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## Social sustainability of Brazilian biodiesel: The role of agricultural cooperatives

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### ABSTRACT

Biofuels have been criticized in academic and activist circles not only for their environmental consequences but also for their social impacts on food availability and on small-scale family farming. Meanwhile (global) initiatives and policies have been developed to stimulate “sustainable biofuels”. Brazil – a frontrunner in production and use of biofuels – aimed to combine biodiesel production with rural development. The biodiesel policy implemented in 2004 had two main objectives: to advance biodiesel as a transportation fuel and to foster the social inclusion of family farmers through participation in the biodiesel chain. Although participation of family farmers was low in the beginning, it increased substantially after a 2009 policy change that gave cooperatives a more prominent role. We analyze how, why and to what extent cooperatives are involved in integrating family farmers into the biodiesel chain and what this means for the social sustainability of biodiesel, taking the northeast state of Bahia as a case study area. The findings show that through the biodiesel policy, cooperatives—until then a marginal phenomenon in northern Brazil—increased their membership, were empowered and contributed to the economic development of a significant group of family farmers. However, these family farmers have not been substantially included in the biodiesel production chain itself. The biodiesel policy functions as a catalyst for rural (economic) development in which the cooperatives seem to achieve what governments were unable to achieve: the integration of specific categories of family farmers into agrarian development. Subsistence family farmers, in particular, have not been able to profit from this policy-driven, “market-oriented,” rural development model. Hence, it can be questioned whether this policy has made biodiesel more socially sustainable.

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### Introduction

Over the past decade, the worldwide embrace of biofuels as an alternative source for transportation energy has been heavily debated, globally as well as locally. This embrace of biofuels has various sustainability concerns following the (potential) adverse impacts of large-scale biofuel production and use. These adverse impacts may include not only increased deforestation, land consolidation, expansion of agricultural areas at the cost of nature conservation and greenhouse gas emissions through indirect land use change, but also social issues such as land ownership, food prices and access, and marginalization of small farmers. Hence, governmental policies to further enhance the production and use of biofuels have been and still are strongly debated and criticized for both their environmental sustainability and their social conse-

quences for small-scale family farmers (Mol, 2007, 2010; Sorda et al., 2010).

One of the major challenges in this context of sustainable biofuels is the impact of indirect land use change on food production and landownership. The notion of indirect land use change has proven to be difficult to measure and the impact is very unpredictable. Nevertheless, the European Union (EU) has put in place an obligation to monitor the effects of indirect land use change from crop-based biofuels, without any clear indicators (Levidow, 2013). In September 2013 the EU parliament voted that in meeting the EU's target of 10% biofuels in transportation fuels only 6% could be food-based biofuels, in order to stimulate “advanced biofuels” that do not compete with food production; however, the proposal was rejected, just two votes short of a majority (EurActiv, 2013). This indicates that concerns about sustainable biofuels have risen to such a level that policy objectives might change in the future.

The EU debates show a growing awareness about the social and environmental impacts of biofuel, as do the increasing amount of governmental and other global (non-state) initiatives that stimulate

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sustainable biofuels (Scarlat and Dallemand, 2011). Some countries have begun to address the environmental impacts of biofuels, but few countries have formulated concrete policies to mitigate the social impacts of crop-based biofuel production (van Dam et al., 2010; Smeets et al., 2008), such as small farmers' being pushed from their land by agro-industrial investors and the competition of biofuel crops with food crops. Brazil – as a major user, producer and exporter of biofuels and biofuel crops – holds a key position in these global debates and how the future biofuels market will evolve (Garces and Vianna, 2009; Goldemberg et al., 2008). Brazil is also one of the first biofuel producing countries to explicitly include social sustainability into its national biodiesel promotion policy.

The Brazilian government aims to combine biofuel blending promotion with social sustainability by protecting and enhancing the social and economic development of small-scale family farmers. These combined objectives became operational in the 2004 Brazilian biodiesel policy: the National Program of Production and Use of Biodiesel (PNPB). The PNPB has two main goals: to introduce and enhance biodiesel as a transportation fuel into the national fuel matrix and to foster the social inclusion of small-scale family farmers through their participation in the biodiesel value chain in the poorest regions of the country (MDA, 2010). The development and implementation of the PNPB led to two main debates. First, policy measures for implementing the PNPB show tensions between the two goals; for instance, PNPB policy measures create a conflict between the participation and development of small-scale family farmers, the prevention of biodiesel domination by agro-industries, and the stimulation of sufficient biodiesel (crop) production. In the implementation of the PNPB, these conflicting goals remain a source of ongoing debate (Stattman et al., 2008, 2013). The second debate concerns the implicit assumption in the PNPB that small farmer participation in the production of biofuels will result in desirable small-scale family farmer development. This interpretation and ambition of social inclusion have been contested for their narrow (economic) definition of social inclusion and their relationship to rural development (e.g., Hospes and Clancy, 2011; MDA, 2013a; Quiñónez et al., 2012).

The PNPB objective of small farmer social inclusion and rural development has been advanced with two main policy instruments: (a) the Social Fuel Seal (SFS), and (b) a special tax system. These instruments together are designed to facilitate and stimulate the inclusion and involvement of family farmers in the northeast (the poorest region of Brazil) in biofuel production, as opposed to the large-scale agricultural producers in the central west. The SFS is awarded by the Ministry of Agrarian Development (MDA) to biodiesel companies that buy a minimum percentage of their biodiesel feedstock from small farmers. Only companies that possess the SFS are allowed to bring their biodiesel onto the Brazilian biodiesel market. In addition to buying feedstock from family farmers, biodiesel companies are obliged by the SFS to deliver technical assistance and support to these family farmers. This means that they have to support small-scale family farmers in improving their agricultural systems and farming practices, resulting in their economic and social development as defined by the Brazilian government. The tax model supports this objective by reducing taxes depending on the region and type of crop; for example, family farmers in the northeast who produce castor or palm oil pay lower taxes than do large-scale farmers in the central west who produce soybean oil.

In spite of these policy measures, the involvement and “inclusion” of small farmers in biodiesel production lagged behind governmental expectations and targets in the early years of the PNPB. However, this changed with the biodiesel policy revision in January 2009, which, among other changes, enhanced the role of agricultural cooperatives in biodiesel feedstock production and marketing. From 2009 onward, cooperatives have appeared to function as key organizations between farmers, industry and

government authorities in implementing the biodiesel social inclusion policy. This raises questions with regard to how and why cooperatives are successful in integrating small farmers into the biodiesel chain and what this cooperative-enhanced social inclusion actually means for family farmers. In focusing on the (changing) role of agricultural cooperatives in biodiesel production, we aim to contribute to the wider debates on the social sustainability of biofuels and on cooperatives in rural development.

Before introducing the research outcomes (Section ‘Bahian cooperatives participating in the PNPB’), the theoretical framework of cooperatives in rural development (Section ‘A role for cooperatives in rural development’) and the history of biodiesel promotion policy in Brazil are introduced (Section ‘The National Program of Production and Use of Biodiesel’). Section ‘Social inclusion’ analyzes how and with what consequences cooperatives have successfully advanced the social inclusion of family farmers in the biodiesel chain and is followed by conclusions.

### A role for cooperatives in rural development

Currently, rural development policies are an important part of Brazil's social policies. In November 1999, the government even created a ministry to specifically support agrarian reform and the sustainable development of family agriculture (MDA, 2013b). This is very different from the period during the military dictatorship (1964–1984) when the focus was primarily on opening up new land in the Amazon region and settling farmers on public lands. Schneider et al. (2010: 231–235) distinguish three consecutive phases in post-military rural development policies. In the first phase (1993–1998), the government had a strong focus on agrarian issues such as unequal land ownership. Rural organizations and social movements, such as the Brazilian Landless Movement (MST) and the Land Pastoral Commission (CPT), emerged as important action and lobby groups. A first generation of rural policies for small family farmers was created to give these farmers access to credit and financial support, such as PRONAF (National Program for Family Agriculture). The creation of the MDA to facilitate these processes can also be considered an outcome of this first phase.

The second phase (1998–2005) can be characterized by social and compensation policies that aimed to increase the income and welfare of family farmers. During this phase, programs for food security and family spending, such as Bolsa Família, were developed and implemented. In the third phase (2005–present), attention has shifted to fine tuning and improving existing rural development programs through changing their institutional design and better integrating different levels of government and other institutions. Schneider et al. (2010: 233) place the development of the biodiesel program in this last phase because it is a fine-tuned strategy of adding value to products from family farmers and of making markets accessible to them.

Two key elements of this third phase are relevant for our biodiesel analysis. First, rural Brazil can be characterized by significant regional differences, for instance, when considering socioeconomic indicators such as income, health, infant mortality and nutrition. The richer south and southeast regions score much better on these indicators than do the poorer north and northeast ones, although the inequality between these regions seems to be declining slowly (World Bank, 2013). These differences require rural development policies to be fine-tuned to different regions to be effective and this is also a core characteristic of this third phase with respect to biofuel policies. Second, one of the key institutional changes of the third phase seems to be the increased involvement of local agricultural cooperatives in rural development. Government agencies argue that cooperatives increase effectiveness and reduce the costs of rural development policies. In evaluating Brazilian rural

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