Regoverning Markets

Small-scale producers in modern agrifood markets

Innovative Practice

Brazil
Access of family farmers to biodiesel markets: Partnerships between large companies and social movements

Ricardo Abramovay and Reginaldo Magalhães
University of Sao Paolo

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Regoverning Markets

Regoverning Markets is a multi-partner collaborative research programme analysing the growing concentration in the processing and retail sectors of national and regional agrifood systems and its impacts on rural livelihoods and communities in middle- and low-income countries. The aim of the programme is to provide strategic advice and guidance to the public sector, agrifood chain actors, civil society organizations and development agencies on approaches that can anticipate and manage the impacts of the dynamic changes in local and regional markets.

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1 Introduction

Over the last few years Brazil has become a decisive international player in the biodiesel sector, a sector that is bringing about the end of 'oil civilization' (Sachs, 2005). As a result of more than 30 years of research in the field combined with practical experience it occupies the technological frontier of bioenergy production. Hundreds of alcohol production plants have now been constructed and an enormous number of cars are running on biodiesel (UNCTAD, 2006). 50 billion litres of ethanol are now produced in the world. 17.4 billion in Brazil and 18.5 billion in the US (Veiga Filho, 2007).

The market is highly promising, which explains the exponential increase of foreign investment in the acquisition and construction of industrial units in Brazil. The area of land occupied by sugarcane has also increased dramatically in those regions where it already dominated the landscape (e.g. São Paulo), as well as in areas where it has substituted pasture and soybean production (e.g. in the mid-West and the Northeast). Between 2005 and 2007 the contribution of sugarcane to the income of the Brazilian agriculture sector increased from 14 per cent to 21 per cent of the total.

The technological innovations contributing to this performance has not altered three central sugarcane patterns in Brazilian agricultural history, the large territorial areas used to cultivate the product, the resulting monotony of the agricultural landscape in the areas where it is found and the degrading working conditions that are the norm, especially during the harvest (Moraes Silva, 2005).

The force of national, and increasingly, international interests linked to sugarcane importance and expansion seem to confirm the prediction made in Foreign Affairs magazine (Runge and Senauer, 2007) that the history of the industrial demand for agricultural products in developing countries benefits the largest producers.

Nonetheless, parallel to the expansion of the alcohol plants, the Brazilian government has begun to implement a policy that supports the production of biodiesel. In contrast to the policy for the national supply of alcohol from sugarcane, the National Program for the Production and use of Biodiesel (PNPB) is clearly aimed at integrating family farmers into the production of biofuels and, as a result, contributing to their ability to generate income. It aims to do this by using forms of production that avoid monoculture and enables the use of areas that had previously been underutilized. It is true that, in the same way with sugarcane, there has been a rush of foreign investment for the production of biodiesel. It is also true that soybean, a product that is well established and frequently cultivated in large and monotonous areas of land, represents the main feedstock for the production of biodiesel.

A new market is being formed as a result of government intervention. Its main objective is to include family farmers in the oil chain and to encourage the use of rarely employed feedstock. In reality, soybean has some limitations that prevent it being the basis for producing biodiesel. It has a low oil yield and it competes with the food oil (making the supply for the production of fuels insecure). Its value also depends on the prices of the soybean meal, whose market is completely independent from that which guides the prices of biodiesel. However, the weight of soybean in the vegetable oil production chain is so great that it makes it unlikely (without government intervention in the market) that increased production of other crops would provide an alternative.

It is interesting to note that the government objective of linking biodiesel production with the income of family farmers was immediately supported by two groups whose relationship oscillate between conflict and indifference; the big corporates that process feedstock for the biodiesel production and the rural workers' trade union movement.

This declared link between the supply of feedstock for the production of biofuels and income generation for family farmers appears to be internationally unprecedented – under state sponsorship, organized by private companies and with contractual agreement of the trade unions.

In Brazil it is the first time that a policy has been drawn up where the state creates conditions where an important part of the supply of feedstock for a particular industry comes from productive units that, without this intervention, would be unlikely to play a significant role in the market. This type of state intervention is highly different from the policies relating to credit (PRONAF) or the cash income transfer to the poor, where the state allocates resources directly for a particular public.

This initiative should not be confused with those that exist in developed countries that guarantee that the government will purchase part of the production of particular segments[1]. What is interesting about the Brazilian case study is that the state intervenes in the organizational format and in the incentives upon which a certain market is constructed, without the use of public resources.

Rather than being a typical supply chain contractual integration case, the formation of an unprecedented pattern of the operation of the market itself and its governance (Buskens *et al*, 2003) may occur. The companies not only select their suppliers based upon the work of the trade union movement, but rely on the trade union structure to

[1] This is the case with the US Small Business Administration of the Department of Commerce, which guarantees, especially for small businesses, a significant part of the powerful market created by governmental purchases (see http://www.sba.gov/GC/).

negotiate the contracts and to organize the supply. A price is guaranteed and the firms also offer technical assistance to the farmers.

The 'social label', based upon Resolution Number 3 of the National Council for Energy Policies that enables the companies to participate in the auctions organized by the National Petrol Agency (ANP) depends on the relationship between the companies and the trade union movement. This relationship guarantees their participation in the national policy, forcing an increased percentage of vegetable oils to be added to the diesel produced from fossil fuels ([2]). In other words, companies' access to market depends upon forms of market operation that include the trade union movement in their system of governance.

This article aims to describe the social forces behind the construction of this policy, and above all, the mechanisms and the system of governance (Buskens *et al*, 2003, Fligstein, 2001) of the emerging Brazilian biodiesel market. Why are private companies subject to contractual forms that make them dependent upon actors with whom, up to now, they have not had a permanent relationship with and who are potential sources of considerable conflict? What are the chances that this policy will provide a sustainable source of income generation for groups that find themselves at the base of the social pyramid of farmers? Can this policy establish technological and organizational innovations capable of creating sustainability in income generation processes?

Brazilian biodiesel market organization cannot be explained exclusively by the specific assets it mobilizes or in terms of the need to reduce the transaction costs between its protagonists. Whilst these factors are clearly present, political-cultural (Fligstein, 2001) dimensions are decisive. Social participation in the feedstock supply structure has incorporated functioning issues into the market such as the social responsibility of companies, income generation for members of the population living below the poverty line, the integration between the production of food and energy, the diversification of feedstock for oil and the ecological integrity of the regions themselves into which the product is expanding.

The approach of this article is justified by the instruments of new economic sociology that deal with these markets from a political-cultural standpoint: the intentional action of the protagonists of these markets ([3]) is able to avoid some of the

[2] The technological path of the current biodiesel policy follows that of petroleum. In the case of alcohol the motor was adapted for the fuel, in contrast to what is happening at the moment where the fuel is being adapted to the motor. For a critical perspective of this development see Professor Guilherme Dias' exhibition in the Institute of Advanced Studies at USP: http://www.iea.usp.br/iea/online/midiateca/biomassa/v061109b_700/Web/Script/index_IE.htm

[3] It is in this way that Buskens et al (2003:3) characterize the governance of the markets as '*a result of purposive behaviour of independent actors*'.

central problems that could have been foreseen in their operation, concentration of income that follow the increase in supply, and above all, the environmental problems that the increase in biofuel production may bring.

2 Theoretical bases

This article is based upon two theoretical perspectives. From an agricultural and energy viewpoint it explores the possibility of integrated systems for the production of energy and food. This is in order to decrease the skepticism about world biofuel production increases that much of the international literature cites (item 2.1). However, the functioning of these systems – according to the second perspective – presupposes forms of market organization set up with social and environmental ends (item 2.2).

2.1 Conflicts and interactions between food and energy

2.1.1 The sceptical views

The increase in the international production of biofuel has provoked an important and consistent combination of critiques that can be summed up in the following basic points:

a) In the US and Europe the principal crops that provide feedstock for biofuel have a low, sometimes negative, energy balance. The quantity of energy required to produce the corn to make ethanol (including the industrial process itself) means that 'only about 20 per cent of each gallon is 'new' energy' (Tilman and Hill, 2007). Furthermore, if each of the 70 million acres used for planting corn in 2006 were used to make ethanol, the amount of energy produced would only replace 12 per cent of the gas oil market in the US. The amount of 'new' energy (non-fossil fuel) obtained would be very small, only 2.4 per cent of the market. Tuning a car and ensuring that the tires were adequately inflated would economize more energy.

The expansion of the production of corn in the US could have a negative effect on soil and water resources. It could also encourage farmers to remove their land from conservation programmes, such as the 'Conservation Reserve Program' and the 'Wetlands Reserve Program' (Babcock, 2007). Clearly the force of these impacts depends upon the products used to obtain biofuel and their system of cultivation. However, until now in the US and Europe, crops with an extremely low energy performance predominate. It is worth remembering that the criticism of the energy inefficiency of agriculture based upon large farms of highly specialized crops was already being made in the 1970s in the pioneering works of David Pimentel (1980).

b) These products make a small contribution towards the reduction of the greenhouse effect because of the use of fossil fuels in their production, as well as the deforestation that they cause. The expansion of sugarcane into the Brazilian mid-West could result in the relocation of livestock and soybean in the direction of the Amazon, further increasing deforestation. The expansion of palm oil in Indonesia is essentially based upon deforested areas (Monbiot, 2007). The international effort for

the certification and traceability of biofuels illustrates the importance of this problem. The broad-based participation, including Brazilian organizations, in 'the round-table discussions about sustainable biofuels', organized by the Energy Center of the Federal Polytechnic School of Lausanne is an attempt to deal with the environmental problems caused by the expansion of biofuels (Frei et al, 2006).

c) The increase of biofuels is a threat to world food security. This point of view has been defended by the ex-president of the Société Française d'Économie Rurale, Jean-Marc Boussard (2006) who states that the generalization and exclusivity in the use of biofuels 'as a source of energy could put unsustainable pressure on agricultural land'. Along the same lines, Michel Griffon (2006:160) asserts: 'In terms of food as well as the production of energy, agriculture does not constitute a solution for the creation of global energy scenarios that include the massive use of biomass'.

The increase of corn prices is an expression of this phenomenon. Its current stocks, as a result of the increased demand for ethanol, are at their lowest levels since the drought of 1995 in the US (Runge and Senauer, 2007). In Mexico this increase has already provoked significant social tensions as corn forms a large part of the staple diet. The International Food Policy Research Institute (IFPRI) predicts strong pressure upon agricultural prices if the current patterns of land use and technology for the production of bioenergy persist (Rosegrant *et al*, 2006).

More than 200 organizations from various parts of the world signed the Biofuelwatch manifesto. This called for the European Union to abandon targets for the consumption of biofuels because of their estimated negative social and environmental consequences, advocating instead a drastic reduction in the use of energy and the use of truly renewable sources of energy (www.biofuelwatch.org.uk).

d) Throughout the world the production of biofuels accentuates the concentration of income and the importance of the large-scale producers as well as the big processing firms. 'The major classes of biomass for biofuel production recognized to date are monoculture crops grown on fertile soils such as corn, soybeans, oilseed rape, switchgrass, sugarcane, willow, and hybrid poplar' (Tilman *et al*, 2006). Corn and soybeans are products that are subject to the lobbying of large-scale planters and big processing companies such as Archer Daniels Midland Company (ADM), the largest producer of ethanol in the North-American market (Runge & Senauer, 2007).

The risks of the negative impacts on the environment and on the supply of food are highlighted in a recent United Nations report, 'Sustainable Bioenergy' (United Nations, 2007). Whilst the last Intergovernmental Panel on Climate Change (IPCC) report illustrates the important role played by biofuels in the reduction of global warming, the United Nations warns of the inverse effect on the environment if the

expansion of sugarcane and oilseed plantations threatens the forests and food production.

2.1.2 The paths of integration

These arguments, presented here briefly, are based on empirical facts. More than this, they insist upon the importance of re-thinking the patterns of civilization that are based upon the intensive use of energy in contemporary societies. Similarly an important report by Greenpeace and the European Renewable Energy Council (Greenpeace, 2007) underlines the urgency of energy reducing measures one of the most effective measures for contemporary society to adapt to the current situation. The cheapest and the least polluting energy is that which is not used.

However, the arguments set out above suffer from a basic flaw of reasoning, as illustrated in various recent articles by Prof. Ignacy Sachs. They do not take into account that the technological patterns upon which the supply of biofuels are based could be different from those that predominate today. Currently there are sufficiently solid scientific bases for the conception of integrated systems for the production of energy and food that could overcome the principal dilemmas of the conventional system that presents an impasse between energy and food.

In 1983 Ignacy Sachs and Dana Silk launched the 'Food and Energy Nexus Program', under the auspices of the United Nations University with the objective of finding synergetic solutions to the agricultural production of energy and food. The programme fostered various research projects experimenting with integrated production systems in Brazil and India (Sachs & Silk, 1990). Its central ideas included the intensive use of biomass, the stimulation of biodiversity and the use of biotechnology capable of taking greater advantage of feedstock. This United Nations Program finished at the beginning of the 1990s, but it is vital to recognize its pioneering role and its influence on the directions that the Brazilian biodiesel programme is taking today.

Amongst the most recent work, in the same vein as Sach's work in the 1980s, is the research of Tilman *et al* (2006), published in *Science*. The study shows that the main problems with the biofuel production pattern in North American agriculture could be overcome by the use of degraded land, instead of the more fertile areas, and by taking advantage of the diversity and integration of the crops that do not rely on the intensive use of chemical products. The experimental crops upon which Tilman *et al* based their conclusions did not receive fertilizers. They were watered only when planted and relied upon a minimal amount of inputs for their development. All the forms of conversion of the plants grown in this system, baptized as 'low-input high diversity' (LIHD) showed themselves to be significantly more efficient than the monocultures that currently dominate. One of the most positive indicators was that

plant diversity increased the storage capacity of carbon in comparison to homogeneous plantations.

Schrimpff's work (2007) shows that for the production of biofuels in Germany 'rapeseed is almost exclusively grown (80 per cent of the total). Sunflower and flax make up the remainder. Nonetheless (in Germany) 15 other oilseeds could be grown. Across Europe this number reaches almost 50 species, and worldwide it is probably more than 2,000 species that are underused. In the final analysis all seeds and the flesh of various fruits (e.g. avocado, palm) contain oils and vegetable fats'.

Schrimpff recognizes that in the current pattern of production the conflict between food and energy is obvious. However, there are two elements that could significantly alter this scenario. Firstly the rotation system between oilseeds, whose fertilizing properties for the soil are widely recognized, and cereals could be improved. Secondly many oilseeds, rapeseed and soybean (apart from oil) produce flour rich in protein that can be used to feed animals and humans.

Therefore the skepticism, with respect to the future of biofuels, is strongly countered 'when, instead of the monotonous monocultures planted today, the agriculture of the future gives way to multiple polycultures (combined systems of cultivation)'. Based on this reasoning, Prof. Ignacy Sachs (2007) put forward the hypothesis that the integrated systems of energy and food production could use less land because the supply of food for animals would reduce the soil needed for pasture.

This is the case for a large Argentine company that implemented a system where the leftovers from corn used to produce ethanol were used to feed livestock. The livestock's dung in turn was used to produce biogas, which generated electricity used in the ethanol plant and also for milk production([4]). There have been similar synergies between the production of ethanol and the raising of livestock in the State of Iowa, as presented by Babcock and Hart (2006).

To conclude, there are sufficiently solid scientific bases to assert that, from a technical perspective, the current environmental, energy and social pattern that provides the base for the majority of biofuel production around the world could be beneficially replaced by social and environmental forms capable of avoiding the problems briefly described. Furthermore, markets are structures subjected to social pressures. They must incorporate the actors' expectations into their basic operating mechanisms, not just in terms of quantity and price, but also in terms of their social and environmental attributes.

[4] According to an article published in El Clarín on 14/04/07, http://www.clarin.com/suplementos/rural/2007/04/14/r-01399401.htm, downloaded from the internet on 29/04/07.

The aim of this article is not to describe the social concerns about the paths that are leading to the end of the petroleum-based civilization, but rather to examine the alternative paths to that which dominates the Brazilian and international scene.

2.2 The political-cultural approach to the markets

One of the central ideas of the new economic sociology is that markets do not consist as points of encounter, neutral and impersonal, between supply and demand, e.g. flowing from actors whose reciprocal relations are limited to those derived from the indications received from the system of prices. Markets are social structures, recurring and stable forms of interaction, subject to sanctions (Swedberg, 2005).

What is important in this approach is that it enables markets to be viewed as the products of history whose existence depends on social networks (Granovetter, 1985) rather than universal and abstract forms of interaction. Their real content can not be defined beforehand The formats of these networks determine the opportunities that the individuals and the firms encounter in the markets. Granovetter (1995) shows that the contacts derived from connections between individuals that are relatively distant from each other are much more advantageous, for example, in terms of getting a job, than those that result from the so-called 'strong ties'.

This theme is particularly important for this article, since the PNPB stimulated the formation of 'weak ties' on the part of the protagonists involved in it. It encouraged social links between actors that do no belong to the same economic, political or cultural universe. This is expressed in the trade union organizations (who begin to establish partnerships with companies[5]), in the business practices (that begin to base several of their activities upon trade union actions) and in the government itself (in the case of the Ministry of Agrarian Development (MDA) who began to negotiate with companies instead of having relationships almost exclusively with social movements).

As well as understanding the format of the networks, it is important to study the recurrent forms in which the markets structure themselves. Neil Fligstein constructed a sociological theory based on the idea that, in contrast to that postulated by neo-classical theory, the actors in markets do not fundamentally aim to maximize their interests. They try to stabilize their relationships to reduce the risks that their exposure to the price system subjects them to[6]. This stability is based upon four basic factors, without which no market could function.

[5] For example, see the 'Note on the conjunction of CONTAG and Brasil Biodiesel on the inclusion of family farming in the national biodiesel program' signed by the presidents of the two organizations on the 12th of May 2006.

[6] 'The sociology of markets that I am developing replaces profit-maximizing actors with people who are trying to promote the survival of their firm' (Fligstein, 2001:17).

The first is property rights. Feedstock for biodiesel production has to be offered by the farmers to the companies, but under certain contractual conditions (price guarantee, technical assistance, social label). Without this, the right to participate in the supply chain is threatened. The second decisive aspect in the functioning of a market is in its structure of governance, the 'general rules that define the relationships of competition and cooperation, and define the way in which firms are organized' (Fligstein, 2001:34)

The work of Buskens *et al* (2003ª:2) is similar to that of Fligstein. They define governance as 'the measures that the actors involved in the exchange use or implement to mitigate the risks associated with economic exchange'. What is important in our case is the diversity of the actors that interfere directly in the establishment of these rules, as explored below.

The third element is the rules of exchange that guarantees the conditions in which the market functions apply to e.g. monetary patterns or the submission to commercial agreements. Here too the proximity to the approach of Busken *et al* (2003b:108) is notable. They insist on the fact that the 'buyer does not need only to find a product that meets his needs in terms of price and quality. The buyer needs to encounter the seller who will offer guarantees and service that are beneficial to him/her and the buyer needs to believe that the seller will act as promised'. In our case study what is important is the participation of the trade unions in the mobilization of the farmers, as well as the guarantee of the purchase of the product on the part of PETROBRAS.

The fourth element is especially important for this study and is called 'conceptions of control' by Fligstein. These reflect the agreements within firms, as well as between firms, around the validity of certain norms of operation and about the reach and the limits of practice of competition and coop eration. Fligstein cites the anthropologist Clifford Geertz to illustrate his idea. He emphasizes that the conception of control in terms of a market functioning is a form of 'local knowledge' and that; it should be approached from a historical and cultural perspective.

This is similar to the explanation of Buskens *et al* (2003a:10) that the transactions, the attempts to reduce risk, and the attempts to stabilize relationships for participants in the market can only be understood in terms how embedded they are in certain social contexts. The idea is also similar to that of Podolny and Hsu (2003:78) who state different forms of government 'depend on the networks and the elements of reputation induced through the links in the networks'.

These factors lead to the study of markets in terms of strength of relationships between its participants. They also inspire the study of the state participation in market formation and regulation. Fligstein is inspired by Pierre Bourdieu (2005), describing economic life, and particularly markets, in terms of the notion of 'fields',

that ‘contain collective actors that attempt to produce a system of domination, that supposes the production of a local culture which defines its social relations’ (Fligstein, 2001:15).

The rules with which a particular market regulates itself are not the spontaneous result of its evolution, but are the result of the active participation of the forces of organized society as well as the state itself. Furthermore, the characterization of markets in terms of ‘fields’ makes them a permanent item of dispute – economic, political, and cultural – between what Fligstein calls the *incumbents* ([7]) and the *challengers*. Precisely because it forms a particular field, a market is only stabilized when the terms upon which participant disputes are settled are accepted in a relatively homogeneous way.

With regard resource use, market stabilization around certain ‘conceptions of control’ is especially important in explaining the corporate environmental behaviour as has been well illustrated by Andrew Hoffman (2001). The incorporation of environmental issues is important in defining the current operation of not only government agencies, but also for the markets themselves within companies’ organizational structures. The work of the team directed by Olivier Godard in France, shows also that companies do not act in a purely reactive way to governmental environmental legislation, but try to anticipate the questioning that they may receive because of their business practices (Hommel, 2004).

The studies that emphasize the cognitive dimensions of the behaviour of companies are important in this case study because of the unprecedented social and political constellation upon which the supply of biodiesel is based.

[7] Whilst the word incumbent refers to the occupier of a particular position, within the theory of arenas, it is closer to a position of domination.

3 The construction of a new market

The PNPB was only set up recently, which prevents a rigorous evaluation of its results. The objective here is to present its institutional format and its principal mechanisms of incentives so that it is possible to evaluate if it is actually a policy that innovates the process of income generation and if it is capable of including farmers who do not participate in conventional markets, therefore contributing to the greater diversification of agriculture.

Around what elements is this market established (Buskens *et al*, 2003)? What are the property rights, the system of governance, the rules of exchange and the conceptions of control (Fligstein, 2001) of the emerging Brazilian biodiesel market?

Is the presence of powerful Brazilian and international interests in this organization compatible with the governmental objective of making the production of biofuels an element to open up opportunities for the pro-poor participation in the market?

Are the links between the various governmental agencies, companies and social movements an expression of corporatism (Thomas, 1993) or to the contrary, express the constructive role that the 'strength of the weak ties' (Granovetter, 1995) is capable of playing in the functioning of social networks?

3.1 Basic characteristics of the PNPB

The PNPB has been set up in an environment that opens up opportunities different to those adopted by the ethanol programme in the 1970s and whose damaging social and environmental consequences are well known. In contrast to sugarcane, the participation of family farmers in the production of feedstock for biodiesel is significant. Even when dealing with soybean in Rio Grande do Sul, half of the supply comes from units of family production. Furthermore, the family farmers' organizations gave extraordinary influence to the conception and execution of Brazilian public policies.

The National Program for the Strengthening of Family Farming (PRONAF) meant that almost 2 million farmers received credit, half of the potential public. In no other segment of small urban or metropolitan enterprises is there a comparable ability to influence public policies and access to governmental resources ([8]). The MDA (created in a situation of urgency to deal with land conflicts) is responsible for the management of PRONAF. It allocates, in the form of credit to family farmers, around

[8] Of the 10 million units that make up the small scale urban and metropolitan 'nanoenterprises', only 300,000 manage to receive formal credit. Of the 4.2 million family farms, more than 2 million have access to credit (Abramovay *et al*, 2003)

R $12 billion (more than US $6 billion), reaching a significant number of those who are at the bottom of the social pyramid of farmers.

In 2003, discussions begun within the government, about the need to stimulate the production of biodiesel. The Presidency of the Republic orientated the technical analysis explicitly so as to avoid what the government considered the social and environmental distortions that were the result of the pro-ethanol policy. It also guaranteed part of the supply of the feedstock for the product to the family farmers, especially those in the Northeast, ([9]).

This orientation has the chance to establish itself not just because of the interests of the family farming organizations, but also because of the promising perspectives offered to industries already active in the production of soybean, as well as those who plan to enter specifically into the production of biodiesel independently from the supply of oil and flour for food ([10]). Until today the majority of the feedstock for biodiesel production comes from soybean. However there are important incentives that could avoid repeating the pro-ethanol monoculture pattern in the case of PNPB.

The touchstone for the business interest in the PNPB is the increasing percentage (two per cent in 2008 and set to grow to five per cent by 2013) that non-fossil origin feedstock should have in the composition of diesel. For this target to be met the National Council for Energy Policies will supervise the mixture and quality of the fuel. It is here that the social content of the recent measures enters into the equation. For the companies to be able to participate in the auctions where PETROBRAS buys biodiesel production in advance, therefore establishing the market for the companies, they need to present a social label.

This is conceded by the MDA. Based upon a detailed examination of the contract that the companies formulate with the farmers, with the signature of the rural workers trade union of the municipality where the production will be carried out ([11]).

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[9] The Programme has an executive commission that is directed by the Presidential Staff Office and which consists of 14 ministers, apart from the National Petrol Agency (ANP), Petrobras and the National Bank of Social and Economic Development. In other words it is not a programme that belongs exclusively to a 'social' ministry (like Agrarian Development, MDA) and whose force is limited, but rather an initiative that involves the Presidency of the Republic. The civil servants have to constantly report directly to President Lula who takes a special interest in the development of the PNPB.

[10] Amongst the companies authorized by the ANP to produce biodiesel, almost a third were set up specifically to produce the fuel. The others are companies that already existed and were active in a variety of segments such as the production of ethanol, vegetable oils, the chemical industry, industrial technology and tires.

[11] The relationship between these different actors (companies, social movements, unions, PETROBRAS, the MDA) has not been formally established yet and there is no guarantee that this

Depending on the region where the company is situated, the obligatory percentage of the production that originates from family farming varies. To obtain the social label in the Northeast (and particularly in the semi-arid areas), and thus be accredited to participate in the auctions that guarantee a demand for their product by PETROBRAS, it is necessary that a company obtains 50 per cent of its feedstock from family farmers. The industries established in the South and Southeast need to prove that 30 per cent of the raw materials used come from family farming. In the North and mid-West the figure is ten per cent.

Meeting these targets does not only guarantee that the product will be bought by PETROBRAS, therefore offering a degree of stability for investment in industrial installations, but also exempts the companies from an important group of taxes. The policy of fiscal incentives not only aims to stimulate the contractual relationship between the companies and the family farmers. It also stimulates the use of feedstock that had previously been rarely used for biodiesel production, such as the castor oil plant (*Ricinus communis*) and palm. These plants are known not only for their energy efficiency but also for their compatibility with productive systems characteristic of family farming.

The guarantee that these percentages were actually met and that, therefore the company effectively earns the social seal, comes from the individual contracts with the producers, signed by the president of the relevant workers union along with the verification of the receipts for the purchase of the raw material. The contract verification is carried out through an annual audit. The validity of the operation depends on each producer having obtained a formal declaration from the trade union that she/he belongs to the category of 'family farmer'.

The contracts agreed between the companies and each farmer contains the following basic clauses:

- The period over which the relationship is established. In the Northern region there are companies that have committed to purchasing the product over various years, in line with the natural cycle of the plants. In the case of palm in the Amazon there are 25 year contracts. For castor oil plants the contracts are two yearly.

- The value to be paid for the product. When this value cannot be stipulated in the contract there is a clause that guarantees the producer a higher price than that usually paid by the market. For example, in the case of soybean in Rio Grande do Sul, the trade union movement made it a condition for the validation of the 2007 contracts that an additional payment of R$1.00 per sack

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arrangement that assures a market for the family farmers will be effective in the long run. This does not impede it from representing a significant institutional advance with strong chances of being consolidated.

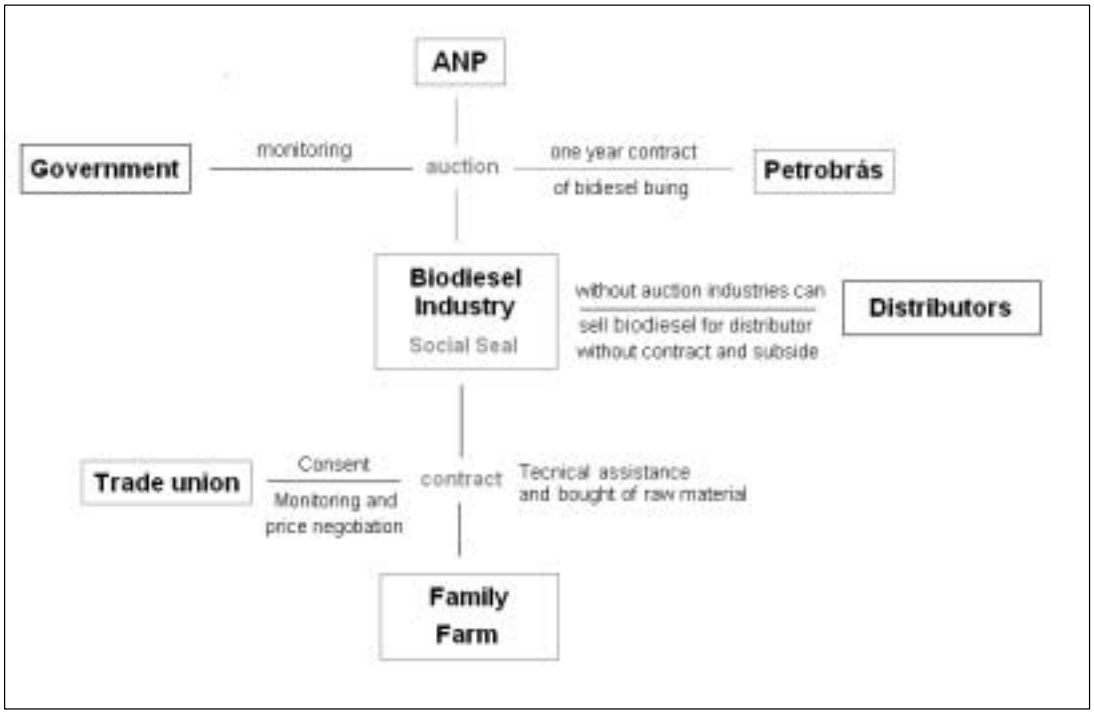
of 60 kilos be made, as well as an improvement in the price paid for castor oil plants in relation to the conventional markets.

- The companies offer technical assistance to the producers. This item may not be important in the cases where well-known products are being cultivated, but it is fundamental when the aim is to introduce new crops. Apart from the technical assistance the company often provides seeds and inputs to the farmers. Today Brasil Ecodiesel, for example, has 210 offices in 436 Brazilian municipalities. The specialists visit each producer four times during the whole process from preparing the soil to harvesting. The company is now investing in the training of 'rural community agents', members of the local society who will be responsible for mediating between the specialists and the farmers for questions that relate not only to agricultural production, but also to issues such as health and other basic services.

- The delivery conditions (humidity, collection place of the crop, transport) also are part of the contract, with the consent of the trade union.

The biodiesel market is formed from a unique conjunction of forces (see figure 3.1). It is not the same type of relationship that the companies that deal with small animals maintain with the farmers in the South of Brazil (Sadia, Perdigão, amongst others). In this case the contracts are public, socially monitored, regulated by the government and subject to negotiations that are not limited to the companies and farmers. The trade unions are not simply organizations that defend the interests of the farmers, but participate actively in the formulation and the execution of the contracts.

Figure 3.1: Agents involved in the National Program for the Production of Biodiesel (PNPB)



Buskens *et al* (2003a:3) study four phases that characterize exchange relations. The 'search and selection of partners, negotiation and contracting; contract execution and performance; and (possibly) conflict regulation'.

Whilst the contracts are standardized, they are nonetheless signed by each individual, or with cooperative organizations. The technical assistance in the beginning is also individualized. Apart from the company and the producer, the manager of the local trade union also signs the contract. Clearly there are considerable expenses and transactional costs incurred by the companies. However they have some important advantages, apart from the exemption from taxes and the purchase guarantee from PETROBRAS. The four phases analyzed by Buskens *et al* (2003) characterizes these well.

The company reduces its costs in the search for partners. The trade union leaders help to organize meetings for the company to set out its objectives and invite farmers to join their production system. The contracts do not need to be negotiated or explained individually, once they are understood and accepted as a consequence of trade union diffusion work. The execution of the contracts is also accompanied by the trade union movement. However there is no data to evaluate their capacity to control the real monitoring of what takes place in the field, especially in terms of the technical assistance.

Today there already are 68.5 thousand signed contracts, of which 13 thousand are from the South of Brazil. The forecast is that by the end of 2008 there will be 225 thousand signed contracts throughout the country, of which 85 thousand in the Northeast, 18 thousand in the Southeast, 27 thousand in the South. In these contracts castor oil plants are the principal crop (61 per cent of the total), followed by soybean (29 per cent), DENDE (four per cent) and sunflower (three per cent). The average area of the planted area is between two and five hectares. Table 3.1 presents the principal crop already planted in each region.

Table 3.1: Castor oil plant is the principal crop of family farming for the production of biodiesel

Region	Planted area				
	soybean	palm	castor oil plant	peanut	sunflower
South	94 %		4%		1%
North		100%			
Northeast		5%	88%		2%
Central-West	39%		46%		15%
Southeast				100%	
Total	**29%**	**4%**	**61%**	**0%**	**3%**

Source: MDA/Selo Combustível Social, 2007.

3.2 The interests of the social actors

The formation of the biodiesel market, with a dimension of social responsibility, is the result of a coalition of interests of three actors; companies and social movements under the coordination of the federal government. Actors that previously were only in positions of conflict found themselves responsible for the formation of a productive arrangement. This unexpected configuration was made possible by the substantial changes in the 'conception of control' (Fligstein, 2001), which guides the action of the three principal agents responsible for the formation of the biodiesel market. Companies began to adopt social responsibility as the nucleus of their business. Social movements changed from contestation to partnership with companies and the government played the role of catalyst between previously antagonistic agents instead of the traditional corporatist practice (Thomas, 1993).

In the 21st century corporate social responsibility (CSR) is no longer an isolated attitude of more advanced companies. According to a survey by the IPEA (2004), almost 70 per cent of private Brazilian companies carry out some sort of social action. However, philanthropy is the principal view that the companies have in terms of their relationship with society. The food distribution and several

programmes of social assistance are what the greatest majority of companies offer to their communities.

The approach of the biodiesel social seal by companies is much closer to that which Porter and Kramer (2006) calls the 'strategic social dimensions of the competitive context'. In this case social responsibility is conceived of as strategic. It aims to increase competitiveness through changes in the social context to explore new business opportunities and increase the productive efficiency. Biodiesel companies try to explore diversification of feedstock suppliers, both a social and economic objective.

Apart from the reduction of the taxes for the companies that buy feedstock from family farmers, the production costs of the family farms are competitive, when compared with big farms. Less use of machinery and chemical inputs, diversification of income sources and principally, the subsidized credit provided by PRONAF, make the family farming production system competitive. Whilst the large buyers of soybean in the mid-West region pre-finance their suppliers with interest at market rates, the family farmers produce the raw material for biodiesel with subsidized interest rates. The incorporation of producers with less capital in the biodiesel market has precisely this objective of a wider supply of raw materials at a low cost.

In addition to this, the Brazilian companies enter into the foreign market with a social label. This could open up greater opportunities of access and cause less risk of opposition. For example, the access of soybean to the European market has been increasingly linked to the adhesion of companies to certifications and policies of environmental and social responsibility. Whilst restricted to the social aspect, the 'Fuel Social Seal' is the only system of certification of biofuels in the international market.

However a further surprise in the formation of this market is the big engagement of social movements. Oriented by different market conceptions and functioning in different ways, the biodiesel market has become one of the prime social movements guidelines.

Brazilian rural trade union movements emerged in the 1960s. In spite of their confrontational character, the organizations of the so called 'official structure' are until now dependent on the state. Trade unions finances are based mainly on obligatory contributions made by all agricultural members and collected by the state. The large reach of PRONAF explains the prestige of trade unions significantly. Over its first three decades of existence the movement was based upon agrarian reform claim and the conquest of rural workers' rights, such as worker's and social security rights. Since the 1980s, the modernization of agriculture, the intense exclusion of the poorest farmers, and the formation of large-scale agro-industries and cooperatives,

has created a new line of struggle directed towards the conflicts with the private sector.

Some of the most important actions of the rural trade union movement took place in the southern region in the 1980s and 1990s with the mobilization of the tobacco farmers against Souza Cruz, the pig and poultry farmers against Sadia and Perdigão, the dairy farmers against Parmalat and the excluded family farmers against the big cooperatives, to cite just a few examples. Nonetheless even in the actions against the private sector, the focus of the trade union activities was always oriented to the state, especially to federal government.

What changes have taken place that caused a sizeable part of the rural trade union movement to work directly in partnership with the large companies that produce biodiesel? The MDA presently coordinates one of the largest financial programmes directed to a specific economic segment in the country. From 1999 to 2006, almost R $32.7 billion (about US $16 billion) was invested in credit for family farmers through PRONAF. In the first ten years of PRONAF, the programme represented the principal source of political legitimacy for the rural trade union movement.

Annually the rural trade unions seek an increase in the resources for, and a reduction in, the interest rates of PRONAF. Improvements in the policy have been made and many are still to be implemented. However, the capacity of rural organizations to promote substantive changes in the public policies and with this, justify their role to their social bases is reaching a limit. The conquest is routine and the role of trade unions in its existence are no longer a basis for its political reputation.

The creation of the 'Fuel Social Label' represents a new source of justification for the rural trade unions. With this power they have unprecedented opportunities to act formally in the mediation between the producers and industry. In this way they can influence the new market organization and act directly in the negotiation of prices paid by the industries to family farmers.

The possibility of offering new opportunities to family farmers to access the market, especially a market with great potential, and the new and unprecedented possibilities of politically strengthening of the rural trade unions are the two hypotheses that explain the trade unions engagement to the programme, especially those affiliated to CONTAG.

However, other segments of the social movements have strong opposition against the Fuel Social Label. FETRAF (Federation of Rural Trade Unions), MST (Landless Movement) and MPA (Small Farmer Movement) reject the model that stimulates the integration between family farmers and large private companies. Recently in Curitiba, FETRAF and Sindipetro (the trade union of Petrobras workers) launched a

manifesto against the seal. These organizations pressured the government to finance cooperative industrial units that could be managed directly by popular groups.

The creation of the 'Fuel Social Label' marks a clear change in the logic of government's actions. The approximation between the companies and the trade union organizations was mediated by the MDA. The MDA did not just formally establish itself through label standardization, but also encouraged the creation of councils to plan the production where both sides are represented.

The Ministry itself has been going through important changes. Previously its field of relationships was limited to the area of public bodies and organizations in the sector. Through establishing closer links with large private companies in the energy sector, the department of the Ministry that coordinates the policy became more preoccupied with the management, the markets and the economic rationality of the policies for which it is responsible.

The federal government has adopted two mechanisms to bring together companies and social movements. The first is the formal mechanism described above, through which the companies need the consent of the trade union organizations for the contracts between the companies and the family farmers. The second mechanism aims to establish long-lasting relationships between the social agents, through the formation of local coordination groups for biodiesel production. The formation of these local groups has the objective to monitor the contracts and targets negotiated by the companies and the trade union representative for the farmers to ensure they are met.

They aim to coordinate the various operations needed to carry out business, encouraging cooperative relationships between the agents involved in the biodiesel production chain. The groups are structured through the creation of Management Working Groups, with the participation of the biodiesel companies, as well as the representatives of the trade union organizations, financial agents, technical assistance companies, research institutions, and cooperatives and in some cases universities, municipalities and other public or private organizations.

The methodology for the creation of the groups is also different from the traditional forms of public policy organization. Traditionally the actors move themselves around strategies to meet specific and unrelated demands. In the biodiesel groups, the organization and its actions are orientated by the targets set in the ANP auctions and in the contracts between the companies and producers. The first step in the creation of the groups was the analysis of the production chains of biodiesel, with the aim of identifying conditions for the production of the feedstock, and the actions that were being implemented by the organizations and local institutions.

Once the critical points had been identified in each region, plans of action are drawn up involving credit policies, technical assistance, training and technological innovation so that the production targets could be met. Furthermore, the working groups monitor the execution of the contracts and verify if the companies or producers meet them or not.

3.3 Some limits

There are three factors that could compromise the innovative elements of the policy.

- There is no evidence that integrated systems of energy and food production are being adopted in a significant way. It is true that in the State of Paraná a milk cooperative system (Sisclaf) in partnership with a credit cooperative (Cresol) is encouraging the integration of milk production with biodiesel, by making use of the leftovers of the sunflower seed (after the oil has been extracted) as animal feed. In the same way, in Abelardo Luz (Santa Catarina), the agrarian reform settlements have integrated systems for the production of sunflowers and fish. The Ecovida Network (present in the South of Brazil) promotes the use of leftover castor oil plant as compost for organic farms. However, currently these examples are not the dominant norm of the technical assistance and of the agricultural practice in the production of biodiesel.

- In the same way as happened in the beginning of PRONAF (Abramovay & Veiga, 1999), there is a risk that only the more prosperous family farmers will manage to take advantage of the opportunities to participate in the markets opened up by biodiesel. In the mid-West, the majority of the supply comes from farmers with land of between 50 to 100 hectares. Currently there is no empirical data to evaluate this question.

- The social label has no environmental guidelines. The introduction of agricultural practices aimed at the integrated production of energy and food could be part of a wider movement for the environmental certification of biodiesel, which could have interesting market repercussions for all the actors involved in the process.

4 Results and conclusions

Research carried out in various countries suggests that the inclusion of small-scale and low income agricultural producers in dynamic markets depends upon very specific institutional arrangements. The role of public subsidies and their capacity to target specific groups is important, especially when the producers are not well organized and have limited influence on the supply chain (Berdegué, Peppelenbos e Biénabe, 2006).

The arrangements stimulated by the PNPB contribute in creating new patterns for the inclusion of low income farmers in dynamic markets. Such conditions are met by three basic political components; a new organizational model, new technical productive standards (by the use of new products) and strategic models of social responsibility on the part of the companies.

The principal organizational innovation is the strength of social links between trade unions, companies and the Ministry. With the companies, there has been the creation of an unprecedented contractual link with the farmers, under open and explicit trade union and government supervision. Here lies an important issue for discussion amongst the social movements. Some segments (Fetraf and part of the MST) do not want to rely on the companies to participate in the PNPB and aim to implement cooperative units managed by the workers themselves.

Union organizations are increasing their power in price negotiation, in contract monitoring and by their participation in shaping the market. This power is not addressed against the companies. Unions are decisive in encouraging family farmers to take part in the market, in the mobilization of the network of suppliers, in the organization of the technical assistance and in the monitoring of the contracts. They contribute substantially to reduce transaction costs of the companies.

In spite of the expectations that biodiesel production would be based on a soybean monoculture, the programme is stimulating the introduction of new products in family farming production. It is important to highlight the participation of EMBRAPA (the Brazilian Agricultural Research Corporation), and also of the companies themselves, in agricultural research that have led to a mapping of the possibilities of new crops in several regions of Brazil. The areas planted with crops for bioenergy, within family farms, are sufficiently small so as not to threaten their characteristic diversity.

However, there is a need for agricultural research specifically to this end which, above all, establishes the formulation and execution of integrated systems for the production of energy and food. Furthermore, the companies have incentives to invest in degraded areas and also those with a low level of agricultural use. Consequently, in contrast to what occurred with the expansion of alcohol

production, there is no indication that the PNPB threatens, even indirectly, forest areas.

The government policy promoted the formation of ‘weak ties’ between the social actors that were on opposing sides. This was made possible through the combination of stimuli that saw the convergence of the companies’ and unions’ views and interests into a common strategy for the formation of the biodiesel market

It is also important that companies benefit from the social inclusion aimed by the policy. In this case, social responsibility relates directly to their economic interests and to the business strategies of the companies, as well as the political interests of the union organizations that participate in the PNPB. These organizations are not strengthened by their generic opposition to agribusiness. They are strengthened by their ability to mobilize their social and political capital to increase member participation in the market and to construct the conditions to consolidate the economic viability of this relation.

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Regoverning Markets

Regoverning Markets is a multi-partner collaborative research programme analysing the growing concentration in the processing and retail sectors of national and regional agrifood systems and its impacts on rural livelihoods and communities in middle- and low-income countries. The aim of the programme is to provide strategic advice and guidance to the public sector, agrifood chain actors, civil society organizations and development agencies on approaches that can anticipate and manage the impacts of the dynamic changes in local and regional markets. The programme is funded by the UK Department for International Development (DFID), the International Development Research Centre (IDRC), ICCO, Cordaid, the Canadian International Development Agency (CIDA), and the US Agency for International Development (USAID).

Innovative Practice

Innovative Practice is a series of case studies from the Regoverning Markets programme providing examples of specific innovation in connecting small-scale producers with dynamic markets at local or regional level. Based on significant fieldwork activities, the studies focus on four drivers of innovation: public policy principles, private business models, collective action strategies by small-scale farmers, and intervention strategies and methods of development agencies. The studies highlight policy lessons and suggest working methods to guide public and private actors.

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