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ENVIRONMENTAL CONFLICTS,
HEALTH AND A MODEL OF ECONOMIC
DEVELOPMENT IN LATIN AMERICA

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1. INTRODUCTION

This document aims to present a report on the strategic importance of environmental conflicts in its relationship with features of the model of economic development in Latin America, adopting as a main reference the Brazilian case.

More than a problem limited to environment, economy and environmental health, understanding environmental conflicts enables the development of courses of action for the promotion of public health in a region where natural resources exploitation was and remains remarkable in the history of its economic development. The impacts of the extractive model are countless, affecting not only the health of ecosystems, but also people's health and human rights. In the countryside and forests, the main affected are Indians, *quilombolas*, peasants, family farmers, fishermen and other groups depending directly on natural resources and ecosystems' vitality. However, urban populations – with high growth rates in the 20th century – were also made vulnerable as they were displaced from the countryside to urban areas without simultaneously the implementation of public policies of proper housing for the lower classes and professional qualification. As a result, besides the huge informality in the region, an intense process of shanty towns has occurred, with housing areas without services and basic infrastructure for a decent quality of life.

The issue of environmental conflicts along with environmental justice can contribute to the unification of two of the main challenges of the contemporary world:

- (i) Equity and human development, in conjunction with the issues of democracy and human rights, facing the permanence or worsening of strong inter- and intra-regional inequalities in the world, including Latin America, often involving disputes between countries, peoples and ethnic groups over natural resources;
- (ii) Environmental sustainability and quality of life. Such challenges are expressed both in terms of local environmental problems affecting specific communities – whether they are settled in the countryside and forests or even urban areas, such as those living without basic sanitation, nearby industries or polluting and hazardous waste sites, or even exposed to natural disasters – as for global ecological problems – such as ecosystem degradation, loss of biodiversity, climate change with potential worsening of extreme events and cross-border chemical pollution.

Besides worrying about the quality of life of vulnerable populations living in the countryside and towns, environmental conflicts and environmental justice issues bring up the advocacy for health and the empowerment of ethnic populations and traditional peoples, such as indigenous peoples, Afro-descendants, fishermen, small traditional farmers, as well as specific issues related to gender, women's rights, migrants and minorities. By joining social justice and human rights to environmental and health protection, environmental justice movements carry with them the potential for communication between different people, countryside and urban languages and cultures that make up the rich and multiple diversities of Latin America. Thus, this helps to operationalize possible dialogues that may build new commitments and dreams of a world that is socially fair and environmentally sustainable in the region.

The analysis of environmental conflicts allow us to understand in an articulated way the demands and actions of social, environmentalist and

community movements, with the production of knowledge in the academy and new institutional practices on the part of local, national and international organizations that work with matters of health, environment, human rights and sustainable development. It also allows engaging and integrating various issues such as equity; social determinants of health; local and sustainable human development; health promotion; environmental health; cities, schools and healthy housing; and also allowing to contribute to integrate and operationalize many commitments made by countries and international agencies, such as the Millennium Development Goals and chemical safety.

The report is organized as follows: after this brief introduction, we discuss the definition of environmental conflict and its relationship with the model of economic development and public health. In the next topic, we present a typology of environmental conflicts according to their spatial and population origin (rural and urban) and the relationship with the economic activity and/or types of use of land and natural resources, among other elements. We complement the report with some selected examples of environmental conflicts, finalizing it with a reference bibliography.

DEFINITION OF ENVIRONMENTAL CONFLICT, MODEL OF ECONOMIC DEVELOPMENT AND RELATIONSHIP WITH HEALTH

The worsening of the social-environmental crisis in different territories, countries and regions expresses the appropriation of natural resources and public spaces for specific economic purposes that can produce economic exclusion and expropriation, thus causing reactions from social movements, organizations, groups and populations that feel affected in their fundamental rights involving issues such as health, work, culture and environmental preservation. In this context, new arguments and symbolic struggles have been developed by social movements, scholars and activists who seek to delegitimize the discourses, practices and public policies aimed at advocating the hegemonic development models that hyper value the benefits of big enterprises and market economy, hiding or invi-

sibilizing environmental risks, loss of identity and the vulnerabilization of affected populations (PORTO, 2009).

Therefore, the concept of environmental conflict expresses the fight for resources and for different ways of facing development, involving not only organized social movements, business and national and transnational industries in sectors such as agribusiness, mining, energy production, infrastructure works such as roads and ports, but also governmental institutions and public policies.

Environmental conflicts are present in different continents and countries and have been the object of academic production by authors in various fields, such as Social and Environmental Sciences, including Political Geography, Political Ecology, Ecological Economics and, most recently, Public Health itself. Their emergence and intensification, especially in the latest decades of economic globalization, are a result not only of the intensification of economic activities and use of natural resources in the global and commodities market: they are a consequence of a restricted view of economic development, determined by productivist and consumerist criteria disrespecting the lives of humans and ecosystems, as well as peoples' culture and values in the territories where investments and production chains take place. From an economic standpoint, such restriction occurs through the negative externalization of costs associated with the short, medium and long-term impacts on the environment and populations, since many public health problems and environmental degradation will not be paid by producers and consumers involved in production and trade chains, but rather by the people affected, society as a whole and future generations. For example, environmental and human contamination resulting from the intensive use of pesticides in the large-scale agribusiness model, as a rule, is paid for by workers, families, populations and public health and social welfare systems of the countries.

From the standpoint of public health, environmental conflicts allow us to understand the relationship between health and environment based on the so-called social determinants of health, where the concept of environmental conflict is a mediator dealing with issues such as health, environment, economic development, human rights and democracy. The conflicts and disputes emerge in territories where social and environmental

inequalities and the vulnerabilization of populations impacted by different development projects and economic enterprises historically materialize.

From this perspective, population health, human rights and exposure to different risk situations must be understood within political and symbolic disputes involving different projects and use of (natural, economic and cultural) resources in the territories, as well as the use of power to impose such projects. Besides the use of direct force, power is expressed through economic, political and symbolic means at different levels and can feature a more democratic process or, conversely, more technocratic and authoritarian ones depending on the way these levels operate. For example, in public policies, institutions and ways of participating in the decision-making process, in the availability and access to information – which includes the media in its various forms –, in the field of justice, academia and technological development, among others.

Environmental conflicts should be analyzed not only under their negative and divisive aspect, but also their dynamic potential that is revelatory, transforms the social organization and boosts collective health promotion actions. Due to their nature, conflicts allow the emergence of social movements and community organizations that can be treated in different ways. From the hegemonic perspective, the space in which to resolve conflict is limited to the consolidated institutional instances and to the search for consensus among stakeholders through mechanisms such as composition, negotiation or decision by majority vote in a process that can hide important social dissent and isolate demands, favoring the establishment of fragmented social identities. In contrast, there is a plurality of demands, protests and collective rights achievements which, through their joint equivalential coordination, produce subjectivities, platforms and agendas wider than stakeholders (transformed into stakerights), networks and social movements which are fundamental to social transformation (PORTO; SCHÜTZ, 2012; ALMEIDA, 2012).

To authors of political ecology and ecological economics, such as Martinez-Alier (2007), understanding environmental conflicts enables a critical insight into the neoclassical model of economic development and contributions made by environmental justice movements which arise as an alternative to the other two aspects of international environmentalism.

The first aspect has a preservationist character, focused on the “cult of the wild” that aims to preserve the wild and fragile nature from human action and systematically conflicts with the traditional people and farmers living in areas considered priority of environmental preservation. The second aspect is called eco-efficiency – or, according to its latest evolution, green economy – and seeks to coordinate the concept of sustainable development with market mechanisms based on the valuation of externalities and on efficient environmental management of natural resources and the production-consumption cycles supporting the economy. To Martinez-Alier (2007: 27), the second aspect has become “a religion of usefulness and technical efficiency devoid of the concept of the sacred” under the hegemony of economists and engineers, although coupled to the social and humanities sciences in the development of participatory methodologies and vulnerability studies based on the concepts of consensus and governance that disregard existing conflicts as the basis for local and regional development within a democratic perspective. Green economy can be understood as a development of eco-efficiency, centered on transition marketing processes towards an economy without fossil fuels. One of the main tools of the neoliberal ideal is the creation of specific markets divided into components – such as carbon, biodiversity or environmental services. Thus, a process of liberalization of the nature and its resources occurs through a dangerous process of creating titles that could allow financial speculation, corporate control, loss of food sovereignty and the emptying of life in the territories subjected to such logic.

TYPES OF ENVIRONMENTAL CONFLICTS ACCORDING TO PRODUCTIVE AND COMMERCIAL CHAINS

One of the bases for understanding environmental conflicts is Political Ecology, a field of theoretical and political discussions that studies the ecological distribution conflicts or simply environmental conflicts. It begins to strengthen mainly as from the 1980s through the growing links between environmentalist, social and academic movements, enhancing political economy in the critique of the philosophical foundations of neo-

classical economics by incorporating environmental issues in the understanding of the economic and power-related dynamics that characterize modern societies.

In the view of Political Ecology, in its interface with Ecological Economics, the environmental conflicts can be defined as ecological distribution conflicts. They are linked to access to natural resources and services and to damage caused by pollution, since the industrial trade and the production-consumption model set up a social metabolism that affects such conflicts. These occur in accordance with the moments when the goods trade chains ("commodity chains") are produced and are made upon the material's extraction or the production of energy used, during the production or transport stage or, ultimately, the disposal of tailings (MARTINEZ-ALIER, 2007; PORTO; MARTINEZ-ALIER, 2007).

Conflicts at the time of extraction of materials and production of the energy used are present in almost all regions of the world, increasingly focusing on commodity-exporting countries. They may be associated with land occupation and pollution caused by various activities such as: iron, bauxite and uranium mines; foundries, steel mills and aluminum plants; oil or gas extraction and refining; or even conflicts related to the extraction of building materials. Several international social networks with operations in Latin America have been established around these conflicts, such as Oil Watch. Another source of conflicts, also known as biopiracy, is found in the appropriation of genetic resources (wild or agricultural) without proper payment or acknowledgment of ownership of peasants or indigenous people over them (including the extreme case of the Human Genome Project).

Soil degradation has been another major source of conflicts in many countries and results from soil erosion caused by the unequal distribution of land or the pressure caused by export-related monocultures, especially grains such as soybeans. A similar situation is found in crops that, unlike what is often stated, are not forests because they work as tree plantings like eucalyptus, pine and acacia grown for wood production. This one can be used in the field of pig iron and steel (important in Brazil), or even in the manufacture of paper pulp or cellulose, whose output is routinely exported. In recent years, besides trees, the use of biomass for the production of

biofuel (particularly cane, but also diesel from vegetable oils) has been scaling up. There is a strong relationship between the growth of biomass material flow and the increase of environmental conflicts, including the spread of monocultures on family farming areas and the consequent danger of losing food security and sovereignty. Another example of appropriation and degradation of natural resources and soil is the increase of agriculture aimed at the production of meat and dairy products, in addition to shrimp farming that have destroyed mangroves and caused reactions organized by environmentalists and populations in order to preserve the means of survival of fishermen. Also related to fishing are local, national and international conflicts regarding the demarcation of exclusive fishing areas and the defense of local and community fisheries as opposed to industrial fishing. Water-related conflicts have created important movements in various countries, such as those against the construction of large dams to generate electricity or for irrigation purposes, or even conflicts related to groundwater pollution by pesticides or industrial pollution.

Transport-related conflicts are booming due to the increased use of materials in the economy that need to be moved between the locations of extraction, production and consumption. During the 20th century, transport-related indicators (e.g. the amount of tons transported per the number of road kilometers) show stronger growth than GDP and the outputs of material and energy from the economy. Transport-related conflicts are compounded by events such as oil spills from tankers or pipelines leaks, or even due to the construction of new highways, waterways, ports and airports used to the increasing runoff of agricultural, mineral and industrialized products. Conflicts related to waste disposal and pollution relate to the "outputs" of social metabolism. The first conflict of this nature was called in the U.S. toxic struggles, referring to the struggle against the risks caused by exposure to heavy metals, dioxins and other hazardous pollutants emitted mainly, but not only, by chemical and petrochemical industries. Cross-border pollution amplifies the issue and points to problems such as sulfur dioxide which crossed borders in Europe and produced acid rain, but it has also become a problem in Latin American metropolises. Another type of conflict that is widespread in much of the world and is especially serious in Latin American countries is related to landfills, waste

incineration and the export of toxic waste to poor countries, including plastic and electrical-electronic waste (e-waste).

A recent and particular type of conflict is associated with the so-called green economy and mechanisms aimed at the use of oceans, forests, soil and atmosphere for carbon sequestration or as temporary carbon dioxide reservoirs. Besides discussions regarding the equal distribution of rights to use and the fight against disproportionate releases of carbon dioxide (carbon debt), several environmentalist groups have mobilized to prevent the use of resources from this fund for the maintenance and scale-up of monocultures such as those of eucalyptus, besides criticizing the maintenance of polluting practices and the nature commoditization feature imposed by such market mechanisms.

A final type of conflict, yet related to the "outputs" of social metabolism, relates to the safety of consumers and citizens around the potential risk of new and dangerous productive technologies and investments. Both in rich and in poor countries, several disputes revolve around technologies like nuclear power, genetically modified organisms, pesticides and emerging diseases such as bovine spongiform encephalopathy, so-called mad cow disease. Disputes deal with the security criteria in risk management and control and the application of the precautionary principle, and they show how public perception of the risks of a same technology can be very different among countries. At the same time, such differences and the speech of "progress" have been used to scale-up forms of labor and risk division internationally through investments in more polluting and/or dangerous sectors in the so-called less developed countries.

A SCENARIO OF ENVIRONMENTAL CONFLICTS

The table below presents a schematic summary of four major groups of environmental conflicts of relevance to Latin America. The typology adopted relied mainly on the theoretical formulation expressed in the previous item on the social metabolism of productive and commercial chains, focusing on four groups of conflicts.

The first, present in nearly all of Latin America and of great importance in the current economic situation in Brazil, is related to agribusiness export, particularly to the production of rural commodities. Among them we highlight the monocultures of soybean, of trees such as eucalyptus and pine, sugar cane to produce ethanol (biofuel), shrimp farming and ranching. The second, of particular relevance to many countries in Central and Andean America, refers to both the mining of metals, oil extraction and processing industries for the production of commodities such as petroleum products, steel and aluminum. Both mining and associated industries have a high environmental impact, affecting the health of ecosystems, workers and people in the impacted regions.

Table 1. Relevant types of environmental conflicts and examples of impacts

TYPE OF CONFLICT AND ECONOMIC SECTORS INVOLVED		EXAMPLES OF ENVIRONMENTAL AND HEALTH IMPACTS
Extractivism linked to agribusiness (rural commodities)	Soybean monoculture Eucalyptus monoculture Shrimp farming Timber factories Cattle breeding Biofuels	Biodiversity loss and greenhouse gases from deforestation and fires Destruction of ecosystems such as the Amazon, savannahs, swamplands, Atlantic forest and mangroves Environmental contamination of soil, water and food by pesticides Human contamination of workers, residents and consumers by pesticides Invading and forcing out Indians, quilombolas, extractivists, fishermen and small farmers from their territories Concentration of land, hampering agrarian reform and agro ecology and boosting rural exodus
	Extractivism linked to mining, oil extraction and industrial production for metal commodities	Iron mining and steel cycle Bauxite mining and aluminum chain Oil extraction, petrochemical industries Gold, silver, copper mining and other mining activities (such as uranium)

<p>Production of energy and major infrastructure works</p>	<p>Dams and hydroelectric plants Petroleum industry Other forms of energy production (thermoelectric power plants, nuclear and wind power plants) Waterways and highways Transposition and integration of watersheds</p>	<p>Changing weather and water regimes in the construction of hydroelectric dams Deforestation, population displacement and environmental degradation resulting from the construction of large dams and hydropower plants Oil and oil derivatives spills from ships and pipelines in various regions of the country Air pollution caused by thermoelectric power plants</p>
<p>Urban conflicts related to housing, lack of infrastructure in cities and “natural” disasters</p>	<p>Real estate Public power and sanitation sector Risk industries without isolation areas around them Public safety</p>	<p>Lack of housing supply for low-income people Increase of slum areas without urban infrastructure Disasters and/or their aggravation, such as earthquakes, floods and landslides in slums, expanded chemical accidents in densely populated risk areas Construction of buildings, condominiums and slums in contaminated areas Lack of sanitation (drinking water, sewage and garbage collection) Urban violence, especially in poor areas of urban fringe</p>

Source: Adapted from Porto (2007).

The third group of conflicts stems from energy production and large infrastructure enterprises. Among them we highlight dams and hydroelectric power plants, oil and oil derivatives industry, thermoelectric power plants, nuclear power plants (present only in Argentina, Brazil and Mexico, but with plans in several other countries, such as Chile, Venezuela and Ecuador), waterways and highways and transposition and integration of watersheds. It is interesting to note that even technologies and manufacturing processes involving alternatives considered cleaner or sustainable (such as biofuel and wind power production) can give rise to environmental conflicts involving land dispute (through the scale-up of monocultures such as sugar cane and wind farms) and possible environmental impacts. Finally, typically urban environmental conflicts involve mainly problems in regions that American theorist Robert Bullard calls “sacrifice zones”, i.e. areas where excluded and discriminated populations are forced to live

and work in hazardous or degrading conditions, with lack of sanitation or exposed to greater pollution risks – or even flooding or major impacts as a result of earthquakes or major industrial accidents. This phenomenon lies behind the statistics of important technological and “natural” disasters that mark the vulnerability of the Latin American population in many countries.

Hundreds of concrete examples of environmental conflicts are available on the internet at some specific sites. For example, in the Brazilian case, there is the Map of Conflicts Involving Environmental Injustice and Health (www.conflitoambiental.icict.fiocruz.br) with approximately 400 cases of conflicts throughout the country and that is currently being updated and expanded. Regarding Latin America, the Observatory of Mining Conflicts in Latin America (OMCLA) is responsible for updating and disseminating mining-related environmental conflicts in Latin America. Database for research is found at <http://www.conflictosmineros.net>. In Europe, there are two important maps to disseminate conflicts: the first one, coordinated by the Autonomous University of Barcelona, is the Environmental Injustice Map, linked to the Environmental Justice Organisations, Liabilities and Trade (EJOLT) project available at www.ejolt.org. Finally, the Documentation Center of Environmental Conflicts (CDCA), an organization headquartered in Italy, provides a map of environmental conflicts focusing mainly on Africa, Latin America, Asia and Europe. The map is available at www.cdca.it.

FINAL CONSIDERATIONS

The prevailing model of economic development in Latin America systemically produces many environmental conflicts arising, above all, from the intense exploitation of natural resources associated with significant and unequal environmental, social and health impacts deriving from this process. Therefore, it is a major challenge to face the problem in order to promote social justice, environmental sustainability, health, human rights and democracy in the region.

There are two groups of possible actions by governments and institutions devoted to the issue: the first one refers to specific actions related to the health sector or in partnership with the environmental sector. For example, promoting the development of epidemiologic studies and the production of social, health and environmental indicators pointing inequities, including related to ethnic, racial and gender aspects; fostering participatory methodologies for the shared production of knowledge, such as popular epidemiology and community-based and participatory methods of health indicators promoting scientific and popular knowledge dialogue; building maps of social and environmental vulnerability as well as environmental conflicts; mapping and remediating contaminated areas; establishing programs for the education, training and empowerment of affected and vulnerable communities; participation in environmental licensing processes through risk assessments and production of future scenarios, particularly for large enterprises with more environmental and health impact; among others.

A second group is related to broader intersectoral actions. Among them, we highlight actions in the field of human rights; affirmative policies against ethnic, racial and gender discrimination; land demarcation and creation of reserves and property rights in the areas of indigenous, quilombolas and extractivists' communities; incentive for agrarian reform, family farming, as well as food safety and sovereignty programs and agro ecological transition; participatory urban planning in slum areas and expanding coverage of drinking water, sewage and garbage collection; affordable housing supply and legalization programs in urban areas, as well as public security coordinated with public policies aimed at human rights and the celebration of democratic culture; youth training and digital inclusion in vulnerable urban communities; fostering family farming, community tourism, alternative energy, recycling; among others.

Another important aspect from the standpoint of democracy and human rights is the right to expression and the fight against violence. An important feature of environmental conflicts in Latin America, expressed

in conflicts present in the various aforementioned maps on environmental injustice, is persecution, threats and even murders of community leaders and environmentalists engaged in environmental conflicts.

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