak form of resistance to a corporatist political system in which state support – often unevenly and arbitrarily allocated – is easily capitalised by local leaders. The political aspirations of Emilio did, however, become especially problematic when the *jatropha* project started to fail. A second-rank UCABED leader recalled how the situation changed: '*When it was election time, the man was calientito (warm)*' (Informal conversation, 3 September 2013, Rio Salinas). By warm, he referred to how Emilio actively pushed for *jatropha* cultivation. After the project's failure, Emilio even avoided UCABED meetings. Once production and economic problems plagued the *jatropha* expansion, producers began to openly criticise Emilio's political aspirations, and some accused him of corruption. They deemed him largely responsible for the

jatrophas failure. A close relative of Emilio confided to us that UCABED members were considering to '*amarrarlo*'. The Spanish word, which literally means 'to tie him', refers here to the practice in some rural communities in Chiapas, especially indigenous, of locking a person in community jails or houses as a punishment for undelivered promises, which are interpreted as crimes. Emilio's political aspirations, certainly, were over. The productive failure of jatrophas signalled the end of compliance to the political project of UCABED's leadership by the social base.

The question can now be raised as to the consequences of the failure of jatrophas for the politics of consent in rural development. We described above how peasants were well aware of the political dimensions and withdrew their consent to their leaders' political projects when the development project failed. This failure did not, however, lead to a local questioning of political practices. In the case of jatrophas, peasants mostly reacted against their leader but not against the government. This acceptance of the political order by involved peasants explains why, regardless of failures, each new state intervention leads to a new round of participation. Unlike individual dealings with often corrupted or despotic government officials, large state interventions offered greater opportunities for material and political gains for local people.

Conclusions

This chapter showed that the economic and technical factors alone do not explain the expansion of biofuel crops in Chiapas. The state conceded power to local organisations that acted as intermediaries with the wider rural population in the course of promoting biofuel crops. This strategy strengthened local organisations by providing them with possibilities and resources to pursue their own ends (see, for a similar process in Brazil, Stattman and Mol 2014). Sometimes organisations opposed the government's plans, such as in the case of UCABED, which used jatrophas to increase its membership in poor, indigenous communities in an attempt to erode traditional political power. We showed that development was not only useful to outsiders and their political purposes (Ferguson 1990), but also served political interests of local populations. By following the adoption of biofuel crops as well as the contestation of previous government interventions, we focused, not so much on the state itself (e.g., its class character, functioning, internal organisation, party struggles, or legislative and executive processes), but on the local state-peasant relations. We were thus able to analyse how relationships between state agencies and local political processes are continuously defined and redefined both in material and discursive terms (cf. Jessop 2008). The description above of the micro-politics of productive development projects, such as those promoting oil palm, shows how

these establish legitimacy and reproduce (and sometimes transform) corporatism and hegemony, not simply from the centre to the marginal rural areas, but within the marginal rural areas themselves and from there to the centre.

This study also provides lessons for the field of political ecology. Political ecology is concerned with the politics of coercion, domination, and 'resistance' (e.g., farmers not accepting an agro-industrialisation driven by agrarian capitalism), but has often ignored the politics of consent (exceptions are Kull 2002; see, also, Lapegna 2015; Rangan 1995). More attention to the 'politics of consent' would serve political ecology to better understand the multiple roles that the state, through the heterogeneity of state institutions, can play in rural development interventions and in associated conflicts. Our data and analysis suggest that the 'domination and resistance' paradigm is insufficient to explain the biofuel case in the southern Lacandon rainforest. Leaders, in seeking political and economic opportunities, mobilised for state support even before government officials reached the region. Rural producers, generally well aware of leaders' ambitions, granted their support to the projects in order to tap into the state's resources. But with the same ease, producers turned away when their organisations or the productive projects failed. They were also willing to initiate a confrontation with the government when they felt their demands or concerns were left ignored. Rather than dominance and resistance (or a concept of hegemony defined as a perfect or nearly perfect system of domination that combines ideological and material considerations to impose a project upon a particular social group), we propose a concept of hegemony as a set of shared political practices between the state and its subjects that serves to reproduce a dominant political order. In this perspective, hegemony is potentially fragile, contradictory, and open to change. This is even the case for the Mexican state, which has a strong and successful tradition of corporatism, as well as a political elite with a capacity to manage regional particularities (or 'spatial and historical specificities' as Jessop 2008 would say) and a deep involvement in local politics. We have to understand hegemony as consisting of partial processes, co-constructed through local political processes and characterised by contradictory swings and hardly foreseeable outcomes. Coercion is part of hegemonic practices, but so is consent, often self-interested, as well as calculated subordination.

Chapter 4.

From Global Discourses To Local Environmental Change⁴⁸

Discourses on climate change, deforestation, carbon emissions, or biodiversity conservation are produced, reproduced, recreated, and contested in all regions of the globe and by all kind of actors, ranging from international organisations and national government agencies to corporations, local nongovernmental organisations (NGOs), and poor rural producers. While initially pushed to the global arena by a handful of international organisations, some industrialised countries, and few northern environmental NGOs, global environmental discourses emerge now from multiple fronts (Baud et al. 2011; Falkner 2012; McManus 1996; Peet and Watts 1996, 4-5). Transnational peasant organisations, such as *Via Campesina*, critical environmentalists from the South, and certification bodies all attempt to construct global environmental discourses with widely divergent goals (Jansen 2004; Martínez-Alier et al. 2014). Environmental discourses are not simply external to processes of environmental change and have to be seen as intimately linked to environmental management. Environmental discourses can, for instance, strongly shape the perceptions and actions of numerous actors in particular contexts, becoming in this way ‘social realities’ (Sayer 1992) with concrete environmental consequences. This chapter aims to elucidate how new global discourses in the oil palm case influence local processes of environmental change and whether these environmental discourses are conducive to sustainability.

In the oil palm case, two main global environmental discourses are identified. First, oil palm has become a symbol of deforestation, biodiversity losses, greenhouse gas emissions, and agrochemical usage. This global discourse emerged from the efforts of environmental activists and organisations trying to halt the large environmental impacts of the palm oil industry in Southeast Asia. Second, oil palm has also often

⁴⁸ This chapter was submitted to *Global Environmental Change* as Castellanos-Navarrete, A., van Rikxoort, H., and Jansen, K. Do global environmental discourses harm smallholders? Evidence from the oil palm case in Mesoamerica.

been associated with sustainability through certification. The corporate sector has mostly responded to critical environmental discourses by claiming a newfound sustainability through environmental standards and certification, especially through the Roundtable of Sustainable Palm Oil (RSPO). The RSPO certification includes standards that aim to prevent deforestation, to reduce agrochemical usage, and more recently, through the PalmGHG model, to limit the level of greenhouse gas emissions. While this ‘certification discourse’ has become increasingly important, the environmentalist tide is still very powerful (Pye 2010). As a consequence, this crop has raised environmental concerns wherever it has expanded. This study analyses the situation in Mesoamerica, where the recent oil palm expansion has also stirred a regional debate over its environmental impacts. Since 2000, the area under oil palm has rapidly increased in both Mexico (i.e., 59,564 hectares) and Guatemala (i.e., over 100,000 hectares) (Duarte et al. 2012; SIAP-SAGARPA 2015). Critical environmentalists in this region have reacted to oil palm’s possible impacts by translating global critical discourses to their own context (e.g. Castro-Soto 2009; SAVIA 2011). Corporations have responded mainly through allegiance with the global discourse of certification (GREPALMA 2012b). This study looks at three regions – two in Mexico and one in Guatemala – where smallholders are key actors in oil palm production. According to Solidaridad (2015), a Dutch civil society organisation, smallholders provide about 40% of the worldwide palm oil supply. Despite their importance, smallholders do not figure prominently in global environmental debates about oil palm, or in sustainability initiatives (Brandi et al. 2015; SNV 2015). This chapter asks how global environmental discourses shape conceptions over oil palm when smallholders are key actors and examines their social and environmental consequences, with particular emphasis on deforestation, agrochemical usage, and greenhouse gas emissions. To answer this question, we follow a political ecology approach.

Studies in political ecology have developed a critical tradition in analysing linkages between environmental discourses and power (Bryant 1998; Swyngedouw 2014). Scholars have shown, for instance, how colonial discourses on forestry or soil degradation have often been functional to top-down interventions by limiting access to resources for poor colonial subjects (Becker 2001; Bryant 1996; Jarosz 1993). Political ecology has analysed how state environmental discourses make local practices ‘illegible’, reinforcing the prerogatives of government officials or project administrators (Bassett and Zuéli 2000; Benjaminsen et al. 2010; Leach and Fairhead 2000; Lukas 2014). Powerful actors frame their environmental discourses as universally valid claims resulting in the dismissal of some local perspectives on environmental as inadequate (Bixler 2013; Kull 2000). In the case of certification, corporations often present standards as a neutral tool for governance or management,

supported by science, while standards can also be analysed as discursive devices shaped by and reinforcing power (Busch 2000; Ponte 2008). Political ecology has been particularly useful in problematising the assumptions and exposing the consequences of grand environmental narratives, especially the consequences for the rural poor or for other excluded populations. We use the political ecology approach to consider both the multiple environmental interpretations of oil palm's impacts and how these discourses relate to local processes of environmental change.

This chapter has five sections. The first section describes the study regions and the methods of our research. The second section shows how local environmental change processes strongly shaped smallholders' conceptions of oil palm. The third section explores how environmental organisations translated critical environmental discourses to the study regions and how this, inadvertently, displaced local interpretations of environmental change related to oil palm from view. The fourth section critically assesses the assumptions underpinning the 'certification discourse' and analyses the effectiveness of certification in curbing environmental impacts. This chapter argues that global environmental discourses can work against efforts to achieve environmental sustainability. This underlines the importance of analysing concrete consequences of apparently benign narratives, especially when the livelihoods of vulnerable social actors are at stake.

Study regions and methods

Study regions

This research was carried out in three regions in Mesoamerica: i) Soconusco (Huixtla and Villa Comaltitlán municipalities) in Southern Mexico; ii) the southern Lacandon rainforest (Marqués de Comillas and Benemérito de las Américas) in Southern Mexico; and iii) the Northwestern Transversal Strip or Western NTS (Chisec, Cobán, and Ixcán municipalities) in Northern Guatemala. These regions have different environmental characteristics. Soconusco has coastal plains that farmers have mostly planted with pastures or cash crops, with wetlands and mangrove ecosystem areas partly protected within the Encrucijada Biosphere Reserve. Both the southern Lacandon rainforest and the Western NTS are contiguous rainforest frontiers opened to agriculture in the 1970s (de Vos 2002). Despite extensive deforestation, evergreen rainforests still cover 60% of the southern Lacandon rainforest and about 40% of the Western NTS (PACCCH 2011; Regalado et al. 2012). Smallholders in these regions participated in oil palm production in significant numbers – a typical situation in Mexico but exceptional in Guatemala, where larger companies produce most oil palm. Most Mexican smallholders were independent producers organised in

large organisations. Some organisations had collective commercial agreements with processing mills, and, in two cases, organisations had mills on their own. Guatemalan smallholders were mostly linked to the processing industry as individual contract farmers.

Smallholders in the study regions were a highly heterogeneous sector. For instance, average farm size for smallholders in oil palm production was 10.0 hectares in Soconusco, 42.8 hectares in the southern Lacandon rainforest, and 26.2 hectares for the Western NTS. These producers had, respectively, an average of 5.5, 13.8, and 12.5 hectares of their land under oil palm. This chapter will refer to smallholders as the ‘social sector’, comprising oil palm growers living in rural communities with varying access to land, capital, and labour. The ‘private sector’ includes companies managing their own plantations or investors, sometimes enriched farmers, who came to one of the study regions with the sole purpose of planting oil palm. The average size for private sector plantations was 486 hectares in Soconusco, 272 hectares in the southern Lacandon rainforest, and 978 hectares in the Western NTS.

Data collection

Fieldwork consisted of 17 months of data collection between 2011 and 2013. The data consist of 90 semi-structured interviews, field observations, and a survey of 325 oil palm producers. Interviews focused on land use change, soil degradation, regional economic history, environmental change, and certification. Interviews were held with social and private sector producers, local technicians, leaders of former and current rural organisations, personnel of environmental NGOs, and current and former government officials. Informal conversations and observations were recorded daily during fieldwork. Surveys collected information on oil palm production (i.e., inputs, tools, practices, and yields), land use change (i.e., land uses before oil palm at plot and farm level), and socio-economic characteristics before and after oil palm (i.e., land access, main income source, and off-farm employment). The survey sample was drawn from 59 rural communities across the study regions. Smallholders were randomly selected from oil palm production censuses developed by government agencies or producer organisations themselves (see Introduction). Private sector plantations were first identified in the study regions through key informants and then randomly surveyed⁴⁹. Rural producers were preferentially surveyed in oil palm plots to contrast responses with visual observations on production practices and land use changes.

⁴⁹ Survey information on one private sector plantation was not derived from the plantation manager but from a former foreman who had departed his job on good terms.

Land use analysis

A brief land use analysis based on satellite images was carried out to locate oil palm plantations in the study regions, as well as to obtain information about land use change for particular oil palm plots when survey information was considered unreliable. This analysis utilized two SPOT 5 images, with a 2.5 m panchromatic band and 10 m multispectral bands, which were acquired in March 2013 and processed through ERDAS Imagine, ArcView GIS, and Quantum GIS. Oil palm plantations were identified based on colour and planting pattern in pan sharpened images at a 1:5000 scale.

Estimating the emission of greenhouse gases

This chapter provides an estimation of greenhouse gas emissions (GHG) based on the PalmGHG model (version Beta 1a; Chase et al. 2012)⁵⁰. This static linear model will be part of the Roundtable for Sustainable Palm Oil (RSPO) certification in 2017 (RSPO 2013). The PalmGHG calculator provides an estimation of GHG emissions – including carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) – expressed in carbon dioxide equivalents (CO₂e). Data collected from the 325 surveyed farms were used as input for the model. GHG estimation was limited to crop production plus transport to mills whenever producers themselves carried it out, excluding emissions from palm oil processing.

The PalmGHG model estimates emissions from oil palm through four steps (Bessou et al. 2013; RSPO 2012). First, land clearing is estimated as the carbon biomass lost as carbon dioxide from the burning or decomposition of previous vegetation divided over a full oil palm cycle (i.e., 25 years). Whenever possible, carbon biomass in previous land uses were adjusted to measured values in the study regions (Table 7). Second, the model considers soil carbon emissions for two categories: mineral and peat soils. Preliminary soil analysis ruled out the presence of peat soils in Soconusco. Third, the model estimates carbon stored by oil palm based on carbon storage in both oil palm trees (i.e., trunk and leaves, frond piles, shed frond bases, and shed male inflorescences) and on associated vegetation (i.e., ground vegetation and litter). Carbon sequestration by oil palm is calculated as the difference in total carbon stored between successive years and subtracted from total emissions after conversion to CO₂ equivalents. The model attributes greater oil palm yields and, therefore, greater carbon storage potential to private sector plantations when compared to smallholders' plots, due to assumed differences in plantation management (see RSPO 2012). Fourth, the model estimates emissions from both inorganic and organic fertiliser inputs. Emissions from inorganic fertilisers

⁵⁰ This model was recently replaced by the 2.0.1 version, but formulas for GHG emission estimations are very similar.

correspond to manufacture and transport, as well as to direct (e.g., N volatilisation) and indirect emissions after field applications (following IPCC 2006). We modified the model to add several fertilisers previously missing. And fifth, the model provides an estimation of emissions from fuel consumption. Fuel consumption includes fuel consumption both within the plantation and between the plantation and the collection centre or mill, whenever the processing mill was not responsible for fruit collection. This model considered herbicide emissions negligible in agreement with previous studies (Audsley et al. 2009). Calculations do not include pesticides because of their limited use, reflecting limited presence of pests that target oil palm in the study regions⁵¹. This analysis excluded agrochemical usage during nursery stages, as most producers only accessed post-nursery plants. We also estimated the carbon debt based on the PalmGHG estimates. The carbon debt refers to full CO₂e emissions derived from oil palm production, including emissions derived from land use change and production inputs.

Table 7. Aboveground carbon stored in biomass used as input for the PalmGHG calculator

Mainland uses (specify)	Carbon stored in aboveground biomass ^a (tC ha ⁻¹)	Source (reference)
Rainforest	233.4	de Jong et al. 2000
Secondary vegetation ^b	60.5	de Jong et al. 2000
Pasture	23.2	de Jong et al. 2000
Pasture with trees	74.0	Soto-Pinto et al. 2010
Banana	7.2	Brakas 2011
Maize (and other annual crops)	2.4	Soto-Pinto et al. 2010
Cocoa-based agroforestry syst.	49.2	Somarriba et al. 2013
Mango-based agroforestry syst.	70.1	Brakas 2011; Kanime et al. 2013

Notes:

^a Data from the study regions was favoured whenever possible.

^b Plots under fallow with ages ranging from 2 to 10 years.

The role of local environmental processes in the conversion to oil palm

The most important land use changes verified in the study regions were from pastures to oil palm (46%), followed by conversions from other crops (32%), as well as from secondary vegetation (14%) and from the tropical rainforest (8%) (Figure 8). In Soconusco, most land has already been converted into agriculture, limiting

⁵¹ Rats did attack young oil palm plants if producers planted them in former pastures, and moles damaged the crop in sandy soils. Farmers employed a mixture of poisoned baits and more traditional traps (typical in maize farming) to control these limited problems. *Rhynchophorus palmarum* attacks also had a small impact, and producers applied small doses of pesticides directly into the palm trunk whenever attacks were identified on time.

the conversion of natural habitats into oil palm. Our survey indicated most oil palm planting occurred on agricultural land (97%). Oil palm had been planted in this study region since the 1950s; 33% of the sampled area consisted of land already dedicated to oil palm planting. By contrast, in the southern Lacandon rainforest and in the Northwestern Transversal Strip (Western NTS), oil palm replaced natural vegetation for 40% and 31% of the sampled surface, respectively. A quarter (25%) of oil palm production in the Western NTS in Guatemala occurred on land previously dedicated to maize, while only 4% of land converted in Soconusco and 3% in the southern Lacandon rainforest had been planted with maize. In our interviews, local producers in all the study regions pointed to land degradation as a main driver for the conversion to oil palm. Environmental dynamics did differ between coastal Chiapas (Soconusco) and rainforest frontiers (the southern Lacandon rainforest and the Western NTS). This section explores how land degradation, as perceived by local producers and explained in its historical context, explains the current oil palm expansion in both Soconusco and in the rainforest frontiers.

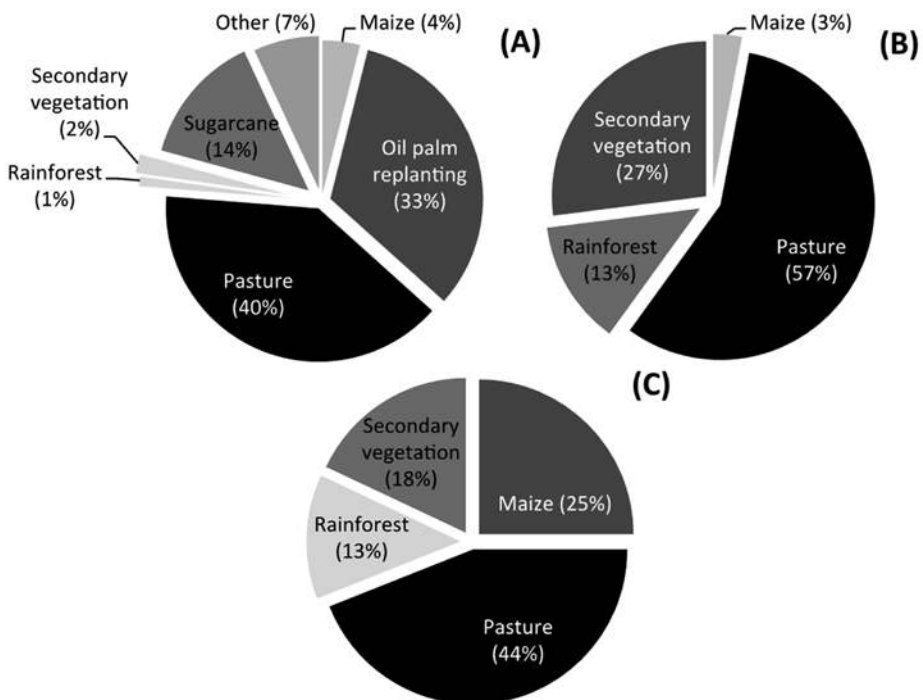


Figure 8. Land use changes to oil palm in Soconusco (A), in the southern Lacandon rainforest (B), and in the Western NTS (C)

Source: Survey of 325 oil palm producers.

A German migrant planted the first oil palm in Soconusco in 1952, and other producers gradually adopted it as they saw its advantages. Questioned why they converted their lands into oil palm, producers in Soconusco referred to agroecological reasons as well as economic motives, with particular emphasis on the capacity of oil palm to withstand floods. A smallholder planting oil palm in the region commented:

There is nothing that can compete with oil palm. [...] Cattle are in danger [as a result of floods], and the banana producers had many losses. At the time of [Hurricane] Stan, those with oil palm had no problem, while the banana was wedged [i.e., flood sediments desiccated banana crops]. In this sense, oil palm is superior in adaptation to this region in comparison with other crops. (Interview, 4th April 2013, Xochicalco Nuevo)

As the producer explains, oil palm, unlike other crops, resists even the worst flooding, such as the ones Hurricane Stan inflicted on the region in 2005. Flood incidence, indeed, often led to the conversion to oil palm: 58% of the surveyed oil palm plots had some trace of recent flooding, specifically deposited layers of flood sediments, sometimes as thick as one metre. Smallholders referenced resistance to waterlogging problems as well as flood resistance. Oil palm was the only crop that permitted continuous cropping in plots located in low-lying sections of the landscape where groundwater often rose above the soil's surface, especially during rainy periods. As both smallholders and large landowners saw the advantage of oil palm in floodable regions, they adopted the crop over pastures or sugarcane.

Shifts to oil palm were very significant in lands next to or within the Encrucijada Biosphere Reserve. These lands are just above and even below the sea level and particularly prone to episodic and seasonal flooding as well as waterlogging. Oil palm offered local producers in these areas a solution to the chronic difficulties they had faced (Figure 9). Therefore, it offered unprecedented economic opportunities, providing many smallholders a continuous income from agriculture for the first time. Before cultivating oil palm, many smallholders lived on seasonal cropping, particularly maize production in dry parts and high-input watermelon production in the wetter parts. They often migrated or worked seasonally for others to compensate for their inability to farm for part of the year. Oil palm led to a significant landscape transformation within the Encrucijada Biosphere Reserve. While agriculture is permitted in areas labelled as 'use' within the reserve, some oil palm also expanded in areas labelled as 'conservation' (where only agroecological production is permitted) and in 'restricted' areas where no agriculture is permitted (INE 1999).

Oil palm expanded in Soconusco because it is resistant to temporary waterlogging and floods that result from long-triggered processes of environmental degradation. Before the agricultural expansion in Soconusco, rivers born in the Sierra Madre meandered in the lowlands, often shifting courses throughout the years and feeding a system of wetlands, locally known as '*pampas*'. *Pampas* were variable in size, but some were as big as 27,000 hectares (Tovilla Hernández 2005). The coastal fringe

was particularly biodiverse, as sea and river water met under complex seasonal patterns leading to a rich landscape made of mangroves, forests, and herbaceous marshes teeming with life. This region was, however, drastically modified by two processes. First, in 1985, the Hydraulic Plan for the Chiapas Coast listed several hydrological interventions for the region, including the embankment of rivers, the construction of channels, and the drainage of wetlands (INE 1999; Lasch 2006). Straight and embanked river tracts in both Huixtla and Villa Comaltitlán municipalities that partly prevent rivers from feeding wetlands still offer evidence of these interventions. Second, this region has also lost about 82% of the original forest cover in the last century, in both the lowlands and in the adjacent Sierra Madre (CAN 2000, 2003; cited by Tovilla Hernández 2005). Deforestation has, seemingly, favoured soil erosion in the Sierra Madre and siltation in the lowlands. Both the hydrological transformations and deforestation triggered the partial desiccation of wetlands. The desiccation of wetlands permitted the expansion of agriculture into the area. This landscape transformation has, however, not been exempt of problems. The combination of heavy rains, silted rivers, and poorly kept river sand levees often results in rivers flooding into cropland, particularly during hurricanes. In this context, local producers believed oil palm emerged as a solution to the problems earlier landscape transformation had created. Contrary to global narratives about oil palm, producers hailed the crop not as a cause of environmental degradation but as a productive alternative to historical problems of land degradation.

The expansion of oil palm in rainforest frontiers was also related to preceding problems of land degradation. Both the southern Lacandon rainforest and the Western NTS across the border can be considered as grossly divided in two major soil types: flood plains and upland soils. Soils in the flood plains, locally known as '*vegas*', are highly fertile, as river floods frequently deposit nutrient-rich sediments in these areas. In contrast to the flood plain soils, rural families generally consider upland soils, despite their variability⁵², to have low soil fertility. A cattle producer described upland soil:

This soil does not work for cattle – lack of nutrients, maybe lack of many things in the soil. The cattle starts eating sticks, plastics, ropes, the cattle eat lots of things [despite available pastures], and the cattle [become sick and] do not heal – the cattle die. I had some cows that died here, and you do not see the output. You have a cow about which you say: well, I want this cow for calving. The cow gives birth to one or two calves and the cow goes down [loses weight]. (Interview, 27 August 2012, La Victoria)

This producer probably considered poor soil fertility as an important obstacle for cattle production. Maize producers in upland soils in the Western NTS faced

⁵² They classify the upland soils in terms of soil texture, such as '*suelos arenosos*' (sandy soils) or '*barriales*' (clayey soils). They also pointed out how these soils were distributed in complex patterns throughout both regions.

similar problems. A leader of the Association for the Maya Q'eqchi' Microrregional Development (ASODEMAQ) indicated that maize yields were about 1.3 tonnes per hectare and that yields required ever-growing levels of fertilisation inputs (Interview, 3 October 2013, Las Flores). These smallholders could not apply too much fertiliser given the low maize prices. Many decided to shift to oil palm in an attempt to find an alternative for their low productive soils (Figure 10). Oil palm thus emerged as a possible alternative for households living on cattle, as well as those living on maize (the latter particularly in the Western NTS).

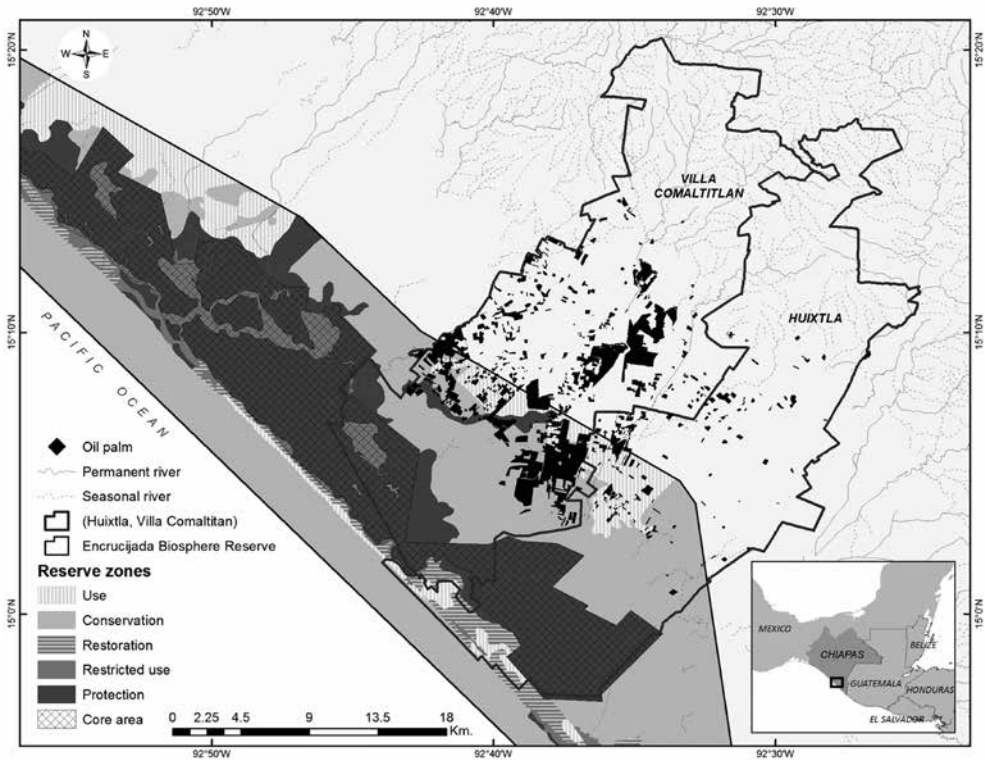


Figure 9. Area under oil palm in Soconusco in 2013
Source: Land use analysed based on satellite images.

To understand the shift to oil palm, we have to look at environmental change in its historical context. Both the southern Lacandon rainforest and the Western NTS region were opened to agriculture in the 1970s. In both the study regions, most land granted by the state to rural producers was covered by rainforests, and they had to clear part of their plots for agriculture. Deforestation rapidly degraded crop productivity in upland soils. Most nutrients in rainforests are located in the forest biomass and not in the soils, so forest clearing releases large amounts of nutrients

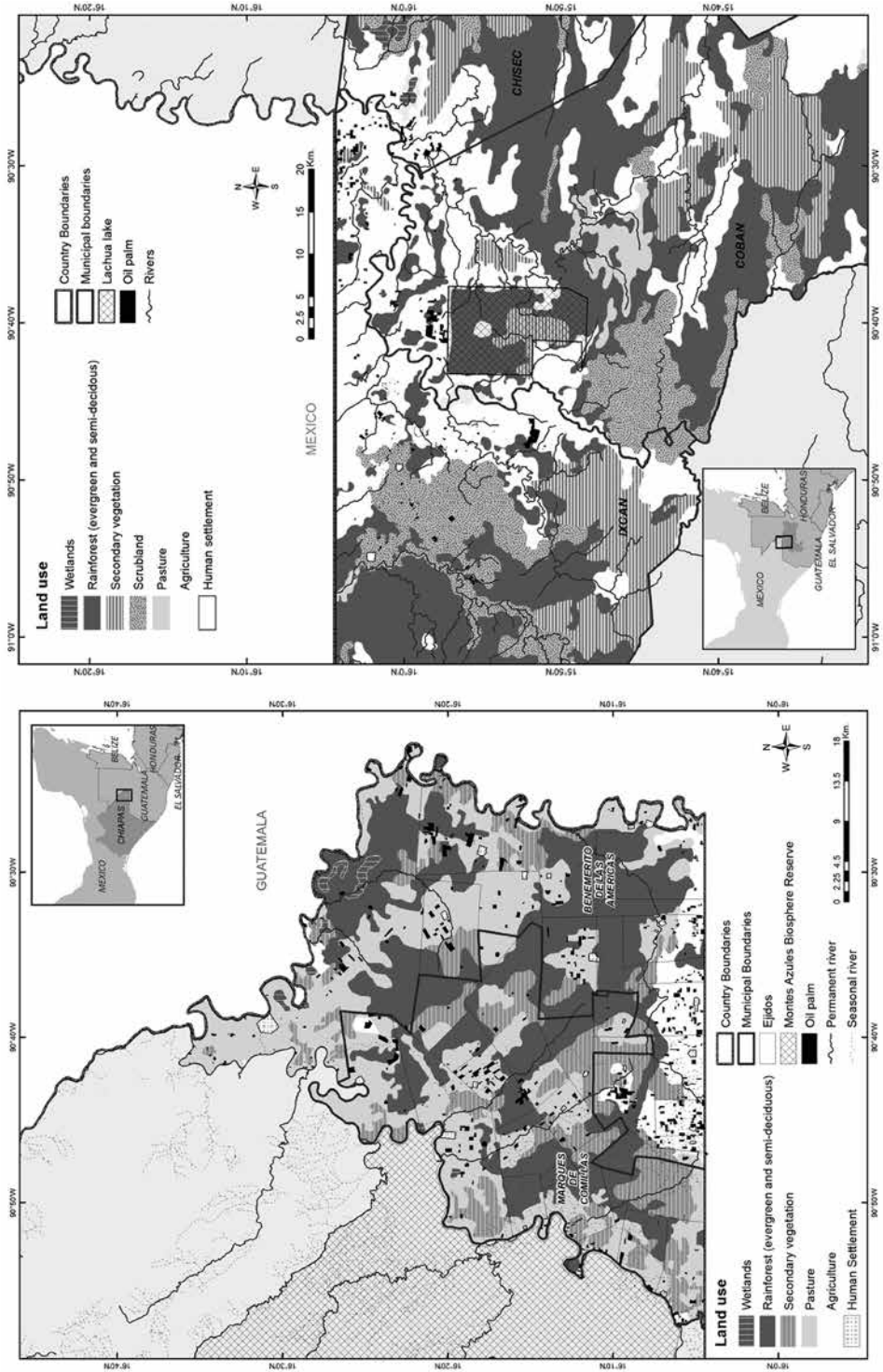


Figure 10. Area under oil palm in 2013 in the southern Lacandon rainforest (left) and in the Western NTS (right) Source: Land use analysed based on satellite images.

into the soil, which exposure to weathering rapidly dissipates, favouring high yields and short-term productivity with the loss of soil fertility in the long term (Eden et al. 1991; McGrath et al. 2001). A former government technician involved in the first agricultural projects in the Western NTS described these lands as simply inappropriate for agriculture (Interview, 5 April 2013, Guatemala City). Producers who farmed on this land had few options. Those with sufficient land opted for extensive cattle production, as it provided some regular income. Producers with less access to land, especially those located in Ixcán (Western NTS), who only received ten hectares of land as part of the Playa Grande Settlement project (Dennis et al. 1988), chose maize instead. In both cases, low returns greatly limited producers' efforts to improve their soils, and soil fertility further degraded. De Jong et al. (2000) found, for instance, that soils had 52% less organic carbon than rainforest soils, a key element for nutrient retention, 20 years after producers cleared them for pastures. This process of land degradation ultimately drove, especially in the poor upland soils, the shift to oil palm. Land degradation did, however, not affect all producers equally. Producers with capital could access fertile soils by purchasing land covered by forests or secondary vegetation, locally known as *acahuales* or *guamiles*, and clearing it for agriculture. This occurred, in fact, for 13% of the oil palm area surveyed in both the southern Lacandon rainforest and in the Western NTS (cf. Figure 8).

The oil palm expansion was associated with complex local environmental processes across the study regions, in which historical processes of land degradation played a key role. In Soconusco, local smallholders perceived oil palm as a good productive alternative to production losses caused by floods and waterlogging, especially in lands located next to or within the Encrucijada Biosphere Reserve. The particular productive advantages local producers saw in oil palm, and longer processes of environmental degradation, drove this expansion, which has put further pressure on the Encrucijada Biosphere Reserve. In the southern Lacandon rainforest and the Western NTS, oil palm expanded as local producers considered it a productive alternative for their poor upland soils. In this case, however, producers have also cleared forests or secondary vegetation plots for oil palm cultivation. This section has shown that the particular environmental circumstances affecting agricultural production in each of the study regions strongly shaped the interest of rural producers' in oil palm.

Conflictive interpretations on environmental change

This section addresses the question of how critical environmental narratives on oil palm relate to local environmental processes and the mitigation of environmental impacts by oil palm. Critical environmental narratives on oil palm have roots in the work of environmental organisations, including transnational ones, to raise public awareness on the large environmental impacts of the oil palm industry in Southeast

Asia. In Indonesia alone, large-scale oil palm plantations have led to an estimated loss of 1 million hectares of tropical rainforests (Abood et al. 2014). Deforestation rates in Southeast Asia have been particularly high in Borneo and Sumatra (Bryan et al. 2013; Carlson et al. 2013; Ramdani and Hino 2013), with the subsequent impacts on biodiversity (Barnes et al. 2014), including on endangered species such as the orangutan (Wich et al. 2012). Deforestation and the conversion of carbon-rich peat lands to oil palm production have also made this crop one of the top global CO₂ emitters in agriculture (Achten and Verchot 2011; Fargione et al. 2008). Oil palm production has also been associated with pollution by agrochemicals (Larsen et al. 2014). In their attempt to halt these environmental impacts, many critical organisations published reports, studies, and documentary films offering a critical environmental narrative of the oil palm sector. Some environmental organisations, such as Greenpeace and Friends of the Earth, staged public actions or started boycott campaigns, while others lobbied governments for policy changes. This mobilisation led to the emergence of a new environmental discourse on oil palm that effectively associated this crop with burning forests, global warming, and killing endangered species. These discourses tended to offer a stylised account of the environmental consequences of oil palm expansions. For instance, the Rainforest Action Network wrote on its website: 'In Indonesia, rainforests are razed to create industrial palm oil plantations, releasing massive quantities of carbon dioxide into the atmosphere' (Rainforest Action Network 2015). This quotation was followed by a scientific reference, but the sentence written offered an unequivocal account of oil palm's impacts bypassing the nuances of the referred scientific text. As pointed out by Li (2002), narratives by activists often need to push forward 'engaging simplifications' by effectively 'making headway in the policy arena'. Such discourses effectively cast a shadow over the oil palm sector, which, previously, had not responded to its social and environmental impacts. Critical environmental discourses achieved a global status, as a news piece in the *New York Times* that called oil palm an 'eco-nightmare' suggests (Rosenthal 2007).

Critical environmental discourses on oil palm also became popular in Mesoamerica as this crop rapidly expanded in the region. Oil palm was the most planted crop between 2003 and 2013 in Chiapas (SIAP-SAGARPA 2015), and 62,328 hectares of land were planted with oil palm in Guatemala in seven years (Duarte et al. 2012). This rapid expansion of oil palm led to growing environmental concerns across the region. As in Asia, environmental organisations reacted to the oil palm expansion by publishing reports, often written in the form of scientific studies, which served as the basis for their subsequent activism. A report called 'The Ecological Reality of Guatemala', produced by an NGO was typical. It described deforestation, biodiversity losses, loss of land, subsistence farming, and excessive water usage as consequences of oil palm (SAVIA 2011). In a similar vein, an organisation in Nicaragua reported:

Traditional crop management in oil palm production, as in traditional slash and burn agriculture, not only pollutes the environment and releases greenhouse gasses, but also causes erosion by leaving soils unprotected in a region with abundant rainfall, as well as impoverishes soils and makes these dependent upon agrochemicals. (Fundación del Río 2010)

As these examples illustrate, local organisations reproduced the global critiques of the crop. These organisations also added new elements: they referenced oil palm's impacts on soil and water resources. Some organisations described oil palm as a monoculture (Carrere 2001; Castro-Soto 2009; Madriz Paladino 2011), thereby connecting the opposition to oil palm with wider struggles against industrial agriculture. These were particular local critiques.

Influenced by environmental critiques, local producers, environmentalists, and critical agronomists in the study regions increasingly considered oil palm responsible for 'land degradation' and 'desiccation'. Oil palm's roots, according to local accounts, grew in excess, sometimes for hundreds of metres, and absorbed all the water in the soil. Although governments in Mesoamerica had promoted oil palm as a sustainable alternative for rural development, critical environmental narratives on oil palm also became popular among some government officials, especially in those agencies with a mandate for environmental issues. While the origin of such discourses is probably impossible to trace, it could be argued that this new regional discourse articulated a variety of social concerns about this crop. Cattle ranchers in Chiapas, for instance, feared displacements by large oil palm plantations and opposed oil palm on environmental grounds (see Castellanos-Navarrete and Jansen 2015). Environmentalists within the Mexican government felt the government push for oil palm cultivation threatened their mandates. Interestingly, this new discourse essentialised oil palm. Actors in the region considered oil palm inherently damaging; it was the crop itself that caused land degradation and desiccation⁵³. Critiques spared species like coconut and the local royal palm, both of which had similar root development to oil palm, and banana, which often demands more water than oil palm (Carr 2009, 2011). Given these simplifications, these critiques seemed more social than environmental. Oil palm in Mesoamerica fuelled a sort of 'moral panic'; many social actors perceived oil palm as a threat to the social order. This critical environmental discourse on oil palm had concrete consequences in the study regions.

In Soconusco, local critiques of oil palm, including by personnel from the Encrucijada Biosphere Reserve, often attributed to oil palm the propensity to dry out soils and, even, to slowly exhaust neighbouring streams, rivers, or the groundwater. The confirming evidence was, according to some, the gradual loss of

⁵³ In Guatemala, this crop, and sometimes palm oil mills, were also held responsible for fly infestations. While rotting, empty fruit bunches, which are mills' waste and often used for compost in plantations, probably attract flies, this critique also seemed to attribute a negative character to the crop itself.

wetlands (*pampas*). This interpretation, however, ignores how desiccation started well before the oil palm expansion. In fact, it was the process of desiccation that, probably, permitted oil palm cultivation in the coastal lowlands in the first place. The framing of oil palm as the cause of environmental degradation in the region generated social tensions, as it contrasted with other local perspectives on the crop. According to other voices, rather than a cause of degradation, oil palm permitted cropping in adverse environmental circumstances. Interestingly, widespread critiques of the crop even created concerns amongst oil palm producers. In a meeting we had with representatives of a large cooperative, the first question was about the environmental impacts of oil palm. As evident in many interviews, the environmental question soon took centre stage when oil palm was discussed.

In the southern Lacandon rainforest, oil palm also became synonymous with soil degradation. Tensions were inevitable, as oil palm producers had different perspectives on land degradation from oil palm's critics. In an interview, a very poor smallholder recalled how, when he was planting the crop, a wealthy cattle owner sitting on his horse yelled at him from a distance about how insane he was for destroying his own land (Interview, 17 July 2012, Quirigüicharo). Tensions between oil palm producers and oil palm's critics ran high. In interviews, some oil palm producers dismissed critical comments as unsupported by evidence, but others attributed such comments to political motivations. For instance, local teachers were particularly critical of the crop. Oil palm producers attributed this to their allegiance to the Green Party⁵⁴. This party gained electoral support in the region by opposing local agrarian leaders, including those promoting oil palm, and focusing on the demands of landless rural families. As in Soconusco, local interpretations by oil palm producers could not compete with the more popular critical narrative on this crop.

The conceptualisation of oil palm as an environmental threat became popular among civil society organisations, activists, a part of the rural population, and even among environmentalists within the government. This critical perspective also influenced policy. For instance, a national report in Mexico by a government institution claimed that oil palm, because it was planted as a monoculture, could lead to 'soil salinisation, soil erosion, and recurring floods' (CONABIO 2012, 34). Environmental critiques of oil palm began to displace other local views and perspectives and seemed to derive their legitimacy from the use of scientific knowledge. As it happens with marginalised actors, smallholders were unable to shape the 'terms of the debate'. The critical environmental discourses also had implications for the environment. In general, environmentalists refrained from working with smallholders to prevent the possible environmental impacts by oil palm production. This is not surprising,

⁵⁴ Ecological concerns do not necessarily rank high in this party.

considering the notoriety of the crop for being inherently damaging, a perspective that leaves few options beyond eradication. Nobody provided an effective mechanism to prevent impacts by smallholders' shifting to oil palm within the Encrucijada Biosphere Reserve or to prevent deforestation in the southern Lacandon rainforest and the Western NTS. Critical environmental discourses on oil palm have served to attract attention to oil palm's environmental impacts, but in Mesoamerica it did not necessarily serve to understand and prevent such impacts.

The RSPO certification: standards for re-legitimation

Due to the strong environmental critique described above, smallholders producing oil palm felt increasingly delegitimised in their communities. In this context, they gradually considered certification as the best strategy to deal with widespread societal critiques to oil palm. Certification has, indeed, become part of a counternarrative to critical environmental discourses of oil palm. We, therefore, explore in this section if certification would curb environmental impacts by oil palm in the study regions and discuss some possible consequences for participating smallholders. This section reflects on the assumptions underpinning RSPO certification, the most important global governance mechanism for oil palm and the key strategy of the private sector to counteract environmental critiques of the oil palm industry. Certification is still incipient in Mesoamerica – only four companies have been certified by Rainforest Alliance (GREPALMA 2013) and one by RSPO (RSPO 2015) in Guatemala with none located in the study regions⁵⁵.

Growing concerns about oil palm expansion in Southeast Asia spurred the World Wide Fund (WWF) to forge a private sector partnership for setting a standard on sustainable palm oil (Schouten 2013, 62-63). The Roundtable for Sustainable Palm Oil (RSPO), established in 2004, devised possible solutions to environmental impacts of the palm oil industry. The RSPO initiative gained traction as large-scale plantations and palm oil companies increasingly considered environmental critiques as a threat to profits, especially for the export of palm oil to Europe (Pichler 2013). The RSPO agreed upon a certification scheme in 2007 and by 2013, RSPO had certified about 15% of the total global palm oil production (Oosterveer et al. 2014). The RSPO standards deal with contentious environmental issues, such as deforestation, the loss of natural habitats, and agrochemical usage. Global warming debates and oil palm's contribution to GHG emissions has prompted the development of the GHG calculator. This model estimates plantations' contribution to global warming gasses and will be included in the certification scheme as of 2017 (RSPO 2013).

⁵⁵ A private company with plantations in the Western NTS started the process of RSPO certification, but this was interrupted by a change in the company's ownership (Interview, 18 January 2012, Guatemala City).

The widely publicised critique of deforestation motivated the inclusion of strict standards for deforestation in the RSPO scheme. RSPO standards exclude from certification any producer who has cleared forests for oil palm planting after November 2005. This is an effective measure for the rainforest frontiers in this study, as most oil palm was planted after this date. The RSPO certification would exclude from certification 16% of the surveyed oil palm producers in the southern Lacandon rainforest in Mexico and 8% for the Western NTS in Guatemala. The November 2005 baseline for deforestation also applies to the protection of other natural habitats. This may be relevant in Soconusco, where certification could serve to protect herbaceous marshes with ecological value and is subject to pressure by oil palm expansion within the Encrucijada Biosphere Reserve. The rate of conversion of natural marshlands to oil palm in the reserve was, however, limited, as most producers were smallholders without the means to drain and claim wetlands for oil palm cultivation. The conversion of wetlands to oil palm in our survey was only 1%.

RSPO certification also addresses agrochemical usage, which figures prominently in critiques of oil palm in Mesoamerica. While pesticides are used only occasionally, inorganic fertilisers and herbicides can have a significant environmental impact. As to fertilisers, oil palm producers added, on average, 30 kilograms of nitrogen, 20 kilograms of phosphorus, and 28 kilograms of potassium per hectare and year (Table 8). About 28% of total fertiliser applications were in the form of organic fertilisers, particularly compost. Except for private sector plantations in Soconusco, fertilisation levels were low when compared to recommended levels for oil palm production in Southeast Asia (see Lam et al. 2009). Low levels of fertilisers' application were probably related to the average age of oil palm. In the southern Lacandon rainforest and the Western NTS, the average age of oil palm was three and two years old, respectively. Fertilisation rates will likely increase as plantations reach maturity (> five years old), and levels may be comparable to Soconusco. When it comes to agrochemical usage, RSPO's standards require the application of 'good agricultural practices' without setting up any limitations to amounts used (RSPO 2013). While the levels of agrochemical usage recorded in the study regions were not problematic, RSPO standards seem insufficient to curb potential impacts.

Regarding herbicides, the social sector applied an average of 6.0 kilograms of herbicides' active ingredient per hectare and year, while the private sector with large plantations applied 7.6 kilograms (cf. Table 8). On average, the private sector relied more on herbicides when compared to the social sector. Several private sector plantations did, however, completely substitute herbicide applications by hiring labour while smallholders, albeit at lower levels, more frequently relied on herbicide inputs as a labour-saving strategy. Herbicides were particularly important for smallholders when oil palm was immature (< five years old), as oil palm trees

were still not large enough to shadow the floor and suppress weed growth. As with fertilisers, the RSPO certification approach to prevent herbicides' impacts on health and on the environment is based on the principle of efficient use. RSPO standards for herbicide use only established limits to paraquat use, which was commonly applied in the study regions. These standards can serve to reduce applications in Mesoamerica, especially for the case of paraquat, but might also pose a greater burden for smallholders given their lower access to labour when compared to the private sector.

Table 8. Average agrochemical inputs per producer type and region

	n	Average oil palm age (year)	Inorganic fertiliser			Herbicides	
			Nitrogen (kg/ha)	Phosphorus (kg/ha)	Potassium (kg/ha)	Paraquat (kg ai ^a /ha)	Glyphosate (kg ai/ha)
Soconusco							
Social sector	119	7	47	22	39	0.9	0.3
Private sector	6	10	146	23	232	0.0	0.1
Southern Lacandon Rainforest							
Social sector	121	3	19	19	13	2.4	6.9
Private sector	4	1	8	8	8	11.6	9.1
Western NTS							
Social sector	75	2	30	20	21	2.9	4.7
Private sector	1	2	37	33	30	0.0	0.0

Source: Survey of 325 oil palm growers in the three study regions.

Note:

^a ai stands for active ingredient.

RSPO certification's role in minimising the emission of GHGs, once implemented in 2017, also has implications for Mesoamerica. Using the RSPO PalmGHG calculator, we calculated that oil palm led to the release of 6.2 tonnes of carbon dioxide equivalents per hectare and year in the study regions (6.2 tCO₂e ha⁻¹ y⁻¹; see Table 9). Estimated emission levels for GHGs were higher for the southern Lacandon rainforest when compared to Soconusco and the Western NTS. In terms of GHG sources, the loss of landscape carbon associated with the conversion to oil palm is often the greatest contributor to GHG emissions (Searchinger et al. 2008; see, also, Appendix IX for yearly emission levels per source for all three study regions combined). In Soconusco, most of the area converted into oil palm was already cropped (97%), so GHG emissions were limited (cf. Figure 8). Carbon dioxide emissions associated with land use change were higher in rainforest frontiers, as the oil palm expansion involved, in occasions, the clearing of secondary vegetation and, especially, of carbon-rich forests (i.e., 13% of the planted area for both rainforest

frontiers). Regarding production inputs, most emissions derived from fertiliser usage (0.6 vs. 0.1 tCO₂e ha⁻¹ y⁻¹ for fuel)⁵⁶. When it comes to total emissions, the RSPO GHG model provides lower estimates for these study regions in Mesoamerica when compared to Southeast Asia – the average carbon debt across the study regions was 155.5 tCO₂ versus 861.3 tCO₂e estimated by Achten and Verchot (2011) for four oil palm regions located in Indonesia and Malaysia. Existing literature offers a limited basis for a comparison of GHG emissions within the oil palm sector in any case. Several studies on GHG emissions do not include emissions from land use changes (Choo et al. 2011; Lam et al. 2009; Silalertruksa et al. 2012) or consider emissions only from specific land use conversions (Reijnders and Huijbregts 2008; Wicke et al. 2008). Only a few studies provide GHG emissions estimations for oil palm based on actual land use conversions (Achten et al. 2008; Achten and Verchot 2011; Carlson et al. 2013; Ramdani and Hino 2013). Life cycle assessment studies have more thoroughly considered the contribution of production inputs to global warming, but were often based on hypothetical production systems (Chase and Henson 2010; Pehnelt and Vietze 2013). The review of the existing literature points to the difficulty of establishing a sustainable threshold for GHG emissions in the oil palm sector.

The possibility to limit GHG emissions in the study regions through RSPO certification is impaired by the nature of the model used⁵⁷. The PalmGHG calculator discounts the carbon stored in natural reserves within farms from total GHG emissions. This renders many farms and plantations in our sample in Mesoamerica net carbon sinks (cf. Table 9). This is particularly problematic, as the GHG calculator uses data at the plot level (single fields) while it discounts emissions at the farm-level (i.e., it calculates carbon storage at the farm level without considering other farm-level emission sources). The decision to include areas of conservation in GHG accounting proved, in the Mesoamerican case, particularly favourable to large-scale producers. They became, on average, net carbon storers, despite higher GHG emission rates when compared to smallholders (cf. Lee et al. 2014). The possibility of offsetting emissions through forest areas can indirectly incentivise the purchase of neighbouring forests or other nearby carbon-rich ecosystems, which may have potential social impacts on neighbouring communities. These details reveal the model is not a simple science-based standard that will necessarily prevent environmental impacts by oil palm production.

⁵⁶ Except for private sector plantations in Soconusco, the degree of mechanisation was very low, especially among smallholders, limiting fuel usage.

⁵⁷ The PalmGHG calculator is also problematic, as it calculates soil carbon emissions based on a distinction between mineral and peat land soils. This simplification was justified by the high costs of detailed soil carbon analyses (RSPO 2012). It is, however, unclear what implications this might have for the estimation accuracy of GHG emissions.

Table 9. Greenhouse gas (GHG) sources and emissions estimated with the PalmGHG model

	Model inputs						Model outputs				Carbon debt ^b				
	Land use change		Fertiliser		Land use change	Fuel	Carbon sequestration	Total emissions							
	Crops	Pasture	Forest	Secondary vegetation				Oil palm	With nature areas ^a	Without nature areas					
n	(%)	(%)	(%)	(%)	(%)	(tCO ₂ e/ha year)	(tCO ₂ e/ha year)	(tCO ₂ e/ha year)	(tCO ₂ e/ha year)	(tCO ₂ e/ha year)	(tCO ₂ e/ha year)				
Soconusco															
Social sector	119	58	26	4	8	4	329	55	4.2	0.8	0.2	0.4	-26.3	4.8	119.9
Private sector	6	50	50	0	0	0	1690	196	4.6	4.2	0.6	0.4	7.6	9.0	225.0
Southern Lacandon Rainforest															
Social sector	121	5	56	11	29	0	113	4	8.1	0.4	0.0	0.4	-341.3	8.1	202.8
Private sector	4	0	24	15	61	0	56	26	10.0	0.1	0.1	0.9	-220.7	9.3	233.6
Western NTS															
Social sector	75	29	43	4	24	0	160	0	5.0	0.5	0.0	0.4	-290.9	5.0	124.6
Private sector	1	33	33	33	0	0	212	16	12.7	0.7	0.0	0.4	-43.3	13.1	326.3
Total Average	31	42	6	20	1	231	26	5.9	0.6	0.1	0.4	0.4	-205.9	6.2	155.5

Notes:

^a Total emissions, considering carbon offsetting from natural reserves.^b Carbon debt refers here to the total CO₂e emission by conversion to oil palm, including land use change and emissions derived from production inputs.

In spite of its limitations, the palm oil industry and private sector partners have increasingly invoked the RSPO certification, as well as similar certification schemes, as a counternarrative to critical environmental discourses. For instance, large transnational companies purchasing palm oil – including Cargill (2014), Unilever (2008), and Mars (2014) – have publicly equated their participation in RSPO with sustainability. At an event in Guatemala, a high-profile RSPO official stated: *‘The image of oil palm production has a past associated with poor environmental practices and with social conflicts, but the present and the future is to grow sustainably’* (El Periódico 2014). An organisation representing the palm oil industry in Guatemala has made similar statements (see, for instance, GREPALMA 2012a; GREPALMA 2012b, 2014). In these cases, certification does not only serve to prevent environmental impacts through a particular set of standards, but is also used as a discursive device to re-legitimise the oil palm sector. It is in this line of thinking that smallholders participating in the oil palm expansion conceived certification as tool for re-legitimation. Our discussion of the RSPO scheme and the calculation made with the PalmGHG model, however, show that RSPO certification will not necessarily serve the interests of smallholders, nor necessarily serve to prevent environmental impacts by oil palm production. The use of the PalmGHG calculator to estimate GHG emissions may favour private sector producers over smallholders. Smallholders are still marginal actors with limited possibilities to have their interests and particularly their interpretations of environmental problems represented in standard settings and certification procedures.

Conclusions

This chapter discussed the effect in Mesoamerica of two global environmental discourses: one critical to oil palm, mostly related to nongovernmental organisations, and one supportive of this crop and related to certification. The critical discourse on oil palm became global when activist environmental organisations struggling against the social and environmental impacts of oil palm in Southeast Asia gained influence through media and policy (Pye 2010). This global critical discourse in relation to oil palm was soon replicated, with its own particularities, by Mesoamerican NGOs contributing to the emergence of a regional environmental discourse that conceived oil palm as inherently damaging. Oil palm in the region was deemed capable of degrading soils and drying watercourses. These critical discourses have created significant tension between environmentalists and the numerous smallholders engaged in oil palm production in the region, especially in Mexico. Global critiques of the crop have, inadvertently, obscured smallholders’ motivations to shift to oil palm in Mesoamerica, as well as their interpretations of local environmental change. In many cases, they planted oil palm as a response to land degradation. In a context in which many environmentalists propose oil palm’s eradication as the only solution,

smallholders responded to environmental critiques by aligning with the second type of global discourse: the corporate-driven counternarratives on oil palm certification.

Palm oil certification should not only be seen as a mechanism to curb environmental impacts, but also as a means to re-legitimise the sector as sustainable. Like transnational companies, smallholders in the study regions perceived certification as a strategy to circumvent societal critiques of their crop. RSPO certification, however, does not necessarily favour smallholders; the 'one size fits all' standards do not properly acknowledge existing economic and social differences between smallholders and large-scale private sector plantations⁵⁸. Differences in capital and labour availability shape the opportunities different producers have, for instance, to substitute manual labour for agrochemicals. In some cases, certification seems to favour the private sector over small-scale producers, as in the current model the RSPO uses to estimate GHG emissions. While smallholders have lower total CO₂e emissions per hectare and year, carbon offsetting through natural reserves permits large-scale polluters to appear as net carbon sinks. In addition to this, RSPO certification focuses on preventing deforestation, reflecting its original purpose of aiding companies in Asia that wished to export their product to Europe. This emphasis on deforestation may lead, however, to neglect of other environmental problems with possible repercussions outside Asia. In this sense, standards cannot simply be considered a neutral tool to deal with universal environmental problems. Rather, like critical environmental discourses by NGOs, it is a particular discursive device embedded in power relationships.

Political ecology has long acknowledged the importance of discourses in shaping processes of environmental change. Escobar (1996) pointed out that some actors are better able to define intervention and courses of actions at the expense of more vulnerable social groups. In Mesoamerica, global environmental discourses tended to occlude the circumstances and environmental interpretations of many smallholders engaged in oil palm production. The reproduction in Mesoamerica of discourses first constructed in Southeast Asia did not consider the particular views and circumstances of smallholders and contributed to their marginalisation. In addition to this, environmental discourses on oil palm, in-line with global discourses, often presented their claims as universal by using scientific discourses against which local perceptions could hardly compete. This study shows how power cannot be simply considered as purposefully exerted by a particular social group upon another, but also as enacted through the use of particular social practices (e.g., scientific discourses) with potential unintended consequences for different social actors. In this perspective, global environmental discourses, of any type, represent a form of power that, as in this case, do not necessarily contribute to

⁵⁸ This does not exclude the possibility that smallholders, or other social actors, might be creative and innovative enough to effectively use RSPO standards in very different ways (e.g. Köhne 2014; Pesqueira and Glasbergen 2013).

achieving sustainability or the well being of vulnerable actors managing natural resources. This calls for a more critical scrutiny of proliferating global environmental discourses. Political ecology seems a particularly apt approach to this issue, given its consideration of both discursive and material processes. Scholars in this field have already undertaken important analysis of global environmental discourses (Adger et al. 2001; Brown 1998), but, in a world in which actors of varying types continuously construct environmental discourses, more research is clearly necessary.

Conclusions

The objective of this thesis was to explain the participation of *ejidatarios* in raising biofuel crops in Mexico, with a focus on oil palm production and some reference to *jatropha* production. This focus was prompted by both the surprising success of biofuel crops in many rural communities in Chiapas and the lack of an obvious theoretical explanation for the high levels of participation from a critical social science perspective. Oil palm was the most planted crop between 2003 and 2013 in Chiapas (SIAP-SAGARPA 2015), and *jatropha* has rapidly expanded since 2007 as a possible feedstock for biofuels (Gobierno del Estado 2012). The Chiapas government incentivised both crops following the global biofuel rush, and poor rural families played a key role as producers and, sometimes, as promoters of these crops in their own communities. The reasons for this biofuel success, in terms of area planted and number of participating *ejidatarios*, was unclear. Research on biofuels point to several social and environmental impacts derived from the production of biofuel crops, ranging from dispossession to deforestation (German et al. 2011b; McCarthy 2010; Obidzinski et al. 2012). These findings do not provide explanations as for why rural producers have shifted massively to biofuel cultivation. The rapid rural uptake of biofuel crops promoted by the government is particularly puzzling in Chiapas, a state known for its peasant uprising against the state. Therefore, this dissertation sent out to investigate these questions: Why have *ejidatarios* shifted to oil palm? If the production of biofuel crops results in environmental degradation, could money alone have convinced rural producers to overlook this threat to their livelihoods? Or have they been forced into it by economic circumstances? What has been the state's role? Could *ejidatarios* have been ignorant of the impacts of biofuel cultivation? Foucault captures this possibility in the following statement:

People know what they do; they frequently know why they do what they do; but what they don't know is [what] what they do does. (Quoted in Dreyfus and Rabinow 1982, 187)

Although written for a different purpose, this quote can represent a popular position regarding smallholder participation in biofuel cultivation. This position denies full consciousness for participating producers and, therefore, suggests they have a limited agency. By critically engaging with such a perspective, this dissertation has advanced a different understanding of the oil palm expansion in Chiapas.

This thesis employed the green agrarian question framework as a means to understand rural responses in relation to the oil palm expansion. This framework was developed to analyse the relationship between agrarian capital and rural producers, taking into account the influence of the state and the environment. In this way, it attempted to combine theoretical insights from both the field of agrarian studies and political ecology. It provided a lens to examine four topics that have been central to the debate over the social and environmental impacts of oil palm production as a form of agrarian capital: enclosure, terms of incorporation, state–peasant relations, and environmental degradation. Findings in the preliminary stages of fieldwork emphasised the importance of these topics, which constitute the basis upon which rural responses to oil palm are analysed. By employing the green agrarian question framework, this thesis has been able to go beyond three explanations popular with global actors to explain rural responses to oil palm expansions: ‘economic compulsion’, which claims smallholders are economically coerced into the production of biofuel crops; ‘deception’, which claims that the state or corporate interests have deceived them; and ‘resistance’, which focuses on smallholders who reject biofuel crops, as if to imply they are typical of small producers.

This concluding chapter has four sections. The first section presents the main findings, addressing the project’s research questions in relation each of these topics separately: enclosure, terms of incorporation, state–peasant relations, and environmental degradation. The second part uses the green agrarian question framework to explore how the state and nature influence the set of relations between agrarian capital and rural producers. This analysis captures the highly uneven character of the relations between agrarian capital and rural producers, both spatially and temporally, suggesting the possible existence of a multiplicity of social responses to oil palm. The third section explains rural agency in relation to capital. It critically assesses the ‘economic compulsion’, ‘deception’, and ‘resistance’ arguments. It also proposes a theoretical approach to the study of rural agency based on the lessons offered by the green agrarian question framework. The last section concludes with recommendations to those actors concerned with the environmental consequences of the oil palm expansion in Chiapas. It briefly questions some theoretical assumptions driving environmental interventions and calls for a more nuanced understanding of rural social dynamics to better address the problems oil palm production causes.

Main findings

Enclosure

The first of the four topics analysed is enclosure. Recent debates on land grabbing and biofuels link the cultivation of oil palm and other biofuel crops to rural dispossession, environmental degradation, and rural resistance (Fernandes et al. 2010; Gerber 2011). According to this perspective, oil palm expansions often take place in the form of large-scale plantations, resulting in the displacement or marginalisation of rural families, as well as in the degradation of their natural resources through deforestation and agrochemical use. The concept of enclosure refers to the act of appropriation, either violent or via ‘dispossession by the market’, of rural land. As it endangers rural livelihoods, rural communities often resist enclosure. Environmental discourses have played a prominent role in rural struggles against dispossession, as both environmentalists and displaced rural families see a threat in the expansion of large-scale industrial plantations. The focus in this dissertation (see Chapter 1) on both changes in land access and environmental discourses proved fruitful to understand rural responses to the biofuel expansion in the case of Chiapas.

In Chiapas, the oil palm expansion roughly occurred under two qualitatively different dynamics. First, oil palm was planted and expanded in *ejidos*, where land rights are not fully liberalised. In *ejido* land, smallholders undertook most cultivation, on their own land, with wealthy *ejidatarios* also purchasing some extra land to plant this new crop. Some investors planted oil palm in *ejidos*, but the opposition of rural communities and the particular conditions of the *ejido* land tenure impeded their expansion. With their access to land secured, many smallholders willingly joined the oil palm expansion. The expansion led to social tensions within communities, as non-participants believed oil palm caused environmental degradation. Smallholders counteracted environmental critiques by partially reproducing pro-oil palm government discourses that framed the crop as a sustainable alternative to burning or deforestation. Second, oil palm expansion also occurred in land titled as private property, where land could be freely sold and bought. Expansion in those lands typically took the form of mid-sized plantations owned by investors or corporations that expanded through leases or, more commonly, purchases. These companies met some opposition from cattle ranchers and other producers owning private sector land, as these producers feared economic displacement by the expansion of large-scale plantations. Like some of the *ejidatarios*, some of the non-participating private sector producers tended to align with environmentalist discourses against this crop.

Taken as a whole, with disparate actors repeating similar statements, the environmental discourse against oil palm seemed to represent a wider societal critique against biofuels. As Chapter 1 explained, however, changes in land access shaped, to some extent, the environmental responses to oil palm expansion in

Chiapas. In the absence of enclosure, an important fraction of rural producers in *ejidos* engaged in oil palm cultivation, undermining green efforts to curb the expansion of this crop in Chiapas. Prior research has greatly focused on cases of dispossession, but, as this thesis has argued, it is important to consider the different forms in which land access changes to understand the complex dynamics associated with new interventions within rural communities.

The terms of incorporation

The terms of incorporation, like enclosure, offered insights as to why *ejidatarios* shifted to the production of biofuel crops. Terms of incorporation refer to the conditions of participation for rural producers within a particular economic sector or value chain. As Chapter 2 described, a combination of high palm oil prices in 2012 and state support prompted *ejidatarios* in Chiapas to engage in oil palm production. The government provided seedlings, loans, and subsidies for the crop. Unlike smallholders in other countries, who are dependent on risky contract farming schemes to access seedlings and loans, state support in Chiapas permitted *ejidatarios* to enter oil palm production as independent producers. *Ejidatarios* could safely take the loans the government offered them because *ejido* land tenure protected them from losing their land in the case of credit default. While aspects of government support favoured those with more land and resources, it also permitted poor rural families previously subsisting on wage labour to shift to oil palm.

Critics of oil palm have framed the changes it brings to rural areas as a shift from tradition to modernity or from self-sufficiency to exploitation, but findings in this thesis do not support this interpretation. Smallholders that shifted to oil palm in Chiapas were already linked to commodity markets, either selling crops or their own labour, with few living from local food production. Contrary to assertions in agroecology, oil palm production also fitted particularly well with peasant subjectivities, as modernisation ideologies were also recreated and reproduced at the local level. While other researchers have analysed economic returns, by analysing the terms of incorporation, this dissertation has provided a wider perspective on smallholder participation in the production of biofuel crops, by locating the conditions of participation within the context of agrarian change dynamics.

Relations between the state and smallholders

State support has been crucial to the last decade's expansion of biofuel crops worldwide, including in Mexico. While research has analysed the social and environmental impacts of biofuels, how state agencies have enlisted local support for the planting of biofuel crops so rapidly has not been sufficiently explored.

This knowledge gap motivated the study of the relations between the state and smallholders for the case of the biofuel expansion in Chiapas, with particular emphasis on developments in the southern Lacandon rainforest. This study, carried out in Chapter 3, revealed how, in the case of Chiapas, the state provided the most support for the production of biofuel crops (oil palm and jatropha) to rural organisations composed by *ejidatarios*, not to individuals or companies. This policy derives from a larger tradition in Mexico of state concessions to social organisations in exchange for political support, which contributed to the permanence in power of the Institutional Revolutionary Party (PRI) for 71 years. While corporatist arrangements have weakened since the 1990s, these still shape, to a large degree, the forms of relations between the state and the rural population. *Ejidatarios*, well aware of these corporatist arrangements, saw advantages in their participation in biofuel programmes, not only because it offered access to economic support but because it also served to create or strengthen rural organisations. Rural organisations have historically provided *ejidatarios* political leverage vis-à-vis the state in this corporatist context⁵⁹. While political ecology has emphasised state coercion and local resistance, Chapter 3 suggests biofuel expansion relied, in this case, upon a ‘politics of consent’ in which both the state and local producers, albeit in a power-laden relationship, sought to achieve their own goals.

The analysis of the relations between state and smallholders in the case of biofuel expansion in Chiapas revealed the importance of the concept of hegemony. This concept was initially developed by Gramsci to explain how consent is achieved between ruling and subordinated classes. He explained how elites might achieve consent to a particular social order through a wide variety of techniques, ranging from the material to the ideological (Eagleton 1991, 112-115). Hegemony is not simply another word for domination, as its construction requires a degree of participation, and legitimisation, by subordinated classes. Smallholder active participation in the construction of hegemony was particularly evident in the biofuel expansion in the southern Lacandon rainforest, where *ejidatarios*, particularly rural leaders, mobilised to participate in the government’s programmes for biofuel cultivation. The concept of hegemony presupposes that the state can be considered as relatively autonomous from capital, and its power depends on its legitimacy amongst subordinated classes (Jessop 2004). The literature has not always acknowledged the state’s autonomy. However, Mexico’s recent history supports this position:

⁵⁹ In the Zapatista regions, rural organisations and communities rejecting corporatist politics failed to access much-needed state support, which contributed to their uprising against the state (see Harvey 1990, 1998a).

[A] peculiar feature of Mexico's bureaucratic elite is that it did not have an oligarchic landed origin, given that the agrarian reform destroyed this class, and most of its cadres did not come from the industrial bourgeoisie either.... Individual members of the Mexican bureaucratic elite were definitely more obedient to the state institutions than to any particular faction of the ruling class, and they were well rewarded for this behaviour. Therefore, if we can question the results of the Mexican revolution for the people, one cannot question its generosity towards the leaders of popular organisations and members of the professional middle classes who also became members of the PRI bureaucratic elite. (Mackinlay and Otero 2004; 85-86)

This quote accurately depicts the autonomy of the state in relation to agrarian capital as a result of the 1910 agrarian revolution. The particular construction of the Mexican state explains its willingness to provide *ejidatarios* with relatively favourable terms of incorporation in the case of the production of biofuel crops. Since the 1910 revolution, the legitimisation of the Mexican state has relied on poor rural classes and their organisations (De Grammont and Mackinlay 2006). This is not a mere concession by the state, but the result of agrarian peasants' defeat of *terratenientes* (landholders) in contests for state power. The construction of the state greatly differs, for instance, from the case of Guatemala, which has derived a great proportion of its revenues and foreign exchange from taxing the export of agricultural commodities (Smith 1978). This has fuelled a historical alliance between state and agrarian capital, often at the expense of poor rural classes, as the recent biofuel expansion made evident (Alonso-Fradejas 2015; Mingorría et al. 2014). In this context, the state has often privileged coercion over a more balanced construction of hegemony.

Environmental degradation

The last process to be considered is that of environmental degradation. Research studies have often focused on the overall impacts of oil palm on the environment, with particular emphasis on deforestation (Carlson et al. 2013) and greenhouse gas emissions (Fargione et al. 2008). Research studies have, however, paid less attention to how local smallholders perceive the consequence of oil palm production. As Chapter 4 described, in both the study regions in Chiapas, smallholders surprisingly conceived oil palm as a potential solution for particularly pressing environmental problems they were facing. In Soconusco, oil palm proved resistant to the frequent floods in the region. In the southern Lacandon rainforest, local producers conceived oil palm as a possible solution for their degraded cattle pastures. Oil palm production emerged in both cases as a potential productive solution to long-term triggered problems of environmental degradation. Local perspectives by smallholders were, however, rendered invisible by either critical or pro-oil palm global discourses. While environmental activism has been particularly useful to render visible the impacts of this industry in Asia, this global critical discourse had unintended effects

in Mesoamerica. NGOs in the region have replicated global critical discourses in relation to oil palm, contributing to the emergence of a regional environmental discourse that conceived of oil palm as inherently damaging and which left few options beyond eradication. In such a context, certification schemes, which emerged as a response to environmental critiques, have served as basis for a new counternarrative legitimating the oil palm sector. However, these schemes do not necessarily favour smallholders or serve to deal with their particular environmental problems. Local environmental dynamics and local responses by producers have, in this context, become ‘illegible’ by global environmental discourses, pointing to the role power can play in shaping how environmental dynamics are understood.

*

In sum, the focus on enclosure, the terms of incorporation, state–peasant relations, and environmental degradation provided the basis to understand why smallholders in Chiapas shifted to oil palm production. First, the oil palm expansion, at least at the time of our fieldwork, did not lead to significant changes in land access. The existence of the *ejido* land tenure in Mexico significantly limited both land grabbing and ‘dispossession by the market’. Second, state intervention in the oil palm sector provided the *ejidatarios* with favourable terms of incorporation. It also permitted the emergence and/or strengthening of rural organisations that offered smallholders some opportunities to gain political leverage with the state. Third, smallholders embraced oil palm production, as it fitted well with local ideologies that considered rural modernisation and agro-industrialisation, historically promoted by the state, as desirable forms of production. And fourth, oil palm producers perceived oil palm as particularly appropriate to the local environmental conditions and as a possible solution to specific productive problems.

Uneven agrarian capitalism: state and nature

The previous section focused on enclosure, terms of incorporation, relations between state and smallholders, and environmental degradation to understand the relation between agrarian capital and rural producers in the biofuel case. This section considers all these processes together through the green agrarian question framework. This framework was constructed in this thesis as a means to understand the responses of rural producers to biofuel expansions based on the effects of agrarian capital on both rural producers and on the environment. This section specifically explores the uneven character of agrarian capitalism in both the study regions in Chiapas as a result of the influence of both state and nature.

The study of oil palm production in Chiapas revealed how the state shaped the relation between agrarian capital and rural producers at two levels. First, the state shaped the relation between rural producers and agrarian capital within the oil palm sector. Second, the state influenced this relation at a more general level through the shaping of the conditions upon which rural producers and agrarian capital relate to each other. As Chapter 2 described, the Chiapas government allocated significant funds for oil palm production to *ejidatarios*. While it favoured the participation of the private sector as processors, it did not support them to become oil palm producers. Also, as explained in Chapter 1, government provision of free seedlings and credit was crucial to the participation of smallholders. This intervention by the state contrasts with the situation in neighbouring Guatemala where, in a context of scarce state support, rural families interested in oil palm production typically had to enter in risky contract farming arrangements to access the needed capital to start oil palm production. In the case of Chiapas, state support was also crucial to strengthen the bargaining position of rural producers vis-à-vis processing mills. Most state support was allocated to rural organisations composed of *ejido* members who could approach mills and other private sector actors as organisations and not as individual producers. State intervention had a large influence over the type of oil palm sector that developed in a particular region.

The state also influenced the relation between agrarian capital and rural producers by shaping the contextual conditions upon which these actors relate, especially through the regulation of land access. Historically, the state in Mexico has distributed a sizeable proportion of lands to smallholders and landless peasants in the form of *ejidos*. As the first chapter described, *ejido* land tenure and legal limits on land ownership of private sector land constrained the expansion of large-scale oil palm plantations in the study regions. These limitations have indirectly favoured *ejidatarios* in becoming suppliers of oil palm in Chiapas. State policies on land access have also changed throughout time, resulting in differences between regions of study. Land policies in Soconusco led to a dual agrarian structure, with wealthy producers in the private sector land and rural families in *ejido* land coexisting, at times, uneasily. This particular agrarian structure was the result of, first, a policy favouring large-scale production during the Porfirio Díaz regime in the nineteenth-century, and then a process of Agrarian Reform initiated during the Cárdenas presidency (1936–1940) that partly distributed large-scale properties into *ejidos*. Land in the southern Lacandon rainforest was, instead, mostly distributed to peasants as *ejidos* in the 1970s. This was a historical period in which the Agrarian Reform was already superseded by the distribution of empty state lands to those in need of land, especially to landless peasants (de Vos 2002). Variations in land policies contributed to different degrees of dependence of the palm oil industry on

rural producers. In the southern Lacandon rainforest, for instance, *ejidatarios* control most land, and processing mills have few options but to negotiate with producers to access oil palm. This range of examples shows that state intervention can modify the relations between agrarian capital and rural producers in multiple ways, leading to a possible great variety of developments and outcomes.

The role of nature has also been important in shaping the development of the oil palm sector. As explained in Chapter 4, oil palm expansion occurred in Soconusco, partially as a response to flooding and waterlogging problems, especially in lands within or near the Encrucijada Biosphere Reserve. Oil palm turned out to be particularly adapted to these conditions. In this part of Soconusco, cattle owners faced considerable risks because of flooding, while sugarcane producers faced disadvantageous economic conditions, as the sugarcane mill did not provide insurance for producers in these flood-prone regions. Land degradation acted in both cases as a trigger for producers to modify their relations with capital. This case effectively illustrates how environmental dynamics can shape rural relations with capital. The influence of the environment needs to be understood as being spatially and temporally complex. Environmental conditions were not uniformly favourable to oil palm development in Soconusco. Rainfall in the region is highly seasonal and, for producers without sufficient capital to implement irrigation, oil palm was better adapted to the yearlong humid soils in low-lying sections of the coast. In the southern Lacandon rainforest, oil palm was devised as a possible productive solution to degradation caused by previous accumulation strategies. Years of cattle production without almost any fertiliser inputs led to land degradation, particularly in upland soils. These examples show how accumulation strategies become necessarily complex as a result of their heterogeneous relations, both spatial and temporal, with the environment.

The brief analysis of the ways in which the state and nature can influence the relation between agrarian capital and rural producers points to the relevance of the theoretical framework followed in this thesis. The green agrarian framework permitted the analysis to capture the highly heterogeneous character of agrarian capitalism as shaped by state interventions or by the particular environmental dynamics of the study regions. Many studies have emphasised the heterogeneous character of capital through the concept of 'uneven development'. Geographers have particularly insisted that development becomes uneven because its production depends on material processes, which are necessarily heterogeneous in space and time (Harvey 2006; Smith 1984). To this heterogeneity caused by environmental processes, we have to add the influence of economic or political processes that differ between countries and regions. The emphasis, in this case, was on the influence exerted on agrarian development by both state and nature. By considering the

uneven character of development, the green agrarian question framework serves to provide a more complex understanding of contemporary agrarian transformations as triggered by biofuel expansions from a critical perspective, and this, as shown in the next section, helps to explain the variability in rural responses to such transformations without violating the theoretical ‘premises’ of the agrarian studies field.

Rural responses to oil palm: from ‘noble savage’ to political subject

Three arguments have been commonly used to explain rural responses to the expansion of biofuel crops: rural producers are forced into the production of biofuel crops because of economic circumstances (called here the ‘economic compulsion’ argument); rural producers participate in biofuel cultivation, which is detrimental to them, because they are deceived (the ‘deception’ argument); or rural producers, once they realise biofuels are detrimental to their interests, respond to expansions mostly through resistance (the ‘resistance’ argument). This section critically assesses each of these popular arguments and proposes an alternative approach to rural agency derived from the lessons offered by the green agrarian question.

The ‘economic compulsion’ argument explains participation of rural producers in oil palm production in terms of economic coercion. According to this argument, as rural producers depend on markets for their reproduction, falling profit margins (due to, for instance, low prices, pests, or insufficient land) might push producers into new crops, such as oil palm or biofuels. Producers are then economically ‘forced’ into the production of biofuel crops. As Chapter 2 detailed, this was an argument often employed by organisations critical of the recent oil palm expansion, and it is also related to arguments that link rural dependence on markets to indebtedness (McMichael 2012; Rosset and Altieri 1997). This argument highlights the constraining effect of large economic processes on rural agency. The current research found limited evidence to support economic compulsion as a driver of biofuel expansion in Chiapas. The ‘economic compulsion’ argument assumes rural producers are strongly integrated into markets, which was hardly the case for oil palm producers in Chiapas. The incorporation of rural producers into agrarian capitalism was particularly uneven considering the state intervention. The existence of the *ejido* land tenure in Chiapas and credit programmes provided by the state prevented rural producers from becoming very dependent on markets for their reproduction. Under these conditions, rural producers cannot be considered economically forced by falling profit margins. They can, in times of crisis, achieve reproduction by shifting into subsistence farming without losing their most basic assets. While valid in other circumstances, economic compulsion cannot constitute the basis to understand rural agency in Chiapas.

The ‘deception’ argument attributes rural participation in oil palm production to the deception, or ignorance, of producers, as it assumes oil palm necessarily fails to serve rural producers’ interests. In contrast with the previous argument that referred to economic imposition, this argument often relies on ‘ideological domination’ to explain rural participation in the production of biofuel crops. Ideological domination occurs when the ideas of a dominant class or group appear as valid or natural to subordinate groups, despite being contrary to their interests. This argument resembles, to some extent, old ‘false consciousness’ arguments in Marxist theory, which argued that subordinate social classes accepted exploitation because of deception⁶⁰. The deception argument figures rural producers as passive ideological subjects, with the state promoting biofuels as ideologically homogeneous. As Chapter 3 emphasised, the state and its relations to rural producers can be highly heterogeneous. Rather than a body of ideas owned by a particular group and imposed upon another, ideology is better understood as a contested field constructed by several actors – a field fraught with power imbalances and multiple contradictions. Gramsci’s concept of hegemony describes this latter perspective better, explaining the apparent deception of particular social classes by reference to the techniques, material or symbolic, used by ruling classes to win the consent of subordinate classes. This perspective is not equivalent to domination, as hegemony is only achieved when subordinate classes recreate and legitimise a social order. In this way, oil palm production by *ejidatarios* cannot be considered simply the result of an imposition, but as the outcome of conflicts, struggles, tensions, and negotiations between, in this case, rural producers and different factions within the state.

The ‘resistance’ argument emphasises rural rejection of the expansion of biofuel crops. It has become a popular focus on the study of biofuel expansions (Gingembre 2015; Hall et al. 2015). The argument that resistance dominates rural actors’ responses to these crops partly stems from the historical focus within the agrarian question on rural resistance being key in shaping the ‘path of capitalist transformation in the countryside’ (Du Toit 2009). Scott (2008) further reinforced the focus on resistance by showing how apparent rural acquiescence to capital or political domination might only be a façade covering quiet resistance. The current emphasis on resistance has implications to the study of rural agency in the case of oil palm, as it does not acknowledge, to the same degree, the possibility of consent to these new agrarian developments. This argument cannot explain the great heterogeneity of rural responses to oil palm in the case of Chiapas. Resistance was only one of the responses found to the cultivation of new biofuel crops. The ‘resistance’ argument is

⁶⁰ In this latter type of arguments, deception was explained based on the lack of consciousness of a particular class on the structural sources of exploitation, rather than as necessarily the result of ideological domination (Eagleton 1991, 87).

problematic at two levels. First, some of its proponents explain resistance by rural producers based on their external position to capital (McMichael 2008; Rosset and Martínez-Torres 2012). Under this perspective, capital is conceived as a 'systematic imposition' on the rural population that they will often resist. This view seems to consider agrarian capitalism as a system almost devoid of subjects (Jansen 2015). Rural producers in Chiapas do, instead, participate in the reproduction of economic relations, as when a wealthy family loans money with interest to a poorer one, or when an oil palm grower hires workers on a piece-per-work basis. Second, resistance is sometimes conceived as external to power. Under such a perspective, the political camp is neatly divided into powerful elites and weak subordinates. This perspective ignores, however, how resistance is also a form of power in which resistance reflects not only rejection to some particular aspects of power but also acceptance to others (Abu-Lughod 1990; Fletcher 2001). The resistance argument would gain nuance by considering how rural producers contribute to the construction of power in multiple, and often contradictory, ways, as evident for the case of oil palm in Chiapas.

Economic compulsion, deception, and resistance all offer limited analyses of rural agency in relation to capital, especially for the case of biofuels in Chiapas. These arguments explain rural agency in relation to structural constraints. According to these perspectives, wider social processes force rural producers into a particular course of action or meet their resistance. This conceptualisation implicitly describes rural producers as 'noble savages' naturally located outside the sphere of capital and power and victimised by being pushed into it. It also describes rural producers and capital as highly homogenous.

In contrast with these arguments, the green agrarian question framework, as developed in this thesis, permits the capture of the highly uneven character of agrarian capital, and, in this way, it offers the possibility of considering social responses to capital as equally heterogeneous. Based on this theoretical framework, this thesis proposes an interdisciplinary approach to analyse rural agency constituted by three key elements. First, at the economic level, it is important to consider rural agency, not only in relation to individual responses to short-term economic signals but also as a collective relation between rural classes and agrarian capital. The 'terms of incorporation' is a useful concept in this regard. Second, at the political level, this thesis proposes to approach agency through a more balanced understanding of power than that offered by conceptions of ideological domination. The concept of hegemony defined as a shared, albeit power-laden, political order seems particularly apt for this purpose. Third, at the material level, social agency by rural producers can also be shaped by environmental change. The focus on material practices can serve to reveal how environmental conditions might modify the relationship of rural producers to capital. Under this approach, rural producers are considered part and parcel of wider social processes linked to capital and power and as active

agents able to influence the development of their regions, instead of victims. Rather than noble savages, rural producers might be better conceptualised as participating political subjects. Contrary to the arguments considered above, the multiplicity of rural responses to agrarian capital might not be the result of some actors running against their 'natural' ideology, but the outcome of a complex process of political construction in which economics, hegemony, and the environment all play important roles.

Research implications for environmentalism

While theses or books often conclude with a set of recommendations for policymakers, this conclusion addresses environmentalists and their organisations, with special emphasis on those who promote low-input smallholder farming as compatible with nature conservation. I have two reasons to provide recommendations for the environmental sector. First, environmentalists have played a key role in bringing to the public fore discussions and awareness of environmental degradation in a way few government actors have done. This work has been invaluable. And second, environmentalists and their organisations are influential actors in many of the unfolding contemporary environmental conflicts. But, as Chapter 4 described, despite their legitimate social and environmental concerns, their influence can run counter to their best intentions. I critically assess three common perspectives held by environmentalists about oil palm, based on the results of this research. These observations could be of value to those activists and organisations struggling to prevent and mitigate oil palm's impacts.

First, biofuels, and particularly oil palm, are often conceived as representing the arrival of agrarian capitalism to many rural regions. In this context, food production for family consumption is often proposed as a more sustainable alternative. This position is problematic, at both the empirical and conceptual level. At an empirical level, this research proved how local rural producers in oil palm regions were long incorporated into commodity markets for cattle, sugarcane, or mango (see Chapter 2). At a conceptual level, environmental perspectives do not always acknowledge that rural families reproduce capitalist relations in their rural communities. A producer in La Victoria explained, in simple terms, the local reproduction of capitalist relations. He indicated that in every community, no matter how poor, there is always a wealthy family that accumulated land, has a shop by the road, and lends money to their poor neighbours. Agrarian capitalism cannot be simply considered as an external system that exists without the participation of local social actors (see Jansen 2015).

Second, smallholders are often considered victims of oil palm. This perspective implicitly assumes that rural producers are a homogeneous sector equally affected

by oil palm expansion. Such a position ignores processes of social differentiation. As Chapter 2 explained, rural producers vary in their capacity to economically reproduce in their relation to capital. Some producers, with greater access to capital and technical knowledge, are able to invest in improved production and achieve good returns, while others, lacking land or labour, might fall into indebtedness as a result of production failures. Oil palm expansions most likely result in both winners and losers. In addition to this, to portray smallholders as victims attributes them a passive ideological role, while these actors are active participants in the construction of both capital and power (see, for instance, Chapter 3). Environmentalists could better achieve their goals by taking into account the complex role played by agrarian change and rural ideology in shaping rural responses to crops such as oil palm.

And third, nature in environmental perspectives is often considered as located outside modern society. According to this view, nature might co-exist with, for instance, subsistence farming, but not with more industrial forms of agriculture. Nature is, in this view, only peripherally connected to social processes. This research has, however, shown how linkages with capital strongly shaped the transformation of nature by smallholders. In the southern Lacandon rainforest, for instance, rural producers shifted to oil palm as a possible productive solution to deal with land degradation processes triggered by previous forms of capital accumulation. Under this perspective, society and nature are co-produced following complex spatial and temporal patterns. This calls for a shift from a perspective in which nature is considered isolated from society, into one in which it is integrated into rural life at different levels. Such a perspective would help environmentalists better understand the reasons smallholders have to manage nature in particular ways.

Coming back to Foucault's quote at the start of this conclusion, smallholders know what they do, they frequently know why they do what they do, and often know, though not always, what what they do does. In such a context, environmentalists should consider and include smallholders' perspectives in their efforts to conserve nature. This means shifting from perspectives that consider smallholders as essentially interested in the conservation of nature, as in agroecology, to one in which they are considered partners with whom environmentalists can define what worldviews are both protective for the environment and emancipatory for rural families. In-line with Gramscian thinking, it can be argued that there is not a majority of smallholders 'out there' who are willing to protect the environment, but that this majority needs to be politically constructed.

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Appendices

Appendix I. Survey

Tipología y manejo del cultivo:

1. Nombre del encuestador: _____
2. Fecha: _____
2. Ejido (vivienda): _____
3. Nombre productor: _____
4. ¿Es usted parte de una organización?
 1. Sí, somos parte de la organización (nombre):

 2. No, soy productor libre (no asociado) ()

Caracterización productiva

5. ¿Cuándo sembró su palma (mes y año)? ⁶¹				
Parcela	Ejido	Mes	Año	Distancia a centro de acopio o procesadora (km)
Parcela 1				
Parcela 2				
Parcela 3				
Parcela 4				
Parcela 5				
Parcela 6				

6. ¿Cuántas hectáreas? ¿Y su palma está sembrada a qué distancias?

- o _____ ha está a _____ x _____ = _____ plantas por ha
- o _____ ha está a _____ x _____ = _____ plantas por ha
- o _____ ha está a _____ x _____ = _____ plantas por ha
- o _____ ha está a _____ x _____ = _____ plantas por ha
- o _____ ha está a _____ x _____ = _____ plantas por ha
- o _____ ha está a _____ x _____ = _____ plantas por ha

⁶¹ Se refiere a las parcelas de palma de los miembros de la familia que viven en un mismo hogar.

7. ¿Tiene otros cultivos en la palma?			
	Cultivo (especificar)	Cultivo de cobertura ⁶² (especificar)	Superficie cultivo de cobertura (%)
Parcela 1			
Parcela 2			
Parcela 3			
Parcela 4			
Parcela 5			
Parcela 6			

8. Labranza del suelo (si aplica)					
	Año de siembra		Años sucesivos		
	Barbecho (no. Año)	Rastra (no. Año)	Barbecho (no. año)	Rastra (no. año)	Número de años barbechando y/o rastreado
Parcela 1					
Parcela 2					
Parcela 3					
Parcela 4					
Parcela 5					
Parcela 6					

9. ¿Cuál fue el uso de fertilizantes y la producción en este año 2012?				
	Producto (orgánicos e inorgánicos)	Cantidad por planta o por superficie en cada aplicación (especificar)	Número de aplicaciones por año	Producción (promedio corte verano + invierno)
Parcela 1				V
				I
Parcela 2				V
				I
Parcela 3				V
				I
Parcela 4				V
				I
Parcela 5				V
				I
Parcela 6				V
				I

⁶² Se refiere a especies tipo frijol ('frijol matamonte') sembradas por el productor con el objetivo de controlar la maleza.

10. ¿Cuál fue el uso de fertilizantes y la producción en este año 2011?				
	Producto (orgánicos e inorgánicos)	Cantidad por planta o por superficie en cada aplicación (especificar)	Número de aplicaciones por año	Producción (promedio corte verano + invierno)
Parcela 1				V
				I
Parcela 2				V
				I
Parcela 3				V
				I
Parcela 4				V
				I
Parcela 5				V
				I
Parcela 6				V
				I

11. ¿Cuál fue el uso de fertilizantes y la producción en este año 2010?				
	Producto (orgánicos e inorgánicos)	Cantidad por planta o por superficie en cada aplicación (especificar)	Número de aplicaciones por año	Producción (promedio corte verano + invierno)
Parcela 1				V
				I
Parcela 2				V
				I
Parcela 3				V
				I
Parcela 4				V
				I
Parcela 5				V
				I
Parcela 6				V
				I

12. ¿Cuál fue el uso de fertilizantes y la producción en este año 2009?				
	Producto (orgánicos e inorgánicos)	Cantidad por planta o por superficie en cada aplicación (especificar)	Número de aplicaciones por año	Producción (promedio corte verano + invierno)
Parcela 1				V
				I
Parcela 2				V
				I
Parcela 3				V
				I
Parcela 4				V
				I
Parcela 5				V
				I
Parcela 6				V
				I

13. Limpia ¿Qué líquidos (herbicidas y plaguicidas) usó en la palma el año pasado?			
	Producto (especificar)	Litros por aplicación o por hectárea (indicar)	Aplicaciones al año (no.)
Parcela 1			
Parcela 2			
Parcela 3			
Parcela 4			
Parcela 5			
Parcela 6			

14. Uso de energía – Limpia					
	Uso [x]	Gasolina/ Diesel	Litros combustible por día o gasto	Limpias por parcela (no. Año)	Duración días cada hectárea (no.)
Machete		n.a.	n.a.		n.a.
Bomba		n.a.	n.a.		n.a.
Bomba a motor propia					
Bomba a motor rentada					
Chapeadora manual propia					
Chapeadora manual rentada					
Vehículo propio					
Vehículo rentado					
Tractor propio con desbrozadora					
Tractor rentado con desbrozadora					
Tractor propio con rolo					
Tractor rentado con rolo					

15. Uso de energía - cosecha y transporte a centro de acopio o procesadora					
Modalidad ⁶³	Uso [x]	Gasolina/ Diesel	Litros de combustible por viaje	Capacidad (toneladas)	Toneladas transportadas por viaje
Machete		n.a.	n.a.	n.a.	n.a.
Bestia		n.a.	n.a.	n.a.	n.a.

⁶³ Se refiere al transporte del fruto desde corte, transporte a calle para recolección y transporte a procesadora.

Carretilla					
Cayuco					
Carretón					
Vehículo propio					
Vehículo propio					
Vehículo rentado					
Tractor propio					
Tractor rentado					
Otro (especificar):					

16. Pago de fletes			
	Capacidad (toneladas)	Tipo de pago (por viaje/por tonelada/otro)	Costo
Carretón	n.a.		
Cayuco	n.a.		
Vehículo			
Tractor			
Otro (especificar)			

17. ¿Cuántas parcelas tiene con palma? ¿Y que había antes?				
	Uso Terreno antes de la palma y edad: 1. Potrero, años 2. Acahual, años 3. Montaña, años 4. Especificar, años	Uso Terreno antes del anterior uso de suelo y edad: 1. Potrero, años 2. Acahual, años 3. Montaña, años 4. Especificar, años	Tipo de suelo	Calzadura y profundidad
Parcela 1				
Parcela 2				
Parcela 3				
Parcela 4				
Parcela 5				
Parcela 6				

18. ¿Qué cultivos tiene y con qué superficie?				
	Ahora (ha)	Uso de suelo el año previo a la introducción de la palma ⁶⁴ (ha)	1. Venta 2. Autoconsumo	
Palma		n.a.		
Potrero				
Caña de azúcar				
Mango				
Cacao				
Banano				
Maíz				
Frijol				
Reforestación				
Achual				
Montaña				
Montaña en PSA ⁶⁵				
Total de cultivos	Ahora (no.)	Ganado año previo a la introducción de la palma (no.)	1. Al partir 2. Propio	1. Cría 2. Torete 3. Lechero

19. Si era montaña o achual ¿cómo se usó la madera?

1. Se quemó ()
2. Usado para leña ()
3. Usado para material de construcción o para cercos ()
4. Venta ()
5. Otro _____

Caracterización socio-económica

20. ¿Usted es?:

1. Comunero ()
2. Ejidatario ()
 - a. PROCEDE Sí (Certificado parcelario) ()
 - b. PROCEDE No (Certificado de derechos agrarios) ()
3. Propietario⁶⁶ ()
4. Otro: _____

⁶⁴ Se refiere al año previo al que se sembró palma por primera vez.

⁶⁵ PSA: Pagos por Servicios Ambientales.

⁶⁶ No vive en un ejido ni debe asistir a asambleas.

21. ¿Usted renta o presta parcelas de/a otros?

1. No rento/presto a otros ()
2. No rento/presto de otros ()
3. Sí, rento/presto tierra **a otros** (cultivo, ha) _____
4. Sí, rento/presto tierra **de otros** (cultivo, ha) _____

22. ¿Ha vendido usted terreno en los últimos 25 años?

1. No ()
2. Sí ()

Año	Superficie (ha)	Uso del suelo

23. ¿Ha comprado usted terreno en los últimos 25 años?

1. No ()
2. Sí ()

Año	Superficie (ha)	Uso del suelo

24a. ¿Quién normalmente trabaja en la palma?

	Corte		Limpia		Fumigación	
	Quien (no.)	Días trabajando x corte	Quien (no.)	Días trabajando x limpia	Quien (no.)	Días trabajando x fumigación
Yo						
Hijos						
Esposa						
Familiar						
<i>Corte</i>						
Cortadores ⁶⁷						
Cargadores						
Pepenadores ⁶⁸						
<i>Limpia</i>						
Jornalero	n.a.					
Origen trabajadores	1. Este ejido; 2. Otro Ejido; 3. Guatemala					

⁶⁷ Acarreador.

⁶⁸ Semillero.

24b. ¿Quién normalmente trabaja en la palma?			
Tipo de trabajador	Tipo de contrato (por día/por volumen/por contrato)	Pago	Notas
Cortador			
Cargador/acarreador			
Semillero			
Limpia			
Fumigación			

25. ¿Tiene otros ingresos?

1. No ()
2. Sí, trabajo ajeno ()
3. Sí, tenemos una tienda ()
4. Sí, trabajo como chofer ()
5. Dinero enviado de Estados Unidos ()
6. Dinero enviado de dentro de México ()
7. Sí, otro _____

26. ¿Usted de que vive? ¿Qué es lo más importante?

- La palma ()
- El ganado ()
- Cultivos para autoconsumo ()
- Salario de un trabajo (especificar trabajo): _____
- Otro _____

27. ¿En qué invierte más recurso desde que su palma produce?

- La palma ()
- El ganado ()
- Cultivos para autoconsumo ()
- Alimentación de la familia ()
- Educación de los hijos ()
- Otro _____

28. ¿Qué sacrificio hizo para poder sembrar palma (dar opciones)?

- Pedir prestado ()
- Pedir crédito ()
- Vender ganado ()
- Vender tierra ()
- Invertir mucho trabajo en el cultivo ()
- Trabajar ajeno ()
- Hubo apoyo ()
- Ninguno ()
- Otro: _____

29. ¿Y antes de la palma? ¿Qué fue lo más importante?

1. El ganado ()
2. Plátano ()
3. Cultivos para autoconsumo ()
4. Salario de mi trabajo (especificar trabajo): _____
5. Otro _____

30. ¿Cuál es la mayor dificultad que usted enfrenta para la producción de palma?

Acceso a:

- | | |
|---|--|
| <input type="radio"/> Trabajadores () | <input type="radio"/> Agua () |
| <input type="radio"/> Fertilizantes () | <input type="radio"/> Maquinaria () |
| <input type="radio"/> Líquido () | <input type="radio"/> Conocimiento y apoyo técnico () |
| <input type="radio"/> Tierra () | <input type="radio"/> Crédito () |
| <input type="radio"/> Buen suelo () | <input type="radio"/> Dinero () |
| <input type="radio"/> Acceso a planta () | <input type="radio"/> Ninguna () |

Otro _____

31. ¿A quien vende su fruto?

(especificar) _____

Uso de líquido

32. ¿Qué cultivo necesita más agroquímicos?

1. Palma ()
2. Potrero o pasto ()
3. Maíz ()
4. Frijol ()
5. Chile o picante ()
6. Otro _____

33. ¿Qué protección usa cuando aplican líquido? (especifico de la palma)			
	Quien generalmente fumiga [x]:	Protección: 1. Nunca usa 2. Guantes 3. Gafas 4. Ropas de protección 5. Otro	Cuando usa protección: 1. Siempre 2. Regularmente 3. A veces 4. Casi nunca
Yo			
Mis hijos			
Trabajadores			

Si no usa herbicida en palma, termina la encuesta aquí

34. ¿Por qué usa protección?

1. Porqué los líquidos afectan la salud ()
2. Porqué los técnicos nos han avisado ()
3. Otro _____

35. ¿Por qué no usa protección?

1. Porqué los líquidos no son tan fuertes ()
2. Porqué no estamos acostumbrados a usar protección (antes tampoco hemos usado protección) ()
3. Porque queremos avanzar, usar protección toma demasiado tiempo ()
4. Porque no me gusta usar protección, es incómodo ()
5. Porque invertir en protección es demasiado caro ()
6. Otro _____

36. ¿Afectan a la salud los líquidos que usa en la palma? (después me siento mal)

- | | |
|--|--|
| <input type="radio"/> Totalmente de acuerdo () | <input type="radio"/> En desacuerdo () |
| <input type="radio"/> De acuerdo () | <input type="radio"/> Totalmente en desacuerdo () |
| <input type="radio"/> Ni de acuerdo ni en desacuerdo () | |

Comentarios _____

37. ¿Ha habido intoxicaciones en su parcela de palma?

1. No ha habido incidentes ()
2. Sí, dolor de cabeza ()
3. Sí, vomitar después del trabajo ()
4. Otro _____

38. ¿Qué se hace generalmente ante estos incidentes?

1. Nada ()
2. Parar de trabajar ()
3. Usar algo para desintoxicar (por ejemplo, limón) ()
4. Ir a un médico ()
5. Sí, otro: _____

39. ¿Cuándo hubo un accidente por qué fue?

- | |
|--|
| <input type="radio"/> Descuido del trabajador () |
| <input type="radio"/> Descuido del dueño parcela () |
| <input type="radio"/> Bomba defectuosa (por qué) () |

Otro: _____

40. ¿Qué tan tóxicos es _____ (herbicida en uso) que se usan?

- | | |
|---|--|
| <input type="radio"/> Muy tóxicos () | <input type="radio"/> Poco tóxicos () |
| <input type="radio"/> Tóxicos () | <input type="radio"/> No son tóxicos () |
| <input type="radio"/> Más o menos tóxicos () | |

Comentarios _____

Notas:

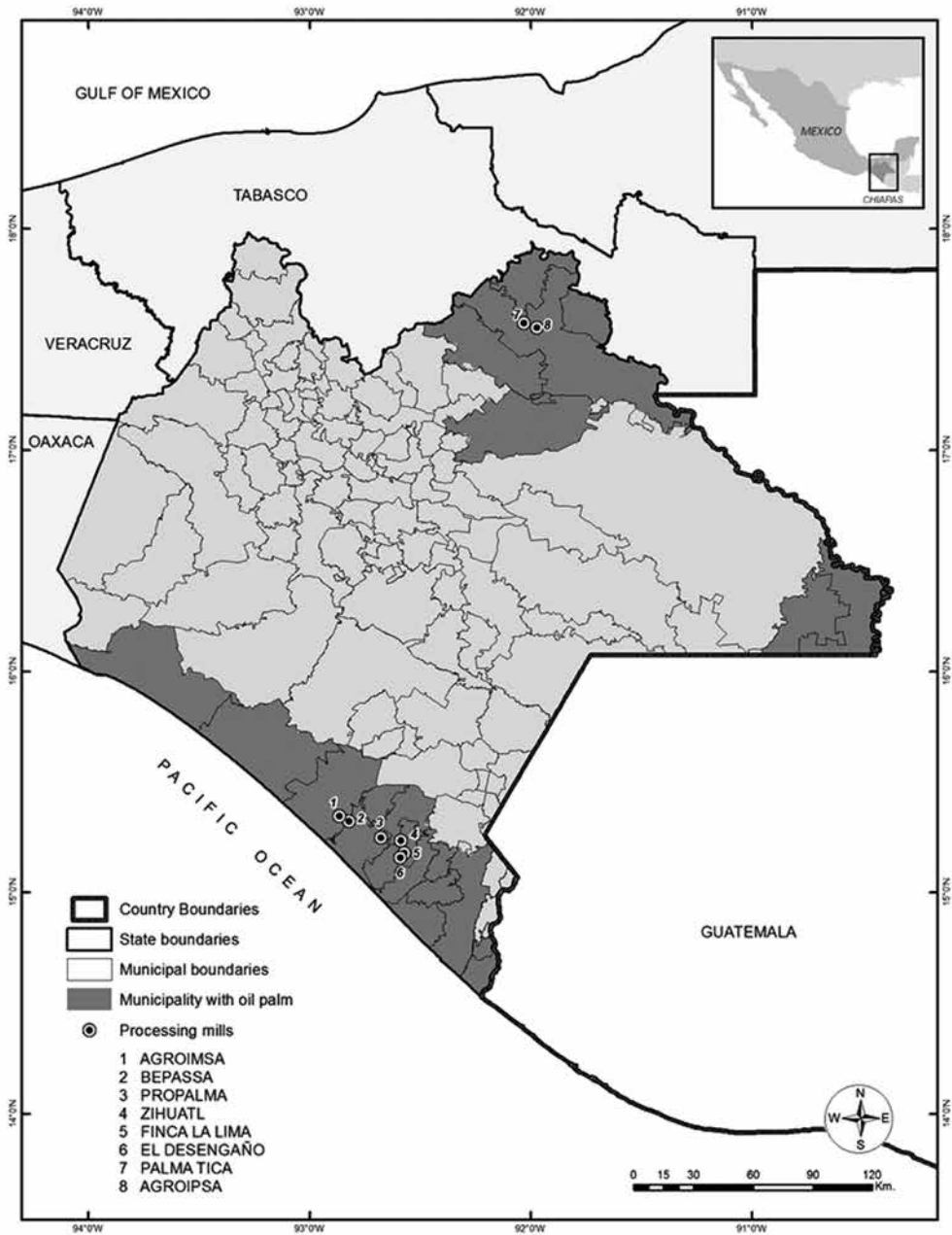
Appendix II. Categorisation of Survey Respondents

Respondents from the survey were categorised as private or social sector. The ‘private sector’ refers to companies and investors (wealthy individuals who entered a particular region with the sole purpose of producing oil palm), whereas the ‘social sector’ refers, in Mexico, to producers in *ejidos*: the so-called *ejidatarios*. In Guatemala, the social sector referred to those producers who lived in *aldeas* (rural communities). The social sector producers were further categorised according to social class and to market orientation prior to oil palm cultivation, in order to identify which type of producer shifted into oil palm production. Farmers were classified as rich, middle class, or poor according to land access and main income source, including the type of labour sold. In order to do this, farms sizes were first divided into three quartiles (i.e., big farms, intermediate farms, small farms) through SPSS® software with producers classified into rich, middle class, or poor according to farm size. This categorisation was done separately for each study region as land access is a relative measure dependent on agrarian history and processes of agrarian change. This classification was then corrected based on employment sources and main income sources. Skilled, semi-skilled, and unskilled employment corresponded to high-, middle-, and low-income categories. Also, producers who depended on maize were considered to be poor because of the low prices maize commands in local markets when compared to other products such as rubber or mango. Income sources were also categorised in a similar manner with, for instance, producers depending on maize for their livelihoods considered poor. Corrections to the land access categorisation were limited to shift respondents only one step on the social class ‘ladder’: from, for instance, wealthy to middle-income but not from wealthy to poor.

Farms were analytically differentiated farms according to market orientation. The social class positioning was insufficient to characterise the type of farms surveyed, as it is only tenuously link to production orientation. Farms were categorised as ‘market-oriented’ when more than 50% of their land was devoted to pastures and/or cash crops, and as ‘subsistence-oriented’ when more than 50% of their land was dedicated to maize, non-agricultural land uses, or renting out (normally as pastures). Maize was considered a subsistence crop given its predominance in family consumption and its low market price. Only farmers with more than 15 hectares of maize were considered to be market-oriented.⁶⁹ It is important to note that subsistence-orientation is not, in this case, equivalent to poverty. A farmer might be wealthy considering his income sources and subsistence-oriented as lands in his or her farm might predominantly lie idle. While land use is not a wholly reliable indicator of market integration, it was the most feasible strategy in the context of the survey. The private sector was not further subdivided as its small numbers precluded meaningful descriptive statistics analyses.

⁶⁹ A surface of 15 hectares was needed to make production sufficiently profitable, considering average maize yields in the study regions, as well as maize and input prices as recorded during the fieldwork.

Appendix III. Map with Processing Mills

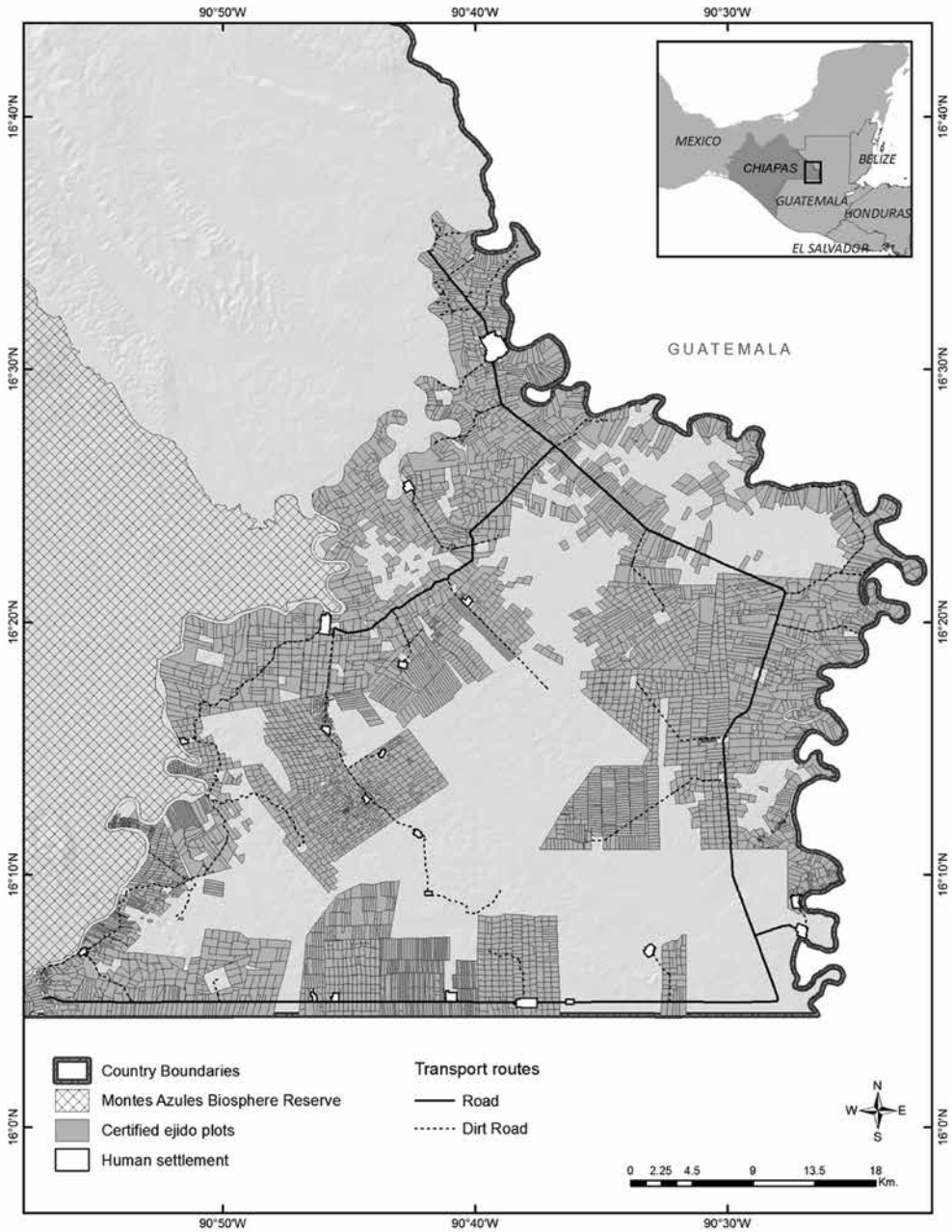


Appendix IV. Land Tenure in Soconusco



Note: certified *ejido* plots referred to those individually registered under the Program for the Certification of Ejido Land Rights and the Titling of Urban Housing Plots (PROCEDE in Spanish). REBIENC stands for the La Encrucijada Biosphere Reserve.

Appendix V. Land Tenure in the Southern Lacandon Rainforest



Note: Blank space within the study region correspond mostly to *ejido* land not certified through PROCEDE.

Appendix VI. Chiapas Government Decree Banning Logging in the Lacandon Rainforest

PERIÓDICO OFICIAL

ORGANO DE DIFUSIÓN DEL GOBIERNO CONSTITUCIONAL DEL ESTADO LIBRE Y SOBERANO DE CHIAPAS

SECRETARÍA DE GOBIERNO

Registrado como Artículo 2^a. Clase con fecha 28 de Octubre de 1921.

Tomo XCIX Tuxtla Gutiérrez, Chiapas, miércoles 4 de octubre de 1989. No. 42

PUB. No. 552-A-89 ACUERDO DECLARATORIO DE AREAS RESTRINGIDAS A LOS APROVECHAMIENTOS FORESTALES Y FAUNÍSTICOS EN LAS ZONAS DE AMORTIGUAMIENTO DE LAS ZONAS NUCLEO EN LA RESERVA INTEGRAL DE LA BIÓSFERA DE MONTES AZULES, DE LOS MUNICIPIOS DE OCOSINGO Y MARGARITAS, CHIAPAS.

Acuerdo declaratorio de áreas restringidas a los aprovechamientos forestales y faunísticos en parte de los municipios de Ocosingo y Margaritas en el estado de Chiapas, que corresponde a las zonas de amortiguamiento de las zonas núcleo de la Reserva Integral de la Biósfera de Montes Azules, dado por el gobierno del estado a través de la coordinación forestal, la cual está presidida por los C. Licenciado Milton Morales Domínguez, secretario de Desarrollo Rural y Fomento Económico, conforme al acuerdo de coordinación entre los gobiernos federal y estatal para la conservación, protección, fomento y aprovechamiento de los recursos forestales y a los Artículos 8^o y 9^o de la ley forestal vigente.

En la selva lacandona habitan diversos grupos indígenas y mestizos constituidos en ejidos y comunidades que orillados por la necesidad de sobrevivencia han provocado una progresiva destrucción de sus recursos naturales.

En efecto, de los 15 millones de hectáreas de selvas altas siempre verdes y de selvas medianas semideciduas con las que contaba el país (7.5% del territorio nacional), hoy apenas queda un millón de hectáreas debido a la destrucción que ha sufrido este patrimonio, en muchos casos en forma irreversible.

Se estima que a partir de la década de los setentas, cada año se han ido deforestando alrededor de 100 mil hectáreas, por lo que cada vez resulta más urgente y necesario tomar las medidas pertinentes para evitar la desaparición de este ecosistema.

En virtud de lo anterior, se hace necesario proteger las zonas arboladas y los recursos faunísticos de las zonas núcleo de la Reserva de la Biósfera de Montes Azules y sus zonas de amortiguamiento, distribuidas en parte de los municipios de Ocosingo y Margaritas, Chiapas, con la finalidad de evitar el deterioro y destrucción de los ecosistemas forestales, considerándose éstos de utilidad pública de acuerdo a lo señalado en los Artículos 3^o y 9^o de la Ley Forestal en vigor.

- PRIMERO: A partir de esta fecha se declaran como áreas restringidas a los aprovechamientos forestales y faunísticos, el total de la superficie territorial de las zonas de amortiguamiento en las zonas núcleo de la Reserva Integral de la Biósfera de Montes Azules, mismas que abarcan parte de los municipios de Ocosingo y Margaritas, Chiapas.
- SEGUNDO: Los permisos de aprovechamiento de los recursos forestales que para satisfacer las necesidades del medio rural se darán preferentemente sobre maderas muertas y plagadas y se otorgarán solamente previo convenio de reforestación y opinión técnica de la coordinación forestal del estado.
- TERCERO: Los permisos de aprovechamiento forestal que se hubiesen otorgado con anterioridad a este acuerdo, quedan suspendidos conforme a lo dispuesto por el Artículo 56 de la Ley Forestal, por el riesgo inminente de daño a los ecosistemas de esta zona.
- CUARTO: Se realizará la reforestación de las áreas degradadas mismas que serán definidas por la coordinación forestal y con la participación del municipio y de los dueños y poseedores de los terrenos.
- QUINTO: La coordinación forestal del estado formulará el programa operativo de protección y fomento a los recursos forestales y faunísticos en cumplimiento del presente acuerdo.
- SEXTO: Las personas físicas o morales que violen la disposición del presente acuerdo, serán sancionadas conforme a lo dispuesto en la Ley Forestal, Ley General de Equilibrio Ecológico y Protección al Ambiente y código penal vigentes.
- SÉPTIMO: El presente acuerdo entrará en vigor el día siguiente de su publicación en el “Periódico Oficial” del gobierno del estado y tendrá una vigencia indefinida hasta en tanto la coordinación forestal lo determine, previo análisis técnico donde se demuestre que la problemática que da origen al presente, ha sido solucionada.

Dado en la ciudad de Tuxtla Gutiérrez, Chiapas, a los ocho días del mes de septiembre de mil novecientos ochenta y nueve.

POR LA COORDINACIÓN FORESTAL DEL ESTADO DE CHIAPAS

Lic. Milton Morales Domínguez.- Secretario de Desarrollo Rural y Fomento Económico y representante del C. Gobernador Constitucional del estado de Chiapas.- Lic. José Patrocinio González Blanco Garrido.- Presidente.- Vicepresidente: Ing. Jesús Velarde García.- Delegado estatal de la Secretaría de Agricultura y Recursos Hidráulicos.- Secretario: Ing. Israel de J. Gómez Torres.- Director de Agrosilvicultura de la Secretaría de Desarrollo Rural y Fomento Económico.- Vocal: Ing. Juan Manuel Mauricio L.- Delegado de la Secretaría de Desarrollo Urbano y Ecología.- Vocal: Prof. Miguel Álvarez del Toro.- Director del Instituto de Historia Natural.- Rúbricas.

Appendix VII. Letter to the Mexican Government by the Unión De Ejidos Julio Sábines

Septiembre de 1984

“Mes de la patria”

Ejido Zamora “Pico de Oro”, municipio de
Ocosingo, Edo. De Chiapas.
R.N.A. 173-8563/84.

C. Lic. MIGUEL DE LA MADRID HURTADO,
Presidente Constitucional de los Estados Unidos
Mexicanos,
Presente.

Los que suscribimos el Consejo de Administración de la Unión de Ejidos “Julio Sábines Pérez” de R. I. de la zona “Marqués de Comillas”, exponemos: Señor presidente, como lo ha manifestado reiteradamente en los medios de comunicación y las veces que hemos estado en reuniones con usted y sus colaboradores, en diferentes regiones de nuestro Estado. Que la mayor preocupación de su administración son las zonas marginadas del país en el medio rural.

Estamos concientes y con responsabilidad; patriotismo y sentimiento agrarista que nos caracteriza, hacemos una exposición cronológica de la zona en que vivimos.

Como es de su conocimiento, la zona del “Marqués de Comillas”, se encuentra ubicada en la franja fronteriza con la Hermana República de Guatemala de Centro América. Se forma desde Boca de Lacantún, por el río Salinas hasta el vértice de Chioxoi, que sirve de límite con la República de Guatemala, de ahí se continua con una brecha internacional hasta el Ixcán. Por otro lado, el río Lacantún, sirve de colindancia con la selva Lacandona, empieza en Boca Lacantún y termina en Ixcán. Con una extensión de 197 000 has de terrenos selváticos, con pantanos, lagunas, lagos, arroyos y la mayor parte de sus tierras, llanas, con un 30% inundable en las épocas de lluvias; su precipitación pluvial es casi constante durante 9 meses del año, con una altitud de 156 mts sobre el nivel del mar y una latitud aproximada de 20° al Norte del Ecuador. Sus recursos maderables hasta la fecha, incalculables; compuestos por maderas preciosas y tropicales, así como con una flora y fauna riquísima en plantas silvestres, mamíferos, aves y peces.

En esta zona. Nos asentamos desde hace 12 años los primeros colonizadores; y hasta la fecha, siguen llegando gentes de diferentes partes de la República. Con

la sencillez de términos que usamos, le damos a conocer cómo el desarrollo ha ido llegando a nosotros. En una acción primitiva fuimos subsistiendo con una lentitud que caracteriza a los primeros colonizadores de una zona desconocida para nosotros, que llegamos de diferentes estados de la República y de varios municipios del Estado de Chiapas. En esta tierra en que vivieron nuestros antepasados, como lo prueban las ruinas de la Cultura Maya que se encuentran entre la jungla, así también se encuentran herramientas, ruedas y carretas de la época de la Colonia, además se localizan sembradíos de limones, piña, pimienta y naranjos, de los que actualmente tenemos sembrados en nuestros solares. También existen vestigios de épocas de más tecnología, como son haciendas, tractores, malacates y otros utensilios que se usaron en la explotación de la madera.

La zona del “Marqués de Comillas”, se repartió en Gabinete Técnico en la década de los sesenta, siendo presidente de la República el Lic. Adolfo López Mateos, quedando así constituido en una reserva ejidal. Estos terrenos fueron segregados de concesión que se le había otorgado durante la administración porfirista al señor Marqués de Comillas, quien posteriormente los sede a la familia Brown y a su vez, los sede a la empresa maderera Agua Azul & Company, vencidas las concesiones, los gobiernos de la revolución la recuperan como lo indican las resoluciones presidenciales que nos entregaron.

Los primeros colonizadores que llegamos a esta Selva Tropical, desconocida por nosotros e ignorados para el resto del estado y del País. Se inicia en el año 1972, cuando los primeros entramos caminando a través de la selva, desde los lagos de Monte Bello, aproximadamente a 150 kilómetros hasta nuestro destino. Otros llegamos caminando desde el ejido Lacanjá, pasando por las ruinas de Bonampak, con una distancia de 120 kilómetros; abriendo brechas a golpe de machete, atravesando arroyos y ríos a nado, acompañados de nuestras esposas e hijos y cargando nuestras escasas pertenencias; otros, con mejores condiciones económicas, entraron en pequeños aviones monomotores que aterrizaron en las playas de los ríos y pequeñas pistas que existían de los chicleros.

Posteriormente, el grueso de los pobladores que actualmente estamos, entraron por brechas hasta Frontera Corosal y de ahí, continuaron por vía fluvial a su destino.

Al inicio, subsistimos comiendo hierbas naturales, carne de animales de la selva, pescados y tortugas de las lagunas y ríos; empezamos sembrando maíz, frijol, arroz y chile que después de dos años empezamos a intercambiar (trueque) por productos elaborados de primera necesidad, con comerciantes de Guatemala que llegaban cada seis meses.

Nuestra mayor batalla fue contra la naturaleza y vencer el choque emocional del cambio, aunado a esto, las enfermedades hídricas, gastrointestinales, paludismo,

plagas (como son sancudos, colmoyotes, mordeduras de culebras) y accidentes por ahogamiento; ya que los ríos Lacantún y Salinas en épocas de lluvias llegan a aumentar hasta de 15 metros su nivel normal, desparramándose en algunos lugares hasta una distancia de 2000 metros de su cauce normal. Estos fenómenos se registran año con año, hasta la actualidad.

Además de esto, hemos tenido pérdidas materiales en nuestras cosechas, ganados, destrucción de embarcaciones motores fuera de borda, productos industrializados, insumos para la agricultura, combustibles y otros.

Ya en 1981, siendo usted Secretario de Programación y Presupuesto, se dan los primeros pasos para encuadrarnos dentro del desarrollo integral del Estado y empesamos a tener nociones de lo que su gobierno tenía programado para nuestra zona Marginada.

Primero, se les regulariza la tenencia de la tierra a los primeros colonizadores, siendo en orden cronológico; Galacia, Benemérito de las Américas, Zamora, Pico de Oro, Reforma Agraria, Adolfo López Mateos, Boca del Chajul y Playón de la Gloria (posesión provisional). Inmediatamente después se le proporciona por la S.P.P. ayuda PIDER por \$12,300,000.00, para el cultivo de 300 hectáreas de cacao al Ejido Zamora; además, se le proporciona crédito de Bancrisa por \$68,500,000.00 para el establecimiento de 2500 hectáreas de praderas y para la compra de ganado de reproducción.

Viendo la necesidad de participar en forma ordenada de ese naciente desarrollo, nos agrupamos siete ejidos para constituirmos de acuerdo a lo establecido en la Ley de Reforma Agraria, en una Unión de Ejidos, que quedó integrada el 18 de Octubre de 1981, contando actualmente por la Dirección General de Procedimientos Agrarios de la Secretaría de la Reforma Agraria, con registro R.A.N. 173-8563/84. Los núcleos agrupados son:

Nombre del ejido	Capacitados	Dot. Agrac. Has.	Pob. Actual. Hab.
Zamora Pico de Oro	330	16550	1355
Reforma Agraria	40	2000	195
Lic. Adolfo López Mateos	37	1900	205
Galacia	45	2600	185
Playón de la Gloria	47	1300	200
Boca de Chajul	185	3810	765
Benemérito de las Américas	680	34000	3500

Al quedar organizados en Unión, presentamos nuestro Plan de Trabajo Global al Gobernador del Estado, C. Juan Sabines Gutiérrez, con copia al c. Presidente de la República, Lic. José López Portillo, siendo el siguiente:

Educación: Fundación de escuelas, maestros, construcción de aulas, mobiliario escolar, material didáctico, telesecundaria para los ejidos: Zamora Pico de Oro y Benemérito de las Américas.

Salud: Construcción de una clínica COPLAMAR en Boca del Chajul, construcción de hospital de campo en Zamora Pico de Oro; brigadas médicas y suficientes medicinas para las clínicas.

Infraestructura caminera: Caminos de penetración para comunicar a los diferentes ejidos de la zona.

Cultivo de Cacao: Apoyo de la S.P.P. para la siembra de 1711 hectáreas de cacao, repartirlo entre los siete ejidos de la Unión; siendo aprobado el mismo año con un monto operable por \$30,798,000.00; el cual se opero en el lapso de 19 meses, ya con las presiones inflacionarias que todos conocemos y que repercutió en el alza hasta de un 500% en el costo de operación. Cumpliendo seis ejidos con la totalidad del programa, quedando sembrados 1411 hectáreas; y las restantes 300 hectáreas sin cumplir. Quedando sin cumplir el ejido Benemérito de las Américas, por problemas de organización interna, que hasta la fecha no se ha podido resolver.

Ganadería: Solicitamos a la S.P.P. Programa PIDER para la apertura de praderas, alambres y corrales de manejo para los ejidos de la Unión; se nos autorizó un monto de: \$9,500,000.00 que no llegó a nosotros porque se desvió para la introducción de agua potable en los ejidos, La Arena, Santo Domingo, el Granizo y otros, en el valle de Santo Domingo y en la selva Lacandona. Se nos explicó que en la junta de la República que se efectuó en Guadalajara, JAL., se autorizó a los Gobernadores utilizar esos recursos económicos, a su juicio, donde más falta hiciera, siendo nosotros los más marginados, se nos vetó de dicha ayuda.

Bodegas: También solicitamos de la S.P.P. la construcción de una bodega, para almacenar granos, fertilizantes e insumos, para cada uno de los ejidos socios; siendo aprobado, pero solamente construyeron dos bodegas en el Ejido Zamora y una bodega en el Ejido Benemérito de las Américas, faltando las restantes.

Creditos: solicitamos de BANCRISA, créditos refaccionarios para apoyar las siembras de cacao del ejido Zamora y el compromiso de apoyar con créditos las 1711 hectáreas que solicitamos para sembrar ante S.P.P.

El 16 de Noviembre de 1981, a los dos meses de habernos constituido en Unión, se nos propuso que para apoyarnos de inmediato y como respaldo al sistema alimentario Mexicano (SAM), de aquellos días, aceptáramos un crédito de cultivo de \$13,518,050.00 entre los ejidos organizados y no organizados; se canalizó a través de nuestra naciente organización y por causas ajenas a nuestra voluntad como son: falta de comunicación, razones climáticas, falta de asesoramiento técnico de la S.A.R.H. y además de que BANCRISA nunca mandó inspectores de campo para respaldar la inversión en esta zona, nos quedamos en una cartera vencida

de \$8,503,999.74 de lo cual usted tiene conocimiento, en carta girada el 16 de Mayo de 1984; donde pedimos se nos reestructure nuestra deuda y además que el Banco y Hacienda, nos congele los intereses y poder pagar líquido el adeúdo antes mencionado. Así también, el Banco ya acepto reestructurarla deuda que contrajimos en la compra de cinco camiones Dodge F-600 Diesel Perkins, chasis cabina, con un monto de crédito de \$2,800,000.00, ya que caímos en cartera vencida créditos por culpa de los primeros pagos, por razones de que se nos cortaron los créditos por culpa de empleados menores de BANCRISA en Palenque, Chiapas. El compromiso al adquirir estos camiones era pagarlos con los fletes de acarreo de insumos, comercialización de granos de maíz y frijol, los cuales quedaron cortados por un año, al suspendernos los créditos.

Posteriormente, con apoyo de BANCRISA, obtuvimos créditos de apoyo para las siembras de cacao en 540 hectáreas, contratadas en el mes de Julio de 1983, quedando 970 hectáreas sin protección crediticia; unas razones de desconocimiento de crédito de nuestros socios; y otras, por haber enviado BANCRISA personal con conocimiento pecuario, pero ignorantes totalmente de asuntos agrícolas y sobre todo, de cultivo del cacao.

El gobierno del Estado nos apoyó con aperos de labranza del programa CODECOA, con tres camiones de volteo, un Caterpillar D-5, dos tractores agrícolas, un camión Ford-600 estaca y una camioneta Pick-up. Todo se encuentra actualmente en buenas condiciones. Nos proporcionó además lanchas y motores fuera de borda y motosierras.

En el renglón alimentos, nos proporcionó mercancías de DICONSA para establecer tiendas populares, en cada uno de nuestros ejidos por un monto de \$1,024,000.00.

Construyó e instaló clínicas del sistema COPLAMAR y radios de comunicación en los ejidos Zamora, Pico de Oro y Benemérito de las Américas. Como los servicios médicos que prestaban en las clínicas Coplamar, eran de carácter preventivo únicamente, además de insuficientes para dar asistencias médica adecuada a nuestros compañeros.

Al iniciarse el programa PIDER de cultivo de cacao, tuvimos la necesidad de contratar los servicios médicos del Sanatorio Paredes, en la ciudad de Tuxtla Gtz. y clínica Palenque en Palenque, Chis., donde se efectuaron desde consultas, hasta operaciones quirúrgicas, con lo que se salvaron muchas vidas humanas. En estos servicios médicos se gastaron \$1,800,000.00 del programa PIDER. Aún así, se tuvieron pérdidas humanas de nuestros compañeros en un total de 36 decesos, ocurridos entre los años 82 y 83; las causas fueron enfermedades y accidentes de orden natural, aunado a esto, la llegada de 18,000 refugiados centroamericanos, que trajeron consigo enfermedades de diferentes índole que no se padecían en la zona.

Tuvimos la necesidad de arreglar caminos, construir un tramo de 500 metros de puente para atravesar un pantano donde empleamos 12,000 trozos de madera de 4 metros cada uno, pagamos 4000 jornales, construimos 3 bodegas de 8 x 20 mts para almacenar fertilizantes, semillas de maíz y frijol, semillas de cacao y para diversos usos. Una bodega a 8 kilómetros del río Lacantún otra en la ribera del mismo río; y la última, en Zamora Pico de Oro, donde también construimos una casa-hospital junto a la clínica IMSS-COPLAMAR con piso de cemento y cerco de tablas de caoba y cedro, donde se emplearon 6 mil pies de madera; construimos oficinas, compramos máquinas de escribir, mobiliarios y equipo de oficina. Este campamento que consta actualmente de 7 cubículos, una sala de juntas y una casa para visitantes, un departamento contable y archivo, así como baños y sanitarios. En este conjunto de obras y servicios se emplearon \$4,000,000.00, los que actualmente ocupamos y lo tenemos en partes prestados a la secretaría de Desarrollo Rural del Gobierno del Estado y a la S.A.R.H., también lo ocupan inspectores de BANCRISA y Anagsa, así como Migración, Marina, Ejército Mexicano y otras dependencias; tanto estatales, como federales que nos visitan.

Señor presidente, con la llegada de los refugiados centroamericanos a nuestros poblados, se creó en nosotros un desequilibrio y una psicosis colectiva al ver las condiciones en que llegaban y las constantes incursiones de aviones y helicópteros de guerra de Guatemala, que cursaban el espacio aéreo de nuestra zona, aterrizar en las pistas de Zamora Pico de Oro y Boca de Chajul y en terrenos de los ejidos Benemérito de las Américas. Estos hechos desestabilizaron nuestro orden de trabajo y comportamiento en la zona, por las múltiples detenciones que sufrieron nuestros compañeros, por el ejército Guatemalteco en la estación militar de pipiles. Esta cronología de hechos y sucesos, lo conoció en su momento el Gobierno y el Alto comisionado de la O.N.U.; ya que fue del dominio público a través de la prensa nacional e internacional.

Actualmente con el traslado a Campeche los refugiados por COMAR, Secretaría de gobernación, Secretaría de Marina, Secretaría de la Defensa Nacional y otras dependencias para esos asuntos, reordenamos nuestro trabajo y el 10 de septiembre de 1984, tuvimos la primera reunión con el sector agropecuario a nivel de institución Federal y Estatal, lo cual fue ordenado por el C. Gobernador, Gral. Absalón Castellanos Domínguez y auxiliado por nuestra Central Campesina C.N.C., en donde presentamos un Plan de Trabajo que se aceptó en un 90%, quedando por resolver nada más tres asuntos de orden presupuestal:

- 1.- Para la Agroindustria, la delegación de la S.P.P. en el Estado, organizó de inmediato una brigada, para efectuar una inspección ocular a los terrenos,

donde quedarán instalados las agroindustrias ejidales de ésta Unión y que son las siguientes:

- a) Una planta trilladora de arroz con capacidad de 1000 tons.
- b) Una planta emvasadora de chile al vacío. (de estas plantas la representación de la S.A.R.H. en el Estado ya tiene elaborado los proyectos y costos.
- c) La comisión Nacional del Cacao, dio su apoyo decidido para que de inmediato se construye una planta fermentadora y secadora de cacao.

2.- Solicitamos a CONASUPO que nos instalen a la brevedad posible dos centros de recepción para la adquisición de 2,000 toneladas de granos de maíz y frijol en Zamora Pico de Oro, donde ponemos a su disposición provisionalmente dos bodegas con capacidad de 500 toneladas cada una; y en Benemérito de las Américas con una bodega de 500 toneladas. El representante de CONASUPO en Chiapas, nos dijo que no era de su competencia, sino de orden presupuestal.

3.- En el plan de Trabajo que presentamos ante el sector agropecuario con respecto a la ganadería, hacemos mención que para proteger la selva, queremos dejar de ser ganaderos extensivos para transformarnos en ganaderos intensivos; y así poder preservar nuestros bosques, por lo que solicitamos a la S.P.P. nos proyecten y programen la construcción de aguajes, drenes, caminos de acceso, baños garrapaticidas, instalaciones de manejo, mejoramiento de pastos y genéticos para ganado de doble propósito.

4.- Para evitar el deterior de la selva y aprovechar al máximo nuestros recursos naturales, solicitamos se construya un campamento rústico de la S.A.R.H. para proyectos y estudios para lo cual ponemos a disposición de dicha secretaría, 50 hectáreas de terreno aledaño al poblado Zamora Pico de Oro y también, se construya una estación pluviométrica, para calendarizar nuestros cultivos en ese trópico. Todo esto, lo presentamos en el documento que anexamos a la presente y para lo cual pedimos su intervención para que se haga realidad.

Señor presidente Miguel de la Madrid Hurtado, como Usted puede palpar, somos campesinos organizados que desde el inicio de nuestro asentamiento en esta hermosa selva, hemos sabido sortear todas dificultades que se nos han presentado, con un alto sentido de trabajo y amor patrio, hemos sabido con responsabilidad darle buen uso a las ayudas que hemos recibido, pero consideramos que es de primordial importancia y de suma urgencia, por ser una franja fronteriza donde estamos se nos incorpore dentro de los programas de la S.P.P., S.E.P., S.C.T., S.A.R.H., C.F.E., CONASUPO, SEDUE y Petróleos Mexicanos, de acuerdo al Decreto que aprueba el Plan Nacional de Desarrollo, publicado en el Diario Oficial de la Federación, con fecha de 5 de enero de 1983.

EDUCACIÓN

En el año de 1976, llegaron los primeros maestros a nuestra zona, de parte de S.E.P. y ya organizados en 1982, recibimos de parte de la Secretaría de Educación Pública del Estado, maestros a nivel primario para el Ejido Playón de la Gloria y maestros para Telesecundaria en los ejidos Zamora Pico de Oro y Benemérito de las Américas. Para poder atender a los niños, hemos tenido que construir chozas rústicas con material de la región, para aulas y casas de los maestros y pupitres rústicos los que son inapropiados y antipedagógicos para atender a nuestros hijos; aunado a esto la irresponsabilidad y falta de conciencia de parte de los maestros, ha repercutido en contra de la preparación de nuestros hijos. Quienes nos han presionado moralmente, pidiendo ayudas económicas para pago de comidas durante su permanencia en los ejidos y gasto para viáticos, cuando salen y así poder regresar, alegan que no están acostumbrados a vivir en barracas y que el sueldo que les pagan no les alcanza.

Desde que nos integramos en Unión de Ejidos, hemos estado insistiendo para que el Gobierno nos apoye en el renglón educativo, para lo cual hemos expuesto nuestras necesidades como son

Primaria: La construcción de 29 aulas, 7 direcciones, 7 casas para maestros, 7 conjuntos sanitarios, 29 paquetes de pupitres que constan de 25 unidades cada uno, 7 paquetes de mobiliario para los maestros, (escritorio y pizarrones), 7 plantas de luz eléctrica (nuestros ejidos no cuentan con energía eléctrica), 7 paquetes de equipos deportivos (futbol, basquetbol y besibol), 7 canchas de basquetbol, 7 campos deportivos con sus medidas reglamentarias y para reafirmar nuestro fervor patrio, solicitamos 7 tocadiscos equipados con material que consta de Himno Nacional, Himno agrarista, 7 paquetes de material para ceremonias cívicas que consta de dos banderas; una para hisar, y otra para escolta, con su equipo de 6 galones y porta bandera, 7 bandas de guerra completas para rendirle honores a nuestra enseña patria, así como crear un protocolo cívico rural.

Secundaria: Estamos solicitando para el ejido Benemérito de las Américas, la construcción de 3 aulas con sus dirección, 3 paquetes de pupitres, 3 televisiones equipadas con su antena parabólica, una planta de luz, para la telesecundaria que ya se encuentra funcionando.

Ejido Zamora Pico de Oro.- Construcción de tres aulas con su dirección, casa para los maestros, 3 televisores equipados con su antena parabólica, una planta de luz, 3 paquetes de pupitres, 2 banderas y paquete deportivos, para la telesecundaria que ya se encuentra funcionando.

Ejido Boca del Chajul.- construcción de 1 aula para clases, 1 casa para maestro, 1 televisión equipada con su antena parabólica; 1 paquete de pupitres, 1 planta de luz, dos banderas y paquete deportivo, para la telesecundaria que en este año empezará a funcionar.

Educación Media Superior: Hacemos de su conocimiento que en el presente ciclo escolar 84-85, sale la primera generación de las telesecundarias en los ejidos Benemérito de las Américas y Zamora Pico de Oro, y queremos de inmediato hagan los estudios correspondientes para la construcción de una escuela agropecuaria, donde además de preparatoria, nuestros hijos reciban educación de carreras técnicas propias para una zona como la nuestra, y así lograr que se arraiguen en esta zona tan hermosa de nuestro país.

Educación Preescolar: Por medio de este conducto, invitamos a su amable esposa, la primera Dama del país, Sra Paloma cordero de la Madrid, para que a través del DIF organismo que ella dignamente preside y con el respaldo que usted le ha brindado en el curso de su gobierno, nos construya jardines de niños y nos envíe educadoras en ese ramo, de acuerdo al estudio que se nos haga de oportunidad.

Señor presidente, hemos observado que en nuestras comunidades se está perdiendo el amor a los símbolos patrios; y por ende, existe el peligro de no afianzar nuestro federalismo en torno a la República; por este motivo estamos solicitando gire usted sus órdenes a quien corresponda para que se erijan estatuas o bustos de nuestros próceres de la independiencia y de la revolución, en los ejidos que integran esta Unión.

Benemérito de las Américas	Lic. Benito Juárez
Zamora Pico de Oro	Prof. Ursulo Galván
Reforma Agraria	Gral. Francisco Villa
Adolfo López Mateos	Miguel Hidalgo y Costilla
Galacia	Gral. Emiliano Zapata
Playón de la Gloria	Dr. Belisario Domínguez
Boca de Chajul	Gral. Lázaro Cárdenas

INFRAESTRUCTURA CAMINERA

En pláticas que hemos tenido con los encargados de la S.C.T. residentes en el Estado, nos explicaron que la carretera fronteriza tiene un avance positivo hasta la fecha. Le solicitamos a Usted Sr. Presidente, se siga apoyando presupuestalmente para sacar adelante esa carretera, que vendrá a resolver en parte el problema de comunicación que tenemos actualmente y además, pedimos se construyan los caminos de penetración a nuestros ejidos y también los caminos internos de los centros de producción a las bodegas de almacenamiento.

PRESERVACION DE LA ECOLOGIA

Solicitamos que en los trabajos de perforación que realizará petróleos Mexicanos en la zona del “Marqués de Comillas”, se les tome en cuenta a nuestra Unión, para conocer los proyectos que tiene a realizar en nuestros ejidos, así mismo se cumplan los convenios: convenio S.P.P. SEMIP, S.A.R.H., SEDUE, S.R.A., PEMEX, con el Gobierno del Estado de Chiapas (12 de Junio de 1984). Convenio de coordinación S.R.A. – PEMEX (20 de Julio de 1984).

INFRAESTRUCTURA AGRÍCOLA

Solicitamos su intervención ante la S.A.R.H. para que por medio de dicha secretaría, se reúna el sector agropecuario y someta a consideración estudios y proyectos para lograr un mayor aprovechamiento de nuestros suelos y conocer si existe viabilidad para abrir áreas a la mecanización para producir: Maíz, frijol, arroz, chile, tomate, plátano y soya, las áreas se abrirán de acuerdo a los estudios y necesidades de nuestros ejidos. En este mismo orden analizar y echar a andar el programa de aprovechamiento forestal.

Que se nos enseñe la tecnología agrícola para mejorar las siembras de cacao, canela, clavo, pimienta gorda de árbol, pimienta negra de liana, rambután, marañón (nuez de la India), cardamomo de Malabar, achiote, nuez moscada, hule hebea, palma africana y cítricos, los cuales actualmente se encuentran en observación para conocer su comportamiento, por técnicos de la materia en el campo Experimental Pico de Oro de la Secretaría de Desarrollo Rural del Gobierno del Estado. Ya que sus lugares de origen son similares al nuestro. Anexamos fotocopia de la entrega de esos terrenos ejidales al actual gobernador, Gral. Absalón Castellanos Domínguez, quien nos está ayudando decididamente para estos fines.

SALUD

Como lo hemos venido exponiendo, en el lapso de 12 años de nuestra presencia en la selva, nuestra población ha sido azotada por las enfermedades de toda índole que da el trópico húmedo y los decesos han sido altos, según estadística de defunción que existen en los archivos de las agencias municipales clasificándose en la forma siguiente:

- 4 por mordedura de serpientes
- 5 por enfermedades gastrointestinales y malaria
- 35 mortandad infantil, por desnutrición, fiebres,
paludismo, bronconeumonía y otros
- 3 de orden natural o accidentes
- 47 decesos anualmente en toda la zona.

Actualmente existen tres clínicas en toda la zona del “Marqués de comillas” que no son suficientes para dar asistencia médica y solamente proporcionan medicinas que se comprenden dentro del cuadro básico para el área rural, por tal motivo, estamos solicitando la construcción de otra clínica en el Ejido Boca del Chajul, que atendería a los ejidos Galacia, Playón de la Gloria y Loma Bonita.

Solicitamos además su intervención ante el director del instituto Mexicano del Seguro Social, para que Construya una clínica Hospital, en el ejido Zamora Pico de Oro que es la sede de nuestra Unión. Informamos que actualmente nos encontramos competentes económicamente, para pagar las cuotas que nos asigne dicha institución.

Solicitamos su intervención ante el director de la Comisión Federal de Electricidad, para que se continúe la introducción de la energía eléctrica que actualmente están llevando a las comunidades Lacandonas, hasta nuestros ejidos, ya que la distancia del tendido al primero de nuestros ejidos, Benemérito de las Américas en línea recta, es de 60 kilómetros; de Benemérito a Zamora Pico de Oro, son 50 km: de Pico de Oro a Reforma Agraria, hay 12 km; de reforma Agraria al ejido López Mateos, hay 6 km; De López Mateos a Galacia, ha y 6 km; de Galacia a Playón de la Gloria, 5 km; de Playón de la gloria a boca de Chajul, 5 kms. Poblados aledaños de Galacia al Pirú, hay 8 km; de Zamora Pio de Oro al Ejido San Isidro, 9 km de San Isidro a América Libre, 9 km; del tendido de Benemérito a Zamora en punto medio a Quiringüicharo, 8 kms.

URBANIZACION RURAL

Para elevar nuestro nivel de vida en el campo, solicitamos que entervenga Usted, ante quien corresponda, para que por medio de la S.P.P. y SEDUE se nos proyecte la urbanización de nuestros poblados, trazo de calles, instrucción de agua potable, drenajes, construcción de parques públicos, centros de recreo y alumbrado público. Asimismo, le pedimos que por medio de un financiamiento, se nos construya 1360 viviendas, repartidas entre 7 ejidos que agrupa nuestra Unión. Que el tipo de vivienda sea funcional y adecuado para zona del trópico húmedo caliente, con temperatura hasta de 40° centígrados bajo sombra.

Señor presidente, nos atrevemos a suscribir este compromiso financiero, porque estamos conscientes de los problemas económicos que atraviesa nuestro país, pero le prometemos que con nuestro trabajo, unidos pueblo y gobierno, saldremos adelante.

ABASTO RURAL

Como una necesidad y para defender la economía de nuestras familias, solicitamos se refuercen las tiendas CONASUPO que existen en la zona, se construya de inmediato un almacén; abran 3 centros comerciales de categoría CONASUPER en los ejidos Benemérito, Zamora Pico de Oro y boca del Chajul.

Solicitamos además, un financiamiento con un capital de fondo revolvente para instalar un almacén en la sede de la Unión, para vender a precio oficial y así bajar costos en los artículos siguientes: aperos de labranzas manuales y de tiro animal como son machetes, hachas, coas, limas, palas, picos, azadones, arados, cultivadoras, trilladoras, bombas aspersoras manuales y de motor, costaleras y similares, sillas de montar y lo que se requiera en el manejo de ganado; incluyendo productos veterinarios, así como insumos para la agricultura; insecticidas, fertilizantes granulados y foliar, herbicidas y otros productos para estos mismos fines, semillas mejoradas de básicos y hortalizas, materiales para la construcción, combustibles y lubricantes.

RADIO COMUNICACIÓN

En este ramo, se necesitan la instalación de radios de banda lateral, en los ejidos Reforma Agraria, Lic. Adolfo López Mateos, Galacia, Playón de la Gloria, y boca de Chajul. Así también necesitamos servicio de correos en nuestros ejidos.

Es de mucha importancia para nuestra zona, que se instale una torre de microondas, repetidora de imágenes de televisión. En un lugar apropiado para que lleguen bien las imágenes de todos los canales a nuestros ejidos; para poder estar más comunicados con el resto del país, llevar la cultura a nuestras familias y nuestros hijos puedan aprovechar al máximo las lecciones que se imparte a nivel telesecundaria. En el mismo orden, solicitamos que se construya una radiodifusora oficial en la zona, para que difundan programas culturales y de enseñanza para el campo, y de los avances tecnológicos en la agricultura; ya que actualmente sólo escuchamos difusión de países centroamericanos y de otros países, incitando a sus pueblos contra sus gobiernos establecidos.

TRANSPORTE

Hacemos de su conocimiento que en el próximo ciclo agrícola 84-85, produciremos 4500 toneladas de chile, 3000 toneladas de maíz, 1000 toneladas de frijol, 15 toneladas de cacao, 1000 toneladas de frijol, 1000 toneladas de arroz, 400 novillos de engorda, 100 vacas de desecho; además, puercos cebados y aves de corral. Introduciremos de las ciudades a nuestros ejidos, 3000 toneladas de productos industrializados, 700 toneladas de insumos para la agricultura; 220000 litros de combustibles entre gasolina, diesel, petróleo y lubricantes. Además con el crédito que se nos acaba de autorizar en Bancrisa, Palenque, introduciremos 840 vientres para reproducción, 35 sementales, 50 caballos, 1500 rollos de alambre y 1500 kilos de grapas. Todo ese volumen de carga que se presenta actualmente, irá aumentando paulatinamente con un 30% anual, ya que con el inicio de apertura de áreas compactas a la mecanización, se perfila un desarrollo constante de nuestra producción.

Existe además, un movimiento de personal constante en toda la zona, quienes por diferente causa tiene la necesidad de desplazarse a las ciudades de Palenque, Ocosingo, Tuxtla-Gutiérrez y otras del interior de la República y viceversa, calculándose este movimiento anual entre 20 y 25 mil personas.

Actualmente tenemos cinco camiones de 10 toneladas cada uno, con capacidad de movimiento de 90 toneladas semanales con un promedio de 4500 toneladas anuales. Para 1985 tenemos necesidad de comercializar nuestros productos a los centros de consumo y a la central de Abastos de la ciudad de México, en un volumen aproximado de 14 mil toneladas.

Para este movimiento, se requieren bastantes camiones, Es por estas razones que solicitamos a Usted. Sr. Presidente que mediante un financiamiento y previo estudio económico nos proporcionen cinco camiones torton con capacidad de 15 toneladas cada uno, cinco camiones tipo rabor con capacidad de 10 toneladas cada uno, y también cuatro autobuses de pasajeros de preferencia marca Dodge con motor diesel Perkins.

Como en la Zona se avisa un gran desarrollo con la construcción de la carretera fronteriza, construcción del puente sobre el río Lacantún, lo que trae consigo un gran movimiento de maquinarias y camiones, solicitamos su intervención para que PEMEX nos da la concesión de dos gasolineras, que se instalarían en Boca de Lacantún y Boca del chajul, que son los puntos de entreda y salida a “Marqués de comillas”.

Solicitamos también que nos ayude con una inversión tripartita (Gobierno Federal-Estatal-Ejidatarios). Para la construcción de un edificio en la sede de nuestra Unión, donde se alojarán las oficinas, tanto de las instituciones que participan en el desarrollo de nuestra zona, así como nuestras oficinas, y poder proporcionarles mejor atención y servicio a nuestros compañeros ejidatarios.

Señor presidente, como una petición muy especial, que es el sentir de todos nuestros compañeros agrupados en el seno de nuestra Organización Ejidal, se ayude al Ejido Benemérito de las Américas, miembro de ésta Unión, a quien hemos visto como el hermano mayor.

Que la Secretaría de la Reforma Agraria envíe personal capacitado para que efectúe labor de conciliación entre los grupos existentes y darles tratamiento adecuado a la diferentes ideas e ideologías que existen, que existen, que se encuadren dentro del sistema Institucional y que todos se pongan a trabajar y producir.

Solicitamos que Bancrisa y Hacienda, les reestructure sus adeudos ya que cayeron en cartera vencida; les cuentan entre nuevos créditos; para la ganadería ya que cuentan entre pastizales y acaguales con más de 5 mil hectáreas; les programe créditos para la siembra de maíz, frijol, arroz, y chile ya que cuentan con un potencial enorme de fuerzas de trabajo y suficientes tierras aptas para esos cultivos; y además

que les hagan estudios para la siembra de hule hevea y caña de Azúcar.

Solicitamos también al Banca Nacionalizada; y así poder efectuar nuestros movimientos bancarios en la misma zona; a la S.A.R.H. con distrito de temporal, a la aseguradora Nacional Agrícola y Ganadera S.A., a la S.R.A. con una promotoría, a la S.E.P. con una inspección de zona escolar: Que el gobierno del estado instale una agencia del ministerio público y se eleve a la categoría de Agencia Municipal al Ejido Zamora Pico de Oro.

Señor Licenciado Miguel de la Madrid Hurtado, presidente constitucional de los Estados unidos Mexicanos, lo que estamos exponiendo para su consideración, creemos que es justo y que por justicia social nos corresponde como mexicanos de la franja fronteriza y como chiapanecos, ya que nos sentimos orgullosos de vivir en esta zona donde principia México y con esto, afianzaremos más el pacto federal que tenemos con la República Mexicana.

Por este medio, reciba un saludo de nuestras esposas y nuestros hijos que risueños y alegres esperan de usted un México más grande, más libre, más mejor.

ATENTAMENTE

TIERRA Y LIBERTAD

EL CONSEJO DE ADMINISTRACIÓN

Appendix VIII. MOCRI's List of Demands to the Mexican Government

ZONA MARQUEZ DE COMILLAS
MUNICIPIO DE OCOSINGO
ESTADO DE CHIAPAS

México, D.F. a 22 de julio de 1991.

C. LIC. CARLOS
PRESIDENTE DE LOS ESTADOS
UNIDOS MEXICANOS
PRESENTE.

Los campesinos de la zona Marquez de Comillas, municipio de Ocosingo, Chiapas, venimos ante usted para exponerle los siguientes hechos:

1.- El día 6 de julio llegaron 4 judiciales, 24 elementos de seguridad pública con campesinos del Ejido de la Unión a la zona mencionada, en 5 camiones de COFRO (Compañía Maderera del Gobierno del Estado), para decomisar la madera aserrada por las comunidades con anterioridad a la veda de explotaciones forestales en la selva lacandona, decretada por el gobierno en 1989.- La madera se encontraba en la trayectoria de la carretera fronteriza desde el Ejido Nuevo Veracruz hasta Nuevo Chihuahua... Nuestras comunidades afectadas y las autoridades ejidales les exigimos que presentaran la documentación legal que amparaba este operativo, no se nos entregó nada argumentando que habían recibido órdenes verbales, mencionando en varias ocasiones que era orden del Gobernador Patrocinio González Garrido. En el operativo estaban involucrados tres agentes del ministerio público, entre ellos el de Benemérito de las Américas quién respondió a la población del Ejido Nuevo Chihuahua que él tenía la orden pero no la presentó; también estuvieron ahí el subprocurador de Justicia del estado, un licenciado que dijo llamarse Amilcar García Costantino y ser Comisionado de la Procuraduría del Estado de Chiapas, quien al ver la indignación de la gente, se dio a la fuga. También se encontraban entre otras personas, uno de apellido Barragán, otro de nombre José Antonio López Rivera y 24 campesinos del Ejido de La Unión, Palenque que traían engañados para utilizarlos como cargadores.

2.- Las comunidades afectadas decidimos que los camiones cargados con la madera aserrada, no saldrían del ejido hasta que no se nos indemnizara conforme al acuerdo del Gobierno- en efectivo y/o mediante obras de interés social – incluyendo también un pliego petitorio en el que se contemple la problemática de la zona y la necesaria solución a convenios contraídos con varias dependencias del Estado a los que no han dado cumplimiento, así como la necesidad de que nos dejen trabajar libremente el parcelo y manejar adecuadamente nuestros recursos forestales para poder subsistir y que nuestras familias tengan una vida digna.

3.- Las comunidades actuamos en defensa de nuestros derechos, el hecho de que las personas que llegaron a decomisar” la madera no se hayan presentado ante las autoridades ejidales y municipal acreditando legalmente el operativo, para nosotros se trataba de un robo. No acudimos a la agencia del ministerio Público más cercana , porque al encontrarse en Benemérito de las Américas y otros más en este operativo, desconfiamos de las autoridades y del Gobierno del Estado.

4.- Los 24 campesinos del Ejido La Unión, Municipio de Palenque, al ver que la salida estaba bloqueada, se presentaron ante nuestro pueblo, manifestando que ellos habían sido contratados para injertar hule en Marquez de Comillas y que llegando a Benemérito los repartieron en 2 grupos, los 24 que estaban ahí los asignaron a la zona fronteriza sur y 16 los enviaron por la carretera que conduce a Zamora-Pico de Oro. Los 24 que permanecieron libremente en la comunidad rindieron su declaración ante las autoridades ejidales y el agente municipal.

5.- A los elementos de Seguridad Pública se les hizo un llamado pacífico para que entregaran las armas y para su seguridad los detuvimos en la agencia Municipal, sin maltratarlos y alimentándolos lo mejor que pudimos. Ellos también rindieron su declaración a las autoridades ejidales y municipal.

6.- El 8 de julio llegó una comisión de PEMEX encabezada por Mario Esponda y el Lic. Oscar Toral Ríos, les preguntamos si tenían capacidad para resolver el asunto y ellos respondieron que no, solamente iban a recabar información para ver si era contra PEMEX. El Lic. Oscar Toral dijo que un campesino de Nuevo Paraíso que ya existía un acuerdo firmado por el Gobierno del Estado y Comunicaciones y Transportes con respecto a la construcción de la carretera que partirá del Ejido Nuevo Chihuahua a Nuevo Paraíso con una extensión de 9 km. La respuesta del campesino fue la finalidad del Movimiento –era negociar en conjunto el contenido del pliego petitorio, con todas las comunidades reunidas en Nuevo Chihuahua.

7.- La Comisión Intersecretarial enviada el 11 de julio por el Gobierno Estatal, presidida por Mario Arturo Coutiño llegó al ejido Benemérito de Las Américas y de ahí se comunicó por radio a Nuevo Chihuahua, no llegamos a un acuerdo porque no se presentó en el lugar que se le requería y además no traía poder de decisión para resolver los problemas.

8.- El 12 de julio salieron del Ejido Nuevo Chihuahua 340 campesinos en 7 vehículos, 4 camiones de los ejidatarios, dos de propiedad de PEMEX y uno de la línea comercial “Monte Bello”. Los choferes estuvieron de acuerdo en traerlos a la ciudad de México. El 13 de julio a las 11 de la mañana 700 elementos de la policía judicial y de seguridad pública reprimieron a nuestros compañeros golpeándolos y desaparecieron 2 niños posteriormente fueron encontrados lesionados en el DIF de Palenque , 18 mujeres y 8 niños fueron detenidos durante 2 días en la comandancia de la policía de Palenque.

9.- Algunos funcionarios del Gobierno obligaron bajo amenazas a un campesino a que hablara por radio a los ejidos de Nuevo Chihuahua para que soltaran a los policías y cargadores que permanecían allá. Los ejidatarios dieron respuesta al mensaje.

10.- Los campesinos detenidos fueron trasladados a Tuxtla Gutiérrez en sus propios vehículos y los de la seguridad pública, en el camino fueron golpeados y les robaron sus pertenencias y otros las depositaron en el cuartel “Base Dragón” punto de llegada. Ahí los mantuvieron incomunicados en el patio al aire libre, fueron interrogados por un agente del ministerio Público sin que interviniera algún abogado en su defensa. Se les obligó a firmar, sin saber de que se trataba, también fueron fichados como delincuentes.

11.- El ejido Nuevo Chihuahua fue rodeado el 14 de julio por elementos del Ejército Mexicano armados al mando de un General quien a nombre de Usted, Sr. Presidente de la República llegó a negociar con los campesinos. Se firmó un convenio en el que nos comprometimos a liberar a los detenidos por el decomiso de la madera y el general prometió que los 303 presos detenidos en Tuxtla Gutiérrez volverían al día siguiente a Marquez de comillas. Ellos fueron trasladados el día 15 de julio en 12 microbuses al ejido de Nuevo Chihuahua.

12.- Los campesinos de la zona Marquez de Comillas no hemos podido comprobar si todos los detenidos regresaron a su lugar de origen, estamos inconformes por haber sido fichados como delincuentes.

Ante los hechos relatados, solicitamos de usted se investiguen, se castigue a los responsables de las violaciones a nuestros derechos humanos Y se envíe una comisión integrada por representantes del Gobierno Federal con capacidad para negociar con todas las comunidades en el Ejido de Nueva Chihuahua, la problemática regional.

También solicitamos que sea destituido el Gobernador del Estado José Patrocinio González Garrido, ya que hasta ahora no ha cumplido con los acuerdos y convenios celebrados con las comunidades y por emplear la fuerza de las armas para con el pueblo.

ATENTAMENTE

MOVIMIENTO CAMPESINO REGIONAL INDEPENDIENTE

ZONA MARQUEZ DE COMILLAS

Appendix IX. Total Yearly Oil Palm Derived Greenhouse Gas Emissions per Source

Emission sources	Emission units (ha)	CO ₂ per unit source (tCO ₂ ha ⁻¹)	N ₂ O per unit source (tCO ₂ ha ⁻¹)	Emissions			
				Total CO ₂ (tCO ₂ y ⁻¹)	Total N ₂ O (tCO ₂ e y ⁻¹)	Total CO ₂ e (tCO ₂ e y ⁻¹)	Percentage CO ₂ (%)
Previous land use^a							
Banana	61	26	0.0	63	0.0	63	0
Mango	44	257	0.0	452	0.0	452	1
Maize	525	9	0.0	189	0.0	189	0
Oil palm	948	196	0.0	7,432	0.0	7,432	14
Pasture	2,972	85	0.0	10,105	0.0	10,105	20
Rainforest	512	856	0.0	17,531	0.0	17,531	34
Secondary vegetation	876	222	0.0	7,779	0.0	7,779	15
Sugarcane	402	9	0.0	145	0.0	145	0
Other land uses	81	multiple	0.0	264	0.0	264	1
Sub-total	6,423	-	-	43,960	0.0	43,960	85
Fertilisers^b							
10-10-24	71	1,844	578	132	41	173	0
13-02-27	96	1,844	753	176	72	248	0
14-02-22	2,212	1,844	812	4,079	1,795	5,873	11
15-15-15	116	588	870	68	101	169	0
16-18-0	82	1,844	929	152	77	228	0
17-17-17	197	588	988	116	194	310	1
Compost	1,166	0	138	0	160	160	0
Other NPK fertiliser	100	multiple	multiple	171	258	329	1
Other fertilisers	103	multiple	multiple	142	156	298	1
Other organic	8	0	multiple	0	1	1	0
Sub-total	4,151	-	-	5,036	2,855	7,789	15
Fuel consumption^c	429,376	3.1^d	-	0.2	0.0	0.2	0
TOTAL	-	-	-	-	-	51,749	100.0

^a Aboveground GHG emissions only.

^b GHG emissions for manufacture of fertilisers and for transport to the study regions calculated for average inputs for the period 2010-2012.

^c Average of total fuel consumption per year for the 2010-2012 period.

^d Data used in the PalmGHG Calculator (RSFO 2012) and derived from EUCAR et al. (2011).

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During this project, I was, for a brief period, also a visiting scholar at the Center for International Forestry Research (CIFOR) in Bogor. I am particularly grateful to Pablo Pacheco for having me there, as well as to the Wageningen School of Social Sciences (WASS) for providing the necessary funding. This experience would later culminate in a joint panel with both Pablo Pacheco and Fabio de Castro (CEDLA) at the LANDac conference in Utrecht in 2015 on oil palm expansions in Latin America.

The discussions we had broadened my perspective when it came to the social and environmental dynamics linked to oil palm production. In 2012, Jaime Hoogesteger and I co-organised a seminar called, "Local Rural Struggles Amidst Global Environmental Discourses in the South" funded by WASS. This seminar and our discussions were very helpful when approaching environmental discourses in my research.

This dissertation benefited from the intellectual inputs of a wide number of people. First, I would like to mention Sietze Vellema, with whom I had many enlightening discussions. His advice was always extremely helpful. Additionally, discussions with Bela Teken, Diana Cordoba, Doreen Mnuylwa, Debashis Sen, Federico Morales, Jaye de la Cruz, Horacio Narvaez, Paola Chavez, and Victoria Marín shaped this thesis in crucial ways. Stephen Sherwood and Martha Bakker provided many useful comments to Chapters 2 and 4, respectively. I also benefited from comments made by both scholars and students in presentations held in different venues. Comments by KTI staff during our regular lunch meetings were always helpful as well. I also benefited from comments and observations made from the Plant Production Systems Department at Wageningen, at Chapingo University in San Cristóbal de Las Casas, at ECOSUR, and at the Ecology Institute from the National Autonomous University of Mexico (UNAM) in Morelia, among other venues. Daily interactions with PhD colleagues, many of whom became friends, were all important to this process. To name a few, I would like to thank Alfred Mokuwa, Carolina Camacho, Charlynn Curiel, Florent Okry, Marie Garnier, Mirjam Schoonhoven, Maria Angélica Naranjo, Moussa Bathily, Pablo Laguna, and Tania Martinez. The times shared with KTI colleagues, and others from Wageningen, made this whole effort worthwhile. I would also like to thank Mirjam Pulleman, Mariana Rufino, and Pablo Tittonell, as their demanding supervision during my MSc proved of great help for the PhD process. Finally, I would like to thank all CPT administrative staff, particularly Bea Prijn and Inge Ruisch, who made everyday life at KTI an extremely easy and joyful experience.

There are many friends in Wageningen, in Mexico, and elsewhere who helped me get through this process. I cannot name them all. I, however, would like to especially thank Benjamin, Agnieszka, and Eva on one hand, and Bjurn and Selma on the other. They hosted me during my stays in Wageningen, and they always made me feel welcome and supported. It was a pleasure to stay with them, and I feel very fortunate to have them as friends. I, of course, could not have completed this project without the help of my parents and little sister, who are always there for me. And finally, I simply could not have done this without Pilar, my beloved *compañera*. She constantly supported me through this process; she beared me when I only talked about my thesis; she helped me with her critical observations; she introduced me to many contacts that proved key for this research; and it is through her and with her that Chiapas has become home. I cannot thank her enough.

Curriculum Vitae

Antonio Castellanos Navarrete was born in Aguascalientes, Mexico, on December 13, 1977. He is a Mexican-Spanish national and studied Biological Sciences at the Autonomous University of Sevilla from 1995 to 2000. During his last year of studies, he was at the Faculty of Agronomy at the University of Viterbo in Italy. In 2002, he was granted a fellowship by the Italian National Agency for New Technologies, Energy and Sustainable Development (ENEA). During that time, he worked at the National Park of Circeo, where he participated in a project implementing an environmental management system for the whole park's territory. Later that year, he became a consultant for the Food and Agriculture Organisation of the United Nations (FAO), where he worked in the Land and Water Division. His work at FAO was focused on sustainable soil management with a particular focus on semi-arid areas and smallholder agriculture. In 2003, he was granted a scholarship by the Spanish Ministry of Science and Technology to carry out research at the Institute of Agrarian Capacity Building and Research (IFAPA) in Cordoba, Spain. His research there focused on the impact of tillage systems on soil carbon sequestration and soil quality in southern Spain.

In 2005, Antonio started an MSc in Soil Science at Wageningen University with a specialisation in soil quality. During his time at Wageningen, he combined soil science with rural development courses that were part of the MAKS (Management of Agro-ecological Knowledge and Social Change) programme. During his MSc work, he undertook two major theses. First, in 2006, he carried out a study on soil quality at the experimental station of the International Maize and Wheat Improvement Center (CIMMYT) in Mexico under the Soil Quality Department. He later carried out an on-farm study of manure and residue management in western Kenya under the Plant Production Systems Department in 2006 to 2007. In 2008, he became a consultant for the Impact Assessment Unit at CIMMYT in Mexico. His work there mainly revolved around technical and socioeconomic aspects linked with conservation agriculture. At the end of 2008, Antonio joined the NGO CETAMEX to work in the Lacandon rainforest in Chiapas, Mexico. He was responsible for coordinating and implementing agroecological projects in coordination with peasant organisations. Most work focused on communities struggling for land tenure in the Montes Azules Biosphere Reserve, but it also did include other regions within the Lacandon rainforest. In January of 2010, he was granted funding by the Mexican Council for Science and Technology (CONACYT) to carry out his PhD studies at the Technology and Agrarian Development Group (TAD), now the Knowledge, Technology and Innovation Group (KTI).

Antonio has authored three articles in peer-reviewed journals in the field of social sciences and agronomy. He has also co-authored two peer-reviewed articles, one book chapter, and has an extensive list of professional publications. He is an active reviewer for scientific journals, and he has co-supervised two MSc students. With an interdisciplinary background, Antonio's work focuses on studying how new technologies and development models in agriculture work for both peasant families as well as for their environment. More recently, his work draws upon and contributes to political ecology, agrarian studies, state-peasant relations, environmental conflict studies, and agroecology, with a particular focus on Mexico and Latin America.

List of Publications

Articles In Peer Reviewed Journals

- Castellanos-Navarrete, A.** and Jansen, K., 2015. Oil palm expansion without enclosure: Smallholders and environmental narratives. *The Journal of Peasant Studies* 42(3-4): 791-816.
- Castellanos-Navarrete, A.**, Tittonell, P., Rufino, M.C., and Giller, K.E., 2015. Feeding, crop residue and manure management for integrated soil fertility management – a case study from Kenya. *Agricultural Systems* 134: 24-35.
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- Verhulst, N., Govaerts, B., Verachtert, E., **Castellanos-Navarrete, A.**, Mezzalama, M., Wall, P.C., Chocobar, A., Deckers, J., and Sayre, K.D., 2010. Conservation agriculture, improving soil quality for sustainable production systems? In: Lal, R., Stewart, B.A. (Eds.), *Advances in Soil Science: Food Security and Soil Quality*. CRC Press, Boca Raton, FL, USA, pp. 137-208.

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- Castellanos-Navarrete, A.**, 2015. The environmental governance of oil palm: Bottlenecks and opportunities for sustainable land use change in Mesoamerica. Oral presentation at the LANDac Conference, 8-10 July 2015, Utrecht.
- Castellanos-Navarrete, A.**, y Jansen, K., 2014. Palma africana y acaparamiento de tierras: ¿La excepción Mexicana? Oral presentation at the IX Congreso de la Asociación Latinoamericana de Sociología Rural (ALASRU) – Sociedades rurales latinoamericanas: Diversidades, contrastes y alternativas, 6-11 October 2014, México, D.F.

- Castellanos-Navarrete, A.**, 2014. CO₂ and agrarian change: Oil palm, emissions and certification in Mesoamerica. Oral presentation at the Carbon, Land and Property, 1-4 July 2014, Copenhagen.
- Castellanos-Navarrete, A.**, and Jansen, K., 2014. Markets and land use: Oil palm, greenhouse gas emissions and certification in Mesoamerica. Oral presentation at the Annual Meeting of the American Association of Geographers (AAG), 8-12 April 2014, Tampa.
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- Pulleman, M., **Castellanos-Navarrete, A.**, Kooistra, M., de Goede, R., Sayre, K.D., and Brussaard, L., 2006. Earthworm activity and physical soil quality of conventional tillage and conservation agriculture in the highlands of central Mexico. Poster presented at the 18th World Congress of Soil Science, 9-15 July 2006, Philadelphia.

Other Publications

- Castellanos-Navarrete, A.**, and Jansen, K., 2013. The drive for accumulation: Environmental contestation and agrarian support to Mexico's oil palm expansion. Land Deals Politics Initiative (LDPI) Working Paper No. 43. Institute of Social Studies, the Hague.
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Antonio Castellanos Navarrete
Wageningen School of Social Sciences (WASS)
Completed Training and Supervision Plan



Name of the learning activity	Department/Institute	Year	ECTS*
A) Project related competences			
Writing of research proposal	Social Sciences, WUR	2011	6
Investigating technology: politics, power and the social shaping of technology	Social Sciences, WUR	2011	4
Social movements in the South	Social Sciences, WUR	2011	1.5
Research stay	Forest and Governance Program, CIFOR	2014	4
KTI seminars	Social Sciences, WUR	2011-2014	0.1
AAG International Conference: "Markets and land use: oil palm, greenhouse gas emissions and certification in Mesoamerica"	The Association of American Geographers	2014	1.4
Carbon-land-property International Conference: "CO2 and agrarian change oil palm, emissions and certification in Mesoamerica"	University of Copenhagen	2014	0.9
ALASRU International Conference: "Palma africana y acaparamiento de tierras: ¿la excepción mexicana?"	Asociación Latinoamericana de Sociología Rural	2014	1.4
LANDac International Conference: "The environmental governance of oil palm expansions: bottlenecks and opportunities for sustainable land use change in Mesoamerica"	International Development Studies Group, Utrecht University	2015	0.7
B) General research related competences			
Research methodology I: from topic to proposal	Social Sciences, WUR	2011	4
A practical course on the methodology of fieldwork	CERES	2011	2
Qualitative data analysis for development research	CERES	2011	1.5
C) Career related competences/personal development			
Information literacy PhD including EndNote introduction	WUR Library	2011	0.6
KTI MSc students supervision	Social Sciences, WUR	2012-2013	4
Total			32.1

*One credit according to ECTS is on average equivalent to 28 hours of study load

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