The Anthropocene as Multiple Crisis

Latin American Perspectives on Water[1]

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The Anthropocene is probably one of the most disruptive concepts in contemporary science. It has the intellectual power to question ideas previously thought to be obvious, such as the modern-Western separation between nature and culture, because Earth's history no longer follows only natural laws but is shaped by the history of human societies. Conversely, these histories can no longer be understood without the inescapable consideration of planetary systems and their boundaries. Beyond its impact on academia, the emergence of the Anthropocene concept is a historical-political event, as it marks the global need not only to rethink but also to fundamentally remake the relationship between humanity and nature.

The concept of the Anthropocene has gained strength in the global public arena over the past 20 years and has been hotly discussed by the social sciences and the humanities for the past decade. The word was coined in 2000 by the Dutch atmospheric chemist Paul Crutzen and the U.S. American biologist Eugen Stoermer at a conference in Cuernavaca, Mexico. Both scientists observed the profound changes that human beings had caused to the environment. Based on this, they attempted to express the global reach of the great anthropogenic changes with the new term. Thus, the Anthropocene emerges as a new geological era in which humans introduce unprecedented amounts of CO_2 into the atmosphere through the massive use of fossil fuels. In addition, another major anthropocenic problem has been the large-scale extraction of non-renewable resources. Other processes by which human beings have come to change all spheres of the planet include plastic pollution, nuclear

1 This introduction aims to provide the reader with an overview of the conceptual and organizational principles of this six-volume handbook on the Anthropocene in Latin America. To improve readability, we have dispensed with the usual academic references. In each article, the reader will find a detailed and individualized bibliography.

waste, ocean acidification, the extinction of species, the fossil energy regime, the depletion of water sources, and the massive use of agrochemicals and pesticides. All of this constitutes the multiple crisis of the Anthropocene.

Given the above, it is clear that the Anthropocene is more than just a new fashionable term to refer to climate change as it has been widely, yet incorrectly, understood through the media. Nor is it simply a new concept useful for comprehensively addressing known environmental problems, although these issues obviously play an important role in its understanding. The novelty of the perspective that led to the coining of the term "Anthropocene" is fostered by the technological and informational possibilities of Earth system sciences to collect and process data like never before since the 1990s. In this way, it was possible to make visible the alterations, or rather the anthropogenic damage, in all the systems of the planet.

This is not the place to present all facets of the reflections on the concept of the Anthropocene carried out in the social sciences and the humanities. For our purposes, it is sufficient to refer to debates that offer novel perspectives to understand the historical singularities of Latin America in the Anthropocene. In this regard, discussions have recently resumed and continued about the Anthropocene and its derivatives such as the Capitalocene, Plantationocene, Chtulocene, Necrocene, etc.

In this context, the Latin American debate is particularly useful when it comes to relating multiple environmental crises to various sociocultural crises related to capitalism, coloniality, and racism. Here, approaches to environmental justice, the ecology of the poor, Latin American environmental history, nineteenth and twentieth century Latin American critical thought, and the approaches developed by Indigenous, Afro-descendant, peasant, and/or feminist movements and communities become relevant. An example of this from the Andean region is the concept of *Buen Vivir* (Good Living), *sumak kawsay*, based on the idea of the need for a turning point, *pachakutic*, according to which the poor governance and immoral leadership of global neoliberal capitalism with its colonial foundations must be substantially overcome.

Planetary thinking in the Anthropocene can and should be approached differently depending on the places of enunciation embedded in different constellations of power. In this regard, our concern is to broaden the debate, which so far has been largely carried out predominantly in the Global North by the natural and Earth sciences, to include a perspective from Latin America rooted in critical humanities and social sciences.

The aim of this six-volume handbook, *The Anthropocene as Multiple Crisis: Perspectives from Latin America*, published by the Maria Sibylla Merian Center for Advanced Latin American Studies (CALAS), is, first of all, to think about the Anthropocene from a particular region of the Global South. In this way, this handbook offers a platform for discussing the multiple "anthropocenic" socioenvironmental crises and their possible solutions from a specifically Latin American point of view, without los-

ing sight of their global and planetary dimension. The second objective is to systematize, from the perspective of Latin American social sciences and humanities, the multifaceted environmental crises that have met and crossed the planetary boundaries of Earth systems and led to the new geological time of the Anthropocene. With this, we have produced an unprecedented empirical basis for the Anthropocene's complex genealogy in a specific region of the world – in this case, Latin America – with key regional and historical differentiations.

Thus, our perspective combines the already mentioned planetary dimension with a perspective that takes into account the local and regional specificity of ecosystems and socioenvironmental relationships in Latin America. The humanities and social sciences pose different questions in relation to the new geohistorical temporal layer of the Anthropocene. This task is by no means trivial. Rather, it is a multifaceted search process in which the initial assumptions of the definition of the Anthropocene in the Earth sciences are questioned, corrected, completed, and expanded. This starts with historical classification. The question of whether there is an epoch called the Anthropocene, and also of when it begins, was initially addressed by the Anthropocene Working Group (AWG) of the International Commission on Stratigraphy and was weighed according to geological considerations.

Based on the geological and socioecological evidence, 1950 has been proposed to be the year of the "Great Acceleration" despite the first defenders of the Anthropocene having proposed previous historical periods, such as the Industrial Revolution or the invention of the steam engine by James Watt in 1769. Reference may be made here to the smoking chimneys of Manchester factories. But precisely this origin narrative, based on the historical experience of the West, is criticized from a Latin American perspective. Manchester's industrial dynamics relied on the supply of cotton for textile production or sugar as a source of calories for the labor force. Both resources were produced in new plantation systems on the Atlantic coasts of America based on the introduction of neobiota and the labor of enslaved people forcibly brought from Africa. Equally worth mentioning is the mega-mining that emerged during the European colonization of Latin America, symbolically expressed in the system of Potosí, the silver mining center in present-day Bolivia. The silver mined there laid the foundations for the capitalist development and subsequent industrialization of Western Europe. Thus, mega-mining and plantation economies do not constitute mere gradual changes in human use of the environment, but rather mark a fundamental and planetary rupture in the social metabolism, that is, in the management, use, and exploitation of natural resources.

Recognizing the deepest historical roots of the Industrial Revolution leads us to reconstruct a genealogy of the Anthropocene in which it cannot be separated from coloniality, the rise of the capitalist world system, and racial capitalism. Thus, 1492, the year of European contact with the Caribbean and the Americas, is a turning point in world history and represents a fundamental rupture for the Indigenous peoples

and cultures of America. Along with the conscious and unconscious introduction of new plant and animal species, European pathogens arrived in America, together with the colonial violence against Indigenous peoples, a massive number of fatalities, and the consequent cultural ruptures. Ninety percent of the Indigenous population died as a result of the conquest, either through direct violence, the destruction of their living conditions, or the introduction of new germs. It was one of the greatest genocides in history, wiping out 10 percent of the world's population. The abandonment of a large part of the agricultural area and the subsequent spontaneous reforestation caused a drop in global temperature at the beginning of the seventeenth century, coinciding with the beginning of the Little Ice Age – responsible for extreme atmospheric events on the planet.

In biological terms, the Columbian Exchange was so fundamental that biologists set 1492 as the milestone for the categorization of neophytic plants, distinguishing them from plants established in biomes (archaeophytes). With the Columbian Exchange of species, a homogenization of flora and fauna took place between the American continent, Africa, and Eurasia.

The criticism of European/Western capitalism as a driver of the Anthropocene goes hand in hand with a radical critique of European/Western modernity and the recognition that the Anthropocene puts an abrupt end to the European teleological notions of development, progress, and civilization. We stress the criticism of the leveling effect of the Anthropocene concept in the way that it has been coined by the natural sciences, insofar as it implies that the human species is responsible for the great transformations of the environment to which the concept refers. The danger of this approach is to ignore not only the sociohistorical differences between the Global North and the Global South but also the differences between different ethnic and "racial" groups (even if we acknowledge the fact that there are no biological races), as well as those between social classes within the respective regions of the world, especially in terms of consumption patterns or even cosmological representations.

Not all human societies have a predatory approach to the non-human environment, nor do all humans have the same ecological footprint. Perceiving human beings as a single species that destroys ecological environments ignores asymmetric power relationships and how they influence interactions and practices between human beings and the environment. Some voices from the humanities, however, are beginning to question the absolute rejection of the species category. They advocate the cultivation of a dual perspective that addresses not only the asymmetries of power that fracture human experiences and histories but also the geobiological history of the planet, where the human species constitutes a minority life form, despite having undoubtedly become a geological force with a profound impact on the entire planet.

In this sense, the notion of the Anthropocene requires us to question precisely the gap between the scientific idea of a single planetary system, the universe, and the

multiverse of forms of existence and life on Earth. Despite recognizing and stressing the need for planetary thinking, this handbook highlights the current disconnect between global quantifications of systemic limits and the political and social realities historically constructed in the territory. This is where the handbook revisits the concept of planetary boundaries, approaching it from the social sciences and the humanities. In other words, while Earth system sciences conceive of the planetary from a satellite's point of view, we will get closer to the ground without completely losing our planetary perspective. We will reduce the spatial scale to the regional and local while also adding temporal depth, which we will then attempt to reconnect with the planetary perspective. This approach is necessary if we want to investigate the impact that different regions had on the acceleration or slowdown of the planetary rise of the Anthropocene during different historical conjunctures. It is also relevant for keeping the focus on the extremely unequal socioenvironmental dynamics of the Latin American Anthropocene, where European/white settlers "naturalized" Indigenous and Afro-descendant peoples as exploitable resources.

On the other hand, the Anthropocene's genealogy is invariably constituted as a history of conflicts and crises, having developed in Latin America from the beginning of the Conquest to the present day in a very violent way. However, those who were subject to such violence should by no means be understood only as passive victims. In this particular region, there have always been creative social responses to overcome multiple socioecological crises. From our perspective, these approaches are an integral part of a genealogy that cannot be conceptualized solely as a linear history of decline.

Through these debates between the editors of the handbook, we identified the most important thematic axes for understanding the Anthropocene's genealogy. We enter into a critical dialogue around the general approaches of a planetary Anthropocene, expressed, for example, in the debate on planetary boundaries and the historical and contemporary experiences and reflections proposed by the social sciences and Latin American environmental humanities. Faced with the continuous conjunctures of colonization from the Conquest to current extractive practices, the importance of deforestation, and the dynamics of the technosphere's advance, especially in urban zones, we identify **land use** as a paradigmatic theme for understanding the Anthropocene from Latin America. For this reason, we dedicate the first volume of the series to this topic. Within this theme, we are interested, firstly, in aspects of environmental change associated with different forms of land use, such as planting, ranching, livestock, or the large-scale clearcutting of forests for infrastructure projects. In addition, we are especially interested in the interconnection with extremely unequal and sometimes violent social processes and crises that originate from these aggressive land uses.

Biodiversity is another central aspect of the Anthropocene discussion. Latin America and the Caribbean are home to 40 percent of the world's biological diversity

and seven of the world's 25 biodiversity hotspots, including six of the 17 megadiverse countries and the second-largest reef system on the planet. This region also has Indigenous forms of management, as well as a long history of preservation that is threatened by dynamics of commodification and dispossession. For this reason, a volume is dedicated precisely to biodiversity.

A research project on the Anthropocene, such as the one we present here, must necessarily pose questions related to **climate change** without reducing it exclusively to the global variation of the Earth's climate due to natural causes. The Anthropocene has caused unprecedented changes in this regard in Latin America, often linked to social conflicts and demands for environmental justice. On the other hand, the issue of **water** is inevitably related to climate change and raises important questions on issues such as human consumption and pollution. This vital resource has generated numerous socioenvironmental conflicts during the Anthropocene. Therefore, two volumes in this series are dedicated to climate change and water, respectively.

Due to its importance since the beginning of the conquest, we dedicate a volume to **mining and energy,** which addresses mining extractivism from the silver of Potosí to the lithium of the Altiplanos' salt flats. Mining is inextricably intertwined with the energy sector and its various regimes. Both are linked to specific social processes and structures, in particular, the extreme exploitation of labor leading to slavery, as well as the displacement of Indigenous populations in favor of the use of fossil, or even renewable, energy. These tensions and contradictions comprise the focus of our volume on the subject.

In the discourse on the Anthropocene in the humanities and social sciences, the visual and artistic representation of the concept has occupied a special place, as the question of what images we use to narrate the Anthropocene emerged quite early on. For this reason, we are dedicating a special volume to the **visual representations** of the Anthropocene's genealogy.

In a complex project such as this handbook series of the Anthropocene from Latin America, it seems appropriate to provide guidelines to facilitate reading for all kinds of audiences. The handbook is neither a simple edited volume nor a compendium. Rather, it is organized according to a conceptual matrix in order to understand and address the Anthropocene's genealogy from Latin America. Therefore, all volumes have the same basic structure. Each is structured by a temporal axis divided into three historical periods: the colonial era, the middle of the nineteenth century to 1950, and 1950 to the present day. In turn, each of these respective periods is preceded by a general historical introduction to the topic. This allows for a contextualization from a broad Latin American perspective, making it easier for the reader to navigate the general debates. After this contextual introduction, the main entries follow. These entries synthetically discuss the Anthropocene's genealogy with respect to the volume's theme in large regions of Latin America. From the south to the north of the Latin American continent, the reader will find for each of the three

historical periods five descriptive and analytical chapters of about 10,000 words, including a coherent bibliography, on the Southern Cone, the Andes, the Amazon, Mesoamerica, and the Caribbean. To depict the structure of the handbook's matrix in more detail, we first present a concise characterization of the three relevant periods, placing special emphasis on the phases of intensification and acceleration of anthropocenic dynamics. Secondly, we present the regions of Latin America and the Caribbean that will help us to analyze anthropocenic dynamics beyond the methodological nationalism that still predominates in the social sciences. And thirdly, we explore the different elements and variables that are covered in this volume on water.

Periods of the Anthropocene's Genealogy in Latin America

Since its proposal in 2000 by Paul Crutzen and Eugene Stoermer, the Anthropocene has now begun the process of being ratified as a new geological epoch in Earth's history. Although the Anthropocene Working Group, a subgroup of the International Commission on Stratigraphy, is interdisciplinary, the argument for the ratification and acceptance of a new epoch is purely geological. In other words, for the Commission to recognize the Anthropocene, it needs, first and foremost, stratigraphic evidence of such planetary human influence on all natural systems. That is to say, it looks for a marker, the so-called "golden spike," in the natural record of soil and rock layers, as well as the atmosphere. Evidence from Earth system science and human history points to a post-World War II marker in the 1950s. In 2023, the Anthropocene Working Group (AWG) proposed Lake Crawford, in Canada, as the Golden Spike, given that the radioactive fallout from the atomic bomb tests of the 1950s and other anthropogenic changes in the environment are especially marked here. Although this proposal has not been accepted by the Geologists of the Subcommission on Quaternary Stratigraphy in 2024, it coincides with the beginning of a phase that members of the AWG and associated researchers have dubbed "The Great Acceleration." This time reference, from 1950 to the present, is included as the last of three axes that we have identified as relevant to a specifically Latin American perspective on the genealogy of the Anthropocene. However, we argue that to understand the process that led to the geological definition of the Anthropocene, it is necessary to grasp dynamics and processes prior to the 1950s.

From a Latin American perspective, we propose tracing the Anthropocene's genealogy to the European Conquest of the American continent starting in 1492 with the Columbian Exchange, the plantation system, and mega-mining. Thus, the colonial era in Latin America is understood as the phase of intensification of important features in the genealogy of the planetary Anthropocene. A second phase begins with the end of the colonial empire and the processes of independence in America. In ad-

dition to profound political changes, this phase encompasses an accelerating moment for the historical construction of the Anthropocene, especially from the 1860s to the world economic crisis of 1929. Finally, we include in a *sui generis* manner the Anthropocene phase from 1950 to the present day. Within this phase, it is possible to detect an intensification of anthropocenic factors in Latin America, especially since the 1960s with the Green Revolution and oil exploitation, as well as the eighties with neoliberal policies that accelerated extractive economies and mass consumption.

Colonial Period

1492, the year of European contact with the Caribbean and the Americas, marks a turning point in world history. For the Indigenous peoples and cultures of America, it represents a fundamental rupture and even the end of their worlds. From the perspective of the European conquerors, the so-called "New World" emerges, altering the existing medieval vision of the world. For the first time, the imagination of a global "single world" arises. At the same time, the conquest and colonization of the Americas become the starting point for the formation of a capitalist world system.

In this way, 1492 marks a milestone in environmental history. An intercontinental exchange of biota begins that fundamentally changes both the "Old" and the "New World." Plants from America, such as potatoes, tomatoes, or corn, leave their mark on European cultures and become national foods. At the same time, cane sugar makes its way into Europe and provides the energy reserves for the subsequent Industrial Revolution. The Americas today are hard to imagine without the biota introduced by European colonizers, from bananas, citrus fruits, and coffee to chickens, cows, pigs, sheep, and horses.

In 1492, a large-scale socioenvironmental transformation began, from landscapes characterized by Indigenous land use to Europeanized ones. From this abrupt alteration arises the accumulation of extractive capital. It is important to recognize that, clearly, the Caribbean and American environment was not only extensively modified by Europeans, but also by the numerous and diverse Indigenous populations that inhabited both continents, as well as the Caribbean archipelago for millennia before. Our argument for 1492 as a turning point is one of scale and intensification. In other words, with the arrival of European contact, specific practices of exploitation and extractivism that were unprecedented on the continent became widespread. In fact, the introduction of new species favored the conquest of Indigenous populations, as well as the domination of vast rural areas of the American territory.

One of the "anthropocenic" processes of the colonial phase was the massive reforestation that occurred after the genocides of Indigenous populations as a result of pathogens and European violence. The natural scientists who have modeled this process argue that the disuse of cleared agricultural space led to a large-scale regrowth

of forest cover – a massive carbon sink – which, in turn, tangibly cooled the climate around 1610. This theory is known as the Orbis Spike Hypothesis and has also been suggested as the beginning of the Anthropocene. This is a highly controversial topic in climate science, given that this period is also associated with the beginning of the Little Ice Age, but it raises important questions about the relationship between human societies and the Earth system. In any case, the continuity of the colonial process reversed this environmental dynamic, producing extensive deforestation.

On the other hand, the colonial era left as a legacy the development of the plantation system that some academics have called the Plantationocene. In the plantations, systematic techniques of overexploitation of nature were developed, connected also to the excessive exploitation of subaltern labor, that is, Indigenous and African slavery. Human muscle strength (African or Indigenous) was violently exploited as energy to power these plantation machines, thus connecting to the energy history of the Anthropocene's formation and to the process of building European modernity from the margins. The plantation system became an epicenter of confluence between early capitalism and racism, becoming part of the Anthropocene's genealogy. Starting in the last years of the eighteenth century, this process of colonial occupation was decisive in abolishing the natural limits of the solar energy economy in the imaginary of modern capitalism, opening the way for the unrestrained and unlimited expansion of extractive frontiers. This made overexploitation of the land a fundamental characteristic not only of the Americas and Europe but of the global capitalist system.

From the Mid-Nineteenth Century to 1950

During the nineteenth century, the industrial model developed in the European eighteenth century was consolidated. Although the Latin American countries that were becoming independent sought their own ways to carry out social, political, and economic transformations, such transformations were part of global and international struggles of an accelerated imperialism and nationalism. Political and economic changes brought about social transformations in the forms of production, the management of natural resources, and the dimensions of exploitation, accelerating towards the end of the nineteenth century. Although the break with the colonial model was gradual, the oligarchies acquired greater power through the Latin American independence processes, dividing and distributing capital together with the territories of production and the complicity of the landowners.

Nationalism, represented in forms of development, also fragmented territories and the uses of natural resources. New geographical and naturalistic explorations and a new conquest of the environment marked the beginning of the nineteenth century. This century is also considered the era of the second globalization, entailing the consolidation of unequal ecological exchange. There is talk of a second Columbian

Exchange related to a global metabolic fracture. Based on this logic, exchange networks were consolidated. This involved not only the exchange of raw materials for industrialized goods, but also the trade of difficult or impossible to replace goods – such as energy, soil nutrients, and biodiversity – for rapidly replenished goods, such as industrial products.

The period between the 1860s and the world economic crisis of 1929 served as a phase of economic liberalization and modernization associated with a new integration of the region into world capitalist structures and a strong reinforcement of extractive economic sectors. Within the framework of the handbook, it can be understood as a phase of intensification and acceleration of the Anthropocene, comparable only to the metabolic rift of the Conquest. With the exception of a few regions, the predominant agricultural model was the exploitation of vast *haciendas* and plantations. In addition, this period is characterized by a process of internal colonization and land grabbing in peripheral regions, referred to by some historians as the Second Conquest. The extraction of raw materials such as rubber, henequen, and mate gave rise to new estates (*latifundios*), export-oriented elites, the establishment of feudalized forms of labor exploitation, and the rapid destruction of natural landscapes.

State formation played a crucial role in the structure of the nineteenth century, marking the definition of new forms of land use and outlining enclave economies in various regions of Latin America. This process was strengthened by new technologies such as steam, electricity, and the subsequent modern means of transport derived from these technological innovations. In the economic transformation of independent Latin American countries, foreign capital investment played a key role, both in the exploitation of agricultural land and in mining. Foreign companies from the United States, Great Britain, France, and Germany accelerated economic and political transformations, directly impacting land exploitation.

With regard to land tenure, the transformation of properties contributed to the displacement of Indigenous communities and the cooptation of others who had been exploited under conditions of semi-slavery in the hacienda system. This phenomenon was observed in different regions of Mexico, the Andes, and the *estancias* (ranches) of the Southern Cone. In Caribbean countries, independence came late and led to new dictatorships at the beginning of the twentieth century. Demographic growth went out of control in some regions, leading to a separation and even segregation between the rural and urban worlds. The motto of "Progress and Order" regulated business and daily life in the nineteenth century. This included hygiene and control measures conducive to new forms of segregation and inequality, which in turn had negative impacts, both on Indigenous communities and on increasingly urbanized populations. It should be noted that at the end of the nineteenth century, the first responses emerged to mitigate anthropocenic effects. Conservationism was consolidated with the creation of natural protected areas in several countries. The biotic flow began to be controlled – albeit under a reduction-

ist conception of conservation spaces – either as untouchable and unaltered areas, intended as pristine or as reservoirs of exploitable resources in the future.

From 1950 to Present

The period from the mid-twentieth century to the present is known, from an anthropocenic perspective, as the Great Acceleration. It is a period marked by the accelerated consumption of natural resources, raising serious questions about the viability of the Earth system. This phenomenon is the result of important transformations in the world economic system, including the exponential growth of gross domestic product (GDP), population growth, increasing urbanization, energy production and consumption, and the use of fossil-based fertilizers, among other variables.

All of these large-scale socioeconomic transformations have drastic effects on the components of the planetary system beyond the expected natural variations. In the context of Latin America, these changes are reflected in the modification of the phosphorus and nitrogen cycle, which has resulted in the eutrophication of rivers and soil degradation due to industrial agriculture. In addition, an alteration has been observed in the carbon cycle with the loss of sinks due to deforestation and a dangerous increase in carbon dioxide and methane emissions from agricultural sources. Also, changes have been registered in the hydrological cycle with more frequent extreme events of droughts and floods and greater impacts due to the vulnerability of productive systems and urban habitats. Furthermore, there has been an increasing demand for water reservoirs for irrigation and hydroelectricity. Another relevant impact is the simplification of ecosystems and agroecosystems, which has led to a generalized loss of biodiversity.

Since the mid-twentieth century, Latin American governments and elites have assumed changing roles in driving their nations' development models and schemes. In the first stage, coinciding with developmental theory, production and consumption were oriented towards the "catch up," the theory of rapidly reaching the progress and well-being of Euro-Atlantic societies. During this period, local elites and governments adopted a planning approach to the future, with a programmed increase in the scale and pace of production. The import substitution model was implemented, allowing some countries in the region to satisfy the domestic market and to industrialize moderately: Brazil, Argentina, and Mexico being the most prominent. The Economic Commission for Latin America (ECLAC) was created in 1948, and the dependency theory was developed, which allowed the region's situation of marginalization to be explained from a structuralist perspective.

Towards the end of the 1990s, with the wave of neoliberal policies across Latin America, the role of the state was consolidated as a facilitator and intermediary for private transnational capital. Under this scheme of welfare political control, companies were able to freely access natural resources and territories through mechanisms

such as public-private partnerships. In parallel, selective integration into the world market based on the exploitation of natural resources encouraged agroindustry and extractivism, such as mining, agroforestry, or fishing. With the new millennium, progressive or neodevelopmental governments spread throughout the region. Although they assumed greater roles of state control and planning, these governments facilitated the arrival of global capital mainly oriented to the production and export of raw materials associated with the commodity boom, aimed at increasing the public budget allocated to social policies. Despite their differences, all these models have had in common the primary target of economic growth as the governing axis of the economy, as well as public policies aimed at strengthening the economic bases of the Great Acceleration.

In this period of acceleration, an increase in the rate of extraction of natural resources for the world market has been seen, giving rise to what are known as old and new extractivisms that include the mining, agriculture, forestry, fishing, and urban sectors. In addition, there has been a new Green Revolution characterized by the use of monocultures based on transgenics, the massive use of harmful agrochemicals, and intensive water consumption. Large areas of the region have also been deforested for the expansion of the agricultural frontier, leading to a further significant loss of biodiversity.

Another crucial aspect of the Great Acceleration has been the need to increase the production and diversification of energy sources. In Latin America, there has been an early use of hydroelectric energy, creating profound environmental impacts, both in the flow of rivers and in the production of greenhouse gases that have contributed to global warming. Widespread rural and urban electrification processes have been favored. However, hydrocarbon extraction has also played an important role. New frontiers of oil exploitation, whether offshore (the Brazilian coast and the Gulf of Mexico) or in the Amazon rainforest (particularly in Peru and Ecuador), have helped to increase the supply of fossil fuels in the global market and to delay the international energy transition. In fact, the accelerated integration into global markets has led to the advancement of production frontiers towards non-anthropized areas, causing significant impacts on natural ecosystems and local communities. In addition, there has been a growing presence of financial capital and fictitious economies, characterized by cycles of financial crisis. During this period, internal, regional, and international migration has taken on a new dimension in terms of quantity and quality. In particular, regional migration has intensified due to greater obstacles blocking movement to the countries of the North, although there are still migratory flows to those regions. On the other hand, water management has been oriented towards intensive extraction, both in the industrial and agricultural spheres, generating significant pollution of the region's main hydrographic basins.

Anthropogenic climate change and natural climate variability are also prominent phenomena during the Great Acceleration. The Latin American region is one of

the largest terrestrial carbon sinks, in part due to the existence of biomes with less anthropogenic transformation, such as the Amazon, the Mayan Jungle, and Patagonia. Greenhouse gas emissions, however, have not been kept below the sinks. Meanwhile, the increase in the scale of agroindustrial and urban enterprises has produced a continuous increase in waste generation and pollution. During the Great Acceleration, an increase in economic and social inequality has been observed in Latin America, which has meant that different social groups have different levels of destructive capacity. A significant change has been the relative loss of the states's monopoly on the use of force, leading to the emergence of organized crime groups that are involved in the processes of production and environmental predation, controlling territories in both rural and urban areas. At the same time, Latin America has witnessed the rise of resistance movements and proposals for local alternatives, especially around feminism and environmentalism.

Technological changes and transformations in communications have been profound and extensive during this period. Satellization and fiber optics have revolutionized communication media, allowing for a diversity of messages and greater appropriation of the media by subalternized movements and organizations. Nevertheless, there has also been a concentration in the distribution of cultural messages, posing challenges in terms of the democratization of information and culture.

In conclusion, the Great Acceleration has been a period of intense socioeconomic and environmental changes in Latin America. The accelerated consumption of natural resources, development models oriented to economic growth, extractivism, water management, anthropogenic climate change, inequality, and migration are some of the key aspects that define this stage. Latin America faces significant challenges in achieving a sustainable development that guarantees the preservation of its natural resources and the well-being of future generations.

Anthropocene Regions in Latin America

Regarding space, the handbook combines the perspective of planetary boundaries with a regional approach that takes into account the local and regional specificity of climates, ecosystems, and socioenvironmental relationships. The operationalization of this regional approach for the handbook project poses a complicated task. In macro-regional terms, the handbook is limited to what today corresponds to Latin America, including South America, Central America, Mexico, and the Caribbean. However, given the wide variety of climates and ecosystems in this vast region, we have proposed to define smaller and, at times, even larger areas. To this end, we do not want to rely solely on the geopolitical units of nation-states – important entities for the political regulation of the environment. Often, such territorial divisions ignore natural boundaries, while, at the same time, climate extremes tend to disregard

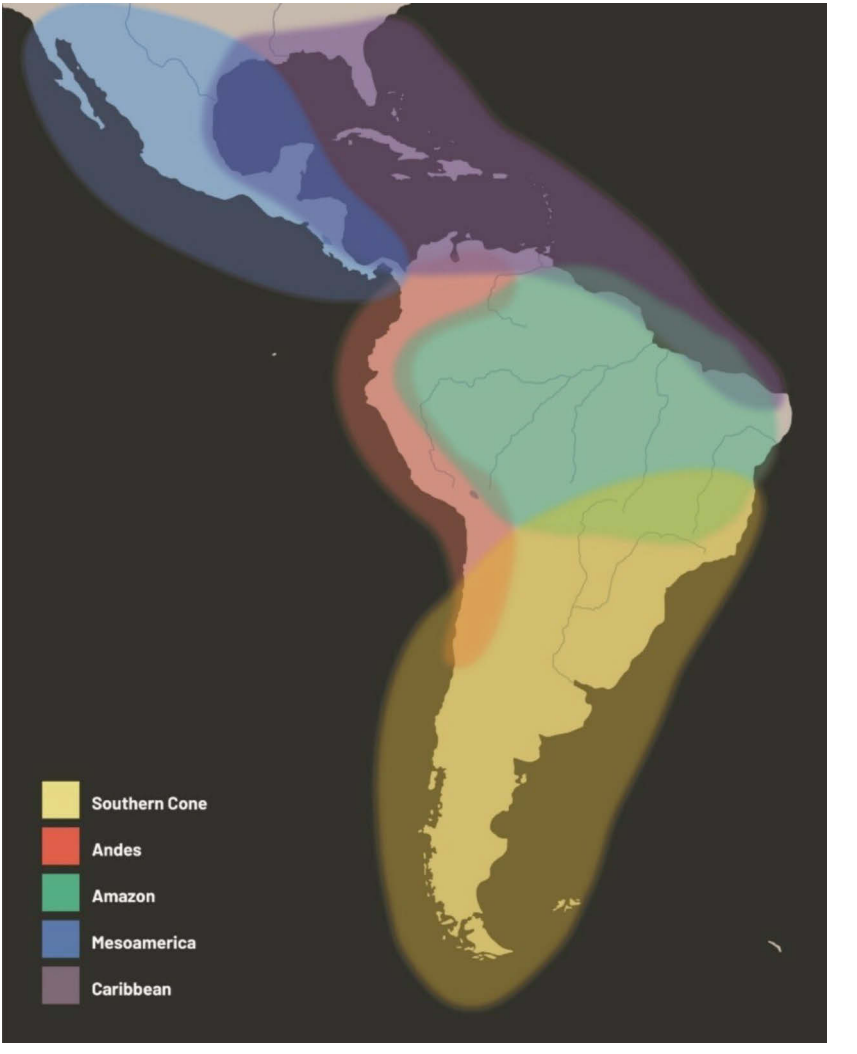
human-created national borders. Finally, from a heuristic standpoint, we chose to define five areas that we consider suit what we would like to show in the six handbooks and that, according to our approach, are characterized by a certain ecological and cultural coherence without national borders. From south to north, these regions are as follows: the Southern Cone, the Andes, the Amazon, Mesoamerica, and the Caribbean.

Southern Cone

The Southern Cone can be defined in a combined manner. In biophysical terms, its hydrographic network, which corresponds to the Rio de la Plata Basin, stands out. In geopolitical terms, it is defined by historical processes that determine flows of people and material wealth. While still taken into account, these flows transcend the national borders of neighboring states. From a political-administrative point of view, the definition of the Southern Cone has varied. In the colonial past, the delimitation of the viceroyalty of the Rio de La Plata and the Jesuit-Guarani territory outlined a region. The Southern Cone would encompass Uruguay, Argentina, Chile, Paraguay, southern Brazil, and even the southeastern tip of Bolivia, forming a region with common structures in a heterogeneous scenario. More recently, the Southern Cone acquired geopolitical meaning in the seventies, as well as a commercial and customs significance with the creation of Mercosur in the nineties.

In the colonial period, the region was an important corridor that linked the silver mines of Potosí to the Atlantic. Much of the territory of the Southern Cone had not yet been conquered and controlled by the Spanish Crown, but was kept in the hands of various Indigenous peoples. The southern part of the region, especially, was controlled by the Mapuche, whom the Spanish Crown could not conquer. During the colonial period, the relationship between Indigenous peoples – particularly the Guaraní in south-eastern Bolivia, southern Brazil, northern Argentina, and Paraguay – was fundamental for inter-ethnic relations and landscape transformations, especially due to the Jesuit presence until their expulsion at the end of the eighteenth century.

Figure 1: Anthropocene Regions in Latin America



Source: Own Elaboration.

This geopolitical situation changed dramatically in the second half of the nineteenth century. We can speak in the Southern Cone of a Second Conquest, which found its highest expression in the bilateral Chilean-Argentine military campaign against the Mapuche people in the 1860s.

Parallel to this violent grabbing of Indigenous territories, a massive process of European immigration took place. In the middle of the nineteenth century, the

Southern Cone states received a large number of settlers of European origin. In fact, the Brazilian Southeast, especially the megalopolis and the interior of São Paulo and even Rio de Janeiro, can be integrated into the Southern Cone due to its similar characteristics in terms of economic structures and the important role played by European migrations in its overall human composition. Colonial and neocolonial ambitions to create "Neo-Europes" are reflected in many city names, urban landscapes, dietary habits, and agricultural practices in the Brazilian Southeast. From a European perspective, mass immigration was a biopolitical solution for the rural population, impoverished and made redundant by industrialization.

The environmental characteristics of the Southern Cone region vary widely due to its extensive territory and geographical diversity. The region is home to a great diversity of ecosystems, including subtropical rainforests, temperate forests, steppes, grasslands, wetlands, deserts, and glaciers. On this backdrop of complexity, heterogeneity, and abundance of natural resources, there are some structuring features of the territory that provide it with identity. A very important one is the presence of its three main rivers: Paraná (4,352 km), Paraguay (2,459 km), and Uruguay (1,600 km), which make up the Río de la Plata basin. These rivers are among the largest in the world, while the Rio de la Plata estuary is the widest in the world.

The La Plata Basin, the central part of the Southern Cone, integrates a large part of the territory of Brazil, Argentina, and Uruguay, as well as all the territory of Paraguay. In this vast territorial expanse, various biomes or ecoregions converge, each with very distinctive characteristics. Some have already undergone severe transformation or degradation, while others are on the path to degradation: the Paranaense Forest, the Pantanal, the Chaco, the Iberá Wetlands, the Pampas Grassland, the Delta, etc. All these are unique ecosystems globally and hold significant ecological value. One of the largest wetland systems in the world is also in its territory, including the recharge and discharge areas of the Guaraní aquifer.

Historically, the colonization of the interior took place mainly through the Paraná, Paraguay, and Uruguay rivers. These also form the transportation routes that today connect the region to the world market. Large quantities of soybeans, cereals, meat, and iron ore are shipped here.

But it is not only the La Plata Basin that gives the Southern Cone its identity. In turn, a second integrating pillar of the region is the presence of the Andes, as an axis that structures a specific space and a fundamental part of the territory. Chile to the west and the Andean regions of Argentina and Bolivia to the east create a socioenvironmental-cultural framework of notable specificities. In the case of the Southern Cone, the southern Andes, with their two sub-regions, are key. First, the arid Andes – from the north of the Chilean-Argentine border (Cerro Tres Cruces) to the Pino Hachado Pass in northern Patagonia – stand out for their aridity and their great heights, such as Mount Aconcagua (6960 m MSL). The Atacama Desert is an ecosystem characterized by its extreme drought, with precipitation not exceeding 18

mm per year. It is a subregion with intense geopolitical and socioenvironmental conflicts in which, as a result of productive activities, considerable changes have been observed in the natural environment, related to mining activities, such as large-scale copper and lithium mining. These metals have become emblematic of the new mining impetus in the triangle of deposits formed by Chile, Bolivia, and Argentina. In this region, there are also a series of socioenvironmental problems, which can be interpreted as the result of human-induced alterations to the natural environment that have affected the population. The second sub-region is the Patagonian Andes, extending south of the Pino Hachado Pass with the Patagonian Andean forest. In southern Argentina and Chile, we find Patagonia, which extends from the Colorado River in Argentina to the Strait of Magellan in Chile, covering approximately 1,043,076 km² in total. The strait, as a natural inter-oceanic passage, saw great commercial activity until the inauguration of the Panama Canal at the beginning of the twentieth century. Another view of this region is from the fragmented and insular coastal edge connected to Antarctica, with a population attentive to maintaining sovereignty flags.

Faced with the vastness of resources, the notion of dispute has been present in the various territories of the Southern Cone, from Gran Chaco to Patagonia and the Southern Andes, the land where colonists exercised sovereignty by eradicating the aborigines. The genocide of the original peoples was accompanied by the destruction of the ecosystems in which they lived. Further west, in Chilean territory, another dispute: the resistance of the Mapuche people to the advance of the Chilean army from the north and the colonists from the south. This conflict remained active for much of the nineteenth century and does not seem to be fully resolved. Conflicts over Indigenous territories are still active and are exacerbated by interest in mining areas, the southern sea for salmon farming, or the rivers for hydroelectricity, among other resources.

The Southern Cone has been blessed with an enormous variety of flora and fauna and extensive ecosystems. However, rapid population growth, industrial expansion, mining, agriculture, forestry, and large-scale hydraulic engineering projects have caused great territorial deterioration and strong socioenvironmental conflicts throughout history. This history is indicative not only of the abundance of natural resources and the natural productivity, goods, and services provided by these ecosystems but also of the tensions, imbalances, and conflicts that their exploitation has caused throughout their historical development. In conclusion, the Southern Cone presents itself as a region rich in biogeographic and cultural diversity, marked also by significant environmental and socioeconomic challenges. The sustainable management of its natural resources, the preservation of its unique ecosystems, and equity in the access and use of these resources are key elements for a future development that guarantees the prosperity of the region and the well-being of its inhabitants. A deep understanding of the region's environmental and

social history is essential to address current challenges and build a more sustainable future for the Southern Cone.

Andes

The Andes region encompasses the countries crossed by the Andes Mountains, located in the tropical zone of South America, between 11° North and 27° South latitudes. In administrative terms, it includes the south of Venezuela, Colombia, Ecuador, Peru, and Bolivia, as well as the tropical parts of the Argentine and Chilean extreme north. From a natural point of view, the region has common elements in relief, altitude, and climatic behavior, but with significant variations. While the northern areas of the Andes experience two rainy and two dry seasons, the central Andes are characterized by only one rainy and one dry season.

The Andes Mountains are divided into two main mountain ranges: the Cordillera Negra in the west and the Cordillera Blanca in the east. These are connected by transverse mountain ranges and their valleys, as well as by the elevated lands of the páramo in the north and those of the Altiplano, a wide plateau that reaches its largest extent in Bolivia. The great elevational variation of the Andean region, which ranges from sea level to heights of more than six thousand meters, creates several altitudinal floors with different ecological characteristics. The climatic influence of the El Niño-phenomenon and the Humboldt marine current, which circulate along the Pacific coast, also translates into climatic diversity along the latitudinal gradient. These features range from very humid ecoregions on the North Pacific coast, such as the Colombian Chocó, to desert ecoregions on the Peruvian coast.

The Andes are home to several ecoregions that are internationally recognized as biodiversity hotspots. In fact, the region constitutes a complex mosaic of more than 130 ecosystems, including páramos, punas, and Andean valleys, with high levels of biodiversity. The tropical Andes are a leading region in endemism worldwide, with an estimated rate of more than 50 percent in plant species and more than 70 percent in fish and amphibians. Thus, it is the region with the greatest diversity of amphibians in the world, with around 980 species, 670 of those endemic.

When we refer to the Andes, we mean three diverse geographic zones that comprise the Pacific coast, the Andes, and the Amazonian foothills. The region's diverse ecologies have been used and shaped by humans for more than 14,000 years. The formation of complex human societies based on agriculture dates back approximately one thousand years before the Inca expansion in the fifteenth century. On the coast, the construction of monumental structures and urban centers in several valleys of the central and northern coast of Peru, such as the Supe Valley, cannot be comprehended without taking into account the maritime resources provided by the Humboldt Current, especially the rich fishery. The key characteristics of Andean societies, such as the specialization of social roles, the emergence of formal belief systems, the

increase in food production, and technologies for systematic data recording, are evident more than a thousand years before the Incas began their imperial expansion in the fifteenth century.

Over the millennia, Andean societies in the mountain range have employed diverse strategies and technologies to survive and thrive in a challenging physical environment. These strategies include the construction of irrigation systems and terraces, innovations that enabled the spatial and seasonal expansion of agriculture. They also facilitated the proliferation of species suitable for agriculture, such as corn and potato varieties, as well as the domestication of camelids. In addition, Andean societies promoted demographic expansion, especially in the mountain range. These technologies were complemented by the emergence of dispersed settlement patterns, allowing communities to take advantage of a wide range of ecological zones at different altitudes, with their diverse available resources. Although these strategies fostered the self-sufficiency of many communities, the Incan imperial expansion introduced a policy of integration evidenced in the construction of an extensive road network, as well as in the relocation of ethnic groups, and the storage and distribution of food, textiles, and other goods.

From the imperial scale to the level of the *ayllus* – the basic social units in Andean communities – existing physical infrastructure and organizational practices formed the initial basis of colonial society after the invasion of the Spanish conquerors. However, the prolonged turbulence of the conquest, aggravated by epidemics and depopulation processes, caused the deterioration of road, irrigation, and cultivation systems in many areas of the Andean territories.

On the other hand, the viceregal policy of introducing large-scale mining manifested itself dramatically in silver mining in Potosí, an industry that emerged as the epicenter of large continuous movements of forced and free Indigenous workers, as well as goods. This restructured communities in the surrounding provinces and, among other environmental effects, led to deforestation. The appearance of mega-mining during the colonial regime marked an acceleration point in the Anthropocene, with its collateral effects of excessive land and water use, deforestation, and pollution.

Mainly in the northern Andes and the eastern foothills, the colonial exploitation of gold deposits, which often relied on enslaved Afro-descendant workers, accompanied silver mining. Whereas the extraction of precious metals was crucial during the colonial era, the second half of this period witnessed economic diversification in many parts of the Andes. Although the wars of independence in the nineteenth century brought about political and social changes, the exploitation of primary resources remained the main economic base of the new Andean republics. In Bolivia and Peru, the decline of mining during the wars was followed by a process of recovery and transformation, driven by foreign investment, industrialization in the Global North, and the introduction of machinery powered by steam and electricity

in many mining sites. Overall, trends toward intensification and expansion of mining operations have continued into the twenty-first century in response to growing global demand for a variety of metallic and non-metallic minerals.

In all the countries of the region, the rise of the oil industry, especially during the last five decades, represents a parallel intensification process in the extraction of subsoil resources. The mining, oil, and gas industries, dominated in many cases by transnational corporations, have been responsible both for severe ecological degradation in many areas of operation and for the production of socioenvironmental conflicts. At the same time, agricultural industrialization has had diverse impacts on the Andean region since the second half of the nineteenth century. These include cacao plantations in Ecuador, coffee plantations in Colombia, cotton and sugarcane plantations in Peru, and the unrestrained exploitation of seabird guano off the Peruvian coast, followed later by nitrates, to promote the development of intensive agricultural systems in the North, especially in Great Britain and the United States. This transfer of resources marks a profound metabolic rupture in Andean ecosystems.

The agrarian reforms of the 1960s and 1970s mainly caused a modernization of the agrarian structure, including the introduction of the agrochemical packages of the Green Revolution. With the implementation of neoliberal policies that began in the 1980s, the orientation towards exports intensified, giving rise to new agroindustries, such as the expansion of African oil palm, especially in Colombia and Ecuador. This was alongside the more traditional monocultures of coffee and bananas, which have produced a great deal of deforestation.

In the coastal valleys of Peru, the industrial-scale cultivation of a variety of agricultural products for external markets contributes to the worsening of the water deficit faced by many communities. Local or regional conflicts over water and other vital resources are intertwined with the impact of anthropogenic climate change at the trans-Andean level, driving, among other things, the retreat of Andean glaciers.

Despite a long history of colonialism and its profound legacies, many Indigenous and Afro-descendant communities have succeeded in defending and rebuilding high degrees of cultural and territorial autonomy. Nowadays, especially in Ecuador, Bolivia, and southern Colombia, Indigenous movements constitute a considerable political force, sometimes manifesting as resistance to extractive projects or as new forms of care for the natural environment. These forms of care are also expressed in the concept of Buen Vivir.

Although all the countries of the Andean region defined themselves as multicultural or even plurinational in the 1990s and countries such as Ecuador and Bolivia incorporated rights of nature into their constitutions, extractivism deepened. Today, the various socioenvironmental conflicts in the Anthropocene era are at the center of fundamental debates about the future of the Andean region. These conflicts are also manifested on a global scale, as seen in the Bolivian-Chilean-Argentine highlands, which is becoming a new pole of rare earth metals extraction, especially lithium, to

support the Green Deal and the CO_2-neutral industries and transportation of the Global North.

Amazon

The Amazon is a region defined by its belonging or proximity to the Amazon River basin, which crosses nine nation-states: Brazil, Colombia, Peru, Bolivia, Ecuador, Venezuela, and the three Guianas. Each of these nations has different trajectories in their relationship with the forest, both quantitatively and qualitatively. In Brazil, the Amazon is connected to the Cerrado and the Northeast through a history of migration since the end of the nineteenth century, linked to activities such as rubber extraction, mining, livestock farming, and logging. The Amazon has also been a supposed ecological paradise to which the victims of drought and the inequalities of the plantation system were encouraged to flee and settle. In the north, the Amazon River system is connected to the Orinoco, the third largest river in Latin America. Across the Atlantic, the Orinoco River system was an important entry point for extractive economic activities in the Amazon, such as the exploitation of rubber, the felling of native trees, livestock farming, and mining. Being a difficult-to-access area for the European colonizer, the otherness of Amazonian nature has been the source of numerous myths and cultural representations that have served to justify its exploitation or conservation, given that it is the largest rainforest reserve on the planet with a great diversity of biomes.

Although the concept of the Amazon has served to exemplify the notion of nature in its most "pristine" state, it is actually a historically constructed concept. At the beginning of colonization, it was not spoken of as a totality. Rather, it was established sociohistorically in the mid-nineteenth century, as until then, the Amazon only referred to the river and the river system associated with it. European knowledge of the area was gradually recorded in the cartography of the sixteenth and seventeenth centuries, showing imaginaries built on the idea of an exotic and exuberant Eden, as threatening as it was paradisiacal.

Despite the predominant image of a "virgin" jungle, the Amazon region is cultural. It has been transformed by humans for around 10,000 years. Indigenous and certain mestizo populations are important actors, even though forest biodiversity is the result of millions of years of evolutionary processes prior to human presence. During the colonial period, among European and Creole travelers and settlers, the predominant idea was that of a "green hell," the scene of the great drama of man against a wild and unhealthy nature full of dangers arising from its flora, fauna, climate, and human groups, associated above all with the idea of the cannibal. Over the centuries, various projects coexisted or alternated such as the conquest of the jungle, its exploitation, or its occupation, later moving to a conservation discourse

framed by the idea of the region as a global natural heritage beyond the protection managed by specific political entities.

In the countries of the Amazon, this region has generally not been a geopolitical center, but rather a territory in a certain limbo, considered to be a reserve for the future. The predominance of national structures as determinants of public policies, whether of colonization, exploitation, or conservation, does not take into account the fact that non-human forms of life and many human populations do not always live according to the assumptions of Western structures. Animals, plants, and rivers experience and renew their existence through cycles and movements that do not consider borders. However, the actions that each nation does or does not implement in the jungle may determine whether the life of these beings on its borders is viable. Both official policies and the demands of social movements are becoming important in the continuous construction of a territory in which the Anthropocene – apparently less visible here than in more urbanized places – is constantly maintained as a structuring principle. This is evidenced by the numerous interventions carried out in the Amazon since the first half of the twentieth century. From that point on, an increasingly extractive economy with varying intensities broke out. In addition to the extraction of natural resources, the expansion of nation-states entailed the occupation of land for agriculture and livestock, as well as the development of large infrastructure projects. By the 1970s, there was already flagrant harassment of the jungle, marked by the invasion of the territory. There were slight variations in the implementation of the occupation projects according to the historical processes of each country.

In many Amazonian areas, the second half of the century was also characterized by the incursion of religious missions, first Catholic and then Protestant, whose presence had strong impacts on the organization of the native peoples, both in the management of resources and in their relations with the environment. In the twenty-first century, the growing political role of evangelical churches and their representatives has been supportive of right-wing factions with little willingness to stop environmental devastation. Instead, they have come into open conflict with environmental and land defense movements. The case of Brazil during the administration of Jair Bolsonaro, when the destruction of the Amazon rainforest increased alarmingly, exemplifies this alignment of forces and the threat it poses to the region. Given the key role of the Amazon in global ecology, the ease with which governments, ultimately transitory, are able to trigger environmental crises that impact their countries and the entire planet is worrying.

In contrast to this bleak landscape, several projects emerge that amalgamate multi- and transdisciplinary perspectives with the purpose of recovering or generating ways of inhabiting the Amazon in a sustainable manner. Although the region has become a testing ground for a new Green Economy, the weight of extractive capitalism, represented by mining and oil exploitation, among others, remains over-

whelming. In addition, harmful practices such as clear-cutting, livestock farming, and other archaic predatory economic forms persist.

It is worth noting, however, a change in approach that considers biodiversity not only in terms of biological diversity and physical environment, such as waters and soils, but also in relation to sociodiversity. The latter is perceived as an element that must necessarily be integrated into conservation actions. In this context, non-dualistic thinking acquires relevance when reflecting on the Anthropocene, stressing the need to not separate nature and culture. Instead of erecting visions based on the ancient myth of a "virgin" jungle in which the human being is simply a hindrance – an idea that has been used more to displace Indigenous and peasant communities than to curb large-scale exploitation –, one must consider that the challenge lies in building conditions favorable to ecological balance. Indigenous and traditional worldviews, revitalized by current generations, offer ways to rethink the relationship between the human and natural worlds.

Mesoamerica

We propose to include the Central American Isthmus and Mexico in a new notion that we call Greater Mesoamerica. The conceptualization of Mesoamerica, presented by Paul Kirchhoff in 1960 and originally published in 1943, has been very useful because of its specificity, making it possible to distinguish a given area in geographical and cultural terms. Mesoamerica has solved problems associated with unclear concepts, such as Middle-America, used in the handbooks of the 1960s, whose translation into Spanish was never clear. In addition, it geologically identifies Mexico as part of North America, while also being part of Latin America. However, Kirchhoff's definition omits northern Mexico and part of southern Central America, leading us to propose a more inclusive notion.

In this volume, we will consider Greater Mesoamerica the geographical and socioenvironmental space that encompasses the entire Mexican territory, the five Central American nations that formed the Captaincy General of Guatemala (Guatemala, Honduras, El Salvador, Nicaragua, and Costa Rica), as well as the present-day Belize and Panama. Greater Mesoamerica, as we conceive it here, does not intend to analytically homogenize the biocultural diversity that characterizes this region; rather, we start from the premise that, despite this diversity, historical processes have taken place that present parallels in the field of socioenvironmental relations, differentiating it from other Latin American territories.

In ecological and socioenvironmental terms, the subregions of Mexico and the Central American Isthmus have peculiarities and interrelationships that we must highlight. Mexico is a megadiverse country thanks to its geographical position, connecting North America with Central America, and its strategic location between two oceans: the Pacific and the Atlantic. This allows for the conjunction of nearctic and

neotropic vegetation in that territory. Mexico ranks first in terms of reptile diversity in the world. Half of the country is desert, and more than 50 percent of its national surface has a rugged topography with hills and mountains. Most of the territory experiences severe droughts, and the availability of water is mainly in the south-southeast.

This is clearly a geographical Vavilov center, defined as the place of origin of domesticated plant species of great economic importance. Led by corn, the dietary basis of the region, these species include chili, tomato, pumpkin, cacao, amaranth, and others that form part of the world's food heritage. Mexico has more than 20 biocultural regions, where language and culture are combined with natural biological species, generating broad and diverse knowledge systems. Mexican cuisine, in recognition of this biocultural richness, has been declared an Intangible Cultural Heritage by UNESCO. However, this wealth is under threat and requires urgent protection measures.

Central America stands out as the only region in the world with both an intercontinental and an interoceanic position. This isthmus links North America with South America, separating the Pacific Ocean from the Caribbean Sea. It extends from Tehuantepec in southern Mexico to the Atrato Valley in northeastern Colombia. Formed 3 to 4 million years ago in the Pliocene, the isthmus has been a bridge for North-South movement for about 10 to 12 thousand years. Its unique location gives it a variety of contrasting landscapes, including mountain ranges, intermountain valleys (altiplano), hillsides, and coasts. The region is characterized by its climatic diversity. Tropical and subtropical climates predominate, but microclimates abound.

There is a great contrast between the mountainous areas – composed of hills, mountains, volcanoes, and plateaus – and the slopes. This climatic diversity is reflected in the region's natural richness. Its diverse life zones host forests that range from the very humid, humid, and rainy to the dry. The isthmic condition of Central America explains the presence of flora and fauna from North and South America. Until Nicaragua, the vegetation is nearctic, and from the south of Costa Rica, the vegetation becomes neotropic. The combination of species in these regions explains the vast biodiversity of this subregion.

Greater Mesoamerica clearly covers a period that precedes the beginning of the genealogy of the Anthropocene, which, from this project's perspective, stems largely from the European invasion. However, we will limit the period of study in these handbooks starting with the considered territories' conquest, that is, the colonial period, based on the logic of the intensification of exploitation processes. Therefore, the concept of Mesoamerica present in the contributions of these handbooks must be understood from a broad geographical, cultural, and socioenvironmental sense, as stated above. It is, then, an operational concept that does not ignore the diffuse and subtle nature of inter- and intraregional divisions, nor does it ignore the socially

constructed nature of any spatial delimitation, especially – although not exclusively – when it comes to socioenvironmental relations.

Caribbean

The Caribbean, whose core was delineated by different groups of various-sized islands, is characterized by the territorial interaction between these insular and maritime spaces, as well as the surrounding coastal areas in the Gulf of Mexico. This is known as the Circum-Caribbean, and we include it in our conception of what we call the Greater Caribbean, which also includes the Atlantic coast of northern Latin America with Colombia, Venezuela, and the Guianas. It was the first region "discovered" by Christopher Columbus. The island of Hispaniola (currently the Dominican Republic and Haiti), in particular, became the geopolitical epicenter of the Spanish and other European powers. It was called "the gateway to the Americas," at least until the mainland (*Tierra Firme*) – with more promise – was discovered and began to be conquered.

From the perspective of the Anthropocene's genealogy, the Caribbean is a particularly vulnerable region in relation to climate change in historical times, i.e., the colonial imaginaries of "primitive climate engineering," and also to anthropogenic climate change since the Great Acceleration. First, the Caribbean archipelago has been especially exposed to weather extremes such as hurricanes, droughts, and extreme rainfall, as well as to geological extremes such as volcanic eruptions. Second, these small island ecosystems were extremely sensitive to disturbances, such as large-scale deforestation undertaken by colonizers to create sugar plantations.

The Caribbean is a point of confluence between various geographical areas of the American continent, located in the middle part of the continent in much of the Atlantic Ocean. This has allowed large territories of the Caribbean to become gateways, both by sea and by land, for the migrations of people from European countries and the American continent itself. In addition, the Caribbean was the first region in the Americas to experience migrations of flora and fauna, especially with the arrival of Spanish inhabitants who introduced new livestock species and various agricultural products. The anthropogenic change caused by the European arrival was, to a large extent, related to the introduction of pathogens, causing the massive death of Indigenous populations and the abandonment of land cultivation in different Caribbean regions.

It is no accident that, until today, the Caribbean is recognized globally as a large tropical and mountainous area contrasted with coastal activities. It brings together vast territories with a wealth of terrestrial and maritime biodiversity that, for centuries, have been a meeting point for migrants from Europe, America, Asia, and Africa. The migratory diasporas to and from the Caribbean had such intense peri-

ods that we can say the region has provided conditions for complex and conflicting *mestizaje*.

After European colonization and the beginning of the transatlantic slave trade, the extractive plantation industries, which exploited the labor of large numbers of enslaved Africans, gave rise to highly stratified and socially vulnerable societies in this geographically fragile environment of small islands. From this perspective, there are numerous analogies and a shared history of forced migration, racial stratification, and systematic ecological exploitation as in the Brazilian Northeast. Both regions, of roughly the same demographic size, are fundamental nexuses of the Afro-Atlantic world and constitute spaces of ecological circulation that are paradigmatic for the colonial plantation system, in addition to its enduring legacy in the creation of the Anthropocene. The northernmost part of Northeastern Brazil, that is, states such as Ceará and Rio Grande do Norte, are sometimes included in classifications of the Caribbean.

During the colonial period, the Caribbean was one of the most important markets for people exploited by the international slave trade, financed by European economic powers. To a large extent, current migrations from the Caribbean are due to very complex processes of the anthropocenic degradation of territories and popular settlements, as well as to the violent penetration of criminal groups that have forced large sectors of the civilian population to take refuge in neighboring countries or seek migratory routes to the United States.

Since the conquest, violence and political instability shape the Caribbean region. At the end of the eighteenth century, Haiti was the epicenter of the first major revolt of people freeing themselves from the yoke of slavery in America. Since then, the conditions of slavery and labor exploitation have been intolerable for large sectors of the civilian population. However, at the same time, the Caribbean has been a space of great transformation and anthropocenic resilience, despite extractivist policies focused on land use changes, the exploitation of aquifers, the introduction of non-endemic fauna and flora, the extraction of oil, clandestine logging of forests, and the extraction of minerals. Countries such as Cuba, Haiti, Barbados, and the Bahamas are just a few examples of nations that have experienced dramatic transformations with great effects on their inhabitants due to the extractive policies implemented from colonial periods until today.

In anthropocenic terms, Indigenous and Afro-descendant communities have been especially affected due to the occupation of their ancestral territories and the implementation of industrial-scale monocultures. Paradigmatic examples of this are bananas, cacao, and coffee, products with great global demand that are grown using labor under precarious conditions, often equivalent to slavery. Another manifestation of anthropocenic devastation in the Caribbean is sugarcane, which has resulted in extensive deforestation to grow tubers imported from the Philippines, depleting water reserves due to intensive water use.

In addition, the mining of precious metals such as gold and silver has been a significant factor of anthropocenic devastation. Land use and the pollution of rivers with toxic substances, such as mercury and cyanide, have seriously affected the natural environment. Copper mining since the nineteenth century and nickel mining in the twentieth century have had a global impact and have wreaked havoc on diverse ecosystems. These activities have also profoundly transformed the region's cultural forms and traditions.

In short, the Anthropocene has had a significant impact on the Caribbean region, especially from the nineteenth century to the present, due to abusive and uncontrolled extractive policies in populations that have suffered a long history of systematic impunity, corruption, government abuses, discrimination, and endemic racism. In addition, the phenomenon of mass tourism in the twentieth century has affected the natural resources and biodiversity of jungles, mountains, and beaches through the international sale of land and property to European and North American foreigners. Finally, we wish to emphasize that, given the historical legacy of colonialism, slavery, and continued economic dependence on European powers – even after political independence – together with anthropogenic climate change, these small island states remain vulnerable. However, creative regional solutions are emerging to address the climate crisis, especially in the form of specifically and innovatively structured disaster insurance programs.

Water

This volume of the CALAS Handbook series on the Anthropocene as a Multiple Crisis examines the complex evolution of the relationships between Latin American societies and water, considering their nuances and particularities in the various regions and historical periods. The analysis of the diversity of water uses and management is presented as a way to understand the shifting power relations in Latin America and the Caribbean throughout history. The problems underlying the socio-water crises in the region are addressed and historically framed within the colonial period, from the beginning of the nineteenth century to 1950 or from 1950 to the present. Water-related difficulties in the international division of nature are articulated to the transformations arising from the international division of labor and knowledge.

The current socio-water crisis in the region has manifested in the severe contamination of surface and groundwater, the growing need for sanitation, and the inequitable distribution of this resource, which limits universal access to drinking water. This situation favors overexploitation for productive purposes and results in the transformation or disappearance of aquatic ecosystems, such as wetlands, rivers, and lakes, as well as the degradation of socio-water basins.

This volume examines the thoughts and actions surrounding the Anthropocene, the uses and meanings of water, and the long history of coloniality in the region while highlighting the resistance and critical struggle of the peoples who defend water in Latin America and the Caribbean. This approach implies recognizing that the international division of nature is an intrinsic characteristic of modernity/coloniality of power and knowledge exercised since the sixteenth century.

The central themes are addressed into three main categories: the various forms of productive use of water and their impact on the availability and the contamination of the resource, the impact of urbanization, and the conflicts and struggles surrounding water. These problems are part of the processes of bio-geophysical, political, sociocultural, and economic transformation that have affected the relationship between Latin American and Caribbean societies with water from colonization to the present.

Between the colonial and the postcolonial periods, there is a notable continuity in methods of water supply and use. Despite the technological and political transformations of the nineteenth and early twentieth centuries, such as the steam engine, electrification, fossil energy, and the processes of independence and the formation of nation-states, tensions persisted in the relationship between society and nature that still give rise to long-standing socio-environmental crises.

The emergence and consolidation of modernity in Europe, and in the Global North more generally, correlates with the colonial world-system and especially the coloniality of nature in Latin America and the Caribbean. Between the end of the nineteenth and the beginning of the twentieth centuries, transformations occurred in the relations between human beings and nature, which occurred in parallel with the unequal integration of Latin American societies into the international economic system.

In the colonial world-system, transformations occurred in the bio-geophysical environment and the landscape, as well as radical changes in the relationship with water due to the introduction of forms of productive use that were foreign to the region, such as plantations and large mining operations. Likewise, imported urban development models implemented systems of access, supply, and distribution of water alien to the social groups that originally inhabited those territories. During the twentieth century, growing urbanization, accompanied by industrialization, required the creation of regulatory frameworks that, in the long run, led to dispossession and inequities, resulting in scarcity, pollution, and degradation of ecosystems.

This paradigm shift in the material relationship with water was accompanied by transformations in the symbolic relationships and imaginaries that gave meaning to the complex web of life and water. These tensions have festered since the earliest periods and are reflected today in the dichotomy between the idea of water as a resource and commodity and the imaginaries that see it as a common good and human right.

The Great Acceleration of the Anthropocene, characterized by a marked increase in economic activity and consumption by an ever-increasing population, exacerbates resource exploitation and water pollution. Together with new modes of exploiting raw materials, accelerated urbanization and industrialization have generated a greater demand for water, increasing the vulnerability of disadvantaged communities. This dynamic generates a cycle of vulnerability since the most disadvantaged populations settle in areas of high risk and scarcity of basic services, which affects their health and quality of life. The interaction between urbanization and natural disasters has also intensified, exacerbating the water crisis in the context of climate change. At this conjuncture, despite some areas having abundant water resources, others are beginning to suffer severe droughts; overuse and pollution challenge universal access to safe drinking water and implementing sustainable management practices, leaving the region facing a water crisis characterized by persistent social inequalities.

Final Words

We proudly present this volume as part of a series of handbooks that have carried out the pioneering task of approaching the Anthropocene from a specific regional perspective. Its realization has been made possible thanks to the dedicated work of a team of 20 editors and more than 180 authors of diverse disciplines from various regions of Latin America, the United States, and Europe.

For two and a half years, we have met at editorial conferences and workshops at CALAS headquarters in Guadalajara, Buenos Aires, Quito, and San José de Costa Rica, as well as at various virtual editorial conferences. These meetings have led to lively and, at times, controversial debates. Now, we present to you the product of this fruitful international and interdisciplinary collaboration.

We have made a significant contribution by approaching the planetary scale of the Anthropocene from a regional perspective. We have shown what the Anthropocene can mean in its socioenvironmental and sociotechnical dimensions, as well as in a long-term perspective. Assuming a perspective from Latin America involves turning to existing debates and problems related to multiple socioenvironmental conflicts, which require critical perspectives from the social sciences and the humanities. With our work, we hope to have promoted the debate on the Anthropocene from critical Latin American perspectives and to have provided inspiration for perspectives on confronting the multiple crises in the Anthropocene. Last but not least, we hope to serve as an example for other regional perspectives on the planetary in relation to the Anthropocene, especially from the Global South.

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