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Martinez-Alier, J.; Baud, M.; Sejenovich, H.

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Origins and Perspectives of Latin American Environmentalism

Joan Martinez-Alier, Michiel Baud and Héctor Sejenovich

Introduction

The debate on the socioenvironmental challenges faced by Latin America has a long history. This history is crucial to understanding Latin American perspectives on environmental governance and, above all, to understanding the specific characteristics which determine these perspectives. Traditional debates on environmental governance tend to see the Western debates on nature and environment as determining views and perspectives on a global scale. The suggestion is that Latin American environmental debates were directed by the changing views in the industrialized world. This chapter, however, suggests that Latin America has developed its own strands and perspectives on environmental issues which were emerging from its peculiar historical position. A focus on the specific, and to a large extent autonomous, knowledge development on nature and environment allow us to understand the determining roots of Latin American ideas on environmental governance.

Latin American environmental ideas are closely connected to an environmental history since the Spanish Conquest, which was characterized by a dramatic drop in population and a series of export booms driven by one commodity after another. An early case in point may be the exportation of guano from Peru that amounted to about 11 million tons over 40 years, from 1840 to 1880, and was based on the exploitation of indentured Chinese workers (Gootenberg, 1993). In the last decades of the nineteenth century and in the beginning of the twentieth century, the entire Latin American region experienced a dramatic boom in agriculture for exportation. New crops such as coffee, cacao and banana, along with more traditional goods such as sugar, changed the economic and ecological context of much of Latin America as well as the lives of

large sectors of its population. The agrarian frontier expanded, and large territories, often in the interior of the new republics, were deforested and occupied by new forms of agriculture. The expansion of coffee cultivation in Antioquia, Colombia, and of cacao in the interior of Ilhéus in the north-east of Brazil have been iconic examples, just like rubber and henequen in southern and south-eastern Mexico, the banana belt in Central America, Colombia and Ecuador, and the occupation of the Pampas in Argentina and southern Brazil (for a number of examples, see Topic, Marichal and Frank, 2006). Cuban sugar export increased from 1 million tons per year around 1900 to 3 million tons by 1920, causing dramatic deforestation on the island (Funes Monzote, 2004a, 2004b). This sacrifice was unaccounted for in the modernizing ideology of the time, epitomized by Arango Parreño's slogan of 1770, "*sin azúcar no hay país*" ("without sugar, no country") (Moreno Fraginals, 1978).

This expansion of the agrarian frontier was accompanied by ideologies of progress, the incorporation of new business elites, and a strong dependence on the international market. With the Chilean triumph in the Pacific War (1879–1883) and the incorporation of Antofagasta and Tarapacá, Chile became the world's principal producer of the mineral saltpetre. The exportation of this sodium nitrate increased until 1914 and remained constant until the crisis of 1929, oscillating between 1.5 and 3 million tons per year (Miller and Greenhill, 2006). This provoked an economic boom like the country had not experienced before.

In the beginning of the twentieth century, the oil industry in Venezuela and Mexico began to grow, causing ecological and social disasters at a scale unknown at the time (Santiago, 2006). This process continues today: the calculation (in tons) of primary materials that are exported (West and Schandl, 2013) reveals a multiplication of four, from 1970 to 2010.¹ As an example, Venezuela exports roughly 120 million tons of oil per year.

Recently, with the expansion of the Chinese economy, the extraction of natural resources (not only minerals and oil but also agrarian products, such as soy) has grown at an extraordinary rate. The Government of Uruguay is considering exporting 18 million tons of iron ore per year under the Aratirí project. Meanwhile, Chile exports 5 million tons of copper per year, which requires the removal of land, enormous production of slag and a large input of energy. Colombia exports almost 100 million tons of coal per year; Brazil annually exports 400 million tons of soy and iron ore. There are signs that the recent economic bonanza from primary exports is coming to a halt in 2015, reinforcing the critiques from the "post-extractivist" school. However, this might be

only a temporary situation. New supplies of energy and materials from Latin America will find markets, and domestic and foreign demand.

The beginning

The population of the American continent suffered an enormous drop during the Spanish colonization. The population was drastically reduced by the exploitation to which it was subjected, but the “Great Dying”, as it was called by Eric Wolf (1982: 133ff), was primarily due to the spread of infectious diseases. From an estimated 140 million people in the year 1500, only 40 million were registered 60 years later (Tudela, 1990; also Sánchez-Albornoz, 1984). The American population, which had a size comparable to that of Europe at the time, dropped some 80%. This historical process is unparalleled in other continents with the exception of Australia and a few other places in the world (e.g. the Canary Islands, Hawaii) that have experienced a similar phenomenon. The decrease in the native population – and its slow substitution by an immigrant population in the neo-European (as they were called by Crosby, 2004) and also later in the humid tropics – should be understood as a biological as well as a military process. The conquistadores arrived in new territories in search of riches. They had little mercy for the native population and, unwittingly but also relentlessly, they contaminated it with new fatal illnesses.

However, the depopulation in the first century after the colonization can not only be attributed to the arrival of Hernán Cortés and Francisco Pizarro and their troops in the former Mexican and Andean empires (or even before they arrived, as death travelled fast). The archaeology of the Amazon today confirms the existence of population densities much greater than those during several centuries following the conquest. There had already been collapses of empires, and perhaps also of populations before the Spanish Conquest, such as in the Mayan territory, but what happened in the American demography after 1492 had no precedent on a continental scale and throughout the history of mankind.

Today's low population density in Latin America (with local exceptions such as El Salvador and Haiti) negates one of the principle arguments in ecological thinking, namely, that population density is the key problem of environmental degradation. Nowhere in Latin America is there an issue of overpopulation as in Europe (with densities of up to 300 people per square kilometre in Germany, Italy and England) or in India and Bangladesh. In Latin America, population increase later

became an explicit policy of modernist governments. In this sense, the famous remark by Argentinian Juan Bautista Alberdi in 1852, “to govern is to populate”, is symbolic of the mindset of the Latin American elites of that time. Much later, during the time of the military dictatorship (1964–1986), the Brazilian state – in its geopolitical delirium – called for an increase in birth rate in order to populate the Amazon against foreign threats.

Ecology and demographics thus changed rapidly in the context of early colonization. Under the rule of one single dynasty – the Habsburgs – for the first 200 years, the Spanish American territories saw enormous ecological and demographic changes. Invasive species arrived (Melville, 1999), whereas the expansion of modern mining methods (modern in technology and scale) in regions such as Potosí, Zacatecas and also Minas Gerais led to a great decrease in population and enormous pollution by mercury (Machado Araoz, 2014). In a later stage, the frontiers of silver and gold extraction and – almost always at the same time – of deforestation moved to those of sugarcane in the Caribbean and the north-east of Brazil, and later the regions that produced and exported coffee, rubber, wood such as mahogany and quebracho, meat, banana, soy, copper, oil and coal, iron ore and bauxite (Brannstrom, 2004).

Conservationist environmentalism

Despite the anthropogenic changes that happened before and after 1492, Latin America managed to conserve immense biological diversity in many of its diverse ecosystems. The Amazon had scarcely been touched before the rubber whirlwind at the end of the nineteenth century. This enormous biological richness attracted the attention of European explorers such as Alexander von Humboldt (1769–1859), the renowned Prussian scientist. Without his explorations of this part of the world that came to be known as the “Neotropics”, biogeography, the study of the geographical distribution of plants and other life forms, would not have been developed in the same way. His intention, which he never accomplished, was to return to Latin America once it had become independent and to direct an academy with scientific correspondents from Mexico to Patagonia.

On 29 July 1822, when he was in Paris, Humboldt wrote a letter to Simon Bolívar introducing him to the young mining experts, Jean Baptiste Boussingault and Mariano de Rivero. Some years later, in his *Memoria sobre el Guano de los Pájaros* (1827), Mariano de Rivero

remembered how Humboldt had given samples of guano to Fourcroy and Vauquelin who analysed the chemical elements of this fertilizer. Still later, Mariano de Rivero regretted that Peru had not durably invested the revenues from guano exports in a policy that we now call “weak sustainability” (Alcalde Mongrut, 1966). This renewable product was exported at such a rate that it led to its depletion. It should have been invested in businesses that could have generated permanent income. This proposal is similar to that which was later proposed by Uslar Pietri in Venezuela in 1936, baptized as the “sowing of the oil” (*sembrar el petróleo*) (Martínez-Alier and Roca, 2013: 116–117).

Humboldt described the geology, volcanoes, biogeography and the richness of species of the American territories that he visited between 1799 and 1805. Later – and largely due to Darwin – Latin America came to hold a privileged role in the science of biological evolution. Darwin’s explanation of the origin of species owes much to his trip to America during the Beagle mission (from 1831 to 1836) to collect materials. He came up with ideas that eventually, after his crucial stay in the Galápagos, led him to express his astonishment at the number of endemic species, given that the islands had only come to exist in a geologically recent period. By observing finches and variations in the size and form of their beaks (which ecotourists continue to discuss today), he concluded that only one race of such birds had arrived and established itself on the archipelago, and that new species had arisen through adaptation to specific food sources.

South America was therefore crucial to the history and evolution of biology as well as the history of agrarian chemistry and the development of the idea of “social metabolism”. By 1840, Liebig, Boussingault and other scientists, based on the analysis of Peruvian guano and other fertilizers, determined that plants need three principal nutrients – phosphorus, potassium and nitrogen – and that agriculture should evolve from a system of plundering to one of restitution (McCosh, 1984: 81–82). The fertilizing properties of guano were known by the historic inhabitants of Peru but had not been described or analysed in chemical terms. Guano had global importance – it was exported as a fertilizer but also served and strongly influenced the minds of the agrarian chemists (Gootenberg, 1993; Cushman, 2013).

In the course of the nineteenth century, conservationist environmentalism increased. Most intellectuals and politicians lived in parts of Latin American cities which were somewhat removed from the environmental destruction caused by mining and by the agro-export model. Gradually, however, urban populations also started to be confronted by

issues of pollution and environmental destruction in their own habitat. This was most directly the case with dirty water, sanitation and infectious diseases, which alarmed urban elites. The growth of cities also led to environmental destruction and deforestation to which they could not close their eyes. Warren Dean presented some impressive estimates about urban-led deforestation in Brazil. He calculated that a city such as Rio de Janeiro consumed at least 270,000 tons of firewood every year in the 1880s (almost 20% provided by mangroves). For the construction of a small brick house, 37 tons of firewood may have been needed. This would mean that the buildings of the city of Rio de Janeiro by 1890 cost the deforestation of 200 square kilometres (Dean, 1995: 196–197). He may have overstated his case and exaggerated the importance of wood as the principal source of energy for Brazil's urban growth (Brannstrom, 2005), but there is no doubt that the relentless progress promoted by Latin American elites came at the cost of rapid deforestation.

These developments led to a plethora of environmental research. The distinct biomes of the Americas have all had their iconic researchers. The dry tropical forest of the Chaco was studied by the great ecologist Jorge Morello (1932–2013). He sponsored excellent collective research at the University of Buenos Aires, on the Pampas and the Chaco, and also on the coastal areas and the conurbation of Buenos Aires (e.g. Morello and Matteucci, 2000). He occupied the post of director of National Parks for a short time under the government of Raúl Alfonsín. In the ecological and political history of Argentina, the logging of red quebracho for railroad ties and the export of tannin for tanneries (by the British company La Forestal) in Santa Fe and in the Chaco during the first 40 years of the twentieth century played a notable role. In Argentina there has been active conservationism since the end of the nineteenth century, responsible for the creation of various national parks in different ecosystems. The dedication of Maximina Monasterio to the study of the Andean *páramo* has been similar to that of Jorge Morello in the Chaco. Born of a Galician refugee family in Argentina, educated and graduated with a doctorate in ecology in France, with long sojourns in Bolivia and exiled to Venezuela in 1966, she has been a crucial figure in research on and education about the Andean highlands from Venezuela to Ecuador. Monasterio studied, in her own words, “from the *frailejones* to the potatoes” (i.e. both the “wild” and the agricultural biodiversity of the highlands) (Monasterio, 2003). Today the ecosystemic services provided by the *páramos* are common knowledge – as sources of water for the people in the lowlands and their livestock. Thus in Colombia the biodiversity research institute (Instituto de Investigación de Recursos

Biológicos) “Alexander von Humboldt” is currently in charge of delimiting and protecting the *páramo* ecosystems, and in this way of preventing coal mining in such areas.

In Mexico, Arturo Gómez Pompa, a biologist at the National Autonomous University of Mexico (Universidad Nacional Autónoma de México (UNAM)) and of the same generation as Morello and Monasterio, studied the ecology of tropical forests and ethnobotany (see <http://www.agomezpompa.org>). He was one of the most prominent voices in denouncing deforestation in south-east Mexico. He is also known for having discovered the chocolate tree in the Mayan jungle. The idea of the cultivated jungle (or the “cultured jungle”, as Philippe Descola (1986) called the Amazonian Achuar forest) became very important in Latin American conservationism.

Conservationism in Latin American is a consequence of foreign influence but it also has its own local tradition. It uses universal and more or less strict instruments, such as the Constitution of the National Parks, the inclusion of wetlands and marshes in the list of the international Ramsar Convention, and the Biosphere Reserves sponsored by UNESCO. The natural reserves have sometimes been protected by the support of international conservationism. However, many countries rightly stress the importance of their own national scientists and public policy-makers in the designing of conservationist policies. In Peru, the forest engineer Marc Dourojeanni played an important role in establishing protected areas – around 1970 during the administration of Velasco Alvarado – to save both the vicuña in the Andean highlands and the Amazonian forests (Dourojeanni, 1988, 1990). In Mexico the conservation efforts of figures such as Enrique Beltrán and Miguel Angel de Quevedo (Simonian, 1995) are still well remembered 100 years later. In Ecuador, Nicolás Cuví has highlighted the figure of Acosta Solís, botanist and conservationist, with one foot in his country and the other in the USA (Cuví, 2005). The latter’s research on the remnants of the quinine tree (the tree that is on the shield of the Republic of Peru) became suddenly relevant by the Second World War when the US troops were fighting in the Pacific tropics and were threatened by malaria.

More than a century ago, part of the Amazon suffered from the onslaught of the rubber boom, which had a significant negative impact on indigenous populations. Another principal threat is perhaps the global climate change that could convert the rainforest into savannah. Meanwhile, the Atlantic Forest in Brazil, the forests of southern Mexico and Central America, like the forests of southern Chile and Argentina,

were largely destroyed in the twentieth century by grazing, agricultural crops and monocultures of trees such as pine and eucalyptus. José Augusto Pádua has explained how the statesman José Bonifacio predicted the destruction of the coastal forests as early as the moment of Brazilian independence. Conservationists such as Alberto Torres (born in 1865 on a plantation in Rio de Janeiro that was already in decline because of soil erosion) also publicly deplored the forest destruction in the march of extractivist civilization towards the interior (Pádua, 2002, 2010; see also Drummond, 1997).

It is noteworthy to mention that, in the conservation movement of 80 years ago, there was already a major controversy. Ciriacy-Wantrup suggested that “conservationism itself may not mean non-use”. This Berkeley economist anticipated an economic approach to sustainability. His major book was published in 1952 and its translation (by Edmundo Flores, an agricultural economist), published in Mexico in 1957, had an important impact on the region (Ciriacy-Wantrup, 1957).

In summary, there is a Latin American conservationist tradition with deep historic roots. It found scientific support in the sciences of biogeography and conservation biology, and also, later, in the economics of natural resources and the study of watersheds. Different from the popular environmentalism and the agroecology and post-development movements that we shall analyse below, this conservationist trend has had powerful support in the North, among organizations such as the International Union for Conservation of Nature (IUCN), the WWF and other international institutions, such as the US Resources for the Future, and the Smithsonian.

Agroecology and post-developmentalism

The agroecological pride of the Andean and Mesoamerican regions (with authors such as Chilean Miguel Altieri and Mexican Victor Toledo) (Altieri and Toledo, 2011) has roots that are even older than conservationism, but it did not manifest itself significantly until the 1970s and 1980s. A good example of this new visibility was the Andean Project for Peasant Technologies (PRATEC) in Peru, which was established by dissident agronomists from the school of La Molina. In this school they had learned the technological simplification as the result of the focus on the main export crops, sugar and cotton, that included the elimination of native varieties of coloured cotton. They reacted against this teaching (Proyecto SEINPA, 1990) and were critical of the notion of uniform “development”. They were responsible for the first edition in

Spanish in 1996 of *The Development Dictionary* edited by Wolfgang Sachs, a post-developmental classic (Sachs, 1981). They began to research and apply the agrarian epistemologies of the indigenous inhabitants of the Sierra, expressed in the conservation and use of many varieties and species of seeds.

Latin American environmentalism is different from that of the USA as it has drawn significantly from ancestral agricultural practices and respect for indigenous knowledge. There is a line from the agroecological studies and practices of the influential agronomist from Chapingo, Efraín Hernández Xolocotzi (1913–1991), whose career (in the USA and in Mexico) culminated in a substantial and competent school of Mexican ethnoecologists, to the peasant movement in Mexico which manifests itself in the twenty-first century under the motto “without maize, no country” (*sin maíz no hay país*) (Esteva and Marielle, 2003). Victor Toledo (*La Jornada*, 5 August 2014) asserts that the indigenous agrarian Mesoamerican civilization survives and persists: “These indigenous populations are the principle opponents to the industrial civilization model.” Indigenous agriculture and agroforestry are major sources of Latin America environmentalism.

In order to understand traditional Latin American agricultural systems, it is necessary to enter into a “dialogue of knowledges”, if not a rejection of Western thought. The communities whose situation and practices have been studied by anthropologists and agronomists bring to the table their own perspectives and knowledge to guide the research, an idea that Robert Chambers of Sussex University (Chambers, 1983) developed from Paulo Freire and Orlando Fals Borda, important Latin American intellectuals. This dialogue of knowledges is also shared by environmentalists in other contexts, such as in Funtowicz and Ravetz’s doctrine of “post-normal science”, which supports and even requires an “extended peer review” in situations of technological uncertainty and of urgent decisions (Funtowicz and Ravetz, 2000).

Even more radically, political ecologist Héctor Alimonda explains that environmental degradation is caused by “persistent colonialism”. He writes: “Over five centuries, entire ecosystems were destroyed by the implementation of monoculture export crops” (2011: 22). “Colonialism” is also useful for interpreting the environmental crisis in terms of the loss of indigenous knowledge and cultures, true “epistemicides” (Sousa Santos’ word) that cannot be compensated by either Western science or by a dialogue of knowledges.

Patterns of economic and environmental sustainability in pre-Hispanic societies, which we know from archaeology or which have

survived with many changes, express the social values of these societies. They are more useful for the period in which we live because they question the illusion of universal, uniformizing development. Arturo Escobar (1995, 2010) and Gustavo Esteva (who met with Ivan Illich in 1983) have been outstanding thinkers in the field of post-developmentalism, previous or parallel to the discussion of degrowth, *décroissance* or “prosperity without growth” in Europe.² They have deep roots in the Latin American mindset (or *Abya-Yala*, as it is sometimes called) but they also find inspiration in Ivan Illich, Cornelius Castoriadis and André Gorz, political ecologists of the 1970s, and in authors from India, such as Ashish Nandy and Shiv Visvanathan.

In Ecuador, the political debate after 2007 has introduced the concept of Sumak Kawsay, *Buen Vivir*, possibly after many hundreds or thousands of years of verbal usage. Since the year 2000, the concept has been revisited in articles and theses by Quechua intellectuals such as Carlos Eloy Viteri. Viteri comes from the Amazonian village of Sarayaku, which prevented a local oil-extraction project, and his ideas have been heavily influenced by this situation. Sumak Kawsay was converted into a national objective included in the Ecuadorian constitution of 2008, introduced under the presidency of Alberto Acosta in the constituent assembly (Hidalgo-Capitán et al., 2014).

Beyond disputes over the merits of these constitutional developments, the fact is that putting Sumak Kawsay central is very different from saying that the main objective being pursued is economic growth or even sustainable development. Sumak Kawsay is something similar to a solidary and ecological economy, which had already existed and needed to be recovered. It is a concept related to “post-developmentalism”.

Governments and international organizations: “Our own agenda”

Since the last decades of the nineteenth century, there have been voices of scientists as well as writers criticizing the indiscriminate use of natural resources, but they were never heard amid the obsession with the modernity of the time (Baud, 2013). In the second half of the twentieth century, the critique became more coherent and politically articulate. Although it occurred in the context of a global debate, it showed a markedly Latin American perspective and influenced the creation of what is now called an “environmental institutionalism” with new ministries, laws and regulations. Since Rachel Carson published *The Silent Spring* in 1962, and especially since the Meadows Report to the Club of

Rome in 1972, international environmentalism has taken off. At first this debate was scarcely considered by Latin American governments or by the Economic Commission for Latin America and the Caribbean (Comisión Económica para América Latina y el Caribe (ECLAC/CEPAL)). For them the problem of underdevelopment and poverty was the bigger issue, and their main objective was to augment the productive capacity of the region and to consolidate its economic expansion. Nevertheless, in those decades, all national governments created legal and administrative structures for natural resource management. It is important to note the creation of the United Nations Environment Programme (UNEP) at a worldwide level and furthermore the active participation of the Regional Office for Latin America and the Caribbean, which from 1975 onwards promoted courses and debates in all Latin American countries, effectively training university professors, NGOs, and personnel from natural resources and environment administrations.

With the support of UNEP, the Spanish Iniciativa de Copenhague para Centroamérica y México (CIFCA) was created and a multitude of courses and seminars were organized in Latin America and Europe. In 1980 the Latin American governments and universities decided to create their own Environmental Education Network. The Argentinian economist Héctor Sejenovich and the Colombian philosopher Augusto Angel Maya elaborated a plan for training and research. All countries had an office from the Environmental Education Network (Red de Formación Ambiental), in large part with governmental organizations but also with NGOs. In Europe a debate was initiated by Sicco Mansholt, president of the European Commission, who converted to the “growth below zero” doctrine upon reading the Meadows Report. This European debate, which involved the participation of André Gorz, Edgar Morin, Herbert Marcuse and other early ecological thinkers, was published in Santiago de Chile in 1972 and in Buenos Aires in 1975 with the spectacular title *Ecology and Revolution* (Marcuse, 1975). However, the book does not seem to have been influential, perhaps because of Latin America’s military-led neoliberal backlash at the time.

In fact, the first articulated response to the environmental problems in Latin America came in the 1970s from the Bariloche Foundation in Argentina which in 1976 published the report *Catastrophe or New Society? Latin American World Model* (Herrera et al., 1976). In this report, various specialists such as Gilberto Gallopin developed a new environmental model for Latin America, in which the idea of the scarcity of natural resources was basically rejected. Gudynas (1999: 110) observes that these ideas were considered a direct attack on the idea of development

and progress for Latin America. As a logical consequence, the reaction to the Meadows Report was negative, as is evident in the writings of Amílcar Herrera and Helio Jaguaribe (1973; see also Estenssoro Saavedra, 2014, cap. 7). The general conviction was that Latin American natural resources were abundant and that it was necessary to exploit them in order to develop the region. The Bariloche group emphasized two issues: the low population density of Latin America and its enormous and unknown ecological potentials. Latin American diplomats started to reject notions of “limits to growth” and believed that Latin America could resolve its problems of poverty and development, and at the same time achieve a more sustainable model, drawing also on the world’s solidarity. This line of thought was very clear in Brazil, where the national ideology focused on the Amazon (Garfield, 2013). Before the Stockholm Conference of 1972, João Augusto de Araujo Castro, Brazilian diplomat of the United Nations, had asked for “a worldwide compromise on development” from and towards the poor countries. He talked of “a contamination of opulence and a contamination of poverty” (Estenssoro Saavedra, 2014: 129).

Since the mid-1970s, under the influence of Ignacy Sachs (who was a university professor in Paris and travelled to Mexico and Brazil), the notion of “ecodevelopment” spread (e.g. Sachs, 1981, 2008), long before sustainable development would triumph in the rhetoric of the Brundtland Report of 1987. Various Latin American authors, from within official organisms or as consultants or university professors, and people involved in activism – including Enrique Leff, Vicente Sánchez, Victor Toledo and Augusto Angel Maya – were inspired by the idea of ecodevelopment. As part of the actions of UNEP, and along with the participation of the University of Tehran (under the direction of Mohammad Taghi Fharyar), a network of ecodevelopment projects was established. In 1976 the first Symposium on Ecodevelopment was hosted at UNAM, organized by Enrique Leff.

In October 1974, UNEP organized a famous conference in Cocoyoc, Mexico. It was here that the so-called Charter of Obligations and Rights of the States was proclaimed. Above all else, Article 30 about environmental governance was important: “The protection, the preservation and the betterment of the environment for current and future generations is the responsibility of all States. They should try to establish their own environmental and development policies in accordance with this responsibility. The environmental policies of all States should promote and not adversely affect the current and future potential of development of developing countries.”

In the 1970s and 1980s, ministries of the environment were created in various countries. The influence of UNESCO's Man and Biosphere (MAB) programme was evident, generating new interdisciplinary activity. An example is the reference to urban ecology and human settlements by Martha Schteingart at the Colegio de México (Schteingart y Graizbord, 1998). In economic management, Héctor Sejenovich proposed that to minimize degradation and waste it is necessary to take all costs into account, including those of the reproduction of nature (research, regeneration, control and management), and also all the potential benefits, for an integrated management of resources or, rather, an integrated management of the natural patrimony. The Latin American Council of Social Sciences (El Consejo Latinoamericano de Ciencias Sociales (CLACSO)) formed a working group on environment and development in 1978, led by Sejenovich (Estenssoro Saavedra, 2014, cap. 8). In Colombia, in the National Institute of Renewable Natural Resources and Environment (Instituto Nacional de los Recursos Naturales Renovables y del Ambiente (INDERENA)), Julio Carrizosa and Margarita Merino de Botero (who would later represent South America in the Brundtland Commission) began to take action. No less important was Anibal Patiño, whose early work addressed environmental problems in the Cauca Valley in Colombia (Patiño, 1991).

Environmental issues arrived at CEPAL in the form of a book edited by Osvaldo Sunkel and Nicolo Gligo, *Estilos de desarrollo y medio ambiente en la América Latina* (1981), published after developing activities for more than one year along with the UNEP Regional Office. They emphasized the notion of the ecosystem, the understanding that all of us are part of the same ecosystem and that there is a direct relationship between that which happens in society and in nature (Sunkel and Gligo, 1981). In his contribution to the book, Raúl Prebisch (who, as an economist, had been oblivious to environmental issues during his long and brilliant career) observed from the periphery that "the environmental crisis was generated by the centre's irrational capitalist development model". He also mentioned the danger of excessive carbon dioxide emissions from rich countries. However, the book found little response within CEPAL, despite the efforts of Axel Dourojeanni and Nicolo Gligo himself. CEPAL has not been a leader of environmental thought in Latin America. Nowadays the economic crisis of "extractivism" (the rapidly deteriorating terms of trade in 2014–2015, partly because of excessive global investment in the extractive industries) has caught CEPAL by surprise, just as both the neoliberal and the national-popular governments.

Back in the 1980s, the UNEP Regional Office discussed several other issues around the binary development and environment. One of the questions addressed the roles that the small producers and large business owners play in the deterioration of nature. Some sustained that, as peasants were obliged to occupy lands of lesser quality at the agricultural frontier, they generated soil degradation. However, other indicators exist that support the view that the processes of degradation and dilapidation were caused by large landowners.

Later, in response to the Brundtland Report of 1987, another study called *Our Own Agenda* was elaborated by UNEP and Inter-American Development Bank (IDB), and coordinated by the hydraulic engineer Arnaldo Gabaldón (the Venezuelan minister of the environment) (Gabaldón, 1994).³ Gilberto Gallopín, Vicente Sánchez and other expert authors participated, proposing to the governments, to the NGOs and to society at large that the agenda be incorporated into the Rio meeting of 1992. Part of this work was published in more accessible language by Sejenovich and Panario (1996). All of this contributed, on the one hand, to the United Nations' Agenda 21 and, on the other hand – within civil society – to the various alternative Treaties of NGOs in Rio 1992. At the official conference, the Convention on Climate Change and the Biodiversity Convention were signed by all countries (with the sole exception of the USA). At that time, a prominent Latin American representative was Jose Lutzenberger, who had published the ecological manifest, *End of the Future? (Fim do Futuro?)* in 1976. As Brazilian minister of the environment, Lutzenberger asked in 1992 that the World Bank not lent any more money to Brazil (Hochstetler and Keck, 2007: 74ff). He was forced to resign.

In parallel meetings to Rio 1992, popular environmentalism emerged in a very public and urgent fashion. In fact, 1,500 organizations from all over the world met to debate the treaties that the governments were discussing, and effectively drafted alternative treaties that were much more exigent, including one about “ecological debt” (Alternative Treaty, n. 13). Despite all of this, the anti-environmentalist prejudice in Latin American official circles continued for decades, until today. Instead of using Chico Mendes (assassinated in December 1988) as a symbol of popular Latin American environmentalism, an international official conflict evolved over the interpretation of the struggle of rubber tappers against deforestation. Fearing initiatives that would internationalize the Amazon, so as to not passively let Brazil destroy it, the president of Brazil conspicuously left a public meeting.

In conclusion, from Stockholm in 1972 until Rio+20 in 2012, Latin American governments have emphasized that the solution to the environmental problem does not consist of halting economic growth, but rather that the main and ultimate solution resides in changing the unequal distribution of power and wealth in the world, and by stimulating distinct styles of development in accordance with each ecological and social reality at national and continental levels (Estenssoro Saavedra, 2014: 155). At the governmental level there was, and is still, a lack of a sense of urgency about the continuing destruction of biodiversity and about climate change (the concentration of carbon dioxide in the atmosphere rose from 360 ppm to 400 ppm between 1992 and 2012). Empathy for popular ecology has also been missing. Neither peasant agroecology nor post-developmentalism nor popular environmentalism – as discussed below – has been part of Latin America’s official “own agenda”.

Popular environmentalism

Governmental and international debates over new environmental policies occurred at the same time that a debate emerged in civil society which quickly grew stronger. Influenced by the new ideas of Liberation Theology and different social movements in the region, a widely shared critique of the economic growth models in Latin America would give voice to a popular environmentalism, or the environmentalism of the poor. It drew from the ideas of two important Latin American thinkers. Paulo Freire emphasized social and environmental justice, local knowledge, the morality of political decisions, and respect for the planet and its diverse habitats. These ideas led some to adopt a fundamental rejection of capitalism; others regarded it as an agenda that was more cultural and moral, and which could present an alternative to materialist developmentalism. The other thinker with great influence in the debate was the Uruguayan writer Eduardo Galeano. In his 1971 book *Open Veins of Latin America (Las Venas Abiertas de América Latina)*, he presented a ferocious critique of the extractivist logic throughout all of Latin America’s history. The book became an iconic text in the debates over the consequences of extractive capitalism and the social and ecological destruction in the region. In recent years another Uruguayan, Eduardo Gudynas (2009), attracted many followers for his elaboration of “post-extractivism”. Meanwhile, Maristella Svampa leads a flourishing group of Argentinean authors doing excellent political ecology research with

an “anti-extractivist” agenda (Svampa, 2011, 2013, 2015), as do Gian Carlo Delgado in Mexico (Delgado Ramos, 2000) and Mario A. Pérez Rincón in Colombia (Pérez-Rincón, 2006, 2014).

In the 1970s and 1980s, nationalist-popular political parties (in the style of Peronismo in Argentina and the American Popular Revolutionary Alliance (Alianza Popular Revolucionaria Americana (APRA) in Peru, before their incongruent neoliberal moments with presidents Menem and Alan García) had protested against the insertion of Latin America in the world economy as provider of raw materials and with episodes of terrible indebtedness. And they were joined by other political currents. For example, the influential Argentinian economist Aldo Ferrer of the Radical Party presented a well-argued plea for “living within our means” in 1983 (Ferrer, 1983). This has been replaced in recent times by a “commodity consensus” (or a new “Beijing consensus”) at an official level.

Beyond the government and international debates directed towards new public environmental policies and beyond university research, a popular environmentalism developed with greater force encompassing movements that are sometimes purely reactive and that, in general, do not aspire to achieve political influence per se. Instead they emerged as a reaction to specific environmental problems, which are often local but have worldwide importance. In this sense, one can see Latin American agroenvironmentalism as an international movement that is not only defensive but one that also makes propositions that show the “productive ecological rationality” about which Enrique Leff speaks (Leff, 2004).

Much of the resistance manifested in popular environmentalism did not create permanent alternatives but was rather linked at one point or another to specific places of mineral extraction or investment projects. The protests in Mexico in the 1980s against the nuclear plant in Laguna Verde present a now distant example. There have been many instances of resistance to dams, which lasted for decades and eventually led to nothing. The local movement in Ecuador against copper mining in Intag is a current example. They resisted and succeeded against Mitsubishi in 1995 and against Ascendant Copper (of Canada) in 2006, and developed productive alternatives such as the trade of organic coffee and ecotourism. After these victories, in 2014 it suffered the ravages of President Correa’s policies (“we shall leave extractivism behind through more extractivism”) in alliance with the state-owned company Codelco of Chile.⁴

Popular environmentalism, otherwise known as the environmentalism of the poor and indigenous, is above all the expression of a “moral

economy” that confronts commodification and manifests itself in the commodity-extraction frontiers (Martínez-Alier, 1992, 2005). The peasant and indigenous populations protest against the extractive industries of minerals and biomass, using distinct languages of valuation. They succeed in halting conflictive projects in perhaps 20% of the cases, according to the inventories of the EJOLT (Environmental Justice Organizations, Liabilities and Trade) Project (www.ejatlas.org). Sometimes they demand monetary compensation for the damage inflicted or for that which they are going to suffer; other times they argue in terms of inalienable territorial rights, they appeal to Convention 169 of the International Labour Organization (ILO), or they argue that landmarks that are going to be destroyed (hills, rivers, lakes) are sacred. They oppose the loss of common goods and natural resources that they need to live and survive. Not only in the countryside but also in the city there are groups of relatively poor citizens who, without being “card-carrying” environmentalists, protest when they lose green areas of public use, demand space for pedestrians or cyclists, and practise urban horticulture.

Today, this Latin American popular environmentalism congregates in (virtual) networks of information and agitation such as those of the Observatory of Mining Conflicts in Latin America (Observatório de Conflitos Mineiros da América Latina (OCMAL)) and the Latin American Observatory of Environmental Conflicts (Observatorio Latinoamericano de Conflictos Ambientales (OLCA)), both based in Chile. There are parallels and connections (through international networks such as Oilwatch, the World Rainforest Movement (WRM), the Vía Campesina and Latin American Coordination of Rural Organizations (Coordinadora Latinoamericana de Organizaciones del Campo (CLOC)) with resistance movements in India and Africa, and there are also similarities with the movement for environmental justice in the USA. Networks such as the MAB (Movement of People Affected by Dams/Movimento dos Atingidos por Barragens) in Brazil and MAPDER (Movement of those Affected by Dams and in Defence of Rivers/Movimiento Mexicano de Afectados por las Presas y en Defensa de los Rios) in Mexico (which oppose dams) are also connected with international movements. This popular environmentalism has made itself visible in a great number of local conflicts that have arisen in recent decades. In Latin America, in almost half of the cases collected in the Environmental Justice Atlas (www.ejatlas.org), the indigenous or African-American populations participate as actors in such ecological-distributive conflicts. There are also new networks of statistical political ecology (Pérez Rincón, 2014).

Popular environmentalism does not only have indigenous roots; religion was also important. The book by Brazilian theologian Leonardo Boff, *Ecology: Cry of the Earth, Cry of the Poor* (1996), stands out along with the leadership of former priest Marco Arana in Peru in the movement and political party Tierra y Libertad (Land and Liberty), founded after several years of resistance in Cajamarca against the Yanacocha Mine. Previously there was a movement called Movement of Priests for the Third World, which played an important role in the slums (*villas miserias*) in Argentina and in general with the poor. It was harshly repressed and obliged to dissolve itself, but it reappeared 20 years later in the agrarian leagues of north-eastern Argentina, forming environmental movements in the fight against the soy production that invades the Chaco forest. Alongside this process emerged a non-governmental network called Doctors of the Fumigated Towns (*Médicos de los Pueblos Fumigados por Glifosato*), which supports the substantial movement called Let's Stop Fumigating (*Paremos de Fumigar*), with emblematic activists such as Sofía Gatica in Córdoba (Goldman Prize) of the Mothers of Ituzangó (*Madres de Ituzangó*) movement.⁵ In Brazil, the active presence of the Pastoral da Terra is noted in land conflicts in the north of the country (Porto et al., 2013).

The term "ecological debt" was first used in 1991 by Latin American organizations that were opposed to the loss of the ozone layer and to climate change (Robleto and Marcelo, 1992), and it was applied a little later to the results of ecologically unequal trade and instances of "biopiracy". There are other slogans or expressions, such as "water is worth more than gold" (*el agua vale más que el oro*), "water justice" (*justicia hídrica*), "living rivers" (*ríos vivos*), "climate justice" (*justicia climática*), "tree plantations are not forests" (*las plantaciones no son bosques*) (Carrere and Lohman, 1996), "food sovereignty" (*soberanía alimentaria*, from *Vía Campesina*) and, more recently, "energy sovereignty", which were born in or have been spread across the continent. Environmental justice associations also ask for an international criminal court for environmental damages and an international convention about "ecocide". This is truly very distant from the rhetoric of the "green economy" deployed by the United Nations in the Rio+20 conference of June 2012, not to mention the super-oxymoron of "green growth".

One of the important elements of the environmental justice movement is the word "biopiracy", introduced in 1993 by Pat Mooney (of the Rural Advancement Foundation International (RAFI), which is today Action Group on Erosion, Technology and Concentration (ETC)), and spread on a worldwide scale by Vandana Shiva, frequent visitor to

Latin American countries. In Latin America, Carlos Vicente, author of numerous books on the subject, coordinates the Action for Biodiversity Network. What started as allegations by environmental justice activist organizations against biopiracy has now been converted into legal actions of some governments or court cases in megadiverse countries. In Peru, as in Brazil, the state authorities now speak of “biopiracy”. Even the Brazilian minister of the environment, Izabella Teixeira, said in March 2012 – after having fined some companies – that opportunities to advance in the economic valorization of biodiversity should be avoided so as not to “disguise biopiracy actions”.⁶

In the regulation of investment projects, advances have been made in imposing a process of public audience for environmental impact assessments (EIAs), which are crucial moments in many socioenvironmental conflicts (Wagner, 2014). The EIAs sometimes provide a setting of participation or of struggle, and allow advancement towards participatory environmental governance. In Tambogrande, Peru, the refusal of the population to participate in a rigged EIA public audience was a step towards a referendum or popular consultation in 2002.⁷

Environmental conflicts do not only consist of local populations on one side and corporations on the other. Local and international NGOs participate, along with state representatives, in a multitude of conflicts not only over the administrative management of the EIAs or granting of mining or oil concessions, but also through other legal channels (with spectacular cases, such as the recent suspension of the Barrick Gold Pascua Lama project in Chile, after investments of thousands of millions of dollars), including court cases. Legislative authorities also sometimes intervene in favour of environmentalism, such as in the prohibition of open-pit mining by various provincial legislatures in Argentina (Wagner, 2014). Mediation bodies can also intervene, such as the ombudsman (*Defensoría del Pueblo*) in Peru and Bolivia. However, in other instances, quite often the police, military and private security forces protected by the state intervene against popular environmentalists. Although there is a consensus between neoliberal and national-popular governments in attributing environmentalism to foreign influences and interpreting it as a phenomenon of “full bellies”, it is impossible to ignore the numerous outbreaks of bottom-up environmental mobilizations all over Latin America and the hundreds of victims killed in environmental conflicts in Mexico, Honduras, Guatemala, Colombia, Peru, Brazil and other countries documented by Global Witness, by the OCMAL inventories, the Oswaldo Cruz Foundation (Fundação Oswaldo Cruz (FIOCRUZ)) map of Brazil (Porto et al., 2013), and the EJ Atlas (www.ejatl.org).

A Latin American ecosocialism?

In the 1980s, new ideas about socioecological politics in Latin America emerged. Authors such as Victor Toledo, Enrique Leff, José Augusto Pádua and Ivan Restrepo formulated more radical ideas about the political context of environmental governance. Augusto Angel Maya's explicit message (1996, 2002) was to avoid interpreting environmental problems as exclusively ecological or technological. He understood the environment as an object of study in all the scientific disciplines, from the natural sciences and technologies to sciences that study human behaviour.

Beginning in the 1980s, activist groups such as the Political Ecology Institute (Instituto de Ecología Política) in Chile, Censat in Colombia, Ecological Action (Acción Ecológica) in Ecuador (composed of young female biologists), REDES (Amigos de la Tierra Uruguay/Friends of the Earth) in Uruguay, FASE (Federação de Órgãos para Assistência Social e Educacional/ Federation of Organizations for Social and Educational Assistance) in Brazil with Julianna Malerba, and others have emerged. There is a strong Latin American environmental thinking that enumerates, and denounces the multitude of environmental conflicts that the growth of the social metabolism brings with it. Some 20 years later, these views have not only been expressed in writings and manifestos of social actors and alternative thinkers of post-developmentalism, of agroecology and of popular environmentalism, but also in some national constitutions, in the discourses of government officials and even by some ministers.

After the defeat in 2005 of the US plans to promote the Free Trade Area of the Americas (FTAA), new leftwing, progressive governments emerged with the electoral victories of Evo Morales in Bolivia (2005) and Rafael Correa in Ecuador (2006). In the following years it even seemed that an international "official" environmental leadership could arise from South America. The Ecuadorian Constitution of 2008, for example, has been a very important symbol of environmental thinking in Latin America, with the presence of Alberto Acosta – ex-president of the Constituent Assembly – in a multitude of forums. Another example was the radical speech of Ecuador representative Fänder Falconí, at the failed climate change conference in Copenhagen in 2009, when he made reference to the ecological debt or climate debt of the North with the South. He compared the poor countries with "passive smokers" and he defended the Yasuni Ishpingo-Tambococha-Tiputini (ITT) initiative to "leave the oil below ground" in front of more than 150 presidents of state and leaders of government.⁸

The contradictions of the new leftwing governments, which had to choose between environmental protection and economic growth, became clear when only a few weeks later Falconí resigned as minister of foreign affairs because of President Correa's refusal to take the Yasuni ITT initiative forward. In Cochabamba, Bolivia, in April of 2010, a large meeting was held after the failure of the United Nations meeting in Copenhagen, attempting to position Evo Morales as an environmental leader of the South, but neither he nor his vice president, García Linera (who believes that environmentalism is a luxury for the rich), was in favour of concrete measures regarding environmental protection. They went rather for the exploitation of the Amazon as in the plan for the TIPNIS (Isiboro Secure National Park and Indigenous Territory/Territorio Indígena y Parque Nacional Isiboro Secure) highway. The Bolivian ambassador to the UN, Pablo Solón, was alone in the insistence on the responsibility of the developed countries for climate change in December of 2010 in Cancún in one more ineffectual climate conference.⁹

The inability of Latin American governments to take on environmentalism as a main issue, and even more the repression and "criminalization" of popular environmentalism, is opening up space for a political environmentalism that is opposed to neoliberal as much as it is to the national-popular governments. Both share the "commodities consensus" (Svampa, 2013). This is leading to a mature Latin American environmentalist political thinking, albeit incipient, proposing new principles of international environmental governance, and also criticizing extractivism and environmentally unequal trade in the defence of the rights of nature, the human right to water, and the integral and sustainable management of resources for the benefit of local livelihoods.

In support of ecosocialism, Enrique Leff in *Ecology and Capital* (1986) and James O'Connor (in the first issue of the journal *Capitalism, Nature, Socialism* (1988)) explained that the growing social and environmental costs caused by economic growth are also the catalysts for an explosion of environmental protest (Leff, 1986, 2012). Currently we see a major global process of dispossessing indigenous and peasant lands by private or state enterprises: expropriating mangroves by the shrimp industry, and land-grabbing for tree plantations and agrofuels, for megamining and dams, and for the extraction of gas and oil. These are neocolonial processes of appropriating natural resources and territories where new actors, such as Chinese companies, appear. There is also much resistance in urban areas, including recycling cooperatives of "scavengers" of urban waste, who play a very important and under-recognized role.

The Latin American Network of Recyclers and Urban Reclaimers has come into existence which has attained notable success in places such as Bogotá under the leadership of Nohra Padilla, who won the 2014 Goldman Prize for grassroots environmentalism.

Conclusion

A common element of Latin American environmentalist thought (absent in Europe and also in India, for example) is the awareness of the demographic disaster brought about by the European Conquest. This led to a perhaps justified disdain for Malthusian approaches in the region. The environmentalism of Paul Ehrlich with his focus on the “population bomb” was never successful in Latin America, where the population density is generally low (in comparison with Europe, East Asia and South Asia). Since the beginning of the 1970s, there has been a profound discussion among Latin American governments and on the part of the UNEP Regional Office to establish a shared environmental position. The 1972 Meadows Report, *The Limits of Growth*, garnered a general rejection in official circles in Latin America. It was emphasized that the problem was not the finite supply of resources but rather their distribution. However, 40 years after this debate, we have indeed found that today there are “planetary boundaries” of resources and sinks. Current world trends are negative in regard to the loss of biodiversity and climate change. Above and beyond this initial negative reaction in the 1970s and 1980s from official circles, and the search for a “Latin America agenda” of its own, we have identified a set of environmental ideas and practices that have emerged in Latin America and which in part coincide and in part diverge from other continents:

- awareness of the demographic disaster after the conquest and a widespread rejection of the Malthusian approach to the problem of overpopulation;
- an agroenvironmental pride, especially present in Mesoamerica and the Andes (and absent in the USA);
- a shared admiration by European and Latin American science (since 1800, with Alexander von Humboldt) for the great biological richness of the continent in its diverse ecosystems, together with conservation programmes implemented since the nineteenth century;
- a keen awareness of global political and economic inequality, and the consequent plundering of natural resources in the region; this

awareness runs from the time of colonial exploitation through to today;

- the rejection by Latin American governments – since Stockholm in 1972 – of the idea of limits to growth, defining an agenda that proposed distinct “styles of development” but eventually accepting a confusing notion of “sustainable development”;
- from the 1980s onwards, a growing number of socioenvironmental conflicts that gave way to “popular environmentalism” with networks of activists that denounce the extraction of natural resources and the destruction of the commons;
- the validity of ancient indigenous worldviews, the celebration of *Pachamama* that is recognized in the constitutions of Bolivia and Ecuador, the respect for nature in Afro-American communities, and the contributions of liberation theology; also, on a cultural level, the presence of ecology in twentieth-century literature.

There is clearly a Latin American conservationist environmentalism that is common with other continents: a shared admiration of European science (which is also American science) since Humboldt because of the enormous biodiversity of Latin America’s many diverse ecosystems, which were only partially explored. The extraordinary biological richness of not only the Amazonian rainforest but also of other ecosystems (such as the Atlantic forest in Brazil, mangroves and coral reefs, the Andean highlands, the tropical dry forests, the Pantanal, and other wetlands and marshes) are seen as a promise of the economic potential that is not yet confirmed and, on the other hand, periodically leads to protests against “biopiracy”.

Conflicts around the extraction and export of natural resources are increasing in Latin America. The resistance against the exploitation of nature has led to the growth of popular environmentalism, to environmental justice movements, to protests against climate injustice and water injustice, and to the defence of the commons. Latin American politicians and public administrators have basically ignored this movement of the environmentalism of the poor, but they have not suppressed it.

Recently, however, there have been signs of an emerging post-extractivist and post-developmental environmentalism that attack impartially both the neoliberal and the national-popular governments. Some would call it ecosocialism. This political environmentalism is very distinct from that of European green parties that focus on “ecoefficiency”. Post-extractivism is intellectually powerful but still politically

weak, although it seems much reinforced by the declining terms of trade of 2014–2015. This movement attempts to include new concrete proposals for continental and international governance, such as oil and open-pit mining moratoria, campaigns against dams and against the “green deserts” of pine and eucalyptus trees, and the defence of peasant seeds. Rather than the objective of economic growth or development, it proposes an objective of *Buen Vivir* and also to give rights to nature (as in the 2008 Constitution of Ecuador). The Latin American concept of “ecological debt” has been very fruitful and has provoked important debates, as has the emphasis on the human right to water, supported by Bolivia on the experience of the Cochabamba “water wars” of 2000. Latin America is at a crossroads where various critical political and economic theories are seeking a point of convergence with environmentalism, which will give it the opportunity to present a real alternative to extractivism. One of the crucial challenges will be to transfer these debates to the new circles of politicians and policy-makers. This has been a permanent challenge in Latin American environmental history, but today it has a renewed intensity.

Notes

1. Chapter 2 gives statistics on the social metabolism.
2. For Esteva’s analysis of the meanings of “development”, see <https://desarrolloxi.files.wordpress.com/2010/05/desarrollogustavoesteva1.pdf>
3. See Garcia-Guadilla (2013) for an interesting account of “neextractivism” and its conflicts in today’s Venezuela.
4. [www.http://codelcoecuador.com/news/](http://codelcoecuador.com/news/) and Rafael Correa, Discurso para la XIV Cumbre Iberoamericana, Veracruz, Mexico, 8 December 2014: “Debemos hacer uso del extractivismo para salir de él”.
5. See, for instance, <https://noticiasdeabajo.wordpress.com/2012/07/30/informe-del-primer-encuentro-nacional-de-medicos-de-pueblos-fumigados/>
6. See http://www.bbc.co.uk/mundo/noticias/2012/03/120323_biopirateria_brasil_lp.shtml
7. See Chapter 11 about local referenda or popular consultations against mining investments.
8. See <https://mail.uevora.pt/pipermail/ambio/2009-December/015749.html>, taken from the webpage of the Ministry of Foreign Relations of Ecuador.
9. Chapter 4 compares post-neoliberal environmental governance in Ecuador and Bolivia.

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