



DIE ERDE

Journal of the
Geographical Society
of Berlin

Vol. 151, No. 2-3 · Research article

Struggling against the consequences of bioethanol production. Narratives of a local environmental justice movement in Córdoba, Argentina

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Manuscript submitted: 30 November 2019 / Accepted for publication: 27 May 2020 / Published online: 31 August 2020

Abstract

The production of bioenergy and especially of agrofuels is highly contested, both on a local and global scale. While most research has focused on rural areas and sustainability, our case study explores a conflict around bioethanol production within an urban context: the city of Córdoba, Argentina. Describing the emergence and narratives of a local protest movement within the neighbourhood next to the ethanol factory, our article aims to contribute to the debate on the externalities of bioenergy from an environmental justice perspective. The article shows that the struggle against bioethanol production in the neighbourhood emerged as a local environmental justice movement concerned about the uncertainties regarding health risks and the danger of explosions. At the start, the activists did not define themselves as 'environmentalists' or 'ecologists'. This is not an environmentalism of choice, but an environmentalism 'of obligation', starting from their struggle to defend their bodies, health, lives and territory. The authorities ignored their claims, and so, facing sociotechnical controversies, the movement invested huge efforts into critical epidemiology and created alliances with health and science professionals and institutions. Through their struggle, they developed their own narrative, questioning the enterprise's narrative of 'green' and 'sustainable' energy. The movement fully developed its own understanding of environmental justice in unison with other environmental and human rights movements in the country.

Zusammenfassung

Die Produktion von Bioenergie und insbesondere von Agrotreibstoffen ist sowohl auf lokaler als auch auf globaler Ebene stark umkämpft. Während ein Großteil der Forschung hierzu ländliche Räume und Nachhaltigkeitsfragen fokussiert, analysiert unsere Fallstudie einen Konflikt um Bioethanolproduktion im städtischen Raum: der Stadt Córdoba in Argentinien. Durch die Analyse der Entstehung der lokalen Protestbewegung im Viertel neben der Bioethanolfabrik und ihrer Narrative möchte der Artikel zur Debatte um die Folgen der Bioenergieproduktion aus einer Umweltgerechtigkeitsperspektive beitragen. Der Beitrag zeigt, dass im Konflikt um die Ethanolproduktion eine lokale Umweltgerechtigkeitsbewegung aus Sorge um die Unsicherheiten hinsichtlich Gesundheitsfolgen und Explosionsgefahr entstanden ist. Die Aktivist*innen verstanden sich anfangs nicht als Umweltschützer*innen oder Öko-Bewegte. Sie haben das Thema Umweltverschmutzung nicht gewählt, sondern aus der Notwendigkeit heraus aufgegriffen, ihre Körper, ihre Gesundheit, ihr eigenes Leben und ihr Viertel zu verteidigen. Da die lokalen Behörden die Forderungen der Anwohnerschaft ignorierten, sich dieser Probleme

Anne Tittor, Virginia Toledo López 2020: Struggling against the consequences of bioethanol production. Narratives of a local environmental justice movement in Córdoba, Argentina. – DIE ERDE 151 (2-3): 142-153



DOI:10.12854/erde-2020-480

anzunehmen, sah sich die Protestbewegung selbst mit zahlreichen sozio-technischen Kontroversen konfrontiert, kümmerte sich um kritische epidemiologische Studien und suchte die Zusammenarbeit mit medizinischen und chemischen Expert*innen. Im Laufe des Konfliktes stellte die Bewegung das Narrativ des Bioethanol-Unternehmens in Frage, dass letzteres ‚grüne‘ und ‚nachhaltige‘ Energie produziere. Die Bewegung entwickelte ein eigenes Umweltgerechtigkeitsnarrativ, in Resonanz zu anderen Umwelt- und Menschenrechtsbewegungen Argentinien.

Keywords environmental justice, social movements, Argentina, bioenergy, health

1. Introduction

Bioenergy has been promoted as a purportedly ‘sustainable’ answer to the environmental crisis and climate change. Nevertheless, the production of bioenergy and especially of agrofuels is highly contested, both on a local and global scale. While most research has focused on rural areas – where crops are grown – and on the impact of bioenergy on land use change and emissions, our case study explores a conflict around bioethanol production within an urban context: the city of Córdoba, Argentina. Although bioenergy, and especially agrofuels, have become a popular subject of research in several disciplines, studies from a territorial and environmental justice perspective remain rather scarce. For this case, the implications for the populations living within the vicinity of the production site have recently been considered using a territorial approach, with an emphasis on mechanisms of control developed by the enterprise and the significance of environmental insecurity (Saccucci 2018; 2019). However, to date, there has been no discussion in the literature on the health impacts of this kind of production from an environmental justice perspective. In other works, we have discussed the emergence and the territorial dynamic of the conflict as well as the business strategy of the enterprise (Toledo López and Tittor 2019; Tittor and Toledo López 2020). In this paper, our aim is to portray the narratives of a local protest movement within the neighbourhood, which emerged in response to feelings of insecurity and health risks. With this paper, we would like to contribute to the debate on the externalities of bioenergy from an environmental justice perspective.

In the context of the climate change negotiations, the perceived oil scarcity, the commodity boom and the promotion of agroindustrialisation, bioenergy in Argentina has recently experienced a drastic increase. Argentina’s agriculture has undergone a far-reaching transformation due to the rapid and massive expan-

sion of genetically modified soybean on more than 50% of the country’s agricultural land; the cultivation of corn, wheat and other grains remains relatively constant. Nowadays, all of these crops are used for food, fodder and to produce agrofuels, so called ‘biofuels’. There are different types of agrofuels that are promoted as ‘bio’: biodiesel based on soybean has experienced the most growth, firstly as an alternative fuel for use in transport in the internal and external market, and secondly for electricity generation on a national level (Toledo López and Tittor 2019). Since 2010, the production of ethanol in the country has been fostered by establishing an internal market according to Law 26093. Initially, Argentinian bioethanol was based on sugar cane, then a number of years later, bioethanol production based on corn increased (Toledo López 2018). In contrast to biodiesel, 60% of which is exported, all bioethanol is produced for the local market (around 900,000 cubic metres of ethanol). Corn-based fuel has been produced in the country since 2012, making it possible to meet the national quota.

Against the backdrop of the emerging agrofuels sector in Argentina, we examine an ongoing local environmental conflict in the city of Córdoba, which is emblematic for being the first active challenge to bioethanol production by a social movement in the country. Furthermore, it is the first conflict over agrofuels production to have gained the attention of the national media and has also been taken to court. We focus on the narratives of the protest movements from an environmental justice and (Latin American) political ecology (PE) perspective. In this sense, we contribute to the literature on the externalities of industries and fuel production, which have been a traditional focus of environmental justice and the literature on the environmental conflicts over renewable energies, which bring new challenges for social movements.

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Our article seeks to address the following research questions: What are the narratives of the movement against bioethanol production in Córdoba and which kind of tools does it use to support its narratives? How does the movement deal with the company's effort to present itself as sustainable and green?

The paper now proceeds with a short presentation of our theoretical and conceptual framework, followed by a section on data and methodology. We then analyse one specific case study, focussing on the narratives of the environmental justice movement throughout the development of the conflict.

2. Theoretical and conceptual framework

2.1 Environmental conflicts and political ecologies: tools for movements to support their claims and narratives

Our analysis is located within the broad field of PE, which offers a stimulating perspective on the relationship between nature and society, set by power and politics. Latin American PE in particular can contribute to a better understanding of power within societal nature relations and ecological distribution, environmental appropriation and valuation conflicts around agrofuels (Leff 2015; Alimonda 2011; Perreault et al. 2015; Rocheleau et al. 1996). Conflicts are at the very heart of (Latin American) PE¹. Martínez-Alier even defined political ecology "as the study of ecological distribution conflicts and the use of power to gain access to environmental resources and services, or to shift the burdens of pollution according to ethnic origin, social class, caste, or gender" (2012: 52). Many political ecologists examine the ways in which environmental conditions become politicised and how resources and the environment play a defining role in the reification of conflicts (Le Billon 2015: 599). Also, exploring narratives and languages (the symbolic dimension of the PE analysis) is a key issue within the literature from Latin America. Escobar (2006) proposes an approach of PE that systematically incorporates the economic, the ecological and the cultural. In this sense, calling for a decolonisation of knowledge, many authors have highlighted PE as a new epistemology (Leff 2015; Alimonda 2011). Taking this approach, it is our aim to consider the struggle around ethanol production from a PE perspective, by focussing on the

narratives of the social movement concerning health effects and perceived risks, in order to understand its narratives of environmental justice.

For our analysis we focus on three different concepts emerging from the Latin American literature on PE that are crucial to understanding how the movement in our case study is accumulating new tools and knowledge, by mobilising experts and appropriating some of their knowledge and/or techniques. These tools and the new knowledge are pivotal for the development of the movement's narratives and claims and evolve with it. We can observe this happening in three specific areas: the technical, health and juridical field.

First, social movements often question expert knowledge and have to argue against the narratives of the authorities, according to which everything is under control and nobody is at risk. The concept of 'socio-technical controversies' is developed to identify the moment at which the movements start to question the legitimacy of scientists and technicians as expert discourses. At this point, the arguments of other actors are taken into account and the populations affected mobilise the knowledge of counter-experts (Callon et al. 2009: 229). For example, the mobilisation of social movements and their risk perception of pesticides in Argentina had some degree of influence on scientific research on the topic and on regulations concerning the use of agrochemicals near schools and villages (Arancibia 2013). In sociotechnical controversies social actors start scrutinising technical issues, and in the process they transform them into "political questions" (Merlinsky 2013: 30).

Second, the strategy of producing counter-expertise and knowledge regarding health risks can be described as critical or popular epidemiology. In the US, this has been a key approach of communities and researchers supporting environmental justice movements since their origins (see below). Critical epidemiology in Latin America articulates spatial health analysis that intertwines contributions from philosophy, political economy and social geography with the aim of rethinking the social determinants of health, both in urban and rural contexts (Breilh 2010: 83). The work of activists, scientists and medical teams in mapping health impacts has been a key tool used by several movements to draw attention to the geographical distribution of impacts (Arancibia 2013; Avila-Vazquez et al. 2018). These works contributed to making problems visible, both for the communities

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and the movements themselves, as they support the necessity of urgent action or decisions by the authorities to stop polluting practices.

Third, the production of counter-expert knowledge is not restricted to the technical, nor to the health field, but extends into the juridical field. Therefore, the third concept emerging from the PE literature centers around “the local processes for updating the law” (Melé 2009: s.p.), contributing to a legal and social effect as part of a “juridical productivity of environmental conflicts” (Merlinsky 2013: 48). According to Merlinsky (2013; 2017), in Argentina over the last two decades the use of juridical instruments, as well as the number of legal actions in the environmental field, have increased and have been incorporated into the protest repertoires of many social actors. Movements started to see the issues as ‘socio-environmental conflicts’ and appropriate legal and juridical tools to channel their claims and demands.

2.2 Environmental justice: origins and tensions in the era of green projects

Environmental justice (EJ) is a normative perspective highlighting how environmental burdens are offloaded onto specific communities (Robbins 2012: 87; Acselrad et al. 2009). It focuses on the strong interrelation between social and environmental issues (Merlinsky 2017). At the same time, EJ is a frame and a slogan used and interpreted by specific social movements. The departure point for our analysis is therefore Isabelle Anguelovski’s definition: “Environmental justice is about the right to remain in one’s place and environment and be protected from uncontrolled investment and growth, pollution, land grabbing, speculation, disinvestment, and decay and abandonment” (Anguelovski 2015: 33).

Movements fighting for EJ began to emerge in the 1980s in the US, mobilising against toxic waste disposal and the externalities of heavy industrial production, which is frequently located close to Black neighbourhoods (Bullard 1990: 35). Traditionally, accompanying research focused on providing evidence that the burdens of industrial production have a disproportionate impact on Black and Hispanic neighbourhoods (United Church of Christ and Commission on Racial Justice 1987: xiv). Most toxic waste disposal sites were constructed in the vicinity of already existing neighbourhoods (Bullard et al. 2008: 373). Na-

tive Americans have been exposed to a similar kind of environmental racism: the US military tested nuclear weapons and disposed of toxic waste on many Native American reservations, thereby causing severe health impacts (Hooks and Smith 2004). However, environmental burdens are not restricted to toxic waste and the extraction of fossil or nuclear fuels.

Recent research has looked at the distributional effects of renewable energy projects, which are presented as answers to the environmental crisis and climate change. Several social movements face the challenge of having to question the impact of purportedly green projects, such as large-scale wind parks (Lehmann 2019; Avila 2018), hydraulic dams (Del Bene et al. 2018) or solar energy projects (Yenneti et al. 2016). In all of these projects, investors and government actors employ narratives of ‘green’ and ‘sustainable’ projects, which are presented as an answer to the climate/energy crisis. Many of these conflicts refer to issues such as land access, territorial rights, land-use changes and dispossession using a mix of legal and extra-legal or even violent processes.

2.3 The common focus of political ecology and environmental justice: narratives of emerging protest movements

Although PE and EJ stem from different locations, disciplines and debates, there are several intersections and overlaps between them, with marginalization and inequality at the heart of both areas of research (Holifield 2015: 585). One of several research strands that brings PE and EJ closer together is the interest not only in environmental inequalities themselves, but in the ways in which communities and activists have translated these patterns into grievances and claims (Holifield 2015: 589). One thing that studies from environmental justice and political ecology have in common is that they both raise the question of “who owns the power to impose particular understandings of sustainability and who benefits from it at different geographical scales” (Avila 2018: 612). Our aim, therefore, is to contribute to this strand of literature by analysing these different claims, how they interrelate with one another and together build a specific narrative.

We understand narratives in the literal sense, as implied by the Latin origins of the word, namely as meaning storylines, which different people and

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groups of actors use to relate to ways of implementing a certain form of production (*Backhouse* 2015: 68). Our aim is not to analyse an entire discourse or set of ideas, but rather the narratives and repertoires which are repeated through interviews, newspaper reports and legal documents. Frames in our understanding refers to the ways in which claims are presented. In our case study, we focus on the way in which problems around bioethanol production are framed and defined by the activists opposing the factory and what kind of knowledge tools they appropriate to support their narrative.

3. Material and methods

The article is a qualitative single case study, reconstructing the storyline of a local protest movement against bioethanol production in Córdoba (*Flyvbjerg* 2011; *Merlinsky* 2013). Following *Stake* (2003: 136), an “intrinsic case study” is undertaken “because, in all its particularity and ordinariness, this case itself is of interest.” The reason this case is of interest is because it refers to the first big struggle against ‘biofuel’ production in Argentina. Drawing on empirical research, in the case study we examine the narratives of the key actors in the conflict, with whom we conducted 15 interviews in 2017 and 2018. Most of the interviews were recorded, transcribed and discussed by us as the authors of this article. Additionally, we conducted one week of participant observation within the neighbourhood, talking to all social institutions in the area. As the enterprise applies political pressure on anyone who speaks out about the case, we have guaranteed anonymity to everyone we spoke to and we will not provide any further details about the institutions and individuals to avoid personal consequences for our interlocutors. We also conducted a content analysis of local and national newspaper articles about the conflict, as well as material provided by the movement itself, such as radio interviews, Facebook posts etc. Further information is drawn from the legal documents presented by different actors involved in the conflict and from newspapers reporting on the case. In sum, the analysis of the conflict is based on the experience of people living in the immediate vicinity of the ethanol factory and reports about their health problems provided by a medical team.

4. Narratives of the protest movement developed during the struggle

4.1 Historical and territorial specificities of the neighbourhood and the factory

The residential neighbourhood of San Antonio is located about 6 kilometres south of the centre of Córdoba, Argentina. San Antonio has existed since the mid-20th century. The Historical Archive of the Municipality contains various documents indicating that the first houses were built in 1950, followed by the subdivision into plots in 1953 (fieldnotes 21/06/2018). The company Porta Hnos. settled in San Antonio in 1995. Until 2012, the company had bought alcohol based on sugar from Tucumán and refined it in Córdoba. In 2012, it significantly expanded its factory, occupying green spaces and unused land, as it started producing bioethanol² based on the fermentation of corn, bought directly from regional farmers. The enterprise announced this change in the production process through their website, and the local press reported on this shift as a promising investment (*La Voz* 16/02/2012). In 2018, between 15 and 20 trucks arrived each day delivering unprocessed corn (fieldnotes 12/06/2018). The expansion contributed to the diversification of the company’s products, but now its boundaries extend right up to the houses in the neighbourhood. This extension was carried out without the environmental impact assessment required by general national environmental law 25.675/2002, mandated only by a municipal permit.

In February 2012, following an explosion in the factory, many residents in the neighbourhood gathered in the streets. When they asked Porta Hnos. for an explanation, the representatives of the company answered that everything was under control (interview 6/9/2017). The neighbours began to feel constantly unsafe due to the risk of explosion as well as the constant presence of alcohol steam in the air and they began to worry about the health impacts. They founded the neighbourhood association VUDAS (United Neighbours in Defence of a Healthy Environment/*Vecinos Unidos en Defensa de un Ambiente Sano*). VUDAS has around 15 members from the neighbourhood of San Antonio and later also from the neighbourhood Inaudí, the majority of them women. Since 2012, they have been continuously engaged in social and political activism under the name VUDAS. In some cases, they have mobilised hundreds of people, mostly from the aforementioned neighbourhoods, to demonstrate

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against the factory. *Figure 1* shows the location of the factory (A) and both neighbourhoods (B, C).

Since 2012, VUDAS continuously insists that the bioethanol production in their neighbourhood has to stop, as it “makes people sick and kills them”, and “is conducted illegally”. This type of insistence on the right to stay in their own territory and their own environment is a claim of environmental justice, following *Isabelle Anguelovski’s* (2015) aforementioned definition. As one of the activists asks rhetorically: why is it us who have to leave?

Why do I have to leave if he is the one killing me? I did not do anything to him. People have had to leave San Antonio, the husband with polyps in his nostrils, the wife with haematological pathology, the youngest child with purpura and the oldest daughter with cervical cancer. (Interview 18/06/2018)³

These quotes already show that residents perceive health problems which can even be life-threatening. Many neighbours are forced to leave the neighbourhood because of health issues.

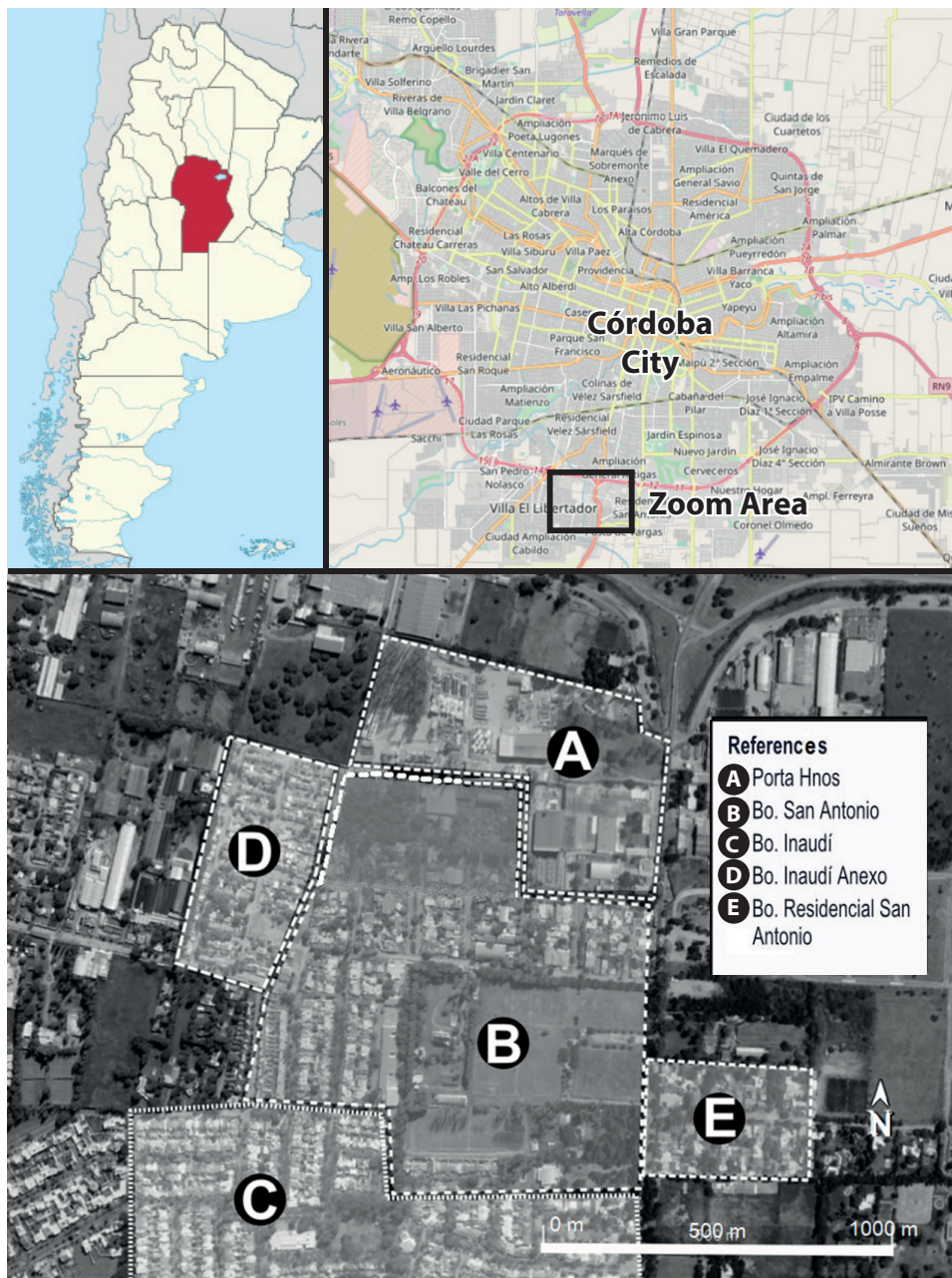


Fig. 1 Neighbourhood of San Antonio in Córdoba and surroundings. Source: own elaboration based on open street maps 2020

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4.2 Mobilising expert knowledge with critical epidemiology to support perceived health risks

The health consequences of bioethanol production are a major issue within the conflict, as almost all the quotes in this article show. In May 2013, VUDAS contacted educational and scientific institutions to encourage them to conduct research on the health effects and to seek support for their argument that the company poses a threat to their health. In an effort that can be understood as ‘critical epidemiology’, experts from the National University of Córdoba and members of the University Network on Environment and Health (*Red Universitaria de Ambiente y Salud*, REDUAS), carried out a first study about environmental health (Avila-Vazquez et al. 2013). In August 2013, REDUAS consulted 74.2% of the neighbourhood’s population and revealed that more than half of the residents were facing health problems, specifically persistent headaches, conjunctivitis, dry eyes, pulmonary disease, gastritis and dermatitis (Avila-Vazquez et al. 2013). VUDAS then presented these results to the municipal government and renewed their demand for the factory within the neighbourhood to be closed. Once again, they received no response from the authorities.

As the conflict continued, VUDAS asked REDUAS to conduct a second environmental health study in 2016. The study revealed that breathing problems had increased sharply since 2013, and were significantly above average in Córdoba.⁴ Not only did it record four malformations in children under the age of five, but also four spontaneous abortions (Avila-Vazquez et al. 2016). In terms of age groups, children and the elderly were the most affected. The longer people spend in the neighbourhood – both in terms of hours per day and years living next to the factory – the more their susceptibility to disease increases.

4.3 Sociotechnical controversies on the quality of air

VUDAS not only sought counter-expert knowledge on health, but also on air quality. A technical report compiled between July and October 2014 supports VUDAS’ arguments as it confirms particles “beyond the legal threshold” defined in the National Law on Dangerous Residues (N° 24.051) in the air around the factory (Rossi 2016: 62). Since these measurements were taken, VUDAS claims:

They are killing us in small doses from breathing in toluene, formaldehyde ... that’s what there is in the neighbourhood: a lot of chemicals that we are breathing in 24 hours a day. (Interview 06/09/2017)

The public prosecution called for two expert studies to be conducted. This caused a sociotechnical controversy: the physical and chemical expertise of the official expert, a professor from the Department for Industrial Chemistry at the National University of Córdoba, against the VUDAS expert who was a chemical engineer. The interpretation of the results was highly contested because the prosecution understood the unit of measurement “mg” to mean microgram (although the universal metric system defines it as milligram), which is a concentration that is 1,000 times lower. With this ‘reinterpretation’, the public prosecution dismissed the case in March 2015 (*La Voz* 06/03/2015).

4.4 The temporal dimension: we don’t have time, death is omnipresent

For the first three years of the conflict, VUDAS brought evidence from counter-experts that the company was a threat to their neighbourhood, while the authorities ignored them or presented expert knowledge to counter their arguments. Despairing about the inaction of the authorities, in April 2015, five women and one man chained themselves to Córdoba town hall demanding an audience with the mayor of the city. The national media reported on the protest and placed the conflict on the national agenda for the first time (*Página 12* 01/06/2015). Human rights organisations criticised the government response and the behaviour of the police and supported the activists’ demands (Rossi 2016).

The form of protest used by the activists who chained themselves to the town hall expresses a frame of urgency. The temporal dimension is therefore very present in VUDAS’ narrative:

The demand for justice for the deaths and the increase in health problems – diseases, cancers and malformations – plus the imminent risk of explosion to which the public is exposed because of Porta Hnos., can wait no longer. (*VUDAS Facebook post* 14/07/2017)

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Due to the continuous exposure of their own bodies to these chemicals, they call for urgent action, stressing that they can wait no longer. VUDAS makes an effort to place the issue on the public agenda under the slogan: “*Porta contamina, mata*” (“Porta contaminates and kills”, *VUDAS blog* 2020, header). Death as a symbol is omnipresent in their protest repertoire: on the protest t-shirts, posters, stickers; skeletons or somebody dressed as the grim reaper are frequent sights. As a contrast to the frequent reference to the increasing severity of illness over the course of time and even death, there is also frequent reference to the opposite: life.

4.5 Put the right to life above business – connecting the struggle with other environmental movements

VUDAS argues that society should value health and the right to life more than the right of a private firm to make profit.

Life has to be above all other things. It’s still necessary for us to say this in this century. It seems that we humans have not learnt. We have become so ignorant that we always prioritise business before life. But it seems that the residents of San Antonio are going to change that. Along with these residents there are a lot of organizations and people who have not closed their hearts and minds to others. (*VUDAS blog* 05/07/2017)

Throughout the struggle, VUDAS created links with activists from other environmental conflicts. The construction of networks between them broadened VUDAS’ collective action repertoire and their framings. They constructed their narrative on their own blog (<https://vudas.wordpress.com/>) and Facebook page, and organised several music festivals, one of them called “Yes to life” (*VUDAS blog* 18/06/2017). This slogan is a frame that has typically been used by anti-mining movements all over Latin America in the last decade (*Wagner* 2014). Therefore, we observe that the residents of the neighbourhood of San Antonio are inscribing their own struggle into other social and environmental struggles at provincial, national and even international level by using similar slogans, references and protest repertoires. They articulated their protest in collaboration with the *Madres del Barrio Ituzaingó-Anexo* (Mothers of the Neighbourhood of Ituzaingó-Anexo) and together they institution-

alised a particular type of mobilisation: “The March of the face masks” and involved other environmental groups, such as “Spring without Monsanto”. To prioritise health issues above business profit is the common ground for all these struggles.

4.6 The local appropriation of rights: “isn’t that a human rights violation?”

Throughout the conflict, VUDAS appropriated different legal tools. This juridification of the conflict started as early as 2013 when VUDAS first presented their claims and demands, together with the first environmental health study, to the municipal government. For VUDAS the whole issue has become a question of defending their own human rights:

If you live in polluted surroundings, isn’t that a human rights violation? (Interview 06/09/2017)

This framing helped them to gain support from various human rights organisations, e.g. when they chained themselves to the town hall. Throughout the struggle, VUDAS improved their knowledge about rights and justice. In June 2016, twenty-one residents presented a type of legal proceeding for the protection of constitutional rights called *amparo* (based on Article 43 of the National Constitution)⁵ to the Federal Court of Justice. They insisted on their rights using strong metaphors:

We are prepared and we will come with all our artillery to defend our rights: our right to life and our right to health. (*La Tinta* 10/07/2017)

At the request of the federal judge, a public audience with consultative character took place as part of the *amparo* proceeding in August 2017 (*Enredación* 08/05/2017).⁶ VUDAS initiated the country’s first public audience on the production of agrofuels. This has been the only case in Argentina of the production of bioethanol being openly questioned in the public sphere. We can therefore observe the conflict’s clear juridical productivity: the environmental law is increasingly updated and put into practice. This is illustrated by VUDAS’ demands for the ‘precautionary principle’ to be applied and by their framing of the issue as a ‘socio-environmental problem’. The activists involved did not define themselves as ‘environmentalists’ or ‘ecologists’ at the beginning of the conflict. It is not an environmentalism of choice, but an environ-

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mentalism “of obligation”, based on their struggle to defend their lives and territory (Svampa 2015: 128). Within the juridical domain, the claims and demands were addressed to the municipal and national authorities, based on ethical-political, legal, environmental and public health arguments.

4.7 Questioning the company’s green narrative and the role of the state

As the conflict with the neighbourhood became more intense, the company started to change their commercial profile and implemented a strategy in order to present an image of a socially responsible enterprise: they increased their efforts around certification and acquired new awards. To underline their corporate social responsibility, they now proudly present five certifications for the quality of their products (ISO 9001, ISO 14.001, FSSC 22.000, Kosher, Celíacos). Additionally, they were categorised as ‘Empresa B’ (B-Corporation), which indicates that they care about economic, social and environmental goals. In March 2017, the company obtained a special award (Premio Ternium) for their ‘Agroindustrial Innovation’ in developing a small-scale ethanol production distillery (Agroverdad 14/03/2017). The company presents itself as ‘bio’, prioritising both social and environmental issues:

Sustainability is part of our DNA. We are committed to respect and care for the environment, the security and life quality of our collaborators, their families and the entire community. (Porta Hnos. homepage, accessed 15/11/2019)

VUDAS experienced quite the opposite. They questioned whether the company’s activities were legal since it did not conduct an Environmental Impact Assessment (as the general environmental law 26.675/2002 sets in Argentina), before changing its production process in 2012 in order to distil ethanol. Whenever VUDAS sought information, the state institutions refused to cooperate:

Nobody gives you adequate information and the state is their accomplice (...) they started their fuel business with authorisation as a company operating in the food industry. (Interview 06/09/2017)

The legality of the company is exclusively based on the announcement of the project award in the municipality. Looking back, VUDAS describe their experience as a process of learning about the state’s role:

This was a learning process. We have learnt that we are fighting against agribusiness (...) it has been difficult to fight against something invisible (...) This company is a monster; it is illegally constructed, protected by the current politicians in power. Those in power look after the enterprise because supposedly this enterprise is helping us to solve climate change, helping to protect the ozone layer. They do a lot of marketing that presents them as ‘green’ as ‘sustainable’, as an alternative. (Interview 06/09/2017)

VUDAS argues that the company’s bioethanol has nothing to do with environmental protection. VUDAS has been confronted with the narrative that the enterprise is ‘green’, an ‘alternative’ and has perceived this as a narrative of the powerful. For them agribusiness is behind this narrative, which receives strong support from the state. Indeed the agribusiness and the bioenergy sectors are making great efforts to develop a new green narrative around their economic activities in Argentina (Toledo López and Tittor 2019).

5. Conclusion

Our central argument is that the local movement against ethanol production in the neighbourhood emerged as a local environmental justice movement concerned with the uncertainties regarding the health impacts of ethanol production. Claiming for the right to health, new knowledge and narratives of (environmental) justice have emerged. As the local authorities ignored the demands, after several sociotechnical controversies, the movement fully developed its own narrative of environmental justice in unison with other environmental movements in the country.

Our analysis has shown five different storylines that together build VUDAS’ narrative of environmental justice. These are expressed by these iconic phrases: ‘why is it us, who have to leave?’, ‘we don’t have time’, ‘put the right to life above business interests’, ‘it’s about human rights’, ‘the state is their accomplice’. These different storylines are intrinsically related to the tools, frames and repertoires they are using. Throughout the conflict, VUDAS rearticulated the dif-

ferent claims and demands in terms of human rights, in order to strengthen links to other historical struggles in the country. This also broadened their repertoires of action and protest. The main type of action used is to present the problem in the public sphere and to accuse the state of violating their rights. VUDAS' narratives also stress the temporal dimension, as, over time, health issues deteriorated. They noticed that health risks are not equally distributed within the populations exposed to them; socially vulnerable groups are more affected, particularly the poor, children and the elderly. In this regard, they point the finger at the state, denouncing its complicity with the company. They thus also present environmental justice as a problem concerning the state, which failed to protect its citizens. Finally, they demand a solution that preserves the jobs of the enterprise's current employees and that prevents the pollution activity they highlight.

As in other environmental conflicts (Merlinsky 2013; 2016), the struggle encourages the social movement to use the legal framework in its favour and contribute to a learning process. Facing sociotechnical controversies, they invested a lot of effort into a critical epidemiology and created new alliances with health and science professionals and institutions. Years of conflict have helped VUDAS to generate new knowledge about its territory, health, laws, rights and justice in the neighbourhood of San Antonio and beyond, which we analyse in terms of a juridical productivity, with its social and legal effects.

In these terms, VUDAS' struggle against ethanol production expresses a demand for territorial and temporal justice in the face of a new and dynamic activity in Argentina's agri-food system: bioethanol production from corn for fuel use. VUDAS' struggle is therefore a distinctive environmental movement questioning both powerful local actors and the country's elites, as well as a narrative of new, green sustainable energy production.

Notes

¹ The Anglo-American political ecology debates are often more prominent than those in other regions and languages. Despite regional differences, following the proposal by Martin and Larsimont (2016), we see the need to advocate a cosmopolitical ecology and we aim to de-regionalise and relocate these different political ecologies.

² The company announced on their homepage that, with the expansion of the factory, they were now producing bioethanol for agrofuel use. Later on, when the conflict with the neighbourhood emerged, they claimed only to be producing alcohol for medical use and for alcoholic beverages (as they do not have a licence to produce biofuels). That said, in strictly chemical terms, there is no difference between bioethanol and alcohol; other bioethanol enterprises produce huge quantities of bioethanol and afterwards further purify some of the ethanol to sell it as medical alcohol or for beverages (fieldnotes 28/11/2019).

³ All quotes from interviews, homepages and media were translated from Spanish by the authors.

⁴ The prevalence of the health problems identified is considerably above the average of the city of Córdoba: whereas 20% of the population of Córdoba has respiratory problems, near the factory the corresponding figure is 52%. 13% of 6-7-year-olds in Córdoba struggle with asthma, compared to 57% in the vicinity of the factory (Avila-Vazquez et al. 2016: 8).

⁵ Article 43 of the Constitution of Argentina states that any person can present an *amparo* to a judge when an action of others (even authorities or individuals) violates or threatens rights and guarantees that are recognised by law.

⁶ A public audience is a mechanism established to increase citizens' participation in administrative processes and to improve transparency. It is an informative format with participative elements and can be initiated by those affected by an administrative decision. They can present their individual, group or collective perspective on the issue. The result is non-binding.

Acknowledgements

We are grateful to two anonymous reviewers for their recommendations on how to improve the paper and to Carla Welch for proofreading.

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