



Sociedade & Natureza

ISSN: 1982-4513

Universidade Federal de Uberlândia, Instituto de Geografia,
Programa de Pós-Graduação em Geografia

Toledo-López, Virginia

When capital loses its green makeup. The impact of biodiesel
production on Santiago del Estero Province, Argentina

Sociedade & Natureza, vol. 32, 2020, pp. 348-361

Universidade Federal de Uberlândia, Instituto de Geografia, Programa de Pós-Graduação em Geografia

DOI: <https://doi.org/10.14393/SN-v32-2020-44208>

Available in: <https://www.redalyc.org/articulo.oa?id=321364988025>

- How to cite
- Complete issue
- More information about this article
- Journal's webpage in redalyc.org

UABM 

Scientific Information System Redalyc

Network of Scientific Journals from Latin America and the Caribbean, Spain and
Portugal

Project academic non-profit, developed under the open access initiative

When capital loses its green makeup. The impact of biodiesel production on Santiago del Estero Province, Argentina

*Virginia Toledo-López*¹

Keywords:

Agrofuel
Agribusiness
Corporate social responsibility
Environmental conflict

Abstract

The article analyses the environmental management of biodiesel production in Santiago del Estero Province, Argentina, focusing on the treatment of effluents. Therefore, using a qualitative methodology, this article studies the main actors' repertoires concerning their territorial strategies. The production of biodiesel is considered a reaffirmation of the agribusiness expansion in the area and its environmental impact as forms of dispossession of the inhabitants. The study shows that the practices of hegemonic actors are associated with a non-preventive and standard approach to environmental issues, even when they use the ecological modernization frame through the Corporate Social Responsibility. Finally, it reflects on a positive effect of environmental conflicts in the territory.

¹ Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Instituto de Estudios para el Desarrollo Social, Universidad Nacional de Santiago del Estero (UNSE)-Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina. vtoledolopez@gmail.com

INTRODUCTION

Biodiesel production has increased dramatically in recent times in Argentina, placing the country as the main exporter and the third largest producer in the world by 2010. Europe, especially Germany, followed closely by the United States, Argentina and Brazil lead the world's biodiesel market. On the other hand, Argentina and Indonesia are the main exporters, with the United States and the European Union as the main importers (OCDE-FAO, 2017).

In Argentina, biodiesel production based on soy increased from about 711,864 in 2008 to about 2,584,290 tons in 2014, and 40% of which is for the local market, created by national law since 2010 (INDEC, 2016). In 2006, the Biofuels Law 26,093 created a legal framework for enterprises and a market for their consumption at the national level since 2010. In the agricultural sector, almost 80% of soy is used for oil production in the country, and 30% of it is for biodiesel production. Moreover, 60% of the national biodiesel is for the world market (as the 65% of soy oil). According to official data from the Economy Ministry (2017), soy production in the country in 2016 was 58 million tons, obtained from 20 million hectares.

The growth of biodiesel at the beginning of the twenty-first century is a response to the global boost of alternative fuels, in a time of high oil prices in world markets, especially between 2003 and 2008, as well as projected deficits; within the goals of reducing greenhouse gas (GHG) emissions, and in agribusiness expansion in the country since the mid-nineties (TOLEDO-LÓPEZ, 2013; 2017a; 2018). The so-called "biofuels" were promoted as renewable energy from sectors of the national and transnational business community through the mass media, in the political sphere in government plans, programs and projects. The national academic system has highlighted its renewable status, the reduction of GHG, its potential to deploy value chains and promote regional development (HILBERT et. al., 2012; ROZEMBERG et. al., 2009; CARRIZO et. al., 2009; SCHEINKERMAN DE OBSCHATKO; BEGENISIC, 2006), warning, in some cases, about other possible environmental and food security impacts as well as energy and food sovereignty (TOLEDO-LÓPEZ, 2016ab; 2018).

Agro-energy production has been highly questioned for its environmental effect worldwide. From a socioecological perspective, some topics around agrofuel have been

questioned, e. g.: its global energy balance, land competition with food production and the impact of monocrops (raw material for agrofuels). In this framework, I recover the contribution of whom highlight their negative energy balance (PIMENTEL; PATZEK, 2005), the emission of greenhouse gases (REYES, 2007; PANICHELLI, 2006), the land use competence (SMOLKER et al., 2008) and effects on agrifood systems (RUNGE; SENAUER, 2007; BORRAS et al., 2010), among others. The present work is part of this discussion, wondering about the impact and effect at the local level.

The research focuses on the conflicts related to environmental management in case of biodiesel production in Santiago del Estero, especially concerning the effluent disposal implemented from 2009 to 2012, when fieldwork was carried out. In other works, I have studied in depth the accumulation strategy of the business group responsible for the project (TOLEDO-LÓPEZ, 2017b) and in the symbolic dimension of this territorialization process (TOLEDO-LÓPEZ, 2016a). This article explores the environmental conflict around the venture to go in-depth in the analysis of the accumulation mechanisms that are at stake, as well as to make visible the limits of Corporate Social Responsibility (CSR). Following Azuela and Mussetta (2008), I take a sociological approach to the environmental issue, trying to see conflicts as part of a social order formation and transformation process, instead of anomalies that should be avoided. In turn, it is an invitation to reflect on the "productivity of the conflict" (MERLINSKY, 2013), in the sense of understanding its effect and positive results.

I used a qualitative methodology to examine the testimonies of different actors linked to the biodiesel project. Thirty semi-structured interviews were carried out with public officials and political personalities from the national, provincial and local governments, members of the business group, inhabitants of Frías city (Santiago del Estero, Arg.) bordering the Industrial Park where the company was set up, authorities of educational institutions, and the staff of the company, including ex-employees. Individuals were selected using the snowball sampling Goodman's (1961) non-random technique, considering key informant indications, and up to the theoretical saturation level. Those primary sources were supplemented with secondary sources, especially media articles, presidential speeches and audiovisual material available on the Internet, and tours and observations on the factory and its surrounding

area. As a result, the "general corpus" of information was established, which was analyzed to identify what was appropriate and relevant to the research issue. The systematization and organization of this material allowed the generation of the "corpus of analysis" (REGUILLO, 1998) so that the interpretation and discourse analysis stage begun (ÍNIGUEZ-RUEDA, 2006). Finally, a "narrative-historical scheme" was structured through an analytical-argumentative approach, which integrated the theoretical framework of the research, looking for the interaction between socio-cultural, political and economic dimensions (SAUTÚ et al., 2005).

BIODIESEL PRODUCTION IN FRIAS AS A REAFFIRMATION OF THE PROCESS OF EXPANSION OF AGRIBUSINESS IN SANTIAGO DEL ESTERO'S PROVINCE (ARG.).

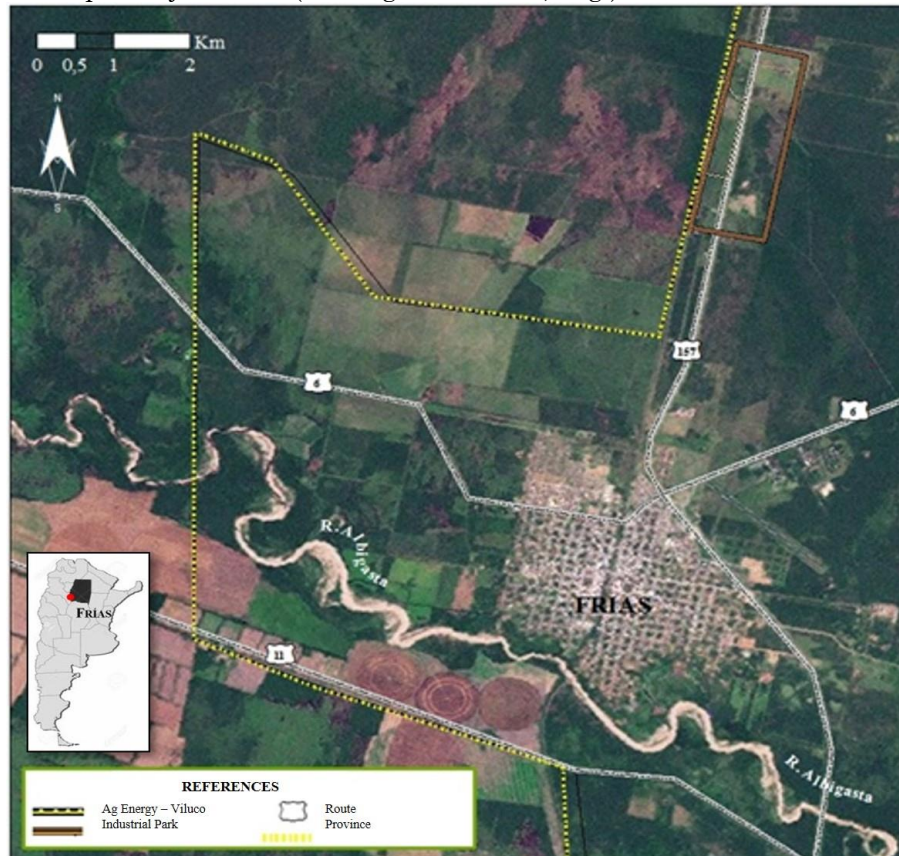
An Agreement of commitment was announced and signed in 2006 between the Zamora's government in Santiago del Estero's province and a business group from Tucumán Province (TOLEDO-LÓPEZ, 2018). The plan was to deploy a huge business venture of biodiesel, in line with one of the main objectives of the provincial administration: strengthening the added value to the region's raw materials, as was set out in the Industrial Promotion Provincial Law, 6.750. The Act establishes a system of industrial promotion and development with the objective of encouraging new industries to come as well as expanding the existing ones in the Article 2, based on "the rational use of the province's resources and raw materials". Article 3 sets conditions for access to the promotional system, the fulfilment of any of the following conditions: the use of raw material from the province, the imports substitution, the exports increase, the multiplier effect in the economy of the province, the observance of international quality standards, among others. It is required that in all cases the project tends "to preserve living conditions and avoid environmental pollution,

according to the regulations". the benefits to which the biodiesel agribusiness gained access, are: return of the investment up to thirty percent (30%), compensation of up to 50% or credit for the payment of future taxes for infrastructure such as roads, energy distribution networks, water supply, sanitation and other public infrastructure, free of existing or to be created provincial taxes for ten years, among others.

To define the factory location, the priority for the business group was to place the mill at the southern corner of a raw material detection zone, this is the genetically modified (GM) crop in the Northwest of Argentina, an area where agribusiness is expanding. Besides, regarding the business strategy, the following decision making factors are highlighted: a) strategic location of the city, which is an intermediate point in the flow of grains from the farming areas to the ports; b) accessibility both by National route and by train; c) energy availability such as gas and electricity networks; and d) water availability since the city has an underground reservoir; from which the company is supplied, and a drinking water supply network, besides being an area characterized by scarcity; e) qualified Human Resources: the city, which is an important urban center in the area, has two technical schools (TOLEDO-LÓPEZ, 2017b).

Meanwhile, the business project was received with enthusiasm by the local government, which saw in it the potential to achieve goals aimed at accumulation at the political level. The local administration made the project viable, in association with the provincial administration. The creation of an Industrial Park, according to the company's requests, was the key evidence of this collaboration. The biodiesel project made the concretion of the desired Industrial Area for Frías possible, quickly settling the differences between the initial Municipal proposal and the requirements of the business group. Thus, the public officials' actions added to the economic capital reproduction strategy of the business group, while the company's proposal strengthens the strategy of the government agents in the political field. Map 1 shows the location of the company in the Industrial Park.

Map 1 City of Frías (Santiago del Estero, Arg.) and Industrial Park.



Source: Own elaboration based on Google Earth.

ECOLOGICAL MODERNIZATION AS MAKEUP FOR A STANDARD MANAGEMENT

The ecological modernization approach (HAJER, 1995) shaped the government speech, around which the environmental discourse of development was organized regarding the biodiesel factory installation in Santiago del Estero (TOLEDO-LÓPEZ, 2016b). At first, this was obvious on a speech given by President Cristina Fernández de Kirchner at the factory opening, which highlighted the promotion of fossil fuel alternatives as one of the main contributions of the project, also relating the local event to the international negotiations on climate change and (re) placing the environmental axis with which agrofuels have been promoted at national and international level (PRESIDENCY, 2009). She said: "So, believe me, I may not be in Copenhagen, but I'm helping to generate fossil fuel alternatives as well". On the other hand, the provincial and local authorities have stressed that "it is a serious company (...) it counts on specialists in the environment, they want to do things right". Summarizing, the government statements that account for the group's

environmental responsibility, highlight three points:

(1) Has a precedent in implementing a Clean Development Mechanism (CDM) project under the Kyoto Protocol because it has been the first citrus grower in the world to deploy the CDM to recover biogas from industrial effluents (which is then used in boilers as thermal energy). This prevents the release of methane into the atmosphere and reduces fossil fuel consumption, thus reducing GHG emissions. The treated water is then used to irrigate the company's own farms, and the organic solid waste from industrial plants,

(2) Some CSR certificates and awards that the group has received: the "XIX International Food and Drink Award" in 1996 in Spain. In 2006, La Nación and Galicia awarded two prizes to Vicente Lucci for "Business Excellence", gold and silver (gold for Best Fruit Grower). In 2008 the businessman was also selected among the 100 leading personalities and organizations of the decade to receive the Konex Award "Diploma of Merit for Rural Business". Also, agribusiness corporations distinguished the group, such as Dow in 2007 and Coca Cola in 2008. In 2005 and 2010, the American Chamber of Commerce in Argentina (AMCHAM) gave the group, and

particularly to the Foundation, the "Corporate Citizenship" awards related to health and environmental performance. In environmental matters, the 2011 Mercosur Award for the "Methodology of calculation for the measurement of GHG emissions in an integrated plant of regional biodiesel production" and in 2012 the World Juice Awards granted to Citrusvil in recognition of the Effluent Treatment Plant with biogas capture and valorisation, for the production of thermal energy.

(3) The company has carried out GHG emissions monitoring of biodiesel in coordination with the Instituto Nacional de Tecnología Agropecuaria (INTA), from primary production to final disposal of the product. In the case of Frías (Santiago del Estero, Arg.), the savings exceed 70%, well above the requirements of 35% of the European market (Directive 2009/28/EC). The calculation was based on company data, including production in own fields, logistics, storage, industrial process and transport to Europe. In this regard, it is noted that the study set at the beginning of 2008 as the base year for land use changes, remaining outside the areas deforested during the soybean frontier expansion process started in the late nineties in the province. Furthermore, the amount of soya supplied by its own, which was considered in this report, is only enough to cover 10% of the biodiesel plant soya bean needs (HILBERT; GALBUSERA, 2011).

Hence, based on these three elements: participation in the CDM, green economy certifications and environmental corporate responsibility, has built government confidence in business environmental management, understood in the sense of the dominant ecological modernization discourse (HAJER, 1995). Meanwhile, the mega-company presents itself with the motto "growing responsibly", highlighting that the "commitment to quality and the environment is sustained through our management system" (GRUPO-LUCI, 2013: 19). Business management promises tasks of control and "permanent supervision" (ibid), in line with ecological modernization, which is characterized by the prevalence of preventive actions and a positive approach to environmental issues (HAJER, 1995). However, the first production of fuel was in June 2010 (to supply the national quota through the oil companies Refinor, Shell and YPF) without an environmental treatment of the effluents. Complaints by local people about the death of animals raised doubts about the safety of these liquids.

The company had acquired the Crown technology from the United States, which was promoted as "zero effluent", an argument used to justify the delay in the consideration of the disposal of liquid waste from the industrial process. However, some experts advise that "most of the companies that build biodiesel manufacturing plants ensure 'zero' effluent, which is a utopia. All biodiesel factories generate liquid effluents, which must be treated appropriately to be dumped into the recipients and comply with the dumping parameters" (BELLOSO, 2011: s/n). Based on the technology bought by the company, the Environmental Impact Study (EIS) initially authorized not considered these wastes of the production process: "when they present the Environmental Impact Evaluation it was approved and later, when it started to work, we saw that there were effluents". In turn, the Ombudsman answered about the lack of prevention regarding the effluents:

They say that is the methodology. I also asked the same question: why don't you anticipate these things at first? I have been told that it is impossible to foresee these things, that as soon as the huge work of a company of this size begins, the company has to start working and see how it is going to deal with it when all the other environmental tasks have started. I also asked them the same question and they told me exactly the same thing: we foresee after the company has first started operations. And that is how it was, in fact.

The mention of the "size" of the company also confirms the special consideration that the company had when it was establishing itself in Frías, which would justify, in terms of the government agents, that they "foresee after". The oxymoron summarized in the statement "we foresee after" is widely distanced from the precepts of ecological modernization (HAJER, 1995). Confidence in the company was crucial when dealing with environmental problems associated with the production of biodiesel, as the following quotes show:

It's a big group that is working (...) I mean, you make them see the problem and they try to solve it. In this sense you see the responsibility (...) And so they in Tucumán sell carbon credits (...) and are ISO 14000 certified. And here too the idea is to get ISO 14000 certified, which a very strict

environmental quality standard (official of the Provincial Directorate of the Environment, March 2012).

They do not want to have problems with the environment. So in that aspect, we are very confident (...) They analyze permanently... to ensure that those materials that come with the water do not produce anything to animals or humans, because it is a serious company, as I said before (interview with the Ombudsman of the city of Frías, March 2012).

Therefore, actual practices of the hegemonic actors seemed to be associated with the standard approach to environmental problems, with a predominance of "after the fact" actions (HARVEY, 1996), which is far from the expected prevention practices based on the dominant ecological modernization discourse. Consequently, the business group was the actual guarantor of the environmental management of the project that they promote based on the promises of prevention and of a scientific-technical focus to address the problems, using the ecological modernization approach as a tool to improve their accumulation. As a result, the economic capital of the company became a political and symbolic capital, reducing to a minimum the warnings given by the inhabitants of the area and the importance of the environmental problem. It is possible to return to Bourdieu's reflection in which the economic capital (defined by the amount of resources held concerning a system of economic relations) is an "instrument of appropriation of the institutional facilities and of the required mechanisms for the running of this field and, at the same time, of the benefits it provides" (BOURDIEU, 2011: 52). At this point, it is also necessary to understand the business action within its accumulation strategy. So, the priority is always to make a profit, switching between cost reduction or the ecological modernization via "green" capitalism. On the other hand, this action allows environmental impacts and liabilities get unnoticed in the absence of a social conflict that makes them visible.

WATER POLLUTION AND DISPOSSESSION OF LIVING SPACES OF THE LOCAL POPULATION

To generate biodiesel, alcohol and a catalyst are

mixed with the oil, resulting in a chemical reaction known as transesterification, from which biodiesel and glycerin are obtained. The alcohols that can be used are "methanol, ethanol, propanol, butanol and amyl alcohol. Methanol (CH₃OH) and ethanol (C₂H₅OH) that are the most frequently used due mainly to their low cost and adequate properties" (SORICHETTI; ROMANO, 2012: 6). Sorichetti and Romano (ibid.) stated that "methanol is chosen over ethanol, despite its high toxicity, because the production process requires simpler technology, the investment to recover the excess is low cost and high reaction rates are achieved" (Ibid.).

The factory uses methanol as an alcohol and caustic soda or sodium hydroxide (NaOH) as a catalyst. The purification process is then initiated to remove contaminants (catalyst residues and methanol) from the reaction products. A large amount of water is used in this stage, so an efficient use and implementation of techniques for its recovery is essential. Water waste for large plants has been estimated at 35%, concerning the amount of biofuel to be purified (SORICHETTI; ROMANO, 2012: 3). In the case study, according to data provided on the company website (recovered in July 2017) "wastewater with a high organic load" is projected at 600 m³/day. As a recent study on the subject states, "in this stage, which consists of successive washing with water, large volumes of wastewater are generated, which would cause severe environmental damage if they were returned to the environment without prior treatment" (ROJO-CHOYA, 2015: 7). A report published by the Economic Commission for Latin America and the Caribbean (ECLAC) states that "the main environmental problems associated with the production of vegetable oils are the generation of solid waste with a high Biochemical Oxygen Demand (BOD) and the presence of bad smell" (GÓMEZ-GARCÍA et al., 2008: 20). According to the authors, "marginal emissions of methanol may occur through venting and sulphur oxide". In the case studied, bad smell was also reported.

Concerning discharges into water sources, the production of agro-diesel is a process that generates oily and soapy water, depending on the efficiency of the oil separator (MARTICORENA et al., 2010). When liquid waste contains a lot of organic matter, levels of dissolved oxygen decrease, and this affects fish and other aquatic organisms negatively. Also, the pH and methanol content of these effluents should be controlled due to the environmental risk of water pollution.

As the work of Rojo-Choya (2015) shows, the effluents from biodiesel production carry the pollutants contained in the mixture of methyl esters (mainly fats, oils, catalyst, salts, soaps, glycerol and methanol traces), with a high level of contamination. Sorichetti and Romano (2012) also state that biodiesel production effluents involve a contamination risk to the environment as the wash water contains a variable amount of alcohol and catalyst. Thus, in the words of the specialists "it involves serious environmental risks due to the contamination of the underground water sources, the water currents and the drainage systems (in urbanized areas)" (SORICHETTI; ROMANO, 2012: 8). Consequently, poor treatment of the biodiesel effluents implies serious environmental problems, which can derive in disputes for the access and use of the common goods, increasing the territorial conflict.

In the case study, when fuel production began, effluents were discharged through pre-existing channels that served as flood control for a nearby river:

A permanent channel made because there is an old river that comes from an area of Catamarca and it is in channel (...) because we had a huge flood in the city, so that channel is a way that in that case, if there is a flood again, it will derive the water that goes out to the side of the city and prevents it from coming into the city. [With the issue of the effluent] then it was opened, and we cleaned it (...) (interview with the Provincial Environment Director, March 2012).

Map 2 shows the Frías Industrial Park and the location of the open-air canals. It also shows the areas where the photographic records were taken.

Concerning the content of these effluents, again it is evident the state authorities "confidence" to the company's management. From the municipality office, it was said:

The factory started processing and discharges 18,000 liters of boiler water into the canal, which is then thrown away with products from the washing process. In all, what is the product of the process wash? Oil, some soy oil, which is biodegradable, and traces of flour, in other words, if the

company dumps too much of it, it is losing money. Since that is an organic product and the protein has the same smell as rotten meat, when the protein gets wet, it decomposes and has that smell (interview with the Secretary of Production of the Municipality of Frías, March 2012).

The Secretary of Production's argument focusses on the "logical" association that, since the fuel is based on biomass, the waste "should be" safe, without taking into account the industrial process through which the biodiesel is obtained and the evidence regarding its contamination, as well as the complaints of the inhabitants about the animals dead from drinking the water from the open channel.

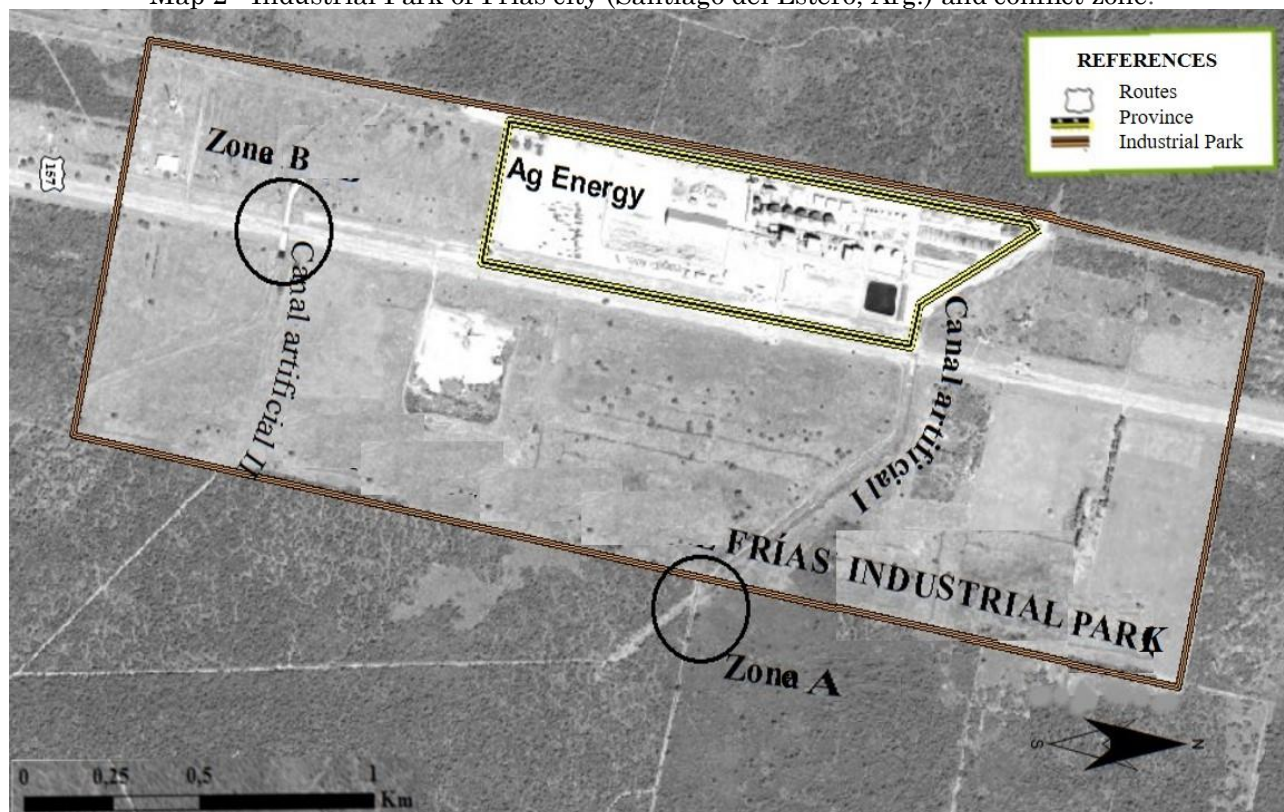
The first formal environmental claims were made in early 2011 and the way chosen to channel them was the presentation to the Ombudsman of the city of Frías to mediate with the company. It should be noted that when he was asked about the process that had been launched, the Ombudsman began his story by warning that

A company that has \$100 million in investment is almost sure to have a little problem. However, we are happy for what it is giving to the city of Frías, as a big company (...) it is a pride for Santiago del Estero and it is a pride for the city of Frías (interview with the Ombudsman of the city of Frías, March 2012).

After reaffirming his perception of the company relevance and justifying a moderate reaction to the problems that had arisen, based on the characteristics of the enterprise (size of the factory and amount of the investment), he described how the claims came from a group of people "from around the city of Frías" and that they were

Mostly about the effluents that the company sends through (...) a channel. These effluents began to make some paths, more or less 10 km long, and there began to be a bad smell, some flies, a yellow color (interview with the Ombudsman of the city of Frías, March 2012).

Map 2 - Industrial Park of Frías city (Santiago del Estero, Arg.) and conflict zone.



Source: Own elaboration based on Google Earth satellite image, 2010.

As soon as the complaint was filed, the Ombudsman went to the place to verify and initiate the procedures stipulated in the protocol. According to the government representative, the action performed consisted of following the stipulated procedures "so that the Ombudsman's Office is covered itself in terms of its work". Thus, the tasks carried out were:

We arrived in the area, we took pictures and began to make the corresponding reports. Once we have done our job (...) we have started to dialogue with the company so that this type of situation does not continue in the future. So much so that through notes that we sent, and their visit, they gave us a corresponding report [on] what they are doing in the future. So, they are working in the plant in the pools so that these effluents do not come out as they are today (interview with the Ombudsman of the city of Frías, March 2012).

Once the conflict had been deployed in the public arena and the claim had been channeled through formal procedures, the company signed a "Clean Production Agreement" with the authorities of the Province of Santiago del Estero, with the aim of "the progressive and

constant adaptation to the environmental regulations in force and the promotion and implementation of Good Environmental Management Practices".

As part of the Agreement, the Company promised to build an Effluent Treatment Plant, in three stages. For this purpose, on June 14th, 2011, the Inter-American Investment Corporation (IIC) approved a two-part Loan of up to \$40 million to Viluco S.A. In exchange, the company agreed to develop an Environmental Management Plan (EMP) to comply with domestic regulations and the IIC's environmental and labor health and safety standards.

When the fieldwork was done (on 2012), stage 1 was already in operation (performing a primary separation), and stages 2 and 3 were under construction. The public officials emphasized in their reports the business' compliance with the agreed schedule, as a way of preserving the prestige and image of the company, and thus defending the expectations (of development) around the project:

They're working at the factory in the pools so that those effluents don't exit as they are today. Just make sure it's clean water. That would be the end of our struggle: so that

there is no pollution in the city, and even less in the area. They delivered a technical report (of) which tasks are going to be done in the first year, which is the one to be done in the second year and which in the third year (...).

They are constantly reporting to me what they are doing. I was invited twice to the plant, I saw the work they are doing and they are very advanced. And it is a serious company, so far they have shown me honesty in their actions and that they will end this type of environmental pollution in the future" (interview with the Ombudsman of the city of Frías, March 2012).

Nevertheless, even though the Ombudsman marks compliance with agreement as the full

stop of the existing environmental dispute over the effluents and smells, this resolution did not satisfy the will of some neighbours who wanted their territoriality no longer to be affected. For those affected, the problem continues because even when the construction of the treatment-pools is ongoing, the company keeps dumping effluents without treatment. This resulted in an increase in conflict in some cases, as the Figure 1 illustrates, took from the "zone A" area in Map 2. In this case, given that the authorities did not give a proper response and that they "stopped being friends" with the company after their repeated claims, a neighbor chose to build a dam on the side of the fence on his property, thus preventing the entry of the effluents from the biodiesel factory.

Figure 1: Conflict with a neighbour



Source: Source: personal file, March 2012.

The Figure 1 shows the stagnant effluent due to the enclosure created by the neighbor next to the wire fence (whose farm was crossed by the open channel.), and at the upper left there is the shape of the biodiesel factory on the horizon. Facing this action, the authorities took measures to reverse the situation, to the disadvantage of the affected:

You know, sometimes we have problems and the channels get blocked. I had to make a presentation in the Court, I got the channels opened again so that the water would run, because we take the channel as a public channel that needs somehow (...) to run every kind of water, whether it is from the rain or in this case from the effluent. And in the future, there is talk that this is going to be ducted ... and that's where we end up... but, it has its time, we are sympathetic, the company is working on it. That's all right (interview with the Ombudsman of the city of Frías, March 2012).

Given these events, public officials once again emphasize the type of investment, the employment created and the social capital of the company:

These companies have certainly generated a bit more movement (...) It is a very large amount that they are going to invest, millions of dollars, in the treatment of this type of water (...) that is what gives me pride for the city of Frías. It is not a ghost company that came to make money. No, it is a company that came to build, to work, to give opportunities to the people and that they earn money (...). This is a serious company (...) This is a leading company" (interview with the Ombudsman of the city of Frías, March 2012).

Therefore, people are asked to be tolerant when their traditional use of space is affected, because of a higher goal ("development") promoted by the "leading company". However, the importance of this social "supervision" is recognized at the same time that public opinion becomes relative, stating that it is necessary to "explain" the reason for the damage generated, taking their criticism to resolve according to "what is possible":

Many of the claims are baseless, but they need to be checked. And you have to meet the people as well. (...) If you explain to them how it is, what is happening... they

accept it, or not, but they accept it by speaking if you explain it well, they accept it, that is, you have to show them. And, I tell you again, many of the problems are not reported because people do not know about them, and when they begin to know about them, they report it and it can be solved partially (interview with the Director General of the Environment, Secretariat of Water of the Government of the Province of Santiago del Estero, March 2012).

This idea of what is possible and what is desirable, and that it is essential to "sacrifice" environmental goals for the sake of "development", is a statement repeated in the speeches of the officials interviewed. In this way, they are not searching to reverse the damages, on the contrary, they assume the *status quo*, to arrive at the "lesser evil". In the words of the General Director of the Province Environment:

You can't say no to fossil fuels. You have to keep going, but always in search (...) However, diesel production helps to minimize, or decrease, the consumption of fossil fuels.

In that logic, the contaminants associated with biodiesel production are a "lesser evil" concerning both fossil fuel use and the gains from industrialization. So, pollution is assumed to be the greatest cost that must be paid in pursuit of work and development. For example, the person in charge of the Environment Office stated:

Personally, I'd prefer soybeans were made into food, not diesel, but still, that's personal, isn't it? And well, for me anything that goes to the processing of raw material is the best. I mean, the worst thing we can do is to sell the raw material without processing it at all (...) The only problem is, always, well, you're going to face the pollution problem, which we have to minimize. But it is always better to sell the products and not the raw material" (Ibid.)

The official's testimony reveals a perspective in which the environmental issue is in opposition to industrialization and employment. This statement linearly assumes the path towards development, raising that it is only possible to choose between a limited number of options, and in this framework to take "engagement solutions" that express the "lesser evil", even if it

is perceived that other/new experiences would be "preferable". On the other hand, it also shows that despite the (new) standards that regulate the economic activity, the nature-society relation continues to arise for some government agents in terms of productivity and under a paradigm in which the goals of the economy and ecology are opposed.

In response to the complaints, the company deployed different strategies, making use of the State Agencies support (indirect domination mechanisms) and also using direct domination mechanisms in those cases where the indirect ones did not work. Those mechanisms consist, according to Bourdieu (2011: 43), of "personal dependence relationships", "based on material things dependence". The testimony of a neighbor collected during the fieldwork shows these practices. She pointed out that since the plant had been in operation, some of her animals died drinking water from the canal, apart from feeling discomfort due to the disgusting smell coming from the company. However, she decided not to formally complain because "one of the factory owners appeared" to tell her that she was "allowed" to visit the factory whenever she wanted and to "request food for her animals" while giving its soy discards as a gift. So, this neighbor, grateful for this action of the businesswoman, decided not to spoil this relationship, while accepting at the same time, the social distances and hierarchies. At this point, it is necessary to remember the warning about the logic of the practices that Bourdieu (2011: 69) made, which states that in some cases "the way of giving is more important than what is actually given", by reinforcing the force relations through a "generous behavior".

FINAL CONSIDERATIONS

Biodiesel production in the province of Santiago del Estero is understood as contributing to agribusiness expansion in the region, being this agro-industry a way of transgenic soy produced in the NOA reaffirmation, through the "added value". The case shows the deployment of a territoriality that involves the company's functional use of space, based on a hierarchical position defined by its economic capital, which became a social, symbolic and political capital. This process involves a conflictive situation, which fundamental aspects are linked to the intrusion of an agent whose use of space conflicts with the uses (and meanings) that local people

have. Thus, it is an example of the existing contradictions between the economic space of agribusiness and the living space of the local population, and its development shows the remarkable predominance of the logic of the business. Thus, the case exemplifies how disputes over the environmental use reveal the power relations that define the resource distribution, which implies for some, the capacity to decide on its use and, for others, the exclusion of its availability and enjoyment.

On the other hand, the conflict shows neglected dimensions during the installation process, despite the prevailing discourse on corporate social and environmental responsibility. The study showed how the actions of both the company and the government agents' distance from the prevention practices that would have been expected in line with the discourse of ecological modernization. In particular, in the dispute over effluents, the pollutants related to biodiesel production were seen as a "lesser evil" and contamination was considered as the great cost to be paid for the sake of work and development.

The analysis of Frías' case shows that business action gives priority to profit over any other social, environmental, or cultural goal, taking care of these as long as it is required to reproduce accumulation (incorporating tools of ecological modernization via green capitalism or reorganizing costs, employment, and investments). On the other hand, the social and symbolic capital of the business group allowed it to "make up" its actions, minimizing the environmental requirements and the importance of the problems that had occurred. Nevertheless, the role of public officials as facilitators is highlighted, maintaining an "understanding" attitude towards the times and the will of the company, while social complaints were dissuaded (especially those with the potential to disrupt the narrative built around the company). Thus, despite the dominant discourse of ecological modernization, the practices of the hegemonic actors continue to be related to a non-preventive and standard approach to environmental management, with environmental care of the commons being subsidiary to capital accumulation.

Finally, the case study reveals the productivity of the public dispute, as it implies measures to improve environmental management, observing the production processes to reduce environmental impacts. The environmental dispute challenged the status quo, asking for new scenarios, showing the need

to review existing practices for the sake of socio-environmental welfare. Moreover, the conflict also enables an open exercise of social reflection, around discourses that seem to be closed and linear.

ACKNOWLEDGMENTS

This research was possible thanks to the doctoral scholarship granted by CONICET and the cooperation of the inhabitants of the province of Santiago del Estero, Arg.

REFERENCES

- ARGENTINA, **Ley 26093**, disponible en <<http://www.infoleg.gov.ar/infolegInternet/>> Acceso 20 de enero de 2020.
- AZUELA, A.; MUSSETTA, P. Algo más que el ambiente. Conflictos sociales en tres áreas naturales protegidas de México, **Segunda Época** 1, v. 16, 2005, p. 191-206.
- BELLOSO, C. **Tratamiento de efluentes líquidos en la industria del Biodiesel**, Ponencia presentada en el Encuentro para la Industria del Biodiesel, Centro de Ingenieros de Rosario y la Asociación de Ingenieros Químicos de Rosario, 2 y 3 noviembre de 2011, Rosario, Arg.
- BORRAS J. R., SATURNINO M.; MCMICHAEL, P.; SCOONES, I. The politics of biofuels, land and agrarian change: editors' introduction. **The Journal of peasant studies**, 2010, v. 37, n 4, p. 575-592.
- BOURDIEU, P. **Las estrategias de la reproducción social**, Siglo XXI, Bs As., 2011.
- CARRIZO, S. C., GUIBERT, M.; BERDOLINI, J. **Actores y mercados de los biocombustibles argentinos**: entre incertidumbre y diversificación. Ponencia presentada en el 12do encuentro de Geógrafos de América Latina – EGAL, 03 al 07 de abril de 2009, Montevideo, Uruguay.
- CII - Corporación Interamericana de Inversiones, **Documento del Directorio Ejecutivo**. Acta de la reunión del 14 de junio de 2011 aprobada el 3 de agosto de 2011. Disponible en <<http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=36326603>>, Acceso el 1 de abril de 2015.
- ECONOMY MINISTRY, **Informes cadenas de valor**, 2017. Disponibles en <https://www.economia.gob.ar/peconomica/docs/2017/SSPMicro_Cadena_de_Valor_Oleaginosa.pdf>, Acceso 20 de enero de 2020.
- GIARRACCA N.; TEUBAL, M. (Comp.) **Actividades extractivas en expansión ¿Reprimerización de la economía argentina?**, Antropofagia, Bs. As.: 2013.
- GÓMEZ GARCÍA, J.; SAMANIEGO, J. L.; ANTONISSEN, M. **Consideraciones ambientales en torno a los biocombustibles líquidos**, CEPAL (Serie Medio Ambiente y Desarrollo) 137, 2008.
- GOODMAN, L. A. **Snowball sampling**. The annals of mathematical statistics, 1961, p. 148-170.
- GUTIÉRREZ, A. **Las prácticas sociales: una introducción a Pierre Bourdieu**, Ferreyra Editor, Córdoba, 2005.
- GRUPO-LUCCI, **Memoria de Sustentabilidad**, 2013, Disponible en: <<https://docplayer.es/15245118-Grupo-lucci-memoria-de-sustentabilidad-2013-seccion-inicial.html>> Acceso el 20 de enero de 2020.
- HAJER, M. **The politics of environmental discourse**, Clarendon Press, Oxford, 1995.
- HARVEY, D. **Justice, nature, and the geography of difference**, Blackwell, Oxford, 1996.
- HILBERT, J.; SBARRA R. LÓPEZAMORÓS, M. **Producción de biodiesel a partir de aceite de soja**. Contexto y Evolución Reciente, Ediciones INTA, 2012.
- _____; GALBUSERA, S. **Análisis de emisiones**. Producción de biodiesel – Ag Energy, Documento INTA, 2011, Disponible en: <<http://inta.gob.ar/documentos/analisis-de-emisiones-produccion-de-biodiesel-2013-ag-energy/>> Acceso el 1 de marzo de 2014.
- ÍNIGUEZ-RUEDA, L. **Análisis del discurso**: manual para las ciencias sociales. Universitat Oberta de Catalunya, Barcelona, 2006.
- INDEC - Instituto Nacional de Estadísticas y Censos, Arg., **Biocombustibles**. Primer trimestre de 2016, 2016; Disponible en: <http://www.indec.gov.ar/uploads/informesdeprensa/biocombustibles_05_16.pdf> Acceso el 1 de mayo de 2017.
- MARTICORENA, A. A., MANDAGARÁN, B. A.; CAMPANELLA, A. **Análisis del Impacto Ambiental de la Recuperación de Metanol en la Producción de Biodiesel usando el Algoritmo de Reducción de Desechos WAR**, **Información Tecnológica** 1, v. 21, 2010.
- MERLINSKY, M. G., (Comp.) **Cartografías del conflicto ambiental en Argentina (I)**, CICCUS-CLACSO, CABA, 2013.
- OCDE/FAO: **Perspectivas Agrícolas 2017-2026**, OECD Publishing, París; 2017. DOI:

- http://dx.doi.org/10.1787/agr_outlook-2017-13-es
- PANICHELLI, L., **Análisis de Ciclo de Vida (ACV) de la producción de biodiesel (B100) en Argentina**. Tesis (Lic. Agronomía de la UBA), Buenos Aires, 2006.
- PIMENTEL, D., PATZEK, T. Ethanol production using corn, switchgrass, and wood; biodiesel production using soybean and sunflower, **Natural Resources Research** 1 v. 14, 2005, p. 65-76.
- PRESIDENCIA, **Discurso presidencial**, Parque industrial de Frías, Santiago del Estero, 16 de diciembre de 2009, disponible en <http://www.presidencia.gob.ar/discursos/3683> Acceso 10 de diciembre de 2012.
- REGUILLO, R. De la pasión metodológica o de la (paradójica) posibilidad de la investigación, En MEJIA-ARAUZ, R.; SANDOVAL, A. (Coord.) **Tras las vetas de la investigación cualitativa. Perspectivas y acercamientos desde la práctica**, ITESO, México, 1998.
- REYES O. **Preparando el terreno para los agrocombustibles: políticas europeas, criterios de sostenibilidad y cálculos climáticos**, 2007, Disponible en: <http://www.biodiversidadla.org/> Acceso 28 de abril de 2008.
- ROJO-CHOYA, M. **Planta de tratamiento de aguas residuales procedentes de la producción de biodiesel**. Tesis (Lic. Ingeniería Química, Universidad de Valladolid, España), 2015.
- ROZEMBERG, R.; SASLAVSKY, D.; SVARZMAN, G. La Industria de Biocombustibles en Argentina, en LÓPEZ, A. (coord.): **La Industria de Biocombustibles en el Mercosur** (Serie Red Mercosur) v. 15, 2009.
- RUNGE, C. F.; SENAUER, B. How biofuels could starve the poor. **Foreign Aff.**, v. 86, 2007, p. 41.
- SANTIAGO DEL ESTERO, **Ley Provincial de Promoción Industrial, 6.750**, Disponible en <http://www.dgrsantiago.gov.ar/wp-content/uploads/2017/11/LEY-6750.pdf>, acceso 01 de enero de 2020.
- SAUTU, R., BONIOLO, P., DALLE, P., ELBERT, R. **Manual de metodología: construcción del marco teórico, formulación de los objetivos y elección de la metodología**. CLACSO, Bs. As., 2005.
- SCHEINKERMAN DE OBSCHATKO, E.; BEGENISIC, F. Coords. **Perspectivas de los biocombustibles en la Argentina y Brasil**, SAGPyA/IICA, Buenos Aires, 2006.
- SMOLKER, R.; TOKAR B., PETERMANN A.; HERNÁNDEZ, E. **El verdadero costo de los agrocombustibles. Alimentación, bosques y clima**, 2007, Disponible en: <http://www.globalforestcoalition.org/newsandpublications/publications/> Acceso 9 de mayo de 2008.
- SORICHETTI, P. A.; ROMANO, S. **Uso de agua en la purificación de biodiesel: optimización mediante el control de propiedades eléctricas de efluentes**, Ponencia presentada en VII Congreso de Medio Ambiente–AUGM, 22 al 24 de mayo 2012, UNLP, La Plata.
- TOLEDO-LOPEZ, V. Agroenergía en Argentina: una discusión sobre la renovabilidad y el despojo, GUTIERREZ, F. (ed.): **Soberanía energética, propuestas y debates desde el campo popular**, Ediciones del Jinete Insomne, CABA, 2018, p. 117-147. Disponible en: <http://www.opsur.org.ar/blog/wp-content/uploads/2018/12/Libro-Soberania-energetica-WEB.pdf>, Acceso 20 de enero de 2020.
- TOLEDO-LOPEZ, V. La política agraria del kirchnerismo. Entre el espejismo de la coexistencia y el predominio del agronegocio. **Mundo Agrario** 37, v. 18, 2017a, DOI: <https://doi.org/10.24215/15155994e045>.
- TOLEDO-LOPEZ, V. Territorio del agronegocio. Estrategias de acumulación y lógicas de territorialización de las megaempresas. Reflexiones a partir de un estudio de caso en el NOA argentino. **Trabajo y Sociedad** 29, 2017b, p. 177-19, Disponible en <http://www.redalyc.org/articulo.oa?id=387352369010>
- TOLEDO-LOPEZ, V. Desarrollo y agroenergía. Un análisis de narrativas regionales y locales a propósito de la producción de biodiesel en Santiago del Estero, MERLINSKY G., comp.: **Cartografías del conflicto ambiental en Argentina (II)**, CICCUS-CLACSO, CABA, 2016a.
- TOLEDO-LOPEZ, V. **Naturaleza del agro y sentidos sobre el desarrollo**. Un estudio sobre los procesos de legitimación de la agroenergía a partir del caso de la planta de biodiesel de Santiago del Estero". Tesis (Doctorado en ciencias sociales, FCS-UBA), 2016b.
- TOLEDO-LOPEZ, V. Los agrocombustibles como eje del extractivismo en la Argentina, GIARRACCA N.; TEUBAL, M. (Comp.) **Actividades extractivas en expansión ¿Reprimerización de la economía argentina?**, Antropofagia, Bs. As.: 2013.