



Documenting the social and environmental consequences of oil palm plantations in Nicaragua

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Data of the article

First received : 21 September 2017 | Last revision received : 10 December 2017

Accepted : 14 December 2017 | Published online : 29 December 2017

URN: nbn:de:hebis:34-2017112153837

Keywords

Oil palm, Monocultures, Nicaragua, political ecology, social consequences, NGOs

Abstract

Palm oil production is expanding in many tropical areas worldwide. The implications for the landscape, social relations and living conditions in the respective areas are the subject of a controversial debate. This article explores the social, economic, and environmental impacts caused by palm oil production in two places in south-eastern Nicaragua: Kukra Hill and Boca de Sábalos. From a theoretical perspective of political ecology, this article reflects on the opportunities and limitations of non-governmental organisations (NGOs) and researchers in documenting social and environmental impacts of one crop within a process of agrarian change in a local setting. The study sheds light on the social and environmental consequences of oil palm cultivation in both places. The text departs from reports and documentation gathered by two Nicaraguan NGOs, Centro Humboldt and Fundación del Río, who used participatory methods to gather information. Their documentation is complemented by interviews of additional actors involved and affected by oil palm, impressions of field work at both sites, as well as an analysis of newspaper articles. The findings of the analysis concern multiple topics. Firstly, the research suggests that large-scale oil palm plantations accelerate land use changes, contribute to deforestation, and decrease local food sovereignty. Secondly, with large-scale oil palm plantations, the overall use and contamination of water increases and pesticide use multiplies, which has severe impacts on human and animal health. Nevertheless, local authorities perceive themselves as facing a dilemma: they welcome the tax revenue and job creation, and therefore some ignore their citizens' complaints, while others perceive that they themselves lack control mechanisms. Furthermore, bad working conditions, low safety standards, and ignorance of workers' rights are subjects of conflict.

Introduction

More and more places within tropical regions worldwide are covered with oil palm plantations. Palm oil companies and governments in different countries promise many positive effects, such as jobs, investment in infrastructure, and growing wealth in the respective regions due to job creation and tax revenue. Nevertheless, negative consequences are also reported. The effects of oil palm expansion are the subject of a controversial debate within the literature (Barin-Burgos, 2015; Castellanos-Navarrete & Jansen, 2015; 2013). Most of the discussions concentrate on land enclosure and access

(Backhouse, 2015; Edelman & León, 2013; Pichler, 2015), while others focus on working conditions (Pye, 2014) or water scarcity (Merten et al., 2016). Studies from Guatemala, Honduras, and Colombia stress the violent nature of the dispossession of small farmers and indigenous communities from their land (Alonso-Fradejas, 2013; Mingorance Cruz, 2009; Ocampo Valencia, 2009).

In Nicaragua, oil palm expansion is not implemented with as much violence as in Colombia, Honduras, or Guatemala, but nevertheless, the impacts on the water-food

Citation (APA):

Tittor, A. (2017). Documenting the social and environmental consequences of oil palm plantations in Nicaragua. *Future of Food: Journal on Food, Agriculture and Society*, 5(3), 46-61.



nexus, working conditions, as well as human and animal health are significant and often underestimated in studies of other countries. Until now, Nicaragua had not appeared in the scientific discussion concerning oil palm. In quantitative terms, the country only produces 0.5% of the palm oil made in Latin America. In 2013, Nicaragua manufactured 15,000 tons of palm oil, which is much less than the 425,000 tons produced by its neighbor, Honduras.

Currently, available information on the issue of palm oil production in Nicaragua is limited to some studies by international agencies promoting an expansion of oil palm (Instituto Interamericano de Cooperación para la Agricultura (IICA), 2007; van der Veen, Lindy, 2008; Sáenz Mejía, 2006). Additionally, a short documentation of one case in Nicaragua (Kukra Hill) exists within the Environmental Justice Atlas¹. Against this background, this article explores the social, economic, and environmental impacts of palm oil production in Nicaragua at the local level. The article is written from a political ecology perspective and investigates the opportunities and limitations of NGOs and researchers in documenting the social and environmental impacts of an overall agrarian change in a local setting. Kukra Hill and Boca de Sábalos are the two cases examined throughout this article. The study departs from the material two NGOs generated to give voice to local peasants, workers, ex-workers, farmers, and neighbors. The author of this study complements this material with semi-structured interviews of further actors involved and affected by palm oil production, impressions from own field work at both sites, as well as an analysis of newspaper articles and online sources.

Theoretical Framework

The broad field of political ecology figures as a background for this article, insofar as the author shares many theoretical assumptions and commitments of political ecology. First, political ecology is understood as a “theoretical commitment to critical social theory and a post-positivist understanding of nature and the production of knowledge about it, which is inseparable from social relations of power” (Bridge, McCarthy, & Perrault, 2015, p. 7). Political ecology is conceptualized as a study of power relations and political conflict over ecological distribution and social struggles for the appropriation of nature. It is the field in which power strategies encounter the distribution of ecological costs and potential constructions of sustainability. Additionally, it asks how these discourses themselves are linked to power relations and personal interests (Leff, 2015). Second, political

ecology has a methodological commitment to conduct in-depth, direct observation and/or document analyses, often within a mixed-method approach (Bridge et al., 2015). Interviews and direct observation are frequently combined with quantitative data and embedded into a historical approach that reveals how the current situation came to exist (Davis, 2015). Political ecology consists of mostly empirical, research-based explorations to explain linkages and changes of social and environmental systems and the way these changes are connected to power relations (Robbins, 2012). Third, political ecology has a political commitment to social justice and political change, aiming to make visible the struggles, interests, and voice of marginalized populations (Bridge et al., 2015).

Political ecology is not a theory, nor a discipline, but a lens through which to view socio-environmental relations. Its origins are mainly in geography and development studies, but today it draws from many different disciplines, such as sociology, political science, economics, geography, history, biology and agronomy. It relies on and contributes to many specific questions and discussions in development studies, agrarian/peasant studies, green materialism, de/postcolonial studies, feminism and gender studies, and environmental economics.

Within Nicaragua, this field of research is hardly known. Nevertheless, some interesting works with a similar perspective on environmental narratives and conflicts around land access have been conducted (Martí i Puig & Baumeister, 2017; Nygren, 2000; 2004) as well as concerning the plans to build an interoceanic canal (Academia de Ciencias de Nicaragua, 2014; Fuchs & Navas, 2016; Huete-Perez, Tundisi, & Alvarez, 2013).

Political ecology is not only an academic endeavor, but also initiated and led by protagonists from social movements and local initiatives (Batterbury, 2015). As Robbins (2012) puts it:

Indeed, the ongoing, small-scale, empirical research projects conducted by countless non-governmental organizations (NGOs) and advocacy groups around the world, surveying the changing fortunes of local people and the landscapes in which they live, probably comprise the largest share of work in political ecology. Published only in local meetings and development reports, this work is as much a part of the field as well-circulated books or refereed journal articles in formal science (p. 13).

As the quote highlights, citizens who experience the

1. The Environmental Justice Atlas is an online platform that gives information on more than 2,200 environmental conflicts worldwide. The case of Kukra Hill is documented on <http://ejatlas.org/conflict/palma-africana-kukra-hill-nicaragua>



changes in their daily lives, can offer valuable descriptions of certain aspects of environmental change. Many of their insights are incorporated into NGO reports and notes of local meetings. Thus, it is not only academics who produce knowledge for the field of political ecology: NGOs and advocacy groups have a key role here. Collaborations between researchers and local activists often help to make conflicts more visible and give voice to people with very limited resources. In the last years, global research projects, such as Environmental Justice Organisations, Liabilities and Trade (EJOLT) have begun mapping environmental conflicts worldwide and making this information open access.² They are bringing science and society together to catalogue and analyse ecological distribution conflicts and confront environmental injustice. This article is in line with this kind of thinking and takes seriously the claim that NGOs contribute to environmental knowledge production.

At the same time, the role of environmental NGOs is the object of controversial discussions. Their work is often characterized by contradictory logics and dilemmas. A few big international NGOs are controlling an increasing proportion of budgets for environmental conservation and are involved into projects that displace communities (Brockington & Igoe, 2006; West, Igoe, & Brockington, 2006). In the last decades, nearly 8.5 million people worldwide have had to leave their homes because the territory they lived in was transformed into national parks (Cernea & Schmidt-Soltau, 2006). Some NGOs have contributed to the transformation of spectacular landscapes into national parks or high-end tourist attractions. Others legitimized the destruction of areas to enable large-scale development, infrastructure, and extraction projects if nature elsewhere was protected (Igoe, Sullivan & Brockington, 2009). Therefore, conflicts between local communities and NGOs have exploded. Additionally, this can cause severe conflicts between different NGOs or within NGOs that sometimes lead to institutional splits. NGOs considerably differ in their policies, practices, and ways of working. The same NGO can act differently in different locations, and NGOs within one region often change their practices considerably. As Igoe, Sullivan and Brockington (2009) put it, "this is not a sector which can be easily typecast" (p. 6). Additionally, different dynamics can change the situation of NGOs. For example, often the success of NGOs in winning the confidence of local populations and representing their claims comes into conflict with tendencies of a growing professionalization and efforts to meet donors' expecta-

tions about reports, budget planning, and fast decisions (Grandia, 2009). NGOs can therefore be victims of their own success. In other cases, after winning the confidence of local groups, they were invited to participate in the administration of highly complex and dynamic international frameworks, such as REDD+³, which local NGOs can hardly understand or influence. As a result, they feel powerless, as if they are just legitimizing decisions that are made elsewhere, and their credibility becomes contested (Nuesiri, 2018).

Many NGOs claim to be advocates for the people, and are widely recognized as such. Nevertheless, they are not elected, nor is it often clear if the position they report as "the communities' view" is shared by all or at least the majority of the members of that community, or if it is just the interpretation of a certain elite who are able to articulate their demands. Spivak (1993) reminds us that the "subaltern cannot speak" (p. 104). Based on her studies of women in rural India in the 1980s, she concluded that for the most underprivileged segments of society, it is almost impossible to articulate and express their own interest in a way it is heard by others. First, this is because the concept of individual subjectivity itself is very distant from the daily experience of the subaltern. Second, what first world intellectuals are mistaking as the voice of the underprivileged is often the expression of local elites, the rural gentry, and the impoverished landlords pretending to speak for all. It is the most-educated (often male) population who starts to express their views, while marginalizing and ignoring those of other social groups within the same territory (Spivak, 1993).

Spivak's argument is important. Nevertheless, there is an immense difference between the situation of women in rural India, and the forms of epistemic and other violence against them, and conditions in Nicaragua in the 21st century. It is a society in which, after taking over the government in 1979, the Sandinistas and their party, Frente Sandinista de Liberación Nacional (FSLN), realized an immense alphabetization campaign. From 1979-1990, they tried to implement socialism, and women, although in contradictory forms, were empowered to participate actively in politics (with mixed results). Recently, a farmers' movement against the construction of the interoceanic canal consolidated itself without significant support from the urban middle classes and intellectuals (Fuchs & Navas, 2016). Nevertheless, as research about many movements and protests has shown, those speaking in public, complaining about the situation, and

2. One of the impressive outcomes is an interactive world map which provides information about hundreds of environmental conflicts. See <http://www.envjustice.org/ejatlas/>. Further reports and information can be found at <http://www.ejolt.org/>

3. REDD+ (i.e. Reducing emissions from deforestation and forest degradation) is a program to reduce net emissions of greenhouse gases through forest management in developing countries within the United Nation's Framework on Climate Change. The rules and details about measuring, reporting and verifying successes were under constant negotiation and changes between 2005 and 2015.



expressing their own interests tend to be the more educated people within society and tend to be men rather than women.

Methodology and Data

The author of this article is aware of the danger of reiterating the view of local elites or NGOs who are very distant from the affected population. During the research, therefore, the attitudes of different NGOs were compared and complementary interviews with actors who are not sympathetic to these NGOs were conducted. In Nicaragua, as elsewhere, different NGOs exist with different approaches to environmental issues and varying commitments to the problems of local communities. Against this background, it was an active choice to search for cooperation with Fundación del Rio and Centro Humboldt, who for years have indeed played a key role in documenting the impacts of oil palm production and use participatory methods to involve the local population. Centro Humboldt started to monitor oil palm effects because of citizens' complaints. Both NGOs have supported ex-workers who suffered work accidents, sensitized the local authorities to the issues of the farmers and communities, and struggled to limit the expansion of oil palm monocultures at both case study sites. They have sought independent information and initiated public discussions about the consequences of oil palm expansion.

This article departs from the documentation of the effects of oil palm cultivation in Nicaragua which these two NGOs, Fundación del Rio and Centro Humboldt, have published (Centro Humboldt et al., 2012; Fundación del Rio, 2011; 2013; Madriz Paladino, 2011; Ruiz, 2010; 2012; Fandiño & Ruiz, 2011). Additionally, the websites of the enterprises Palmares del Castillo S.A. (PALCASA) and Cukra Development Corporation, which are involved in palm oil production at both sites, were considered.⁴ Moreover, articles from the two Nicaraguan newspapers with a national scope, *El Nuevo Diario* and *La Prensa*, were taken into account. After having carefully studied the existing documentation, the author did field work and conducted interviews in both areas. In October 2014, conversations with workers, union members, and peasants within the oil palm plantations near Boca de Sábalos, enabled by the support of Fundación del Rio, provided the author with a personal impression of the situation on the oil palm plantations within the municipality of El Castillo.

Furthermore, in November 2014, the author had the opportunity to accompany a team of NGO members on a five-day field trip through the area of oil palm planta-

tions in Kukra Hill. The trip was organized by the environmental NGO Centro Humboldt, and the team included members of the Nicaraguan human rights organization Centro Nicaragüense de Derechos Humanos (CENIDH), the (faith-based) Swedish organization Diakonia, and the Finish development organization Kepa. During this trip, the whole team had an intense dialogue, interviews, and informal talks with more than 25 persons differently affected by oil palm plantations. Others were involved in the regulatory framework of oil palm cultivation. Some persons were workers and ex-workers on the oil palm plantations, while the majority of them were people living in the area but making their living from other sources, including small-scale agriculture. The team also met members of afro-descendant groups, the local administration, regional delegates of the Ministry of Health and the Ministry for Natural Resources and Environment, as well as an employee of the National Institute of Forestry in the regional capital, Bluefields.

It should be acknowledged that people who are negatively affected or organized in local committees and unions are more likely to talk to NGO delegations and the researchers accompanying them. Therefore, the material gathered by the NGOs and in collaboration with them was critically evaluated by triangulating this information with independently gathered material and interviews. Conversations with workers and local inhabitants who have a positive evaluation of oil palm in the region were also conducted. Additionally, two interviews were conducted with members of other NGOs active in the respective regions, but with other foci, namely FADCAN-IC and FUNDAR, as well as one interview with a member of the territorial government of indigenous and afro-descended population (Gobierno Territorial Rama-Kriol (GTR-K)) and one with a member of the regional environmental authority Secretaría de Recursos Naturales y el Ambiente (SERENA). All their descriptions of the problems facing these regions were quite similar to those presented by Fundación del Rio and Centro Humboldt. Unfortunately, and despite many attempts, requests for interviews with the oil palm companies Palmares del Castillo S.A. (PALCASA) and Cukra Development Cooperation as well as with the Ministry of Natural Resources and Environment (Ministerio de Recursos Naturales y Ambiente (MARENA)) remained without response.

Despite the broad range of actors considered, this kind of case study approach in collaboration with the local NGOs has several limits. It is very sensitive to the interpretations and perceptions of those individuals encountered in dialogues and interviews, while the views of those who did not want to talk about the issues were

4. Online <http://www.palcasanicaragua.com/> and <http://www.cukra.com/>



Case Studies

Before presenting the results of the empirical work, the text will briefly introduce both cases where the empirical research was conducted, i.e. Boca de Sábalos and Kukra Hill, and explain how oil palm cultivation came into existence there. Afterwards, key information about the two NGOs involved is given.

Regions under Examination

Kukra Hill is a small town in the southern part of the Atlantic Coast of Nicaragua, within the municipality of the same name. It is located about 30 km north of Bluefields and the municipality has a growing population (7,455 in 1995 to 9,559 in 2012). In the past, cotton and banana plantations were created within this area, but fishing and small-scale agriculture remained key activities for the population. Boca de Sábalos is a small town located at the confluence of Rio Sábalos and the 192 km Rio San Juan, which constitutes much of the border between Nicaragua and Costa Rica. Boca de Sábalos is part of the municipality of El Castillo. The number of inhabitants within the municipality has risen dramatically from 9,717 (1995) to 30,150 (2012) (INEC, 2013). Historically, cattle rearing, small-scale agriculture, and the collection of products from the forest were the main economic activities of the local population.

In Boca de Sábalos, palm oil cultivation dates back to the 1980s; in Kukra Hill even to the 1960s. Nevertheless, until the end of the 20th century, attempts to grow oil palm only occurred in small areas and with limited success. In Boca de Sábalos, the factory to extract oil did not work most of the time, and in Kukra Hill, plagues and sanitation problems caused large harvest losses.

In Kukra Hill, a new company started to invest in palm oil beginning in 1999, but still operates with the old name, Cukra Development Corporation. In different articles, it is mentioned that the new investors are of Costa Rican origin, which was proven by the International Finance Corporation's loan to the Costa Rican Grupo Numar to expand oil palm production at Kukra Hill (see below). The Cukra Development Corporation has expanded continuously and, according to their website, now officially has 7,082 ha of oil palm plantations. Additionally, they buy the fruits of oil palm from 76 independent producers that cultivate the plant on 1,870 ha.

In Boca de Sábalos, a new enterprise, PALCASA, bought the prevailing plantation in 2005 and set the already existing factory into continuous operation. The factory had been constructed within the framework of the Sandinista Agrarian Reform, and the plantation was set up by agrarian cooperatives. In 2005, PALCASA directly owned about 1,500 ha planted with oil palm, and about 500

Table 1: Overview of interviews and data

Boca de Sábalos (Oct. 2014)	Kukra Hill (Oct. 2014/May 2016)	Kukra Hill (Nov. 2014)	Other documents
6 interviews: <ul style="list-style-type: none"> farmer union member/worker member of local water committee uninvolved neighbor 2 NGO members (Fundación del Rio and FUNDAR) 	7 interviews: <ul style="list-style-type: none"> worker on palm oil plantation farmer 2 NGO members (Centro Humboldt and FADCANIC) environmental authority (SERENA) local afro-descendant authority (GTR-K) local politician 	Dialogue with 25 persons during field trip led by Centro Humboldt (and including Diakonia, Kepa and CENIDH): <ul style="list-style-type: none"> workers, ex-workers, neighbors, local administration, ministries of health and environment, institute of forestry 	<ul style="list-style-type: none"> websites and presentations of the oil palm companies consultancy studies newspaper articles reports on online platforms (EJOLT, landmatrix.org)
<ul style="list-style-type: none"> recorded, fully transcribed, and thematically coded with Atlas.Ti 		<ul style="list-style-type: none"> field notes, photos, collective unpublished report 	<ul style="list-style-type: none"> thematically coded with Atlas Ti

Source: own elaboration

not taken into account. In the current context of Nicaragua, this includes almost all persons working within the state apparatus and/or affiliated with the FSLN, as the government and the administration explicitly did

not want communication with researchers. Secondly, migrant workers on the plantations could not be interviewed within the scope of this research.



Figure 1: South-Eastern Nicaragua; Source: Open Street map with author’s additions

Table 2: Local and national expansion of oil palm in Nicaragua

Department	1963	2001	2011	2016
Rio San Juan	--	2,287 mz (1,611 ha)	5,708 mz (4,021 ha)	5,902 mz (4,158 ha)
RAAS (South Atlantic Autonomous Region)	500-1,500 ha	2,186 mz (1,540 ha)	12,998 mz (9,156 ha)	23,000 mz (16,201 ha)
RAAN (North Atlantic Autonomous Region)	--	--	--	11,257 mz (8,000 ha)
Total nationwide		4,556 mz (3,209 ha)	18,809 mz (13,249 ha)	40,159 mz (28,359 ha)

Source: own elaboration based on data from the Instituto Nacional de Estadísticas y Censos (INEC) (2003a; 2003b; 2013) ; Conversion from Manzana (mz, a Nicaraguan area measure) to hectare (ha) according to <https://converterin.com/area/hectare-ha-to-manzana-nicaragua.html>; for 2016: Interview with Maura Paladino, September 25, 2014, Managua and Cleanenergybrief (December 11, 2016).

ha stayed in the hands of the members of Cooperativa Multisectorial Empresarios Palmeros (COMEPA). COMEPA was supported by the Austrian Development Cooperation, which tried to improve the functioning of the cooperatives (Sáenz Mejía, 2006). In 2008, COMEPA had 43 farmer families as members, and was composed of 129 persons (van der Veen, 2008). COMEPA never owned a factory to produce the oil; the COMEPA members transported the harvested fruits to the factory of PALCASA for

processing (van der Veen, 2008).

In both cases, new enterprises re-activated the business. In both cases, they cultivated it as a monoculture and tried to expand significantly, as Table 2 highlights. Additionally, the table shows that within the Northern Atlantic Autonomous Region of Nicaragua (RAAN), new oil palm fields have been planted in the last years.



NGOs Involved

Fundación del Rio is a NGO founded in 1990 that engages in environmental protection in the south-eastern part of Nicaragua. One of their offices is located in Boca de Sábalos, near the area transformed by oil palm monocultures. Fundación del Rio, among others, has presented various documents to support their critiques, both in a language accessible to the local population and in a more scientific manner, as a policy proposal to limit the expansion of oil palm monocultures (Fundación del Rio, 2011; Ruiz, 2010). Furthermore, both Fundación del Rio and other organizations have published documents to raise awareness about the negative consequences of oil palm within the communities. Of crucial importance in the spread of information is the radio station and program *Voz Juvenil*, which informs on environmental and social issues within the wider area. Additionally, films such as *Piratas del Castillo* and *Resistencia* and various booklets inform about the social and environmental impacts of oil palm monocultures (Fundación del Rio, 2013).

Centro Humboldt is an environmental NGO working at the national level, with headquarters in Managua. It started to monitor oil palm in Kukra Hill in 2010 because two local farmers negatively affected by oil palm plantations nearby contacted the NGO and asked for help. Gregorio Romero Campos and Santo Ignacio Gonzalez Soho, the two farmers from the community Las Limas, issued a public letter on February 16th, 2010 accusing the company Cukra Development of destroying the environment in their community of 20 families. As the local authorities did not respond to their claims, they contacted Centro Humboldt. Centro Humboldt has published detailed reports about the case of Kukra Hill (Centro Humboldt et al., 2012; Madriz Paladino, 2011) and are planning to publish several follow-up reports, as they do a monitoring field trip every year. Furthermore, Centro Humboldt raises awareness of the impacts by initiating local roundtables about the consequences of palm oil production in the region. The roundtables initiated a public discussion at the regional level, which involved the company, civil society, and local population.

Findings and Discussion

In the following section, the text will present the different problems and dilemmas that local farmers, inhabitants of both areas, and NGO members mentioned in interviews and/or which had been documented by films, newspaper articles, or NGO reports. Within the discussion about the effects of oil palm cultivation, the question of scale becomes relevant: a few oil palm trees within a mixed agricultural setting do not have the same

effects as large monocultures. In different countries, various social settings, and concerning different products, the limits defining where large-scale cultivation begins differs considerably (Borras et al., 2012). The International Land Coalition and Land Matrix count every land acquisition beyond 200 ha in their statistics. Others propose to define large-scale as at least twice the average national land holding, whereas the World Bank and many researchers use the term large-scale if the land is bigger than 1,000 ha. The cases studied in this paper are clearly large-scale monocultures according to any of these definitions.

The effects of these plantations can be divided into different issues: a) land-use changes, deforestation, and food sovereignty, b) use and contamination of water, use of pesticides, and impacts on human and animal health; c) dilemmas of the local authorities concerning taxation and job creation, as well as the lack of control mechanisms; d) working conditions, safety standards, and workers' rights. In the following, the text presents the different views on all elements of discussion which were encountered. All quotes have been translated from Spanish to English. Those names where an * is added were changed at the interviewees' request.

Deforestation, land use changes, and their impacts on food sovereignty

The expansion of oil palm cultivation in both cases has meant a reduction of forest areas and small-scale agriculture. The environmental NGOs present the following numbers about the land use changes: according to Centro Humboldt, in Kukra Hill in the middle of the 1990s, about 85% of the area of the municipality was used for staple food production and cattle rearing, and only 2.1% (150 ha) for oil palm. The permission that Kukra Hill got for oil palm cultivation means that nowadays 58% (4,140 ha) can be used for oil palm. The transformation of land use had the effect that less than 10% of land in the municipality was used for cattle and agriculture as of 2015 (Oral presentation by Maura Madriz Paladino, January 14, 2015).

In Boca de Sábalos, Fundación del Rio calculated that in the period from when palm oil cultivation began in 1983 until 2002, the cultivation area expanded at the expense of forest (41%) and agrarian use (58%) (Fundación del Rio, 2011). Of the cultivation area added in the following period from 2002 to 2009, 23% had previously been forest, 29% had been in agrarian use and 49% had been open secondary forest. Forest areas were therefore considerably reduced in both periods. The involved companies, PALCASA S.A. and Cukra Development, disagree with the claim that they contribute to deforestation. They argue



that deforestation is an overall problem in Nicaragua and that they had bought land at fair prices. In November 2012, PALCASA uploaded several presentations to the internet that present the company as socially and environmentally responsible, and as providing a service to the community. They defend themselves against the accusations that they exert pressure on the local population to sell their land – at least “no systematic pressure” (PALCASA, June 3, 2013, p. 17).

They bought the majority of land between 2005-2007 and state that 56% of the farmers who sold territories to PALCASA sold only a part of it, whereas 44% sold their entire land. 2/3 of those who sold are reported to have bought new land⁵. Furthermore, they argue that:

"Deforestation is a national problem and a consequence of the socio-economic situation of the country. Therefore it is outside of PALCASA's business (PALCASA, 2014)."

In another presentation, they even blame the smallholders:

"The principal driver of deforestation is the transformation of forests into multiple small-scale agricultural uses, predominantly cattle ranging (PALCASA, June 3, 2013, p. 17)."

This is a typical continuation of the old narrative that local peasants are the key drivers of deforestation, despite an intensive academic discussion about the reasons for deforestation from the 1990s onwards, that showed that small peasants were very often blamed for deforestation in order to omit the complex driving forces (Backhouse, 2015a; Fairhead, Leach, & Scoone, 2012; Robbins, 2012; Utting, 1993). Research from other regions of Latin America has shown that the imagination of “already degraded land” is used as a key rhetoric element to implement strategies to expand oil palm production (Backhouse, 2015b) and projects to mitigate climate change (Fairhead et al., 2012).

Although the companies deny having cleared any primary forest for oil palm plantations, there are still many locals who claim the opposite. For the case of Kukra Hill, one of the workers, who in general was very content with his job in palm oil production, responded as follows:

Interviewer: In these zones of oil palm plantations, what was there before?

Interviewee: It was forest before.

Interviewer: Who destroyed the forest? The company?

Interviewee: It is the company who destroys the forest.

Interviewer: Was this only in the past or do they continue to increase their terrain and to deforest?

Interviewee: Yes, they continue to destroy forest. Because close to the Tortuguero they started to sow oil palm (Interview with Juan Bermúdez*, September 23, 2014, El Rama).

On the local level, the expansion of oil palm in Boca de Sábalos means that the oil palm company is buying a lot of land in the municipality of El Castillo and the local farmers lose this land for production of food. Fidel Álvarez, who is living in Boca de Sábalos and is an active member of the local water committee, described the change as follows:

If the people, every time, have less land to produce their own food and only plant oil palm or trees, the guarantee that enough food for all persons is available disappears and food sovereignty decreases. The best is if there is a balance and the farmers own land. They can work their land, lend the land, or lease the land so that anyone else can work and produce food on it. In that form, local exchanges and social relations exist. But with those companies, there are no transactions that help the population; those who own land no longer help those who do not. . . . Nowadays the company owns all the land, and it will never sell or lease territories to farmers so that they can plant food. Furthermore, the company bought the land for a very low price (Interview with Fidel Álvarez, September 23, 2014, Boca de Sábalos).

Fidel Álvarez is very worried about the long-term effect of transformation of production patterns: instead of producing food, now oil palm and timber⁶ are grown. However, this does not contribute to local food sovereignty. As is the case for many Nicaraguans, he does not consider oil palm food (although it is in part used to produce margarine and cooking oil), but as a product for export or sale on other markets. Food is rather understood as locally-produced basic staple crops, such as corn, beans, bananas, or vegetables. Furthermore, he is worried that land which has been sold to a company will never come back to the hands of small-scale farmers, because, in his experience, companies never sell or rent out land. The land owned by the company is not used for the cultivation of food anymore, therefore food sovereignty decreases. In times of economic crisis, the population will be even more vulnerable: many persons now try to find employment within the palm oil company, while others

5. The company draws on the Estudio de Rastreo (2010), that was done by UNIQUE, a consultancy firm from Freiburg, Germany.

6. Within the same area, at least 8,000 mz (5.635 ha) of Melina (Gmelina arborea, a fast-growing tree from Asia that is adapted to the tropics) is planted in monoculture. Since this counts as reforestation, it is free of tax. When the trees are grown, they are exported to Costa Rica, which is just on the other side of the Rio San Juan. From an ecological standpoint, this timber monoculture should not be considered reforestation because nothing is to be gained in terms of biodiversity. In terms of land concentration, Melina cultivation in Boca de Sábalos worsens the problem that oil palm had generated.



have migrated to other areas. In many cases, they move towards the nearby core zone of the Biosphere Reserve Indio Maíz, which in the past was one of the best-protected primary forest areas within Central America, with more biodiversity than all of Europe. In the last ten years, newly arriving migrants, who sold their land elsewhere, deforested more and more land parcels. Another effect of the land transactions is that there is a tendency towards the re-concentration of land within the area, as many interviewees stated. Although official data on the topic is missing, many people describe the situation that nowadays, as before the Sandinista land reform, a few landowners again possess a huge amount of land.

Similar developments occurred in Kukra Hill, where the company easily managed to buy a lot of land in a short period because, as in Boca de Sábalos, people have low incomes:

Something we have learned is that for economic reasons, in the situation of poverty, people sell their land. Even whole communities who live in poverty can be easily persuaded to sell if you offer them 10,000 dollars – it is a lot for them (Interview with Roe Kirkman, October 3, 2014, Managua).

In many cases, the land-use change is almost irreversible. Once a primary forest is destroyed and the land is used for monocultures for a longer time, it is difficult to re-forest. One of the reasons lies in the exhaustion of soil, as Allan Clair, a member of the territorial Rama-Kriol government (GTR-K) explains:

"We do not agree with the cultivation of oil palm for various reasons, among them that the soil is not able to produce something else anymore (Interview with Allan Clair, September 22, 2014, Bluefields)."

Additionally, on the Atlantic Coast, fishing in the rivers and lagoons is the backbone of food and income generation for all, but especially for poor households, as fishing grounds are considered a commons. The high consumption and contamination of water (see below) due to oil palm cultivation therefore has a high impact on food sovereignty, especially for the indigenous and afro-descendant population of the wider area who used to consume a lot of fish.

Water contamination and the overall use of water by oil palm

A second major controversial topic is the consumption and contamination of water due to the use of pesticides.

Local farmers in the community Las Limas, located next to oil palm plantations of the Cukra Development Corporation, wrote a public letter accusing the palm oil company of water contamination, which has caused serious impacts on the cattle and their properties:

By signing this letter, we want to denounce that we are directly negatively affected by oil palm cultivation. The plantations are so close to our farms that they are contaminating the water and the environment so that we are literally without access to the vital liquid. Therefore, our cattle died or were seriously affected. We had to construct water basins and watering places for our cattle, we had to spend money on medications for the sick livestock, and we have to care more for our animals to prevent that them from feeding or drinking in the polluted sections. All this increased the costs for cattle farming. Additionally, the value of our properties has fallen significantly, as without access to water, it has almost no value anymore (Gregorio Romero Campos and Santo Ignacio Gonzalez Soho within the letter re-published by Madriz Paladino, 2011, p. 34f).

Similarly, the effects of water contamination are documented by Fundación del Río in the municipality of El Castillo. The farmer Don Felicito Palacios, whose small farm is about 1 km from the palm oil factory, describes the situation as follows:

The other problem is the water contamination: after spraying they are washing the containers for fertilizer in the river, they are constructing drainages for the plants and afterwards the polluted water is getting into the rivers, it passes my property and then goes into the water we all drink. Therefore we are drinking polluted water and the animals miscarry (Don Felicito Palacios, documented by Fundación del Río).

Hence, the NGO Centro Humboldt includes water quality analysis in their monitoring, with water samples taken from different points in the community of Kukra Hill. They are brought to a laboratory in Managua that analyses the samples. They report that various maximum permissible values set by national regulation⁷ were surpassed at least 3 times, while some were exceeded as many as 59 times in 2010 (Madriz Paladino, 2011). In the following years, the intensity of water contamination decreased, but still surpassed the official maximum limits. The situation of water contamination due to intensive use of pesticides is even more dangerous, as most people in the region are not familiar with the risks involved and the classification system of pesticides: a project of the Instituto de Biodiversidad y Estudios Ambientales de

7. The Article 34 of the decree 33-95 "Disposiciones para el Control de la Contaminación Proveniente de las Descargas de Aguas Residuales Domésticas, Industriales y Agropecuarias" (Dispositions for the Control of Contamination of Effluents from Domestic, Industrial and Agricultural Water Use) defines the maximum permissible amount of certain substances within used water before it reaches natural waters (Madriz Paladino, 2011).



la Bluefields Indian and Caribbean University (IBEA-BICU, 2011) found out that the most-used pesticide within the area was Roundup. Of all pesticides used, 45% were lightly toxic (indicated by a yellow label) and 25% moderately toxic (indicated by a blue label). However, the same study also showed that the knowledge of the local population about the agrochemicals was low: the majority of small and medium-size independent farmers involved in oil palm cultivation (68%) had never participated in a training about agrochemicals (IBEA-BICU, 2011). Over 90% did not know about the meaning of the color code on the labels of the boxes they were handling (IBEA-BICU, 2011).

Besides the contamination of water, another issue is the high consumption of water by the oil palm plantations. This can potentially create competition with local needs for water, as a local member of the Water Committee described. Especially during the dry season, scarcity of water is a potential problem, which will increase further with climate change. Silver Borge from the NGO FADCANIC⁸ explained that more rain also causes problems because it can potentially flood the detention basins:

At the Southern Caribbean Coast, in areas such as Kukra Hill, an annual rainfall of 4,200 mm is common. Oil palm needs about 4,000 liters of water for every exported ton. They have big leaching cesspools, where water should evaporate. But during winter, when there is a lot of rainfall, these cesspools get flooded and the water goes into the big rivers. . . . Therefore the environmental problems are immense. For me, most of these problems are irreversible; the contamination of rivers caused by oil palm production is enormous (Interview with Silver Borge, September 17, 2014, Managua).

During the field trip in Kukra Hill, the research team observed that a man with a huge hydraulic pump was pumping water from the tank into the fields without any form of treatment. When the team asked him why, he explained that he is employed by the Cukra Development Company and they asked him to do this work. Pumping should delay the process for the tank to be filled, as the existing capacity of tanks is not big enough.

Dilemmas of the local authorities: Taxation, job creation, and the lack of control mechanisms

Despite the documentation of many negative effects of oil palm cultivation, local authorities see themselves in a dilemma: they perceive the oil palm companies as important taxpayers and creators of job opportunities, and therefore many times did not respond to citizens' com-

plaints about different kind of problems. The local authorities have been notified multiple times of the illegal behavior of the companies, but the overall perception of the local population is that the state institutions are not willing to react. Several persons share this view:

We complained at all levels: at the global and the regional level. We also went to the institutions in the Pacific [the national government], but there they laughed at us. . . . As members of the government are involved in the oil palm business, the authorities arrive, they document the cases, but they never do anything (Interview with Allan Clair, September 22, 2014, Bluefields).

In a similar manner, newspapers report that even state employees feel helpless: the territorial delegate of Instituto Nacional Forestal (INAFOR) said:

"The people [involved in the oil palm business] have achieved that they can do whatever they want and the authorities stay blind, deaf, and silent (León, March 7, 2011)."

Regarding this issue, the previously quoted farmer, Don Felicito Palacios, stated:

"I went to complain to the radio, to MINSAL [Ministry of Health] and to MARENA [Ministry of Natural Resources and Environment]. . . . The MINSAL is responsible for analysing the water, but they are not present. Nobody is helping us (Documented by Ruiz, 2010, p. 12)."

Once when the Cukra Development Corporation was clearing land without having conducted a preliminary study about the flora and fauna within the area, they got into trouble with local authorities and had to pay a penalty. It seems that for the company, the fee was an acceptable price to continue to deforest:

When we talked to the CEO of the company, they openly told us that they prefer to pay the penalty, because it is cheap and in this way, they proceed faster. . . . It was the maximum environmental penalty in Nicaragua, which is 10,000 dollars. Compared to the credits they got, that is nothing for them. The day after, they paid it (Interview with Maura Paladino, September 5, 2014, Managua).

Silver Borge from FADCANIC has a similar interpretation:

MARENA detected various irregularities; nevertheless, they only paid fines of 10,000 dollars. Meanwhile, the Interamerican Development Bank gave a loan of 30 million dollars to the oil palm company. Therefore, it is

8. FADCANIC (i.e. Fundación para la Autonomía y el Desarrollo de la Costa Atlántica de Nicaragua/ Foundation for the Autonomy and Development of Nicaragua's Atlantic Coast) is an independent, non-profit civil society organization that strives to improve the quality of life of the peoples of the Caribbean and achieve development with equity and social justice. See <http://www.fadcanic.org.ni/>



convenient for them to pay these fines (Interview with Silver Borge, September 17, 2014, Managua).

Many of the local authorities fear conflict with the oil palm enterprises as they hope for jobs, increased tax revenue, and development of the area. In both cases, the companies paid fewer taxes than expected, as they found opportunities for tax avoidance.

The former mayor of El Castillo, from the Liberal Party, stated that although the company brings work opportunities, the management is not concerned about social aspects. They try to avoid taxes and only pay small contributions that are not even high enough to repair the damage their vehicles do to public roads. He does not want the company to leave, but to take their corporate responsibility seriously. The mayor publicly claimed that PALCASA avoided paying taxes worth 250,000 Cordobas (11,324 USD) in 2010 (Fundación del Rio, 2011). In a company presentation, PALCASA claimed to provide 600 permanent jobs and to be the biggest taxpayer within the municipality. They state that they bring growth to the region by spending around 100,000 USD on salaries and fees for services per month (PALCASA, November 12, 2012). The farmers who denounced the missing reaction of MARENA and the municipality of Kukra Hill came up with the same explanation: as the company is the biggest taxpayer in the municipality, the authorities do not dare to criticize them (Jarquín, September 5, 2010).

In Kukra Hill, the authorities receive less tax revenue as only one of the companies pays taxes, because officially there are two independent enterprises. Cukra Development Corporation, S.A., manages the plantation, but the oil is produced by the officially independent enterprise Empresa Río Escondido Industria, S.A. Both enterprises are on the same land, have the same parking lot, and are not distinguishable for a visitor. Nevertheless, one of the companies is operating under the regime of a free-trade area and therefore does not pay any taxes. After ten years, in 2013, when the juridical framework of tax-free operation was to be phased out, the company changed its name and structure, despite being owned and managed by the same persons. Thus, the company will remain tax-exempt for another ten years.

Nevertheless, the International Finance Corporation (IFC) investment is for both companies at the same time. The IFC perceives both companies as a unit:

Cukra Development Corporation and Rio Escondido Industrial S.A. (collectively "Cukra") is a greenfield palm oil operation based in Nicaragua. Its main operations include the cultivation and harvesting of palm oil fresh fruit bunches, and processing the fresh fruit bunches

into crude palm oil (CPO) (International Financial Corporation, n.d.).

The companies present themselves as benevolent sponsors of local development. Both companies try to prove their social responsibility by financing local activities, e.g. sponsoring the local football or baseball team, charity activities in collaboration with churches, and financing a maternity ward and an ambulance as well as schools (PALCASA, 2012; Cukra Development Corporation, 2014).

Working conditions, safety standards and workers' rights

Work conditions in both plantations are another continuous issue of criticism and struggle. In the first years, work was very precarious and work safety standards were not met. Changes have occurred for two reasons: 1) there is some public attention, and 2) within PALCASA, a workers' union was established and they succeeded in negotiating a collective agreement. In 2010, Fundación del Rio reported that PALCASA had 200 company employees and around 700 temporary workers. The permanent workers earned 80 Cordoba per day (and if they worked 7 days, an additional 57 Cordoba). The temporary workers received around 50 or 60 Cordoba per day. Salaries were defined in different ways (e.g. per day, per area, or per number of fruits). Many times the workers did not understand which other costs were deducted—sometimes for food, sometimes for health care—but in their perception, this was often for services they did not receive. There are reports of persons under 18 years old and even younger than 14 who worked at the palm oil plantations. The salary was near the minimum wage, which had been 59 Cordoba/day for agricultural work in 2010 (Ministerio del Trabajo, August 13, 2010) Workers had been exposed to different pesticides, especially those persons who were spraying the plants. They often did not receive clothes to protect themselves.

In September 2013, more than 500 workers went on strike for six days to protest the violation of their basic rights, poor working conditions, and abuses. In 2014, the workers succeeded in founding a union. Afterwards, they negotiated a collective agreement, which helped them to achieve the workers' rights that had always technically been guaranteed by law, but had not been enforced in the company. One of the founding members of the union, who is now general secretary, proudly explained:

By law, we had certain workers' rights, but nevertheless the employer did not care about these rights, they did not let us facilitate our rights. . . . Therefore, we founded a union after having organized a strike. Afterwards, we achieved some agreements; we got some benefits and reached mutual respect. . . . Yesterday we went to



the ministry and together with the company negotiated a collective agreement. In the future, this collective agreement will regulate everything. For example, if a worker wants to quit, after ten days, he gets his compensation as the law defines. Before, every worker who tried to defend his rights for whatever reason, the first thing the employer did was to dismiss him. Before when you tried to fight for your rights, you sometimes achieved something, but sometimes not. But now, with the new collective agreement, there will only be dismissals for lawful reasons (Interview with Juan Hilario López Jarquín, September 24, 2014, near Boca de Sábalos).

The hope of the unionist is that more rights are respected now and that dismissals have to be justified in the future. The unionist also pointed out that pregnant women who are working in the plantation now have more time to rest and nurse their babies. However, as it will be difficult to execute this right, they can take the additional resting time together and therefore stay at home on Saturdays. In general, the unionist is very optimistic about the future and hopes to achieve more improvements, such as the construction of a clinic nearby where workers are treated in case of accidents. He recognizes the importance of the company for the region and thinks that the company will contribute to alleviating poverty for many people.

Officially, a union was established in the Cukra Development Corporation as well, but the research team did not manage to contact union members. In response to a critical video about oil palm, the company wrote that they have a collective contract that guarantees minimum salaries above the level required by law and several benefits, such as transportation, housing, and financial support in case of emergencies (Cukra Development Corporation, November 23 2015). Many local residents share the view that, despite all other issues, the establishment of the oil palm companies within the communities generated income and jobs. For example, one worker, who has been employed in the Cukra Development Corporation since 1998 and living in the Kukra Hill community, answered:

Interviewee: The poor people are very glad about the palm oil company. If they would not be there, they would have nothing to eat.

Interviewer: And are all people happy with the company or are there also people who criticize oil palm cultivation?

Interviewee: No, everybody is very happy with the company (Interview with Juan Bermúdez*, September

23, 2014, El Rama).

During the field trips, it did not seem to be the case that everybody was happy with the situation. Nevertheless, there were a considerable number of people who evaluated that, although there is an environmental cost, the creation of jobs and wealth for the region is good. Additionally, many persons did not want to share their personal views on the issue. Workers, in particular, did not want to criticize the company during the interviews, but afterwards reported several inconveniences.

Even those who were, for environmental reasons, very sceptical about the long-term effects of oil palm did not deny the short-term economic benefits:

We know that oil palm as a monoculture causes many illnesses in the communities and in the traditional plants they are growing and eating. . . . We also saw negative impacts when some of the members of the community sold their land for oil palm. . . . But the entire consequences are not clear for everybody. As environmentalists, we have to understand that most people do not see all impacts. They see the jobs that are created. And we cannot deny that these plantations are generating income and work in the region (Interview with Roe Kirkman, October 3, 2014, Managua).

Another very important issue has to do with worker safety. During the visit of the research team in Kukra Hill, we met several ex-workers in Kukra Hill with severe damage to their nervous systems due to work accidents with pesticides.⁹ Furthermore, some children in the region were born with disabilities, which are possibly connected to the intensive use of pesticides. Meanwhile the affected persons, most of them living in extreme poverty, have to struggle with the companies, the local administration, and several health institutions for compensation. In some cases, the companies have started to pay compensation, while denying any responsibilities in other cases.¹⁰

Conclusion and Outlook

This article has shown that with the expansion of oil palm, entire landscapes are transformed, social relations change profoundly, and socio-environmental problems multiply. Instead of mixed, small-scale agriculture, rain forests, and fallow land, now oil palm monocultures are the main form of land use. More and more people sell their land. The younger generation, in particular, is

9. Some of the cases are also documented in the video *Palma Africana, la verdad tras la palma*, available at <https://www.humboldt.org.ni/node/1553>

10. The Cukra Development Corporation responded to the video *Palma Africana, la verdad tras la palma* in an 8-page letter (Cukra Development Corporation, November 23, 2015). They continue to see the health problems of some of the mentioned persons as unrelated to work accidents and rather due to common causes



employed (although in precarious conditions) and has stopped farming their own land. Monocultures typically cause several difficulties: these problems range from deteriorating public health caused by the intensive use of pesticides, water contamination and deficient waste management, to land-ownership concentration, precarious working conditions, and low safety standards. All of this happened in both cases examined in this article. In response, local protests, the foundation of unions, and independent monitoring by NGOs endured. From 2012 onwards, the enterprises reacted by starting to present themselves as responsible actors that respect environmental laws and labor rights, and contributed to the development and wealth of the respective regions. To prove their social and environmental qualities, they started to seek certification. Especially in the case of Boca de Sábalos, the company PALCASA accused the NGO Fundación del Río of presenting false information and attempting to defame the company. From 2014 to November 2017, this has been the first message on the company's website. Nevertheless, this complementary research has shown that other actors interviewed at both sites express similar views about oil palm monocultures. It is not only the NGOs Fundación del Río and Centro Humboldt who report and document the negative impacts, but many other persons living in the area as well. Although some of them evaluate the job and income creation as positive, others are skeptical about the long-term impacts.

Taking the views and experiences of local, marginalized populations into account is an important concern of political ecology. This research shows how important collaboration between researchers and NGOs can be to document environmental and social impacts of monocultures. Nevertheless, there are several limits of an in-depth, case-study approach with narrative interviews and participatory observation: only the perception of those who are both accessible and willing to share their views are represented. Consequently, several perceptions are missing—in this specific case, those of the FSLN members and migrant workers on the oil palm plantations. In future research, therefore, it would be very important—but also very difficult—to consider these groups. Additionally, surveys about oil palm in the respective regions and a systematic quantitative analysis about migration into the protected areas as well as about changes in land-ownership would be helpful. Some of the changes in ownership are documented in the online platform land matrix¹¹, but many more probably occurred. On both issues, the government and other institutions are currently not publishing any

data, so the reported perceptions leave many questions open. Research on ongoing agrarian transformations in Nicaragua shows that the current Nicaraguan government encouraged agricultural production directed at exports and is more supportive of the interests of traditional business sectors than of workers, with the result that peasants are negatively affected (Martí i Puig & Baumeister, 2017). Complementary data, information, and research in the future could contribute to a deeper understanding of socio-ecological change in the region and the importance of oil palm within it. This attempt to document the views of the local population is only the beginning of a bigger research agenda.

Acknowledgement

The empirical research was carried out during my work as a postdoctoral researcher at the Center of InterAmerican Studies (CIAS) at Bielefeld University, as part of a project called “the Americas as Space of Entanglements”, supported by the German Federal Ministry of Education and Research (BMBF). I am grateful for the institutional and financial support that made it possible to conduct field work in Nicaragua twice. I also wish to thank the Nicaraguan NGOs Fundación del Río and Centro Humboldt, who kindly supported my participant observation by taking me to the oil palm plantations. Furthermore, I want to thank the anonymous reviewers and the editorial board of this journal for their helpful comments and suggestions, and Katharina Schiller for language editing.

Conflict of Interests

The author hereby declares that there is no conflict of interests.

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11. Five land transactions within the region are documented in the land matrix: <http://www.landmatrix.org/en/get-the-detail/by-tar-get-country/nicaragua/3754/>



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