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Impacts of oil palm expansion in Colombia: What do socioeconomic indicators show?

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ABSTRACT

The impact of energy crops and biofuel production on development, social welfare and conservation of ecosystems and ecological services has constituted a heated debate. At the center of these controversies is the development of agro-industrial plantations, particularly oil palm. To contribute to a better informed debate, we use existing data to analyze the socioeconomic impacts of the expansion of oil palm plantations in Colombia, the major producer of Latin America. We used the official database of socioeconomic indicators of municipalities for the period 1993–2009, and apply several descriptive and multivariate analyses. The results of the study confirm several issues found in the international literature: oil palm municipalities present lower levels of unmet basic needs and bigger fiscal incomes in comparison to municipalities where this crop is not cultivated. However, in Colombia depending on the region and time period, violence and land tenure concentration are higher in oil palm municipalities, which may help to explain the persistence of inequity and poverty in some areas.

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Introduction

The contribution made by energy crops and biofuel production to development, social welfare and conservation of ecosystems and ecological services has constituted a controversial debate. On one hand, governments and enterprises in producer countries argue that the biofuels area may become a significant driving force for economic growth and a source of exports for tropical countries because it generates employment, foreign currency and improves the life quality of poor farmers (Dufey, 2006; Feintrenie et al., 2010; Garcia-Ulloa et al., 2012; World Bank, 2010; Obidzinski et al., 2012).

On the other hand, many civil society organizations (NGOs, farmer and ethnic communities) criticize the expansion of energy crops by indicating that they promote competition around natural resources such as water and soil, and other agricultural production supplies (De Fraiture, 2009; Sheil et al., 2009; Croezen, 2010). Other studies have argued that production of raw materials for biofuels concentrate assets such as land, and they increase food inflationary pressures (FAO, 2008; Ewing and Msangi, 2009; Tilman et al., 2009). In addition to this, evidences point to the tendency of biofuels to concentrate government subsidies, contributing in some countries to population displacements and conflicts in rural areas (Hickey and DuToit, 2007; Marti, 2008; Colchester, 2010; Friends of the Earth, 2010; Seeboldt and Salinas, 2010).

Establishing a thorough review of this controversy is not an easy endeavor. Specialized literature shows that an evaluation of biofuel impacts must explicitly state every aspect related to the production system, forms of land tenure, labor regimes, the business model and the role of the State (McCarthy, 2010; German et al., 2011). The accumulated social and economic benefits generated by the biofuels sector mostly depend on several aspects such as the established policies, the power positions of diverse agents participating in the productive chain, and the patterns of land and income distribution (Dauvergne and Neville, 2010; McCarthy, 2010).

Studies from Indonesia reveal an improvement in economic indicators for small farmers: there is a constant increase in the contribution made by the biofuels sector to provincial GDP and to producer's incomes. On these cases, small farmers received technical assistance and were included in commercialization chains, which allowed them to enlarge their productivity and benefits (Bunyamin, 2008; Rist et al., 2010a; Obidzinski et al., 2012).

Many authors emphasize the importance of the State in the development of agro-industrial projects at a small scale, particularly its role in the direct intervention of economic and legal instruments to warrant land property rights and environmental laws (Hickey and DuToit, 2007; German et al., 2011). However,

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McCarthy (2010) notices that even when there is political will to include small farmers, it remains a difficult and contradictory process because the State is usually attracted by powerful economic sectors that jeopardize its capacity of acting as a neutral mediator.

In general terms, social and environmental conflicts derived from the development and expansion of energy crops in tropical producer countries are related to three main topics:

(i) *Local conflicts around land property rights*: the main issue in developing countries is the lack of clear legal regulations and the lack of strong institutional frameworks that allow managing the requirements regarding land use and tenure (McCarthy, 2010; Sorda et al., 2010; Timilsina et al., 2010; Vermeulen and Cotula, 2010).

In Indonesia, the NGO "Sawit Watch" identified 630 land conflicts between enterprises that produced oil palm and local communities (Marti, 2008) and the National Land Office also determined 3500 "feuds" between 2005 and 2010 (Colchester, 2010). The majority of these conflicts are a consequence of a missing clear assignation of land rights (or there is no recognition of these rights at all), the lack of transparency in purchase and renting contracts, and the lack of previous information and consultation to the community who inhabits these areas (Marti, 2008; Rist et al., 2010b).

Colombia lacks a reliable judicial framework regarding land property rights, and this has enabled displacement and land abandonment due to violence in various regions of the country (Fajardo, 2012). In the last decade, a number of cases of usurpation have been reported, and they were performed by illegal groups in order to occupy lands owned by Afro-Colombian communities and cultivate oil palm in the Colombian Pacific region (Mingorance et al., 2004).

(ii) *Conflicts relating to labor rights and contractual conditions between small farmers, enterprises and the State:* the problems in Indonesia and Malaysia are created by shared risk contracts between farmers and enterprises (McCarthy, 2010). Often the price of the product depends on the fluctuations of the products' international prices (crude oil palm, soy or sugar cane), which leads to uncertainty regarding possible future benefits for the small producers (Garcez and Vianna, 2009; World Bank, 2010; German et al., 2011; Hospes and Clancy, 2011).

In Latin-American producer countries, the subcontracting of workers and activities by enterprises is a general practice. This is achieved through schemes such as the Cooperative model of Associated Workers and the Strategic Productive Alliances (Dufey and Stange, 2011). These two models are frequent in the oil palm agroindustry in Colombia, and they have been an object of criticism because of labor rights issues (Seeboldt and Salinas, 2010).

(iii) *Environmental conflicts due to contamination and agricultural frontier expansion in strategic ecosystems:* approximately 4.1% of the recent expansion of oil palm in Indonesia, Malaysia and Papua New Guinea has occurred at the expense of natural forest and 32.4% from secondary forest (Gunarso et al., 2013). In the Peruvian Amazon, Gutiérrez-Vélez et al. (2011) assessed the area deforested by industrial-scale high-yield oil palm expansion between 2000 and 2010, finding that 72% of new plantations expanded into forested areas.

However, studies made in Brazil on sugar cane (Goldemberg and Guardabassi, 2009; Martinelli et al., 2010) and Colombia on oil palm expansion (Castiblanco et al., 2013) show that direct land use changes (LUC) had minor impacts on forests since most of plantations used for biofuels have mainly replaced pasturelands. Nevertheless, the indirect land use changes (ILUC) produced by the expansion of the plantations have often also an important impact on areas of natural and semi-natural ecosystems in tropical countries (Searchinger et al., 2008; Croezen, 2010; Achten and Verchot, 2011).

In countries such as Colombia, the effects are confused by socioeconomic particularities that make the separation of their origins difficult, because: (i) oil palm areas may be highly dynamic due to their overlap with oil and mining zones, where important energy and infrastructure projects are take place (Galán, 2012; Tenthoff, 2012); (ii) there is often the presence of illegal armed actors (*paramilitary*, *guerrilla* and *narcotraffickers*) who increase social tensions, and fights over land tenure (Posada, 2009; González et al., 2012); (iii) oil palm growing areas are adjacent to territories of indigenous communities, or lands owned by Afro-Colombian communities.

Under such conditions, the varied optimistic and pessimistic versions must be contrasted. The former argue that the oil palm plantation model contributes to solve many conflicts and fulfills many interests through a virtuous circle that allows farmers, indigenous, laborers, municipal authorities and entrepreneurs to benefit according to their own marginal contribution to social welfare (World Bank, 2010; Willebald, 2011). The pessimistic visions in turn, consider that the intensive production of goods coming from natural resources and land inevitably leads to the social involution, poverty, and concentration of income and power in few hands, that reflects in environmental deterioration and distributive conflicts that will create more violence in such areas (Cimoli and Rovira, 2008). Amid this controversy, it is worth asking how energy crops contribute to improving the living conditions of rural people?

Globally, there are significant growth expectations for the global biofuels market (Sorda et al., 2010; OECD-FAO, 2011). In Colombia there are important financial investments and expansive scale of the large land property required by the oil palm cultivation (Dufey and Stange, 2011; Castiblanco et al., 2013). These facts claim for an evaluation of the socioeconomic impacts of oil palm production in rural zones characterized with important expansion probabilities.

The purpose of this research is evidencing the possible socioeconomic effects of oil palm production in rural areas through the analysis of available socioeconomic data, with the objective of establishing whether municipalities with presence and growth of oil palm plantations show any differences compared to non-producer municipalities. For this, we first present a conceptual framework under which we examine the effects of rural production models based on the primary export product on the social and economic conditions of the main production zones (staple thesis). Second, we use the available multi-temporal data of socioeconomic indicators to analyze the observed changes within oil palm growing areas and comparable areas outside the oil palm growing areas, by using descriptive statistics and multivariate analysis. On basis of the results, we draw conclusions about the observed relationships and impacts.

Conceptual framework: oil palm agribusiness, "staple thesis" or "staple trap"?

After sugar and molasses, palm oil is the second agro-industrial export in Colombia (Proexport Colombia, 2014). For this reason and given the ambitious expansion goals, oil palm fits the hypothesis of the primary export product (staple thesis), which proposes that the exploitation of abundant natural resources based on an open agricultural frontier allows generating "virtuous circles" in regions suitable for large plantation crops (Barbier, 2005; Findlay, 1995; Willebald, 2011; Watkins, 1963). However, as shown by Findlay and Lundahl (1999), the success conditions of a development model based on the main primary product (staple thesis) are unique. An example of this was the so called "golden age" of growth led by natural resources (1870–1914) where only countries such as Canada, the United States of America and Australia achieved high growth levels and productive transformation, whereas other economies

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