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SPECIAL FEATURE: ORIGINAL ARTICLE

The EJAtlas: Ecological Distribution Conflicts as Forces for Sustainability

Inside and beyond the Petro-State frontiers: geography of environmental conflicts in Venezuela's Bolivarian Revolution

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Abstract
Venezuela is well known for its century-old oil economy, which has significantly shaped its social fabrics, territories, and eco-systems. Since 1999, the Bolivarian Revolution has led to important transformations in the context of the 'Socialism of the 21st century' project, but the extractivist model has deepened. This situation has created or intensified several ecological distribution conflicts, which have been further exacerbated by an extraordinary national crisis unleashed in the period 2013–2016. In this paper, a geography of the 20 most emblematic and representative socio-environmental conflicts in the period of the Bolivarian Revolution is presented. From a comparative political ecology perspective, this article aims to understand how power relations are expressed through territorial configurations and spatial dynamics of resistance, and what are the implications for sustainability. It is argued that a remarkable new situation of environmental injustice is occurring in this period. Despite the 'eco-socialist' discourse raised, the current Petro-State has updated the traditional regime on eco-systems, territories, and human bodies primarily by resorting to the assimilation of socio-environmental conflicts through a strategic distribution policy of oil rents. However, it has maintained a pattern of ecological degradation and social marginalization as an outcome of its economic development model. The current context of crisis has fostered intense territorial disputes and conditions for the emergence of new social actors, practices, scenarios, and geographies linked to underground economies and criminal bands, which complicate an already concerning scenario of unsustainability. The current extractivist model is reaching a breaking point. New commodity frontiers have become a main area of dispute.

Keywords Environmental conflicts · Petro-State · Commodity frontiers · Venezuela · Environmental justice · Extractivism · Bolivarian Revolution · Political ecology

Introduction

Venezuela has been strongly impacted over the last 100 years by oil development, which has left significant environmental damages (MPPA et al. 2010), substantial transformations of social fabrics and cultural patterns (Tinker Salas 2014; Quintero 2012), and widespread shaping of the territories and eco-systems of the country.

However, the vast majority of approaches and studies about the historic Venezuelan model basically analyze its macro-economic features, characteristics of the State and the dynamics of political parties, political economy, and economic distribution problems—examining, for example, how oil revenues were or were not invested for development under the so-called "sowing the oil" strategies (Uslar Pietri 2005), policies to reduce poverty, and changes in land tenure, among others. Issues about political ecology, ecological distribution conflicts, environmental justice, and socio-ecological sustainability have rarely been analyzed (Carrillo 2000; Rodríguez 2002). In this sense, socio-environmental conflicts[1] in Venezuela remain the 'dark side' of the oil economy's development.

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[1] From Martínez-Alier (2003) perspective, in this paper the terms 'ecological distribution conflicts' and 'socio-environmental conflicts' are related to the same type of social conflicts and these can be interchangeable.

The start of Hugo Chávez's government in 1999 and the 'Bolivarian Revolution' involved a rupture with the two-party system prevailing since 1959, as well as a change in the national Constitution and a reclamation of control over the State, which had been eroded in the process of neoliberal adjustments promoted since the end of the 1980s (Teran Mantovani 2014).

The 'Bolivarian Revolution', based on a radical progressive narrative inspired by the idea of 'social justice', put in place a series of social policies resulting in several advances in favor of excluded sectors of society, including economic distribution, social recognition, and citizen's political participation (Lander et al. 2013; Teran Mantovani 2014). Environmental demands were also incorporated into the governmental agenda (García-Guadilla 2014) and a set of laws and public policies about these matters were developed. The government even adopted the idea of 'eco-socialism' and the "need to save the life on the planet" in the national development plan for 2013–2019 (Teran Mantovani 2016). Nonetheless, the "extractivist" pattern or model (Acosta 2013; Gudynas 2009) remains unchanged. On the contrary, it was deepened, and therefore, its socio-environmental and economic impacts increased (Teran Mantovani 2014).

In this paper, an analysis of 20 socio-environmental conflicts takes place from the period of the Bolivarian Revolution until the present is carried out. Together, they may be considered among the most emblematic and representative in the country. Descriptive features of the cases are provided from an integrated and multi-scalar analysis (Paulson and Gezon 2005; Escobar 2001) in which they are evaluated in relation to national spatial planning, commodity location, bioregions, or the different patterns of settlement.

The aim is to show the historical–structural patterns of power through which environmental injustices manifest in the Venezuelan oil-economy context, where the 'Petro-State' is the main political actor. In this sense, the analysis will focus primarily on different power mechanisms used territorially to confront demands, mobilizations, and socio-environmental resistances, rather than detailing the characteristics of the latter.

In this paper, it is argued that the Venezuelan State configures a specific regime on eco-systems, territories, and human bodies primarily by resorting to the assimilation of socio-environmental conflicts through a strategic distribution policy of oil rents. This assimilation manifests primarily in Petro-State's old-domain territories and is done to facilitate appropriation of nature, capital accumulation, and the achievement of macro-economic goals.

The context of this research is an extraordinary nationwide crisis, which has been interpreted as a historical exhaustion of the oil-economy model (Baptista 2004, 2010; Teran Mantovani 2015) due to, for instance, significant economic imbalances from the 1980s to the present day—such as inflation trends, continued currency depreciation or productivity drop—volatility of international oil prices, as well as resource depletion leading to a reduction in quality of Venezuelan oil—remaining reserves are composed of primarily heavy and extra heavy crude, that are less profitable in terms of both money and energy.

Exacerbated due to a remarkable drop of international oil prices since 2014, this crisis is provoking serious difficulties in access to food and electricity, while affecting public welfare policies, raising the price of products, depressing real wages, and leading to increases in the informal economy, among other impacts. All spheres of life have been affected and the living conditions of the population have deteriorated significantly, undoing former socio-economic improvements achieved in the previous periods of the Bolivarian Revolution (Lander 2014). At the same time, political disputes have intensified, with increasing challenges to the stability of the current government.

In this article, it is argued that despite an emancipatory discourse of 'eco-socialism', welfare policies leveraged, and the nationalization of the vast majority of the economy, throughout the Bolivarian Revolution period, the structure of unequal ecological distribution has been replicated, updated, and deepened, threatening the livelihoods of significant sectors of the population, both in the short and long term. It will also be proposed that environmental injustice, produced by extractivist expansion, cannot be compensated only through fairer oil rent distribution or greater political participation in electoral matters.

The way in which the current critical scenario impacts all the environmental conflicts analyzed, as well as the Petro-State's traditional power mechanisms, is also highlighted. The emergence in the cases of new social actors and practices linked to underground economies (informal, illegal, irregular), mainly the illegal mining in nature reserves, indigenous territories, and border areas, is briefly explored in this article, as well.

It is argued that the current extractivist model is reaching a breaking point and violent territorial disputes linked to illegal mining are significantly growing in the country. A worrying scenario of unsustainability is emerging, with potential to further contribute to the increase in violence and crisis that Venezuela is presently witnessing and even to a greater violent conflict in future.

The structure of the paper is as follows. After a conceptual discussion on eco-regimes and the Petro-State and the "methodology" section, some results are presented outlining a geography of environmental conflicts in the Bolivarian Revolution period. In this section, the power structures and stakeholders involved in the cases will be analyzed, along with the relation of the conflicts to a national-level set of environmental impacts. Second, a discussion is forwarded by evaluating how a Petro-State configures a

specific 'eco-regime', creating a specific framework for environmental struggles and sustainability. The ecological dilemma throughout the Bolivarian Revolution between the 'eco-socialist' project and environmental injustice is also assessed. In addition, some elements about the crisis of the Petro-State, the rising of illegal/informal commodity frontiers, and potential political and ecological scenarios are also described.

Contextualizing the environmental conflicts: the Venezuelan Petro-State and the production of an 'eco-regime'

The Venezuelan economy may be considered a form of "rentier capitalism" (Baptista 2004, 2010), fundamentally based on oil usufruct—which is a good extracted, rather than produced—and the capture and distribution of a land rent (Mommer 2010) from the capitalist world market. In this economy, a "Petro-State" has been constituted (Karl 1997; Coronil 2002; Watts 2001), which is a particular type of State in which the main source of incomes derives from international oil revenues.

Petro-States are characterized by the extraordinary hegemony which they achieve in their own countries, through the appropriation and management of all or a large part of the crucial oil business. These processes were generally consolidated in the late 1950s and early 1960s, when an era of nationalism based on natural resources emerged as a result of historical struggles between domestic authorities and colonial powers, foreign companies, and/or local elites associated with these dominant groups. The specific power of Petro-States is linked with the fact that oil has been, since the mid-twentieth century, the most important and valued commodity in the social metabolism of the capitalist system. Thus, Venezuela is not a "banana republic" and it can at times achieve geopolitical influence (as in its role in the founding of OPEC in 1960).

The set of institutions and ways of doing politics that characterize the Venezuelan Petro-State stem from the two *great oil booms* (so-called "El Reventón", occurred in the Zumaque well in 1914 and Barroso well II in 1922) and the long military dictatorship of Juan Vicente Gómez (1908–1935). Oil started to shape and give meaning to institutional channels for the use and distribution of the revenues and for the exercise of central power, due to the fact that the State was and is the recipient of these profits of the Nation (Lander 2007). Official narratives and social imaginaries and expectations of progress and modernity find materiality in petroleum (Coronil 2002).

Despite the fact that the military sector has been a very important institution for the formation and consolidation of the Petro-State, political parties—mainly Acción Democrática and secondly Copei—became a central factor for channeling social demands and the political organization of the society (Rey 1991; Bracamonte 2015), particularly due to the establishment of a liberal-democratic period in the country, initiated with the political agreement known as the 'Pacto de Punto Fijo' in 1958.

In economic terms, the State progressively increased control over and profits of the oil industry, until it began to directly manage the business after the decree of oil nationalization and the start of Petróleos de Venezuela's (Pdvsa) operations in 1976. The State expanded its size—especially due to the oil boom of 1973—and the economic institutions were resized, creating autonomous institutes and state enterprises. In environmental terms, an institutionality emerged as early as 1977 with the creation of the first Ministry for Environment in Latin America, although it had played a secondary role and was used fundamentally as an economic instrument in the interest of the national developmental project (Teran Mantovani 2014).

In the period of neoliberal adjustments, the idea of "the Minimum State" sparked a significant regression of the Petro-State's role in the society and economy, and several transformations were made in its structures (Bautista Urbaneja 2007). These changes, however, could not avoid the severe crisis developing in the country at the end of the 1980s and in the 1990s (including the 'debt crisis', collapsing oil prices, social explosion in the so-called 'Caracazo' in 1989, delegitimization of the dominant political parties of the 'Pacto de Punto de Fijo', among others), in which Hugo Chávez's leadership and the new Bolivarian project begin to emerge. The start of the Bolivarian Revolution in 1999 represents the resurgence of the developmental Petro-State, in which new forms of popular participation and a social-oriented economy take an important role.

After a period of intense political conflict between old elites and the Chávez government, which ended in 2004 with the victory of the 'chavismo' bloc (Ellner 2014), a political scenario was configured in which extractivism was relaunched and 21st century Socialism started to emerge as a governmental project (Teran Mantovani 2015). The Petro-State strengthened and grew—powered by the 2000s commodities boom—Pdvsa fell under complete national Government control and a nationalization process of the extractive industries—highlighting the Orinoco Oil Belt in 2007—and other strategic enterprises were started.

While the United Socialist Party of Venezuela (Psuv) arose in 2006–2007, to converge and integrate the support and social organization around President Chávez's leadership, different figures of political participation start to proliferate and strengthen. Much more fluid and dynamic links were generated between the web of Petro-State institutions and the broader sectors of the most disadvantaged part of the population, mainly through 'Communal Councils' and

direct distribution policies known as 'Misiones', which allowed a large part of existing social demands to be institutionalized. In this line, environmental entities were also reformulated, embracing a more politicized and radical discourse about ecology while promoting some corrective and cosmetic policies such as 'Misión Árbol' (forest recovery program) and the prohibition of trawling. Nevertheless, these institutions continued to play a secondary role subordinate to the centrality of the oil economy and the continuing need for political stability.

Focused on the political ecology of the Petro-State, in this paper, it is argued that this Petro-State configures an "ecological regime" (Moore 2011, 2013) at the national level, which will be called an *eco-regime*. That is, a regime developed in the "web of life" or the historical process in which "capitalism-in-nature" is structured. The eco-regime is driven by the State and capital which operate on local territories, eco-systems, and human bodies to confront ecological distributive conflicts and facilitate the appropriation of nature and capital accumulation.

From a micro-political perspective, the series of procedures developed for confronting or resolving socio-ecological distribution conflicts are called *bio-policies*. From a macro-political perspective, the social transformation, domination, shaping, control, signification, and/or dispute of territories is called *territorialization* in the Deleuze and Guattari (2010) approach.

The coherent division of geographical functions at the national scale (extractive zones, urban areas, sacrifice zones, protected areas, agricultural areas, among others) carried out generally by the State is referred as *mode of territorialization*.

The Petro-State has managed the Venezuelan mode of territorialization in the last 100 years, creating a geo-economic domination of the oil basin zones (North West and North East) and a long northern coastal urban belt, in which 90% of the total population reside. In this sense, the south Orinoco region has been assigned as a 'reserve zone' or 'undeveloped' area.

Following Wallerstein (1984), capital accumulation crises have historically been fixed or mitigated through appropriation of new geographical spaces located beyond the margins of central accumulation circuits. This geographical configuration is called by Jason Moore (2000) "commodity frontiers". The appropriation of the new frontiers is crucial not only for fueling capitalist expansion with more natural resources, but also enables displacement/externalization of the costs onto peasants, indigenous people, localized economies, protected areas, and cycles of life, among other. This paper shows that in Venezuela, the *new commodity frontiers* located in the south Orinoco region and the Sierra de Perijá region hold significant importance in the current geography of environmental conflicts.

Methodology

An initial mapping process was carried out on the basis of two sources: on one hand, several years of academic/activism experience around political ecology, extractivism, and environmental conflicts in Venezuela (Teran Mantovani 2014, 2015, 2016), including the organization of the Observatory of Political Ecology of Venezuela in 2017 (http://www.ecopoliticavenezuela.org/); and on the other hand, an extensive inquiry into bibliographies, newspaper archives, and documents to clearly define names and locations as well as elaborating the general profile of the conflicts. The outcome of this process was a preliminary list of 82 environmental conflicts from 18 of 24 states or "federal entities", including an additional "national-scale" category where cases such as "Biopiracy in Venezuela" or the current conflict against the "Arco Minero del Orinoco" project were typified. The list gathers cases with diverse levels of intensity, antiquity, national-scale relevance, and type of economic activity, among others categories.

Aiming at a preliminary construction of a geography of environmental conflicts and the development of hypotheses to explain it, basic criteria for the final selection of the 20 cases (see Table No. 1) were set up: (a) contemporaneity (only current cases, including latent conflicts); (b) geographical representativeness (ten cases at the north of the Orinoco region and ten cases in the south of this river, also taking into account the distribution of the same in the different regions of the country); (c) a significant impact on social metabolism (Scheidel et al. 2018, this feature; Pérez-Rincón et al., this feature) from projects or events involved (taking into account that the social metabolism of the Venezuelan economy is highly related to extractive industries); (d) relatively prominent social mobilization; (e) cases developed over time, rather than environmental incidents; and (f) specific place-based cases, rather than national campaigns.

Looking for geographical representativeness—rather than just a quantitatively representative sample—a national zonification was prepared for this paper, considering that the limits of states or federal entities do not necessarily facilitate this purpose. The zonification covers the whole country and tries to synthesize broad territorialization processes, taking into account the relationship among four dimensions: eco-systems or bioregions, pattern of settlement and cultures, function in the hegemonic mode of territorialization, and level of ecological distribution conflicts.

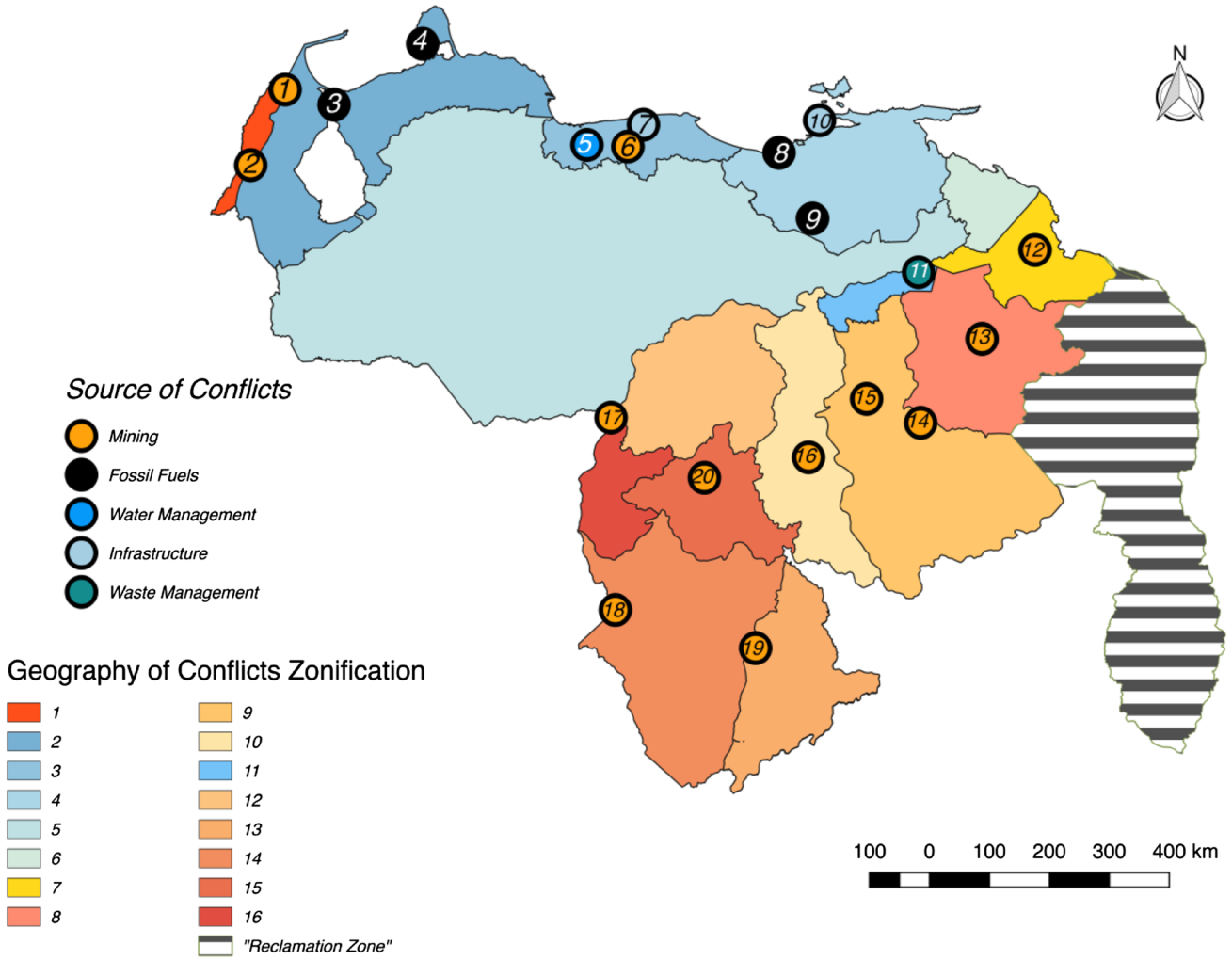

Fig. 1 Geography of environmental conflicts zonification. Source: own elaboration. Sixteen zones are presented. Each one represents a specific region defined by the union of ecological, economic, political, and cultural characteristics, which give it its own specificity. The zones are the following: 1 Sierra de Perijá, 2 Western Oil Basin, 3 Noth-Coastal Center, 4 Eastern Oil Basin, 5 Los Llanos-Los Andes bioregions, 6 Upper Orinoco Delta, 7 Lower Orinoco Delta, 8 Eastern Mining Municipalities of Bolívar state, 9 Caroní River Basin, 10 Caura River Basin, 11 Urban-industrial of Bolívar state, 12 Cedeño Municipality, 13 Yanomami territories, 14 South-western Border Area of Amazonas, 15 Manapiare Municipality, and 16 Autana-Puerto Ayacucho-Eje Carretero

Sixteen zones were delimited: the north Orinoco region has five and the south Orinoco (including the large part of the Delta Amacuro state) has 11 (see Fig. 1). North Orinoco has two zones defined by main oil basins in the country (zones 2 and 4), 1 bioregion (Sierra de Perijá, zone 1), one main urban axis (zone 3) and one low intensity environmental conflict zone (zone 5, union between Los Llanos and Los Andes bioregions). South Orinoco zones are highly correlated to indigenous territories, protected areas, and illegal mining dynamics.

The new commodity frontiers encompass the whole Amazonas state; Bolívar state (excluding urbanized Caroní and Heres municipalities); Antonio Díaz and Casacoima municipalities in the south of Delta Amacuro; and the Sierra de Perijá region in the Zulia state. All new commodity frontiers zones are identified as areas of warm colors in Fig. 1.

Having defined a zonification, cases in each area were chosen to include the most representative and emblematic conflicts by zone. Main regions of national territorialization are covered by the zonification map; therefore, the main commodities and development poles are contained within it. Only 2 out of 16 zones do not include a case. One of them—zone 5—is most probably one of the regions which lost the most demographic weight in the oil-economy development of the 20th century (Bolívar 2008). The six federal entities where no conflicts were found in the inquiry are located in this zone. The other zone without any case is the north part of Delta del Orinoco (zone 6). However, there is a conflict registered in the south part of this state with the indigenous

Warao (zone 7), which is highly linked with a previous oil pollution case in the north part also involving the Warao people (Pedernales-BP, in the late 1990s).

Evidence for this study comes from over 375 sources, including statements by NGOs and indigenous organizations, published interviews, video documentaries and archives, reports and denunciations by impacted communities, activist research documents, official documents and statements, newspaper articles, academic papers, and some interviews conducted by myself over e-mail, Skype, or even in person in Barcelona (Spain) to key actors, such as activists, people of impacted communities, and Venezuelan political ecology experts, aiming to cover research gaps.

The 20 cases were registered in the EJAtlas Venezuela database (EJatlas 2017a). The analysis was based on the categories of the atlas form. The source of the conflict (the main economic activity involved and the commodity at stake) is examined in relation to the geographical location of the case, the type of population affected/mobilized, and the intensity of the dispute. The role of the actors promoting the economic activity—such as Petro-State institutions, foreign corporations, or irregular/informal groups—is also analyzed. In turn, the outcome of the conflicts, in terms of whether environmental justice is achieved or not, is an important variable to shed light on the role of the State and the general force of the struggles, as well as the strength and effectiveness of the power mechanisms exercised over the mobilized population. These latter factors are evaluated in relation to the most prominent features of the socio-environmental impacts to understand the connection between unsustainability patterns and environmental injustice.

Finally, sections for comments were added to some parts of the survey for the sake of enriching qualitative analysis. Some questions were also added to take into account illegal, informal, and irregular economic activities, such as illegal mining, considering the importance of these in the Venezuelan environmental conflicts.

Some results and findings leading to a geography of environmental conflicts in Venezuela

Most of the conflicts are located in rural areas (13), while six are urban cases and one semi-urban. Thirteen cases come from mining activity and practically all of them are in the new commodity frontiers. This is closely related with the fact that almost all conflicts in rural areas are linked with mining activity. Urban (or semi-urban) cases are more diverse regarding the type of conflict: three are related to oil and gas (No. 3, 4 and 8) and one case each to water management (No. 5), infrastructure (No. 7), waste management (No. 11), and mining (No.13).

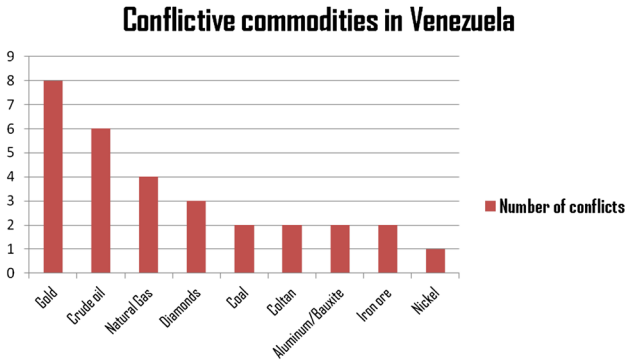

Fig. 2 Frequency distribution of conflictive commodities in Venezuela. Source: own elaboration based on final case selection. Note that more than one commodity may be involved in one single conflict

Despite the features of Venezuela's economy, crude oil is not the main commodity linked to conflicts studied (see Fig. 2). Moreover, four of five conflicts related directly with oil are low intensity. The other is a medium intensity case and is led mainly by oil trade unions (EJatlas 2016a). Instead, gold is the main commodity in conflicts not only because it is first in the list (eight cases), but also because it is linked with two-thirds of the high intensity conflicts registered. Other conflicts are related to natural gas, diamonds, coal, aluminum/bauxite, iron ore, nickel, coltan, among others.

In 12 cases, indigenous communities are involved and 10 of these occur inside the new commodity frontiers. Despite the fact that indigenous people represent less than 3% of the country's population (INE 2014), they play an important role in these conflicts as they inhabit, dispute, and defend these significant frontiers. There is a high degree of overlap with natural protected areas in these locations.

In turn, urban environmental struggles generally are not very intense and the mobilizations are more discontinuous. However, three of these cases have reached a medium intensity with street protests, collective actions, and public campaigns, like those around the big waste dump Cambalache (EJatlas 2016b), oil industrial complex Jose Antonio Anzoátegui (CIPJAA) (EJatlas 2016a) and the water transfer project from Valencia lake (EJatlas 2016c).

Political geography of socio-environmental impacts

Regarding impacts, it should be noted that every conflict entails affectations related to water pollution or hydrologic systems disturbance; 17 of them are linked both directly and indirectly with biodiversity loss and with visible or potential food insecurity. It is important to stress that these sensitive problems are distributed across the whole country, affecting at varying degrees of water sources and eco-systems.

Flows of waste and toxic emissions originating from project or event locations have a determinant role in this geography of conflicts, highlighting industrial waste or chemical products. In 19 cases, the population is exposed to unknown or uncertain complex risks, which are linked mainly to substances such as mercury, toxic gases, and pet coke, among others. Long lists of diseases are identified in these cases. Thirteen conflicts are related directly with deaths reportedly caused by, among others reasons, health damage.

Seen as a whole, we can also draw some observations on the dynamics of waste flows at the national scale:

a) Huge flows of mercury due to illegal mining in the whole Orinoco basin are causing diseases and deaths amongst the local population (EJatlas 2016d, e, f, g, h, i);
b) Displacement of the Orinoco Delta Warao people to the cities caused not only by mercury but also industrial waste (EJatlas 2016j) is linked to the Cambalache waste dump case, which, at the same time, generates a flow of toxic gases to big cities such as Ciudad Guayana and Puerto Ordaz, due to garbage incineration. A remarkable increase in HIV infection rates in indigenous Warao is linked to these displacements towards Cambalache, due to this original people are contagious in the landfill and then return to their communities in the Orinoco Delta;
c) Anzoátegui state networks of extraction, transport, and processing of oil and natural gas from Cantaura—El Tigre axis (medium area) to CIPJAA at the north coast, affect indigenous Kariña territories in the south (EJatlas 2016k), mainly with methane gas leaks through water sources, and impact northern urban areas with emissions of pet coke dust (EJatlas 2016a);
d) Potential pollution of Socuy, Cachirí, and Maché rivers due to the expansion of coal mining in the northern part of the Zulia state (EJatlas 2016l). These rivers feed Manuelote and Tulé water reservoirs, sources for several cities such as Maracaibo, inhabited by 1,450,000 people;
e) Increase of the level of Valencia lake due to, among others factors, industrial waste dumping originating in Valencia and Maracay cities (zone 3), which is linked with displacement of several families from Maracay's neighborhoods due to floods. A water transfer project promoted by the national Government provokes highly polluted water diversions which discharge in important water reservoirs such as Pao-Cachinche (Cojedes state) and Camatagua (Aragua state) (EJatlas 2016c). These dams provide water to cities such as Caracas, with a population of 3.5 million people. This pollution process affects the quality and quantity of water sent to main cities.

Hegemonic actors, power groups, and intense ecological distribution conflicts

With respect to the ownership structures involved in the cases, it must be stressed that all conflicts linked to a formal project[2] are led by a national company, even in joint ventures, where State institutions or enterprises are the majority shareholders. Almost all the national–state management cases occur in the traditional zones of the old oil economy, with the exception of two conflicts surrounding coal projects in the Sierra de Perijá region (cases No. 1 and 2). All the northern Orinoco region cases are linked to formal projects. This is the territory of the old well-established Venezuelan "Petro-State". The public sector is the major driver of the environmental impacts, the State is essentially the central actor that assumes and absorbs the environmental conflicts, as well as the main interlocutor to which social demands are addressed.

However, it is important to remark that not all the impacts of extractivism come from formal projects. The southern Orinoco region shows notoriously different dynamics. Half of the overall cases in the sample are linked to illegal/informal economic activities, fundamentally illegal mining (90% of them), which is in an extraordinary growth for 1 decade (see cases in zones from 8 to 13, excepting zone 11). This expansion is due, to a large extent, to the boom of the gold prices and commodities. Almost all these cases are inside new commodity frontiers, and several occur along international border areas (Colombia, Brazil, and Guyana).

There is an increase in violence and crime in half of the conflicts with 90% of these within new commodity frontiers. This is because of two factors: first, intense territorial disputes around illegal mining and illicit activities, boosted by criminal bands, paramilitary forces, and irregular armed groups—such as FARC in the case related with coltan (EJatlas 2016g). Those groups can manage and/or dispute mines with extreme forms of violence, underlining cases such as illegal mining in El Callao (EJatlas 2016i) and Alto Paragua (EJatlas 2016m).

Second, a militarization process is growing in several of these cases such as Wayuú conflict in Sierra de Perijá (EJatlas 2016l) or Arawaks in the southern Atabapo river basin in the Amazonas state (EJatlas 2016f). In both cases, indigenous people are the main group affected.

These illegal, informal, and irregular actors have been growing in importance and territorial power for at least

[2] The formal projects are those that are framed in the economic institutions of the State or the private companies registered before the authorities. On the other hand, informal economic activities are those that are outside official administrative control and are usually linked to self-employment, family economies and illicit activities, among others.

10 years and are attaining a significant role in ecological distribution conflicts. They have also taken strategic positions in new commodity frontiers, controlling territories, impinging on the local economies and absorbing labor force—even some sectors of indigenous communities—which is occurring at a varying scales among all original peoples (EJatlas 2016n, m, d, g, h).

In addition, it is important to stress claims by mobilizing groups and indigenous people that members of military forces are acting in complicity with illegal mining actors, creating new territorial powers and taking direct advantage of the trade of commodities and rents obtained from this activity (EJatlas 2016m, d, n, i, h, f). A complex relationship between the informal groups and official actors is developing, creating specific territorial regimes and localized economic benefits.

Extractivist expansion and environmental injustice in Bolivarian Revolution period

It is necessary to stress that, although several projects or events are linked to conflicts existing before the start of Bolivarian Revolution, all the sources of these in each case studied have been reinforced or relaunched. This is clear, for example, not only in the expansion of coal mining projects (EJatlas 2016l, o), the enlargement of oil facilities or the creation of new ones (EJatlas 2016p), but also in the increase of environmental impacts such as the collapse of the Cambalache waste dump (EJatlas 2016b), mercury pollution from illegal mining (EJatlas 2016i), and even worsening environmental management, such as what has occurred in CIPJAA (EJatlas 2016a).

Among the recorded cases, little evidence exists pointing towards the achievement of environmental justice. This may be explained by the fact that the material damages have by no means been remedied, and also because the mobilized groups' lists of demands often have not been met. Only in five cases were one or several demands fulfilled, yet even those cannot be considered environmental justice victories.

For instance, in 2014, the Cambalache waste dump was closed, but neither site clean up nor health care services were provided, and the regional government decided to create new improvised landfills, producing tensions in nearby communities (EJatlas 2016b). In case no. 10, the planned location of the deepwater port in the Araya peninsula (EJatlas 2016r) was modified, but currently, this project still stands despite critiques and opposition. A similar situation occured when the El Hornito community (EJatlas 2016q) was relocated in 1995 but never compensated for the socio-environmental damage, despite the fact that it was one of the community's main requests. Furthermore, a clear case of the great contradictions produced by illegal mining in indigenous territories can be found in the occupation of a mine by a Pemón group from Alto Paragua, expelling criminal bands and military forces from it. They continue to constitute an autonomous armed community, though environmental claims are not their priority, and even they still use motor pumps and mercury for local mining activities (EJatlas 2016m).

Discussion

The situation of environmental injustice in Venezuela, reflected in the cases analyzed, must be understood as a result of the combination of historic power patterns of the Petro-State's eco-regime, the renewal and updating of these during the Bolivarian Revolution and short-term factors linked with the country's current profound crisis. In this sense, the role of a traditional set of bio-policies in the current political process and the ecological dilemmas produced by the contrast between the 'eco-socialist project' and the existing injustices in ecological distribution are examined. The remarkable effects of the crisis on the Petro-State's functioning and the rising of 'illegal/informal commodity frontiers' are also discussed. Finally, unsustainability and political trends in the geography of environmental conflicts are likewise evaluated, highlighting the aggravation of the socio-ecological processes that trigger disputes and the colonization of new commodity frontiers.

The Petro-State's eco-regime: the traditional set of bio-policies and the framework for environmental struggles and sustainability

The Venezuelan Petro-State, as the primary economic actor in the country, employs a set of procedures and strategies—bio-policies—to deal with ecological inequalities and demands to ensure the continuing functioning of the rentier oil economy. Three main bio-policies are identified: assimilation, violence, and degradation.

Assimilation bio-policies

Assimilation mechanisms make environmental damage tolerable through the integration of the population in both economic and political dynamics and to general social expectations on the rentier economy model. These mechanisms are highly related to state companies (primarily Petróleos de Venezuela and its subsidiary enterprises) and public institutions, and these work as a set of articulated operations such as: cooptation through direct and indirect oil rent distribution; construction of public works (such as street paving or sport fields) or construction of big infrastructures to compensate for environmental impacts; territorial hegemony and institutional supremacy in the extractive enclaves and development poles; creation and management of social

expectations around products of mass consumption; and the use of the narrative of progress, social change, and sustainability to justify the development projects or economic investments.

These mechanisms have been implemented over time on the population and are not only effective in appeasing or mitigating environmental conflicts, but also work to integrate, absorb, and adapt the society to the economic valuations, policies, and orientations of the oil rentier model.

The following instances can be considered examples of assimilation: the economic supremacy of the oil industry in the peninsula of Paraguaná and the enormous difficulties to locally denounce associated environmental impacts (EJatlas 2016p); food and health assistance (not related with environmental impacts) in large and small scale; construction of sports courts and a defective shipping of tanker trucks to compensate for water pollution by methane gas in the indigenous community of Tascabaña (EJatlas 2016k); organization of indigenous communities in state-affiliated forms of association, as has happened with the Yukpa people in the Sierra de Perijá and the consequent struggle and divisions between these communities (EJatlas 2016o); and the promotion of an 'eco-socialist' narrative by the national Government.

Violence bio-policies

Through *violent* operations, human bodies are directly and indirectly attacked to avoid or eliminate social or individual resistances (see Del Bene et al. 2018, this feature; Navas et al. 2018, this feature). In the Venezuelan case, these mechanisms are evident in conflicts mainly in new commodity frontiers and this violence is primarily linked to processes of militarization. For instance, the Wayuú people have suffered an increase in criminalization and an intense militarization of their territories in the border area with Colombia, which has produced violent confrontations and resulted in deaths of their members. In the same region (Sierra de Perijá), the 'cacique' Sabino Romero, an important and emblematic indigenous leader who fought against coal mining, was killed in 2013 (EJatlas 2016o), in spite of continuous denunciations of receiving death threats. These territories are being disputed due to interests in initiating numerous projects, including infrastructure construction for extractive industries framed in the COSIPLAN-IIRSA project (EJatlas 2016l).

Yek'wana and Sanemá people from Caura river basin have denounced constant attacks and abuse by military officials, which has produced clashes between them (EJatlas 2016d). A similar situation is registered with the Pemón people in the Alto Paragua zone (EJatlas 2016m). These cases relate to intense disputes surrounding illegal mining in the Guayana region and the violent mechanisms described can coincide with criminal band aggression towards the indigenous people.

Degradation bio-policies

Degradation mechanisms operate through erosion, deterioration, and wearing out of the livelihoods and bodies of the dwellers in one specific territory. These can develop by means of continued lack of clean water, disease and epidemics, famine and processes of malnutrition, deaths, etc, and may lead to weakening social resistance. Likewise, degradation mechanisms can take place as an explicit policy to undermine the strength of current or potential opponents to a given project; or as the indirect outcome from economic and ecological externalizations (or even the combination of both).

The most emblematic case of degradation bio-policies in Venezuela is evidenced in dramatic impacts on the indigenous Warao in the Orinoco Delta, after decades of pollution and environmental deterioration produced by various economic activities. These processes have exposed them to numerous toxic substances, multiple diseases, and episodes of famine and death, and, at the same time, have diminished their struggle, turning the conflict into a low intensity one (EJatlas 2016j).

Degradation mechanisms also affect Yabarana, Hoti and E'ñepa (EJatlas 2016h), Wayuú (EJatlas 2016l), Yukpa people (EJatlas 2016o), with further impacts recorded on dwellers nearby petrochemical facilities in communities in Puertos de Altagracia (EJatlas 2016q), and nearby refineries such as in Paraguaná communities (EJatlas 2016).

Although the combination of two or three mechanisms in a single case can be observed, assimilation has historically been the main bio-policy of the Petro-State. This should be understood in the frame of a sui generis development process in which the Venezuelan eco-regime has been configured. The country became the most important exporter of crude oil in the world from 1928 until 1970 with a corresponding extraordinary and accelerated economic growth taking place in those years, unprecedented in Latin America (Baptista 2010). The sudden entry of petro-dollars and significant modernization boosted in the beginning by military regimes, produced a dramatic *shock* at the levels of the "national politic body and the communities" alike (Watts 2001). With the subsequent stabilization of this model, important territorial, cultural, social, and environmental changes were established, along with the consolidation of the extraordinary national-scale domination of the Petro-State.

In this sense, three factors must be remarked upon: first, an early and accelerated urbanization in the country relocated the vast majority of the population to the cities, where the primarily social and economic focus has been in the distribution of the oil surplus and mass consumption. Second, from the first decades of the democratic-liberal period, social unrest was progressively absorbed and assimilated through the 'populist' use and distribution of oil rent (Bautista Urbaneja 1992). The cooptation and institutionalization

of social conflict was leveraged by power groups that compose the Petro-State, configuring a "structural weakness" of all social organizations shut out of the 'Pacto de Punto Fijo' (García Guadilla 1992), including environmental movements, which despite some victories over specific demands (especially in the 1980s and 1990s), have had very little impact at a national level.

Third, different forms of oil rent distribution and remarkable urban territorialization strengthened the myths of wealth and sudden progress that revolve around 'black gold' (Coronil 2002). In this sense, it is argued that the vast majority of the population has been deeply permeated by this specific "valuation language" (Martínez-Alier 2003) configured around the chrematistic values of the oil rent, displacing significantly different valuation languages closer to ecological values.

As with degradation mechanisms, in this eco-regime violence has played a secondary role, unlike what happens for instance either with the Colombian State, which resorts to it as one of the main mechanisms to confront ecological distribution conflicts (Pérez Rincón 2014); or in Nigerian conflicts—e.g., the Ogoni struggles in the 1990s—where the close relation between oil and violence has been noted (Watts 2001). The high intensity of conflicts in the new restless oil frontiers in the Ecuadorian Amazon also contrasts with the "old" Petro-State's territories in Venezuela.

The combination of, on one hand, the link between a strategic and selective socialization of oil rent and the "black gold" myth; and on the other hand, the promise of 'revolution', 'national independence', and 'eco-socialism' in the Bolivarian narrative (Teran Mantovani 2014), has largely invisibilized, diminished, and/or postponed socio-environmental conflicts, mainly in the areas of influence of the Petro-State. In addition, the *rentier policy* is also used to confront ecological distribution problems and conflicts, mainly through economic compensation.

The situation in Venezuela's new commodity frontiers is relatively different, in the sense that violence plays a much more important role in the conflicts. However, the limited and discontinuous media coverage and the low level of attention in National policy on the struggles located there—due to the remoteness of the North Orinoco region's population with respect to those areas—are taken advantage of by the State to keep these claims, demands, and conflicts in low profile.

Nevertheless, Petro-State power should not be understood as an absolute and irresistible force. Some successes have been achieved in favor of environmental causes, such as the emergence of the 'Federación de Organizaciones y Juntas Ambientalistas de Venezuela' (FORJA) in 1978; the mobilizations to avoid mining activity in the forest reserve Imataca in 1997 (EJatlas 2017b); or even the long social and indigenous resistances against coal mining expansion in Sierra de Perijá, which put considerable pressure to stop this trend for more than 10 years and managed, for instance, to reverse mining decree 1606 by the national Government in 2015 (EJatlas 2016l, o). Furthermore, the Petro-State has assumed and institutionalized some environmental demands and narratives, which is partly a result of the struggles of these types of organizations.

In any case, the Petro-State's eco-regime produces a general framework for environmental struggles as remarkably fragile, fragmented, and discontinuous; in which it is highly difficult to confront or face not only the national oil industry, an icon of 'progress' in Venezuela, but also national companies, public institutions, and their values. Excepting for cases from zone 1, it could be said that, from an environmental struggle point of view, the North Orinoco region has been a pacified zone.

In this vein, it is argued that this eco-regime should not be only understood as a set of bio-policies and a mode of territorialization, but also as a specific correlation of forces (Gramsci 1980). The huge obstacles for environmental justice and sustainability are due not only to failures of the mobilized groups in the conflicts, but mainly to their previous weakness, their low relevance in the national political scenario, and the remarkable asymmetry of power that has existed in favor of the Petro-State.

It is argued that these political and socio-environmental dynamics in the country are decisive for a general pattern of unsustainability expressed, for example, in the 'biocapacity deficit' of Venezuela, according to WWF's Living Planet Report (2012).

The socio-environmental unsustainability patterns in the geography of environmental conflicts in Venezuela

It is argued that there exists a high correlation between the undermining of environmental struggles and the increase of ecological degradation. Indigenous people could be considered the main defenders of the water, forests, and biodiversity in new commodity frontiers. Similarly, peasant communities such as those of Tiara (case No. 6) or groups of fishermen such as those of the peninsula of Paraguaná (case No. 4) have defended and vindicated their more sustainable ways of life. All these cases have confronted the various projects that are imposed (or potentially imposed) on their territories. Failures of their struggles point to major transformations in the type of economic activity dominant in the area, with subsequent changes in more intensive uses of energy and materials and higher levels of ecological degradation (Špirić, this feature).

Nevertheless, the environmental injustice reflected in the cases is analyzed as a whole, in such a way as to highlight not only the consequences of territorial injustice but also a national pattern of degradation, produced within the framework of the eco-regime's mode of territorialization.

Thus, this pattern is the outcome of three factors: direct and indirect territorial disruption (e.g., from the imposition of a mining project to the mismanagement of a landfill), the type of response of the affected groups and the manner in which the Petro-State institutions manage the process, which rarely conducts prior consultations or resolves in favor of the demands of those groups. A comprehensive analysis of these processes allows an examination of how their outcomes have also been linked to broader scales of socio-environmental unsustainability, in some cases with unexpected consequences (e.g., changes in rainfall patterns on national-level or climate change effects).

As a result of these processes, there are worrying tendencies regarding the availability and access of water, taking into account that every conflict analyzed is linked to the degradation of water and affectations to the hydrological systems. For instance, the pollution of important dams such as Camatagua and Pao-Cachinche (EJatlas 2016c), or effects on the Caroní basin by illegal mining—a basin which feeds Simon Bolivar Hydroelectric Power Station (EJatlas 2016n)—are identified as one of the main causes of water problems and food and electricity access, even in the bigger cities of the country.

In the same vein, an integrated perspective of the location and flow of toxic waste, which is related to the different diseases present in cases, must be analyzed as a geography of health degradation—e.g., the extraordinary national increasing of malaria cases and its link with mining activity in the Bolívar state (OPS and OMS 2016). In addition, the progressive and permanent undermining of agricultural communities, fishing communities, and artisanal or local producers in a high number of the cases studied reveals a potential worsening of food insecurity problems, which could occur in a country with a high proportion of food imports. This is a dramatic result due to the reproduction of a national geography of poverty and economic vulnerability.

The high proportion of expanding projects or even the increase in illegal mining also points to a growing social metabolism, increasing quantity of natural resources consumed—e.g., remarkable growth of Domestic Material Consumption in the country, especially since 2004 at least until 2010 (UNEP 2016)—and the rise of sources of CO_2 emissions and waste. This situation could imply the worsening of the mentioned socio-environmental affectations, intensifying current conflicts, and creating new ones.

The ecological dilemma in the Bolivarian Revolution, the crisis of the Petro-State, and the rising of the 'illegal/informal commodity frontiers'

It is argued that despite the emancipatory discourse about 'eco-socialism' raised, the welfare policies boosted and the nationalization of the vast majority of the economy; in the Bolivarian Revolution period, the structure of inequalities in ecological distribution has been replicated, updated, and deepened, threatening the livelihoods of significant sectors of the population, both in the short term and long term.

Sacrifice zones and environmental externalizations were imposed or maintained, development projects were implemented without any previous consultation to the affected populations, ecological costs and liabilities were not assumed by national companies or the State, and assimilation mechanisms typical of the Petro-State's eco-regime were reproduced and reformulated. The pattern of environmental degradation/social marginalization (Robbins 2004) has been maintained to promote the expansion of extractivism and to meet the macro-economic goals of the rentier capitalist model.

This raises an ecological dilemma in a political process that has proposed radical transformations and a 'revolutionary' change such as the Bolivarian Revolution: there are marked limits to drive sustainability processes and to move towards the 'eco-socialist via' from the expansion of an extractivist model. The undermining of livelihoods of millions of people in the present and future and environmental injustice cannot be compensated only through a fairer oil rent distribution, some policies of cultural inclusion, or greater political participation in electoral matters.

However, the hegemony of the Petro-State and thus this traditional set of bio-policies are highly impacted by the economic crisis developing since 2013. This situation creates a progressive declining of environmental institutions, a high pressure to *flexibilize* environmental regulations, and an intensification of disputes around the control of resources.

The territorial power of the Petro-State is being disputed by new actors, practices, and coalitions linked to underground and illegal economies, and so, the features of the current eco-regime could be transformed. Criminal bands or irregular armed groups are not only disputing, managing, and controlling illegal mines, but also are producing new territorializations in the sense of exercising power in territory, increasingly transforming nature, creating local economies, and permeating the social fabric of territories, even on indigenous people. This setting up of an *informal ecological regime* sometimes beyond the State and is compromising environmental justice and socio-ecological sustainability even more.

The scale of this new phenomenon is considerable for Venezuela. According to Oil Minister Eulogio del Pino (audio recording 2016), between 10 and 15 tons of gold per year are leaving the country due to illegal mining. The highest quantity of formal mining "production" since 1998 was 12.23 tons in 2009 (USGS 2015). Taking into account the drop in legal production (1.09 tons in 2014), this would

mean that currently, around 90% of the gold extraction in Venezuela comes from illegal mining.

Along with the territorial expansion of these underground types of economies, a remarkable control of commodity extraction is taking place by them. A parallel way of valuation and appropriation of territories involved could be understood as *illegal commodity frontiers*, which also should be analyzed in the light of geopolitical resources dynamics.

However, we must evaluate these processes not only as the rising of an external power to challenge Petro-State hegemony. It could be argued either that when the State is weak illegal mining rises or that the State is able to assimilate small-scale illegal mining activities. Nevertheless, in this article, it is argued that there is not a pure separation between formal–informal or legal–illegal forms. As it has been shown in this paper, in almost all commodity frontiers cases, crossings and intersections between these forms were reported. The role of some members of the military forces allowing, boosting, and/or facilitating illegal mining has been especially pointed out in this article, showing the importance of networks of corruption for extractivism.

The coalition or hybridization between formal and informal, or legal and illegal scopes necessitates a discussion around new potential forms of the State in South America in the 21st century and its consequences in relation to sustainability. Illegal, informal, and criminal networks are booming and are inciting the rise of local governances and new forms of sovereignty. Results of my research take into account the important role of these actors in the territorialization processes and the political regimes, in a context of a remarkable global crisis.

Political trends in the geography of environmental conflicts: colonizing new commodity frontiers

It is argued that the current extractivist model is reaching a breaking point. The reduced ability of the Petro-State to capture and hold oil rents and to keep an equilibrated distribution is currently jeopardizing the assimilation mechanism that traditionally solved or neutralized ecological distribution conflicts. Possibly, we are witnessing the exhaustion of this historical pattern of bio-policies.

What we are increasingly seeing is a highly conflictive scenario in which violence mechanisms could have greater weight. Militarization processes, boosted by the national Government, are being developed in line with an accelerated relaunching of several extractivist projects especially in 2015–2016, focused basically on the colonization of new commodity frontiers. Such projects aim at facing the extraordinary crisis of the rentier capitalist model, raising greater deregulations, and easing new agreements in favor of the entry of transnational corporations (Teran Mantovani 2016). Furthermore, this kind of economic *flexibilization* neutralizes environmental institutions and can lead to increased socio-environmental externalizations.

The "Arco Minero del Orinoco" is probably the most significant of these projects; with a territorial extension of 111,843.70 kms^2 in the Bolivar state (around 12% of national territory) designated for massive gold, diamond, bauxite, iron, and coltan extraction. New commodity frontiers are taking a new-scale profile respect to national economy, focused now on mega-mining activity. The dimensions proposed have never been seen in Venezuela's history.

This new leap of extractivism, disputes around territories, and natural resources lead by irregular/illegal actors, and the worrying scenario of socio-environmental unsustainability points to the increase of violent conflicts in the future and to the growing importance that ecological distribution conflicts will have in the whole country. In this scenario, new environmental identities, narratives, valuations, and struggles could be produced. It is argued that a greater "environmentalization" of popular struggles (Acselrad 2010) in Venezuela is possible.

Conclusions

The geography of environmental conflicts in the Bolivarian Revolution period has been presented, showing how a situation of environmental injustice and worrying trends of socio-ecological unsustainability are being produced.

The features of the Petro-State's eco-regime were analyzed, stressing the decisiveness of assimilation bio-policies and their capacity to integrate the population into the cultural, economic, and political dynamics of the rentier economic model and to neutralize environmentalist dissent. It is important for sustainability studies take into account not only the way in which Petro-States confront environmental conflicts but also how these can produce a general structure of social struggles that are remarkably fragile, fragmented, and discontinuous. It was shown how the traditional Petro-State's territories in the northern Orinoco region, in environmental struggle terms, have been a pacified zone. Rather, violence plays a much more important role in conflicts within new commodity frontiers, but the limited and discontinuous media coverage and the low level of attention paid by National policy to the struggles located there allow the State to keep these claims, demands, and conflicts in low profile.

It was argued that in the Bolivarian Revolution period after 1999, the Petro-State updated the historic eco-regime maintaining a pattern of social marginalization and ecological degradation as the outcome of its economic development model. It was remarked that environmental injustice cannot be compensated only through a fairer oil rent distribution, some policies of cultural inclusion, or greater

political participation in electoral matters. The trends towards deepening of socio-environmental unsustainability not only call into question the 'eco-socialist' proposal of the Bolivarian Government but also jeopardize the livelihoods of millions of Venezuelan people.

However, the potential exhaustion of the historical pattern of bio-policies, focused mainly on assimilation mechanisms, could raise a political scenario in which violence mechanisms would become more relevant. In addition, the emergence of new actors, practices, and geographies linked to underground economies are significantly impacting ecological distribution and intensifying territorial conflicts. The increase of decentralized and delinquent forms of territorial power, mainly in new commodity frontiers, and the complex alliances between formal/legal and informal/illegal scopes, show the potential configuration of new environmental governances.

This has enormous implications for sustainability studies, primarily focused on formal scopes of politics and economy. Informal, illegal, and even delinquent governances complicate the possibilities of setting sustainability scenarios, due to legal and juridical frameworks and procedures that do not seem to be sufficient for the regulation of these activities, giving more space for dynamics of violent confrontation.

The significant importance of Venezuela's new commodity frontiers in a geography of environmental conflicts has been noted. Due to the expanding economic crisis and the needs for a broader appropriation of natural resources and new capital investments, it is probably one of the main scenarios where this political process will be defined.

Finally, the socio-ecological conditions and trends described in this article point to an increase in the significance of ecological distribution conflicts in Venezuela. Despite extraordinary challenges, new ecological, political, and economic conditions have created new scenarios for social struggles. In addition to indigenous peoples' resistances in the new commodity frontiers, it would seem that a greater "environmentalization" of popular struggles in Venezuela, including urban zones, is likely.

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References

Acosta A (2013) Extractivism and neoextractivism: two sides of the same curse. In: Lang M, Fernando L, Buxton N, Beyond Development, Transnational Institute/Rosa Luxemburg Foundation, Quito, pp 62–86

Acselrad H (2010) The "environmentalization" of social struggles—the environmental justice movement in Brazil. Estudos Avançados 24:103–119

Baptista A (2004) El relevo del capitalismo rentístico: hacia un nuevo balance de poder. Fundación Polar, Caracas

Baptista A (2010) Teoría económica del capitalismo rentístico. Banco Central de Venezuela, Caracas

Bautista Urbaneja D (1992) Pueblo y petróleo en la política venezolana del siglo xx. Cepet, Caracas

Bautista Urbaneja D (2007) La política venezolana desde 1958 hasta nuestros días. Publicaciones UCAB, Caracas

Bolívar M (2008) La población venezolana, su dinámica y su distribución espacial. In: Fundación Empresas Polar (comp) GeoVenezuela. Fundación Empresas Polar, Caracas

Bracamonte L (2015) El declive de la democracia liberal de partidos en Venezuela (1974–2001). Fundación Celarg, Caracas

Carrillo M (2000) La inversión extranjera directa y los conflictos ambientales locales en Venezuela. Cuadernos Del Cendes 53:155–196

Coronil F (2002) El Estado mágico. Naturaleza, dinero y modernidad en Venezuela. Nueva Sociedad/Consejo de Desarrollo Científico y Humanístico de la Universidad Central de Venezuela, Caracas

Del Bene D, Temper L (2018) Hydropower conflicts, resistance and violence; a comparative political ecology approach of the EJAtlas database. Sustain Sci (**this feature**)

Deleuze G, Guattari F (2010) Mil mesetas. Capitalismo y esquizofrenia. Pre-textos, Valencia

EJatlas (2016a) Complejo Industrial Petrolero José A. Anzoátegui, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/los-impactos-socioambientales-del-complejo-industrial-petrolero-jose-antonio-anzoategui. Accessed April 1, 2017

EJatlas (2016b) El vertedero de Cambalache en Ciudad Guayana, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/el-vertedero-de-cambalache-en-ciudad-guayana. Accessed April 1, 2017

EJatlas (2016c) Trasvase de agua desde el Lago de Valencia, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/el-trasvase-de-las-aguas-del-lago-de-valencia. Accessed April 1, 2017

EJatlas (2016d) Pueblos yek'wana y sanemá afectados por minería ilegal de oro en el Alto Caura, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/afectacion-de-los-pueblos-yekwana-y-sanema-por-mineria-ilegal-en-el-rio-caura. Accessed April 1, 2017

EJatlas (2016e) Comunidades yanomami de la cuenca del río Ocamo afectadas por minería ilegal, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/afectacion-de-comunidades-indigenas-yanomami-de-la-cuenca-del-rio-ocamo-por-mineria-ilegal. Accessed April 1, 2017

EJatlas (2016f) Pueblos indígenas arawaks del sur afectados por minería ilegal en la cuenca del río Atabapo, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/pueblos-indigenas-arawaks-del-sur-afectados-por-mineria-ilegal-en-la-cuenca-del-rio-atabapo. Accessed April 1, 2017

EJatlas (2016g) Disputas de los indígenas del Alto Paragua en torno a la minería ilegal en sus territorios, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/disputas-de-los-indigenas-del-alto-paragua-en-torno-a-la-mineria-ilegal-en-sus-territorios. Accessed April 1, 2017

EJatlas (2016h) Indígenas wayúu del Socuy defienden sus territorios ante extracción de carbón y otros proyectos, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/indigenas-wayuu-del-socuy-defienden-sus-territorios-ante-el-avance-de-proyectos-vinculados-a-la-extraccion-de-carbon-carbozulia. Accessed April 1, 2017

EJatlas (2016i) Minería ilegal y la contaminación por mercurio en El Callao, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/mineria-ilegal-y-la-contaminacion-por-mercurio-en-el-callao. Accessed April 1, 2017
EJatlas (2016j) Indígenas warao (Delta del Orinoco) contaminados por Corporación Venezolana de Guayana y minería ilegal, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/indigenas-warao-en-el-bajo-delta-del-orinoco-contaminados-por-desechos-de-la-corporacion-venezolana-de-guayana-y-de-la-mineria-ilegal. Accessed April 1, 2017
EJatlas (2016k) Indígenas kariña de la comunidad de Tascabaña afectados por la industria petrolera (PDVSA), Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/indigenas-karina-de-la-comunidad-de-tascabana-afectados-por-la-industria-petrolera-pdvsa. Accessed April 1, 2017
EJatlas (2016l) Indígenas yabarana, hoti y e'ñepa afectados por minería ilegal en Manapiare, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/indigenas-yabarana-hoti-y-enepa-afectados-por-mineria-ilegal-en-el-municipio-manapiare. Accessed April 1,
EJatlas (2016m) La fiebre del coltán amenaza a indígenas guajibo, piaroa y e'ñepa en Bolívar y Amazonas, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/los-peligros-de-la-fiebre-del-coltan-para-indigenas-guajibo-piaroa-y-enepa-en-los-estados-bolivar-y-amazonas. Accessed 1 April 1, 2017
EJatlas (2016n) Comunidades pemón del río Carrao afectadas por minería ilegal en el P.N. Canaima, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/comunidades-indigenas-pemon-del-rio-carrao-afectados-por-la-mineria-ilegal-en-el-parque-nacional-canaima. Accessed April 1, 2017
EJatlas (2016o) Indígenas yukpa de los ríos Yaza y Tukuko luchan contra la expansión de Carbozulia en la Sierra de Perijá, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/indigenas-yukpa-de-los-rios-yaza-y-tukuko-luchan-por-frenar-la-expansion-de-carbozulia-en-la-sierra-de-perija. Accessed April 1, 2017
EJatlas (2016p) Los impactos socioambientales del Complejo Refinador Paraguaná, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/los-impactos-socioambientales-del-complejo-refinador-paraguana. Accessed April 1, 2017
EJatlas (2016q) Complejo Petroquímico El Tablazo y las luchas de El Hornito contra PDVSA, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/el-complejo-petroquimico-el-tablazo-y-las-luchas-de-la-comunidad-de-el-hornito-contra-pdvsa. Accessed April 1, 2017
EJatlas (2016r) El proyecto del puerto de aguas profundas en la península de Araya, Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/el-proyecto-del-puerto-de-aguas-profundas-en-la-peninsula-de-araya. Accessed April 1, 2017
EJatlas (2017a) Venezuela. In: Atlas of environmental justice. http://ejatlas.org/country/venezuela. Accessed March 1, 2017
EJatlas (2017b) Reserva Forestal Imataca, Región Guayana de Venezuela. In: Atlas of environmental justice. http://ejatlas.org/conflict/reserva-forestal-imataca-region-guayana-de-venezuela. Accessed Sept 2, 2017
Ellner S (2014) El fenómeno Chávez: sus orígenes y su impacto (hasta 2013). Fundación Celarg, Caracas
Escobar A (2001) Culture sits in places: reflections on globalism and subaltern strategies of localization. Polit Geogr 20:139–174
García-Guadilla MP (1992) The Venezuelan ecology movement: symbolic effectiveness, social practices and political strategies. In: Escobar A, Álvarez S (eds) The making of social movements in Latin America. Westview Press, Boulder, pp 150–170
García-Guadilla MP (2014) Dilemas del ecosocialismo post-neoliberal y resistencia de los movimientos sociales frente al modelo neo-extractivista en Venezuela. Revista Encuentros Latinoamericanos 8:3–47
Gramsci A (1980) Análisis de las situaciones. Relaciones de fuerzas Nueva Antropología 4:7–18
Gudynas E (2009) Diez tesis urgentes sobre el nuevo extractivismo. Contextos y demandas bajo el progresismo sudamericano actual. In: Various Authors Extractivismo, política y sociedad. CAAP and CLAES, Quito, pp 187–225
INE (2014) Resultados población indígena. XIV Censo de población y vivienda 2011. http://www.ine.gob.ve/documentos/Demografia/CensodePoblacionyVivienda/pdf/ResultadosBasicos.pdf. Accessed 10 Dec 2017
Karl TL (1997) Paradox of plenty: oil booms and Petro-States. University of California Press, Los Angeles
Lander E (2007) El Estado y las tensiones de la participación popular en Venezuela. OSAL 8:65–86
Lander E (2014) Venezuela: terminal crisis of the rentier petro-state model? Transnational Institute. https://www.tni.org/en/publication/venezuela-terminal-crisis-of-the-rentier-petro-state. Accessed 10 Dec 2017
Lander E, Arze C, Gómez J, Ospina P, Álvarez V (2013) Promesas en su laberinto. IE, Cedla and Cim, La Paz
Martínez-Alier J (2003) The Environmentalism of the poor: a study of ecological conflicts and valuation. Edward Elgar Publishing, Cheltenham and Northampton
Mommer B (2010) La cuestión petrolera. Fondo Editorial Darío Ramírez. Pdvsa, Caracas
Moore JW (2000) Sugar and the expansion of the Early Modern World economy. Review 23:409–433
Moore JW (2011) Transcending the metabolic rift: a theory of crises in the capitalist world-ecology. J Peasant Stud 38:1–46
Moore JW (2013) El auge de la ecología-mundo capitalista, I: Las fronteras mercantiles en el auge y decadencia de la apropiación máxima. Laberinto 38:9–26. https://jasonwmoore.com/wp-content/uploads/2017/08/Moore-El_Auge_de_la_ecologia-mundo_capitalista__Part_I__Laberinto__2013.pdf. Accessed 10 Dec 2017
MPPA, Pnuma, IFLA (2010) GeoVenezuela. Perspectivas del Ambiente en Venezuela. Pnuma, MPPA e IFLA, Caracas
Navas G Aguilar-González B (2018) Mapping the environmental injustice in Central America: an analysis of 80 ecological distribution conflicts. Sustain Sci **(this feature)**
OPS, OMS (2016) Plan de acción para la eliminación de la malaria 2016–2020. 55.o Consejo Directivo, Washington. http://www.paho.org/hq/index.php?option=com_docman&task=doc_download&gid=35669&Itemid=270&lang=es. Accessed 10 Dec 2017
Paulson S, Gezon L (2005) Political ecology across spaces, scales, and social groups. Rutgers, New Jersey
Pérez-Rincón M (2014) Injusticias ambientales en Colombia: estadísticas y análisis para 95 casos. Ambiente y Sostenibilidad 4:65–78. https://www.academia.edu/28695876/INJUSTICIAS_AMBIENTALES_EN_COLOMBIA_ESTAD%C3%8DSTICAS_Y_AN%C3%81LISIS_PARA_95_CASOS_Environmental_Injustice_in_Colombia_Statistics_and_Analysis_for_95_cases. Accessed 10 Dec 2017
Pérez-Rincón M, Vargas-Morales J, Crespo-Marín Z (2017) Trends in social metabolism and in environmental conflicts in four Andean countries, 1970–2013. Sustain Sci. https://doi.org/10.1007/s11625-017-0510-9
Quintero R (2012) La cultura del petróleo. Banco Central de Venezuela, Caracas
Rey JC (1991) La democracia venezolana y la crisis del sistema populista de conciliación. Revista de estudios políticos 74:533–578
Robbins P (2004) Political Ecology. A critical introduction. Blackwell, UK

Rodríguez I (2002) The transformative role of conflicts beyond conflict management in national parks: a case study of Canaima National Park, Venezuela. Doctoral dissertation, University of Sussex

Scheidel A, Temper L, Demaria F, Martinez-Alier J (2018) Ecological distribution conflicts as forces for sustainability: an overview and conceptual framework. Sustain Sci. https://doi.org/10.1007/s11625-017-0519-0

Špirić J (2018) Ecological distribution conflicts and sustainability: lessons from the post-socialist European semi-periphery. Sustain Sci. https://doi.org/10.1007/s11625-017-0505-6 **(this feature)**

Teran Mantovani E (2014) El fantasma de la gran Venezuela. Fundación Celarg, Caracas

Teran Mantovani E (2015) El extractivismo en la Revolución Bolivariana: potencia energética mundial y resistencias eco-territoriales. Iberoamericana 59:111–125

Teran Mantovani E (2016) Las nuevas fronteras de las *commodities* en Venezuela: extractivismo, crisis histórica y disputas territoriales. Ciencia Política 11:251–285

Tinker Salas M (2014) Una herencia que perdura. Galac, Caracas

UNEP (2016) Natural resources efficiency indicators, 2010. http://uneplive.unep.org/country/index/VE#more-tab1_7. Accessed 10 Dec 2017

USGS (2015) 2013 minerals yearbook. http://minerals.usgs.gov/minerals/pubs/commodity/gold/myb1-2013-gold.pdf. Accessed 10 Dec 2017

Uslar Pietri A (2005) Sembrar el Petróleo. Revista de Artes y Humanidades UNICA 12:231–233

Wallerstein I (1984) The politics of the World-economy. Maison des Sciences de l'Homme and Cambridge University Press, New York

Watts M (2001) Petro-violence: community, extraction, and political ecology of a mythic commodity. In: Peluso N, Watts M (eds) Violent environments, Cornell University Press, New York, pp 189–212

WWF, Instituto de Zoología, Red de la Huella Global, Agencia Espacial Europea (2012) Planeta vivo. Informe 2012. http://d2ouvy59p0dg6k.cloudfront.net/downloads/informe_planeta_vivo_2012_9.pdf. Accessed 10 Dec 2017