

INTERNATIONAL CONFERENCES ON THE ENVIRONMENT, SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL CRISIS: IS ANOTHER WORLD POSSIBLE?

O. M. PONTES¹, F. F. FIGUEIREDO²

Federal Institute of Education, Science and Technology of Rio Grande de Norte¹, Federal University of Rio Grande do Norte²

ORCID ID: <https://orcid.org/0000-0002-6701-1527>¹

ziel_pontes@hotmail.com¹, ffabiof@yahoo.com²

Submitted February 19, 2021 - Accepted: October 14, 2022

DOI: 10.15628/holos.2023.12036

ABSTRACT

The text addresses the possibility of a new world based on the legacy of international conferences on the environment and the concept of sustainable development. The objective is to contribute to environmental issues based on reflections on the potential and limits around the concept of sustainable development at the time of global environment conferences, particularly climate change and the environmental crisis. With the help of complexity theory and historical materialism, the methodology was based

on bibliographic research. This scientific work brings current reflections on the role of society in relation to itself and the environment, making a transdisciplinary and dialogical study. Therefore, in view of the uncertainty and multidimensionality of reality that leads to innovative environmental awareness and practice, another world is possible, with international conferences on the environment and the concept of sustainable development stimulated and limited to the mitigation of environmental issues.

KEYWORDS: international conferences, environment, sustainable development, environmental crisis, climate change.

CONFERÊNCIAS INTERNACIONAIS SOBRE MEIO AMBIENTE E DESENVOLVIMENTO SUSTENTÁVEL: OUTRO MUNDO É POSSÍVEL?

RESUMO

O texto aborda a possibilidade de um mundo novo a partir do legado das conferências internacionais sobre meio ambiente e do conceito de desenvolvimento sustentável. O objetivo é a contribuição com as questões ambientais com base nas reflexões sobre as potencialidades e limites em torno do conceito de desenvolvimento sustentável por ocasião das conferências globais de meio ambiente, particularmente a mudança do clima e a crise ambiental. Com o auxílio da teoria da complexidade e do materialismo histórico, a

metodologia foi pautada na pesquisa bibliográfica. Esse trabalho científico traz reflexões atuais acerca do papel da sociedade em relação a si e ao ambiente, perfazendo um estudo transdisciplinar e dialógico. Logo, face a incerteza e multidimensionalidade da realidade que conduz à consciência e prática ambiental inovadora, outro mundo é possível, tendo as conferências internacionais sobre meio ambiente e o conceito de desenvolvimento sustentável estimulado e limitado a mitigação das questões ambientais.

KEYWORDS: conferências internacionais, meio ambiente, desenvolvimento sustentável, crise ambiental, mudança climática.

1. INTRODUCTION

International conferences on the environment and the concept of sustainable development bring about the emergence of potentialities and limits towards a new and possible world. In this sense, based on reflections on sustainable development at such global environmental conferences, it is not enough to recognize advances in environmental issues, particularly with regard to the environmental crisis and climate change, but to understand their limits.

In the midst of the ecological imbalance and the possibility of collapse in all ecosystems of our planet, despite the lack of commitment of the various instances of global power to combat this problem, in addition to the lack of interest of individuals of each nation, here is the will to propose new ideas for the taking of a bioactive awareness in defense of the planetary environment, based on current scientific advances and trying to go a little further.

Thus, this text has relevance for the scientific environment, because it intends to bring new reflections about the role of science and society in relation to one another and the environment, making a transdisciplinary study at the moment that the old rationalist and mechanistic paradigm, simplistic and analytical, dominates the scientific context and imposes a reductionist mode of understanding of nature and planetary society. Therefore, by assuming the leading role within a totalizing principle in the human-nature relationship, this scientific study opens space for a new way of thinking about the environment and sustainable development, which corroborates for less harmful attitudes in dealing with environmental issues.

In this sense, it reflects on the contribution of international conferences on the environment. Critically and reflexively, it also discusses the concept of sustainable development based on its attempt to minimize the negative effects of technical-scientific progress on the global environment today. Therefore, what will be the importance of such conferences and this concept in the face of the outdated rationalist and mechanistic scientific model of interference in nature: the perpetuation and/or mitigation in the destruction of the physical environment or, on the contrary, the emergence of a new form of awareness that leads to greater identification with life on our planet?

This text addresses the origin and development of international conferences on the environment, especially with regard to their importance in trying to overcome the contemporary environmental crisis and mitigate climate change. It also deals with the debate around the consequences of the concept of sustainable development for the nature and future of humanity, particularly with what it has to do with mitigating climate change and overcoming the environmental crisis.

2. THEORETICAL REFERENCE

2.1 International conferences on the environment and sustainable development: potentials and limits for another possible world

From the 1970s onto the with the international conferences on the environment, in particular the Stockholm (Sweden) Conference in 1972, also called Stockholm 72, and Tbilisi, Georgia

(former USSR), in 1977, there was greater concern about environmental issues by environmentalists and environmental entities such as Greenpeace and the World Wildlife Fund (WWF) or World Nature Fund, but also political authorities, intellectuals, governments, mainly developed nations, and multilateral institutions, such as the United Nations (UN).

However, these debates left numerous gaps regarding the deepening of an environmental awareness more coherent with the changes in scientific understanding about the need to mitigate the environmental crisis and climate change, which were only exposed at the other conferences that took place afterwards, of which Rio-92¹, Rio+10² and COP-16³ stood out.

In this sense, despite the importance around issues relevant to the future life of our planet, little has evolved in the commitment between nations, especially the most developed nations, with respect to the definition of goals for the reduction of planetary pollution. Economicism and consumerism, present in planetary capitalist society and whose interests were represented by various actors participating in these events, seem to help in understanding their results, along with the rationalist and mechanistic development model that denies the ecology, culture and civilization present on the earth's surface. On the other hand, it is important to understand the role of such global conferences on the environment and, above all, the origin and development of the concept of sustainable development for reflection on their contribution to advances and setbacks in mitigating and/or overcoming climate change and environmental crisis.

Thus, based on the document "The future we want" (United Nations, 2012), it is possible to draw a global reflection on development challenges. This corroborates the search for the "Sustainable Development Goals", which, from 2015, would guide global and national public policies.

According to the 2011 "United Nations World Population Situation Report", development patterns and life on Earth should be rethought. The reason for this is the progressive population increase and the scarcity of natural resources to provide economic growth and the mode of production and consumption that are based on human having (Tavares & Irving, 2009).

Before Rio-92, with regard to the historical milestones of the concept of sustainable development and the conceptual approaches, the criticism of the current development model, centered on economic growth, had as its north the affirmation of a capitalist way of life in society.

¹ Rio-92, ECO-92, Summit or Earth Summit are names for which the United Nations Conference on Environment and Development (UNCED) is best known, held between June 3 and 14, 1992, in Rio de Janeiro. Its main objective was to seek ways to reconcile socioeconomic development with the conservation and protection of ecosystems.

² Rio+10 or World Summit on Sustainable Development was a United Nations discussion forum held on August 26 and September 4, 2002 in Johannesburg, South Africa. Its main objective was to discuss solutions already proposed in the primordial Agenda 21 (Rio 92), so that it could be applied consistently not only by the government, but also by citizens, carrying out a local agenda 21.

³ The 2010 United Nations Climate Change Conference or the Cancun Summit, organized by United Nations, occurred on the 29 November 2010 in Cancun, Mexico. Officially, it is called the 16th Session of the Conference of the Parties (COP 16) for the United Nations Framework Convention on Climate Change (UNFCCC) and the 6th Session of the Conference of the Parties, serving as the Meeting of the Parties (CMP 6) of the Kyoto Protocol (1997). The objective of this conference was a greater participation of emerging countries with regard to their involvement in the first phase of the Kyoto Protocol, which would end in 2012, which would reduce the carbon dioxide emissions, including long-term obligations after 2020.

This is at the origin of plurality and contradictions in relation to the origin of the notion of sustainable development and sustainability, which was also expressed through a "utopia-desirable" (Irving & Oliveira, 2012) and "idea-force" (Loureiro, 2012).

Thus, the notion of sustainable development or sustainability has its origin in the unsustainability of the modes of production and consumption of industrial and post-industrial societies. They devoid the nature of value and instituted the insatiability of desires in individuals.

For Enrique Leff (2009), nature represents the source of symbolization and meaning of life and is a material and spiritual support to life in society, but the process of industrialization and economic growth perceives it only as a source of worthless raw materials, which feeds and enhances the accumulation of wealth on a global scale. Therefore, this poses numerous risks to a society in a "state of dormancy" (Irving, 2006).

In 1972, through the publication of the report "The Limits of Growth", the Club of Rome brought to the environmental debate the warning about the risk of depletion of nature from the demographic explosion and continuous increase in industrial production associated with the demands of economic growth (Meadows, 1972). In the long run, Stockholm 72 was a global milestone of utmost importance in the discussion on the environmental issue surrounding sustainable development. However, at that time the planetary society did not have means of articulation capable of interfering in global political decisions, hence its symbolic impact on critical reflection on sustainable development.

Published in 1987, through the document "Our Common Future", within the framework of the UN and for the first time, the term "sustainable development" is established. With regard to this concept, sustainable development is considered as the type of development "that meets the needs of present and future generations".

Before that, in 1986, at the Ottawa Conference, the concept of sustainable development was already discussed and involved some essential conditions. They concerned the integration of processes of development and conservation of nature, the satisfaction of basic human needs, the achievement of equity and social justice, the guarantee of social self-determination and cultural diversity and the maintenance of ecological integrity.

For Baroni (1992), this official definition of the UN of sustainable development was not able to internalize these dimensions in all its complexity, while Nobre and Amazonas (2002) argue that it is generic, since it allows numerous interpretations (and appropriations). Moreover, the latter point out that this definition has a subjective character, because the sense of "necessity" is not the same for all, particularly in a global society marked by social inequalities, stimulating consumption and concentration of wealth, which causes social exclusion.

Thus, just as it is difficult to convince a cyclist and environmental activist that cycling and bike paths are not of paramount importance in the city in which he resides, the work of convincing the non-need for urban verticalization becomes highly inglório for a real estate entrepreneur. This also applies to deforestation and burning in relation to ranchers, commercial farmers and *miners versus* land reform, agricultural cooperatives and polyculture for the landless, small and medium-sized family farmers. Also for paving, road complexes and bridges for most drivers and entrepreneurs and

managers of the transport, automotive, tourist and air sector, to the detriment of the construction of popular houses, health posts, schools, leisure areas and day care centers, in addition to improving the infrastructure of urban mobility, which would benefit the social segments without their own homes and /or homeless, segregated in the city social and spatial field.

In the midst of all this, the State, almost always guardian of the interests of the ruling and hegemonic classes in economic and political terms, which maintains its representatives in the spheres of municipal, state and federal power. Therefore, based on the mode of production, distribution distribution and hegemonic capitalist consumption, as well as on his legal-political-ideological superstructure, particularly the cultural symbols created by him to legitimize himself, materiality and immateriality, planning and spatial planning and planning and regional development require consideration of a range of different forms of representations and appropriations of reality that translate into *sui generis forms* needs in the definition of sustainable development.

Baroni (1992) and Nobre and Amazonas (2002) are right about the criticism of this definition of sustainable development at the time of the creation of the document "Our Common Future", within the framework of the UN, in 1987, because, in the context of a capitalist society, whether in cities, or in rural areas, in particular peripheral countries, where there are social classes with contradictory and/or antagonistic interests, even if complementary, in addition to the overexploitation of work, increasing due to the neoliberal and neofascist policies of the far-right parties in power, the State usually imposes public policies for planning and territorial planning and regional development according to the interests of dominant political and economic groups, which makes this definition of sustainable development generic and reductionist. Therefore, this definition of sustainable development does not involve the different levels of representation and appropriation of reality through the political positions proper to the social classes, corroborating regional development and deeply undemocratic and unsustainable territorial planning and planning.

Since then, the debate has integrated into the notion of sustainable development three interdependent dimensions. Later, called pillars of the notion of sustainability, that is: economic, social, environmental and ethical-political.

From the outset, the debate on the sense of sustainable development brought an intra- and intergenerational ethical commitment and an interpretation beyond a strictly economic view. There was also an antagonistic proposal or "resistance" to capitalism, in some cases ideological, in others only in discourse. Thus, the criticisms and interpretations of the concept of sustainable development were the fact of the incompatibility between economic growth, conservation, nature maintenance and social justice in a market economy.

Based on a critical analysis of the numerous concepts associated with the debate on sustainable development and sustainability, Baroni (1992) says that the concepts of sustainable development and sustainability are not synonymous. Based on the numerous meanings and interpretations about the concept of sustainable development, Baroni (1992) discusses the trivialization and only operational and/or opportunistic translations that give such debate in depth.

The first initiatives to define sustainable development had to do with economic growth. Eckholm (1982) says that sustainable development is "a type of economic growth" ecologically

sustainable and capable of meeting the needs of current and future generations, while for Goodland and Ledec (1987), sustainable development is economic growth through a social look, which has to do with the pattern of social transformations and economic structures capable of optimizing economic and social benefits in the present plan without compromising such benefits in the future. For his part, Pezzey (1989) says that sustainable development concerns economic growth, well-being and intergenerational commitment from intergenerational equity.

Before Rio-92, discussions about the concept of sustainable development also began to take into account the burdenability of ecosystems and quality of life. On the other hand, the concept of sustainable development also presents nature as a "resource" and the operational perspective of the process. Pearce (1987) says that sustainable development is the type of development in which a set of constraints determines that resource extraction cannot exceed the natural or induced possibility for its regeneration. In other words, it is an operational logic that does not establish the meaning of the process, but only the limits of it.

Loureiro (2012) says that the debate on sustainable development has to do with social and environmental problems reduced merely to technical and managerial problems. Pierron (2009) says that the notion of sustainable development is humanity's way out of an alienating technological development model, resulting from unprecedented planetary domination by instrumental rationality, in a disenchanted and desacralized world, where technoscience, supported by technically solvable problems, has exterminated fatality.

Thus, the notion of sustainable development, a discussion that never ceased, is polysemic, nonlinear and non-consensual. Therefore, in addition to having strong ethical, political and ideological implications, it implies a critical debate.

In the 1990s, there was the rescue of important social and environmental commitments, which surpassed the conformism of previous decades. In this sense, the UN Conference on Environment and Development or Rio-92 brought with it a more favorable political context for the environmental debate, especially the recognition of the effects of over-exploitation of nature and the perverse consequences of the industrialization process.

Rio-92 represented a "watershed" for environmental protagonism and the articulation between environmental and social demands in the development debate. This was due to the technological revolution in the field of global communication that provided advances in information technology and telecommunications.

In this historical period, the "Global Agenda 21" was agreed, which made effective commitments for sustainable development in the 21st century. International conventions were also established: "Convention to Combat Desertification", the "Convention on Biological Diversity" and the so-called "Climate Convention".

In 1992, although no specific implementation obligations were defined, it is worth highlighting the signing of the United Nations Framework Convention on Climate Change (UNFCCC), which established the guidelines for the agreement on climate change and began to seek solutions to this problem, and it was decided that specific obligations would be discussed in the so-called Conferences of the Parties (COPs), meetings that would define the strategies for implementing the

obligations assumed (Viola & Basso, 2016). In this sense, with the COPs, the process of planning, discussion and implementation of mitigating actions with regard to climate change began. Started in 1995, the most important COPs for the trajectory of the climate regime were COP 3 (Kyoto)⁴, COP 15 (Copenhagen)⁵ and COP 21 (Paris)⁶ (Viola & Basso, 2016). Finally, with the advent of COPs, climate change was an important theme regarding the planning, discussion and implementation of mitigating actions, although climate change mitigation was not successful due to the political-legal system, as it acted in the short term, rather than the concern with the revision of the concepts of threat, security and national interest, deepening global governance.

Rio+10, held in 2002 in the city of Johannesburg, South Africa, aimed to evaluate the results obtained in relation to the commitments agreed in Rio-92. The presence of the corporate sector, which was relatively absent in Rio-92, stands out.

⁴ Initiated in 1997, COP 3 was set to sign the Kyoto Protocol by the MEMBER COUNTRIES of the UNFCCC. In this sense, at the time of the negotiation phase of this Protocol, there was a commitment on the part of industrialized economies to be the leaders in reducing greenhouse gas (GHG) emissions (Gupta, 2010; Violet 2002), which should impose mandatory limits on their emissions, reducing them by around 5% between 2008 and 2012 compared to 1990 levels (Violet & Low, 2016). On the other hand, emerging economies have not made commitments to reduce their emission curves for the same period (Violet, 2002), articulating, above all, through the G-77+China, led by Brazil, India and China, whose principle to justify their positioning lay in the common but differentiated responsibilities, in addition to the historical responsibility of the developed economies (Violet & Low, 2016). Thus, between 1997 and 2001, the climate regime, which was moving to consolidation (Gupta, 2010), has a setback, as the United States has decided not to ratify the Kyoto Protocol by arguing about disloyalty to competition in international markets with emerging economies not obliged to reduce emissions. Finally, in 2005, the Kyoto Protocol entered into force, but the reduction of emissions of GEE was 29.91% of the global total in the same year (IEA, 2007).

⁵ With great expectation of signing a legally binding agreement that would replace the Kyoto Protocol after 2012, in 2009, COP 15 was initiated, where the European Union, which ringworm leadership of utmost importance, he proposed strong and differentiated commitments for all countries, but China, the United States and India did not accept and maintained modest positions (Violet & Low, 2016, amended). In view of this, the outcome of this Conference could not be different: the industrialized or Annex I to the Convention were urged to propose quantified and voluntary emission reduction targets that would reach the entire economy, while non-Annex I countries should submit nationally appropriate mitigation actions (NAMAs), in both cases for compliance by 2020 (Violet & Low, 2016). Thus, the Copenhagen Agreement is not legal, mandatory and official, since Bolivia, Sudan and Venezuela did not agree to its terms, preventing consensus, whereas, unlike reducing GHG emissions, except the European Union, there were increases in relation to emission levels in 1990, and in 2012, except Canada, Japan and Russia, UNFCCC members signed the Doha Amendment, which established a second term of validity for the Kyoto Protocol from 2013 to 2019, linking emissions reductions from countries representing a small portion in the global total, i.e. 3.62% in 2012; 12.83% in 2013 (IEA, 2014; 2015).

⁶ Held in Paris in 2015, COP 21 saw resistance from emerging economies with regard to the acceptance of compulsory emission reduction targets based on the argument of historical responsibility of developed countries, although there has been an increase in their emissions in the global total, while the United States has maintained a position of forcing emerging countries to reduce emissions as a condition for accepting compulsory targets for their emissions (Violet & Low, 2016). In the case of countries bound by the Doha Amendment, in addition to other representations, pressure was made by the other countries to become more involved and, in 2013, it was approved that the members of the UNFCCC should submit, by October 1, 2015, Nationally Determined Contributions (INDCs), which should contain specific information about each member's commitments after 2020. Thus, signed in 2015, the Paris Agreement is legal and mandatory, although it waits for the ratification of its members to enter into force and INDCs are voluntary commitments that should be reviewed periodically, which must be adapted according to its implementation. Moreover, if the set of INDCs is fully implemented, the average temperature of the planet will rise 2.7 °C by 2100 (CLIMATE ACTION TRACKER, 2015).

At Rio+10, there is a more direct involvement of the corporate sector through "Sustainable Action", that is, economic strategies in production processes and search for positive images in the market. Thus, the debate on sustainable development is replaced by that of the notion of "sustainability", which involves the mechanisms of market competitiveness and eco-efficiency, while, on the other hand, and in some cases, the use of this notion also arises as citizen action through the social movement.

Since 2000, through social demands, new themes and priorities are incorporated into reflection. The "Millennium Development Goals" (UNITED NATIONS, 2000) are about the agreement around the recognition of the exclusion of large population contingents from the development process, poverty and social inequality. Thus, the environmental approach is addressed only in one of the items of this document, because the social theme acquires global importance, especially with regard to the international commitment to poverty reduction. Then, from there, the discussion about sustainability began to have a deep ethical and political reflection, that is, a sense of planetary citizenship.

Morin and Kern (2003) say that we are in a "Community of Destiny", which has to do with the "Homeland Land". In other words, the fate of humanity requires the "metamorphosis" advocated by Morin. This is in line with the lack of international agreements for mitigation actions regarding climate change and the environmental crisis.

In 2011, at the 65th General Assembly of the United Nations, the search for happiness is recognized as one of the fundamental objectives of man. Faced with the crisis of civilization, this demonstrates the recognition of the importance not only of the satisfaction of the material needs of existence with regard to survival.

Gross Domestic Product (GDP) is not able to assess the state of happiness and well-being. Thus, modes of production and consumption are obstacles to "sustainable development", which must ensure the right to happiness and well-being.

For Nique (2010), since 1986, when she was first coined by the King of Bhutan, the term "Gross Internal Happiness" has been spread globally by some segments of the United Nations. Since then, for the calculation of wealth, this country has defined four pillars, such as the economy, culture, environment and good governance, while nine dimensions have derived from which Bhutan evaluates development, such as mental and psychological well-being, health, leisure experience and opportunities for socialization with family and friends, education, culture, environment, governance and standard of living. Finally, the debate on sustainable development is broadened by reflecting on the notion of well-being.

In Rio de Janeiro, in 2012, Rio+20 sought to evaluate the advances and setbacks in relation to the commitments made since Rio-92. In it, there was the prevalence of the "Green Economy", in which the problems of development are equated through technological development or the strategies of economic evaluation of nature, overlapping poverty reduction and social commitments linked to development. Thus, the document "The future we want", resulting from this conference, displayed the promise of un member countries to meet in 2015 to define the "Sustainable Development Goals".

On the contrary, the reflection on sustainability only has logic from the rights of citizenship and social transformation. Thinking about sustainability without the transformation of capitalist structures of production, circulation, distribution and consumption would lead to superficial, reductionist or "cosmetic" changes.

For his part, Rattner (1999) says that sustainability has to do with logical coherence in everyday practices. For him, it involves the sense of time, in the integration between past, present and future, and the understanding of an ecological and sociocultural context, aiming for a desirable society in the future.

Braga, Freitas, Duarte and Carepa-Sousa (2004) argue that sustainability has a broader meaning than sustainable development. This leads to the need for political action, which, in turn, is based on two axes: ecological, environmental and demographic sustainability – the physical basis of the development process and movement of resistance and balance of nature in the face of human action – and cultural, social and political sustainability (quality of life, distributive justice, construction of citizenship and social participation in the development process).

Gadotti (2008) says that sustainability implies a commitment to the balance of the human being with him, with the planet and the universe, that is, with the sense of existence, while Jatobá, Cidade and Vargas (2009) say that sustainability involves maintenance, survival and harmony of all life forms on Earth, in addition to opposition to the pattern of ecologically unbalanced development, economically unstable and socially unequal.

Leff (2009) presents sustainability as a theoretical and instrumental, economic and technological rationality of modernity, founded on the formal discourse of sustainable development, economic perspective or environmental economy of neoliberal cut *versus* the new environmental rationality, open to diversity and difference and the coexistence of countless rationalities. Loureiro (2012) defends the notion of "Sustainable Societies", which are the denial of a single idealized model of happiness and well-being, which makes the denial of homogenization imposed and/or induced by the capitalist system or industrialization. Jacobi (2003) thinks society is "sustainable" through the cultural dimension, power relations and ecological limitations.

Thus, the moment of environmental crisis requires profound changes in society. Such changes involve the critical and citizen review of the modes of production and consumption.

The field of sustainability has to do with the complex, plural and contradictory interdisciplinary debate from different ideologies and worldviews. In this sense, the concept of sustainability is presented as a "common place", that is, a form of monolithic thinking that would lead to the false idea that there is only one way to understand sustainable development. On the other hand, there is a contrary thought in the sense of a "idea-force" that elevates the understanding of the concept of sustainability to a higher theoretical level, in which polysemy, transcendence and reflection make up a true and imperative environmental debate to science.

In this sense, the concept of sustainable development cannot dispense with the way contemporary society works, since social formation has an influence on the specificities contained in the relations between societies and the environment. It should also be noted that not only society plays a decisive role in the apprehension of society-environment relations, but also the historical

time, inserted in it the level of technology, the dominant class, social relations and the form of appropriation of work.

In turn, the concept of sustainable development requires political and ideological positioning. Otherwise, there will only be an ecologism that will not account for the various dimensions that involve environmental issues or, on the other hand, humanism and sociology disconnected from the environmental, economic, political, cultural and geographical dimensions.

Another important obstacle, arising from the discussions of global meetings on the environment and sustainable development and an important factor in the maintenance of the ecological crisis, refers to dialogic in the notion of "sustainable development", which brings together, at the same time, pollution, by-product of development, and the protection of the environment, present in the idea of sustainability (Morin, 2003). Therefore, while pointing to the improvement of the quality of life of societies, especially in developed countries, it brings with it the possibility of an environmental imbalance.

In this sense, Enrique Leff (2006) says that, in the 1960s, new theories arose for the attempt to circumvent the environmental damage caused by economic and ecological globalization, which highlights "eco-development", which, by taking into account the systemic and pragmatic theory capable of effecting the relationship of the economic system to a set of variables – population growth and technological change – and environmental conditions – ecological processes and environmental degradation – remained in the superficiality with regard to combating environmental degradation, because it formalized a greening of the production and capitalization of nature, without addressing socioeconomic injustices and the unequal distribution of ecological costs. However, such a theoretical attitude led to the non-resolution of the framework of planetary ecological misadjustment, since it put in the background the ills of capitalist society that affect the relationship between man and nature.

Enrique Leff (2006) is also against the correspondence between development and the environment. Thus, this reasoning is close to Edgar Morin's ideas, because the latter also recognizes the contradiction between economic growth and pollution in an uncertain future context. However, Leff (2006) is in favor of sustainable development that inserts the economy into ecology and culture, in addition to limiting economic growth and consumerism. So economics and ecology are complementary concepts. According to Leff (2006, p. 137), "If the environmental crisis is the product of the denial of the natural bases on which the economic process is sustained, then ecological sustainability appears as a condition of the temporal sustainability of the economic process."

Also in the discussion about sustainable development, Fritjof Capra (1996) defends sustainability as a solution for economic growth, within a systemic vision that promotes interconnection and interdependence between the problems that affect society, including environmental ones. This is similar to the multidimensionality of Morinian complexity. If this is not the case, future generations will be affected by the current economic model that does not consider ecology (Capra, 1996). Therefore, it is urgent to build an environmental awareness that provokes the action for the future of the environment as a basic condition for the preservation of human life on Earth.

In this regard, Lester Brown (1981 apud Capra, 1996, p. 15) highlights the idea that "A sustainable society is one that meets its needs without diminishing the prospects of future generations." In other words, any eesterening development must take into account the future of humanity.

In the 1980s, the term "eco-development" was replaced by "sustainable development" or "sustainability", that is, development capable of meeting the needs of the current population without compromising the capacity of future generations to care (Leff, 2006). Thus, this first modality of development is more linked to ecocentrism than to technocentrism. On the contrary, sustained development requires economic growth from the market, without incorporating ecological and social conditions (sustainability, equity, justice, democracy), attributing economic values and property rights to environmental resources and services (Leff, 2006). This second form of development does not criticize the foundations of capitalist society, making the capitalization and marketization of the planet's natural resources.

According to Leff (2006), thanks to the translation into French, sustainable development has gained new meaning, coming from "développement durable", that is, durable development, lived or in the future, a term responsible for the insertion of phenomenological and existential meanings, which remove the ecologism of sustainable development and the economicism of sustained development. In the first case, there is the separation of ecological variables from the political, cultural, economic and social context; in the second, the monetization and commodification of nature.

Thereby:

The principle of sustainability emerges in the theoretical and political discourse of economic-ecological globalization as the expression of a limit law of nature before the autonomization of the structural law of value. The environmental crisis came to question the ideological and theoretical foundations that boosted and legitimized economic growth, denying nature and culture, displacing the relationship between the real and the symbolic. Ecological sustainability appears as a normative criterion for the reconstruction of the economic order, as a condition for human survival and for sustainable development; it problematizes the forms of knowledge, social values and the very bases of production, opening a new vision of the civilizing process of humanity (Leff, 2006, p. 133-134).

2.2 Industrial Revolution, environment and environmental crisis

The Industrial Revolution, begun in England in the second half of the eighteenth century, brought with it the alliance between science and technology, within a vision of nature as an unlimited resource for the voracity of capital. In this sense, the technical-scientific progress made by the technological innovation provided by an external energy source, steam energy, added to other discoveries, has conferred an increase in productivity remarkable and never verified in human history, which has caused both the increase in environmental impacts negative to the global environment and the formation of the current environmental crisis.

The Industrial Revolution also constituted a set of transformations not only scientific and technological, but also social, economic, political, philosophical, cultural, population and

environmental. It should be remembered as a moment in the history of capitalism in which the idea of man's domination of nature through technique took on a fundamental character in modern scientific thought, which contributed decisively to the installation of new forms of economic and socio-environmental relationship.

With regard to the economic character, the Industrial Revolution introduced not only gains in relation to labor productivity, but, above all, also inaugurated the expropriation of the worker from an unfair division of the social product of labor. This founded, therefore, an even greater social injustice in relation to the previous period, because the alienation of work occurred through specialization and control of the productive process by the bourgeoisie.

Moreover, the poor distribution of wealth, added to the exploitation of women, children and poor wage and working conditions, promoted the generation of an unbalanced environmental framework. In other times, this period of capitalism, which consolidated the opposition between capital and work, inaugurated the highest form of exploitation of the human being on this planet, a fact that contributed to the beginning of an unmatched environmental crisis.

In this regard, the capitalist international competition that, despite a totally decontextualized economicism of other facets of reality – social, cultural, political and environmental – and committed solely to economic growth, through increased productivity and capital income, caused the creation and increase of unemployment and ecological crisis (Morin, 2003, modified). This is due to the fact that the tendency of capital to encourage the reduction in costs through increasing investments in technology, while unemployment and social inequality tend to increase, both influencing and influenced by the environmental crisis.

However, based on the adoption of oil as the main energy source and centered on the automotive industry, unlike the First Industrial Revolution, which had the mineral coal and textile industry, despite all these negative socioeconomic and environmental effects, the Second Industrial Revolution also produced positive consequences for the societies through which it passed, mainly from the 19th century onwards, with the expansion of industrialization to other developed nations.

By the way, social gains were achieved through the Medical-Sanitary Revolution. She was one of those responsible for reducing mortality and increasing life expectancy in industrialized nations developed around the second half of the 19th century.

However, the decrease in mortality, coupled with the maintenance for some time of high birth rates, produced a population growth never seen by humanity, generating a concern of the world authorities with the consequences of overpopulation for nature. Even for those scholars who believe that overpopulation concerned unequal income distribution and underdevelopment, the problem of the rampant increase in the world population, especially in underdeveloped countries with low industrialization, worried and alerted global political and scientific authorities.

With regard to the overtaking of the planetary boundaries caused by the Industrial Revolution, through the impacts on natural ecosystems and other species to the point of extinguishing them, the expansion of the human population has had negative effects on the integrity of the biosphere, in the same way that, since the 1950s, the biogeochemical flows of nitrogen and phosphorus, due to the massive use of fertilizers, they decreed the disrespect of another of the

limits of the biosphere, and the accumulation of greenhouse gases in the atmosphere established the breakdown of climate stability and the threat of the end of civilization or the human species in function of catastrophic climate change (Viola & Basso, 2016). Therefore, produced by the Industrial Revolution, overpopulation is one of the important factors that must be taken into account in the apprehension of the current planetary environmental crisis.

On the other hand, the increase in the supply of primary genders led to an exponential growth of the world population, especially after the First Industrial Revolution. From there, the population crisis arises, although it has different levels according to the degree of development of countries and does not accurately specify consequences for the future of humanity, it is a facet of the current ecological crisis. However, it is absolutely uncertain the exponential growth of the world population in the future, given the realization of the discontinuities of its evolution before and after the Industrial Revolution, according to time and space.

For Viola and Basso (2016), consolidated between the end of the 20th century and the beginning of the 21st century, the Anthropocene – a geological epoch in which the interference of society is the main vector of transformation in the planetary system, especially with regard to environmental instability to the point of inaugurating the sixth great extinction in 4 billion years of history of life on our planet, the first produced by humanity - began with the Industrial Revolution. Here is another statement about the importance of the Industrial Revolution with regard to the loss of planetary environmental instability, in addition to the formation, development and consolidation of the environmental crisis.

The changes generated by the First Industrial and Second Industrial Revolution, in addition to bringing an unmatched increase to economic productivity, also caused the current environmental crisis. The latter greatly increased the demand for energy and matter, favoring the increase in pollution levels on our planet.

In this sense, according to the 1st Law of Thermodynamics⁷, energy cannot be created or destroyed, but transformed. Therefore, the impossibility of annihilation of energy and matter by human activity produces undesirable residues to man, which can be decomposed by the natural environment. However, when there is a higher production of waste than the purification capacity of natural cycles, there is the emergence of an environmental imbalance unprecedented in history, something known as an environmental crisis.

Another aggravating factor concerns the discovery of the 2nd Law of Thermodynamics, which argues that part of the energy, defined as the ability to produce work, degrades in the form of heat, which contributes to the realization that it is impossible to fully recycle energy. The 3rd Law of Thermodynamics confers the increase of entropy⁸ to the trend of all systems. Finally, the 4th Law

⁷ The first formal statements of the 1st Law of Thermodynamics were prepared by Clausius in 1790 and Thomsom a year later. Later, throughout the 1790s, other physicists helped in the development of this law. They were Joule, Helmholtz and Meyer.

⁸ Entropy is a thermodynamic greatness that leads to a spontaneous tendency of degradation to energy in all phenomena of everyday life. Thus, the leaps of a ball become smaller and smaller, the heat disperses, gave way to the environment, and a sandcastle disgroups, through the action of the winds.

of Thermodynamics says that an isolated system tends towards chaos, that is, to the complete absence of energy-matter.

In other words, the laws of Thermodynamics led to the idea of the environmental imbalance in terms of energy and matter, because the increase of entropy in a closed system such as the Earth, caused by economic growth seen as an end and not as a means, produces a profound ecological crisis through the realization that there is a decrease in the energy capacity to generate work. Consequently, the result is the increase in damage to the environment that threatens life on our planet, precisely by increasing entropy through the increasing creation of waste.

2.3 Environmental crisis: theoretical contributions

Thus, the analytical and rationalist paradigm, hegemonic in the political and scientific environment, is also one of the responsible for the ecological imbalances that threaten humanity regarding the scarcity of waters, soils, food, energy sources, raw materials and life on the planet, because it fragments, through the specialization of knowledge in various areas, instead of integrating the parts that make up the whole. With this, it prevents the perception and global resolution of the fundamental problems that afflict humanity in relation to the environmental crisis of our day.

In this regard:

To the extent that most of the resulting ecological issues are so obviously global, the forms of intervention to minimise environmental risks will necessarily have a planetary basis. A general system of planetary care can be created, with the goal of preserving the ecological well-being of the world as a whole (Giddens, 1991, p. 169).

For Morin (2013), the ongoing civilizing crisis concerns the historical division between society and nature. He also argues that globalization, Westernization and development have produced a plurality of interdependent crises. In this sense, if the planetary crisis has diverted humanity from a common future and destiny, both in the context of a planetary identity or "Earth-Homeland", the crisis of humanity is the worst of all, for it is the lack of humanity in the human being. In short, there is a crisis of civilization that separates society and nature and establishes the need for reconnection between the two, because it is impossible to appretify them separately, since it constitutes an intercomifying and multidimensional totality.

For his part, Henrique Leff (2009) says that it is necessary to deconstruct rationality that produces the rationalization of the world, instead of stimulating ecological potentials and cultural values that are the basis for planetary life. Therefore, the ethics of conservation is questioned as the only possible way.

By the way, the current environmental crisis consists of a multidimensional aparato, that is, it depends on a variety of factors that are intro-retroactive, which are social, economic, political, ecological, cultural, ethical and epistemological. So, such a thought generates the true and complete

apprehension of the phenomena of nature, precisely by the acceptance of complexity in the whole fabric of life, of which humanity is only one of the constituent parts.

More than ecologically, the environmental crisis is also a crisis of the organization of scientific knowledge, which is unable to accept the integration of all forms of life in the cosmos, being the same fragmented and reductionist. In this sense, the rationalist and mechanistic paradigm, which insists on the division of knowledge into specialized disciplines, removes any possibility of intelligibility from the interconnection between living phenomena.

For Morin (2003), the new one, arising from internal or external forces, is almost always born as an abnormality and deviation from the dominant paradigm, so that, only after the appearance of favorable crisis conditions, it propagates as a tendency that generates a new normality. Therefore, the new can move from extraordinary and marginal events to absolute normality, depending on the context in which it emerges and the level of possibilities and probabilities it endeavors.

Transported to the current environmental crisis, the new ideas that emerged in this regard, especially from the 1970s onto the hope for overcoming the rationalist and mechanistic paradigm, which is one of the responsible for the ecological imbalance of our day. Therefore, the environmental crisis, in fact, is an opportunity for change for improvement in the relationship between man and nature, because it brings with it the conditions for the transformation of consciousness and attitude towards the environment.

This recent ecological concern leads to the conclusion that, based on environmental issues arising from economic growth and globalization, the environmental crisis has a planetary character. Thus, the damage caused to nature in a region or locality is extensive to the entire terrestrial biosphere, since it is a large living, limited and intercom organism. Then comes the need to generate a new planetary consciousness towards decision-making for life. In this regard, Edgar Morin (2003, p. 63) says that "The community of destiny of humanity, which is proper to the planetary age, must be inscribed in the community of earthly destiny." Therefore, humanity is closely tied to the future of our planet, and any scientific progress needs to take that finding into account.

2.4 Anthropocene, climate change and environmental crisis: is another world possible?

Brought to the field of climate change mitigation, this is in line with the ideas that climate change is uncertain, complex and long-term, which leads to the most effective solution to the revision of the concepts of threat to security, national interest and deepening of global governance (Viola & Basso, 2016). In other times, the concepts of security threat, national interest and political-legal system are insufficient to deal with climate change mitigation, as they act in the short term and are unable to democratically bring together the common global interest.

In the case of security threats in the Anthropocene, based on the assumption that climate change is uncertain, profound and correspondence with the productive system (Dalby, 2014), before the changes implemented by humanity are profound and systemic, the consequences of such changes are uncertain and complex (nonlinear) (Viola & Basso, 2016). Thus, it cannot be predicted how long the accumulation of GHG in the atmosphere will cause catastrophic climate change, just

as it is not possible to measure the exact moment with regard to the effects of the adoption of policies for the reduction of greenhouse gases (Underdal, 2010). In turn, with regard to complexity, it is known that a minimal change in the concentration of greenhouse gases can generate catastrophic effects (Viola & Basso, 2016).

In any case, with regard to the mitigation of climate change, by not taking into account uncertainty and complexity, any policy will cause failure, which leads to the reflection that, within the geopolitical context of another world based on uncertainty and complexity, humanity is far from a future of climate and environmental stability. This corroborates the idea that climate change mitigation, as well as the pursuit of planetary climate and environmental stability, requires consideration of non-Cartesian principles of uncertainty and complexity, both linked to multidimensionality and dialogicity in dealing with the environmental crisis.

On the other hand, the development model has to be considered with regard to the future (Viola & Basso, 2016), instead of being based on irresponsible consumption, the rampant use of fossil fuels, deforestation, the very high fertility rates in several regions; in the intensive use of fertilizers and chemical additives, among others (THE ROYAL SOCIETY, 2012). In this sense, the stability of the planet requires honest and open reflection on energy and material systems used in the production of consumer goods (Dalby, 2013), in addition to consumption patterns, lifestyles, values, beliefs and current institutions (Viola & Basso, 2016).

Once again, with regard to environmental issues and the environmental crisis, especially climate change, the dream of another world is possible, provided that there is an understanding of the complexity that involves the relationship between society and nature, in addition to the importance of using complex strategies of political action, which have more correspondence with cooperation, solidarity, inclusion and participatory democracy, without disregarding diversity, plurality and fragmentation.

Another important issue is that, as the Anthropocene is the result of political choices that have been made by humanity, especially the different interest and privilege groups, the changes in such choices have to do with changing the socioeconomic and political status quo (Viola & Basso, 2016). Therefore, based on diverse interests and privileges, from the point of view of climate and environmental change, it is naïve to think about the construction of another world based only on individual and apolitical positioning, without taking into account the political-economic dimension that opposes differentiated forms of political action.

To mitigate the overtaking of planetary boundaries as opposed to measures that treat the problem as marginal or ancillary, it is urgent to understand and modify the power policy (Dalby, 2013). As for the national interest in the Anthropocene, in the context of globalization-fragmentation of the 21st century, the State is not a unitary entity (Viola & Basso, 2016), formed by territory, population and sovereign government, but plural, that is, joint government, companies, scientific community and civil society (Viola, Franchini & Ribeiro, 2012), united or not by a territory, with common and conflicting interests or, in other words, plural, heterogeneous and sometimes disaggregated communities in decision-making (Scholte, 2008; Koenig-Archibugi, 2010).

Thus, with regard to mitigating the environmental crisis and climate change, the national interest is not uniform and has to do with disparate interests. In turn, in the context of globalization-fragmentation and international division of labor, the state's action in mitigating the environmental crisis and climate change varies in time and space, according to the stage of the productive forces, the social relations between the ruling and subordinate classes, as well as their subdivisions, differentiations, similarities, oppositions and cooperations, and the degree of exploitation of the workforce by capital.

By the way, if the state has a new configuration in these times of globalization-fragmentation. In other words, there is no loss, but the reduction, delegation or sharing of state control power over various national and transnational flows across its borders – post-Fordism, informational revolution, deregulation of financial capital, fall of the bureaucratic regimes of the socialist bloc and intensification of transnational flows – whether for other spheres or scale, as is the case of the European Union, large multi[or even trans]national forums, "localisms" and "regionalisms", one should not confuse fragile global "political organization" with "weakening of power", which is not manifested only in the traditional way of political power of the State (Haesbaert, 2007).

From the perspective of global governance, that is, the establishment of cooperation and/or accommodation of diverse and conflicting interests (UNITED NATIONS, 1995), based on the non-unitary character of the State, sovereignty becomes fundamental as the alignment of the conventional interest of the State with the general interest of humanity, which corroborates the deepening of global governance and its application to the issue of climate change, achieving more effective results of reducing greenhouse gas emissions from multilateral and plurilateral negotiations and the adoption of reformist stances in relation to the current climate regime by climate powers (Viola & Basso, 2016).

While any decision that contributes to climate change mitigation, in specific terms, and the environmental crisis in general terms, has to have a global common agreement, even if the interests and diverse levels with regard to global governance make this task more difficult, it is important to highlight the absence of an approach on the need to remake working classes on various geographical scales, since today's neoliberal project, based on neofascism, authoritarianism and racism, has a decisive role in deepening current environmental imbalances. In this sense, cooperation and mutual help between the working classes, especially in trade unions, community councils and other civil society entities, more than in political parties or at the institutional level, from the local to the planetary scale, requires the search for ideological platforms of solidarity and global cooperatives in the face of the global dilemmas of globalization-fragmentation.

Nor can the mitigation of climate change and the environmental crisis be suggested without overcoming a dominant mode of production at international level, capitalism, which establishes and encourages the exploitation of proletarian classes and the degradation of natural resources in favor of the voluptuousness of speculative capital, where crises between supply and demand have been fought through speculation, rather than incentives for the real economy. Therefore, climate mitigation, in particular, and the environmental crisis, in general, become mere appendages from

the perspective of the search for profit and exploitation of the workforce, via technology, by capital, based on productivity, capital markets and economics.

Like this:

Here we enter a world in which capital does not merely appropriate nature to transform it into commodities that function as elements of constant and variable capital (to use Marxist categories). Instead, it is a world in which capital remakes nature and its products biologically and physically (and politically and ideologically) in its own image and likeness. A pre-capitalist or semicapitalist nature is transformed into a specifically capitalist nature. And just as the workers' movement imposes on capital the need to move from a mode of value production based on absolute added value to one of relative added value - for example, moving from the extension of the working day to reducing the cost of wages - therefore, the green movement may be forcing capital to put an end to its primitive exploitation of a pre-capitalist nature, retsnare nature in the image of capital - also to reduce capital costs, especially those of reproduction of the labor force (or cost of wages) (O'Connor, 2000, p. 16).

In "The Capital", Karl Marx, in his most important and extensive work, criticized the relations created by capitalism and the destruction of life on the planet, which produced the separation between society and nature. In this work, Marx (2006 apud PENSAR O AMBIENTE, 2007) also argued that capitalism transformed people and things into commodities, effecting the coisification of human beings and the "worship" of objects of consumption, called fetishism. In a way, the capitalization of nature causes the destruction of planetary ecosystems, which produces factors responsible for the environmental crisis.

In this regard, in Brazil, in the historical context of the advance of capital through neoliberalism, it is important to highlight the deeply discouraging environmental framework at the beginning of the second decade of the 21st century, particularly with regard to burning, deforestation and the water crisis, in the midst of the federal government of the extreme right that has as president Jair Messias Bolsonaro. In this sense, it is known that such devastation of Brazilian biomes, especially the Amazon and the Cerrado, has to do with the financialization of the economy and the reduction in the importance of the role of the State in solving environmental issues, supported by the government in question, which impose predatory exploitation through agribusiness due to the need to increase exports for the payment of public debt.

In this sense, the reductions in financial resources destined to the Chico Mendes Institute for Biodiversity Conservation (ICMbio) and the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), the attempts to change the Forest Code and the approval of the Time Frame are compelling examples of actions by the Bolsonaro government in favor of reducing the inspections of the Brazilian State in mitigating the harmful environmental effects at the time of the shackle, deforestation and burning that favor agribusiness, mining, mining and logging in our largest and most important biomes, especially in the Amazon and the Cerrado. By the way, the increase in the number and intensity of deforestation and burning since 2019 attest to the lack of environmental public policies that prevent environmental degradation in such biomes, with governmental environmental denialism, including with regard to the prevention of Covid-19.

In particular, in 2021, given that the evapotranspiration of the Amazon rainforest is vital for the formation of the "flying rivers" that are responsible for rainfall rates in south-central Brazil, where the greatest installed hydroelectric potential of our country is located, the advances of fires and deforestation in the Amazon, which have intensified during the Bolsonaro government, contributed to the reduction of rainfall rates, which has compromised the supplies of reservoirs of the large hydroelectric plants in Brazil and promoted a water crisis that increased the price of electricity and threatens its supply. Therefore, contrary to the thesis of those who argue that ecology reduces economic growth, the loosening of inspections and reductions in resources in the fight against environmental crimes have negative impacts on the economy and society, added to the mismanagement of the adverse effects of the current health crisis due to the Covid-19 pandemic, which, despite being the result of unsustainable global development, also requires government actions on a national government scale.

By proposing that capitalist society decreed the worship of consumer goods:

The wealth of societies where capitalist production governs is configured as "immense accumulation of goods", and merchandise, in isolation, is the elementary form of this wealth. Therefore, our investigation begins with the analysis of the merchandise (Marx, 2006, apud PENSAR O AMBIENTE, 2007, p. 132-133).

Examples of environmental devastation and disrespect for natural balance are many in the time and space of humanity, as was the case with the natural dismantling that occurred in Europe in the 1980s. In this regard, it is necessary to recall both the episode of pollution of the River Reno, which was caused by France, Switzerland, Germany, the Netherlands and the North Sea, and the accident of the Chernobyl nuclear power plant, located in Ukraine, formerly USSR, whose effects expanded and surpassed Europe (Morin, 2003).

In addition, water pollution, soil contamination by pesticides and chemical fertilizers, urbanization of ecologically fragile areas, acid rains, formation of "heat islands", desertification, deforestation, erosion, soil salinization, floods, air pollution in large metropolises by sulfur dioxide and carbon monoxide, among others.

Another serious environmental issue concerns global warming or increased greenhouse effect that causes terrestrial climate change. The increase in emissions of carbon dioxide or carbon dioxide (CO₂) threatens the future of life on Earth, especially after the Industrial Revolution. Through the increase in the burning of fossil fuels and the devastation of forests, resulting from a development model contrary to ecology, culture and socio-diversity, greenhouse gases are growing responsible for the increase in the temperature of the earth's surface, of which carbon dioxide is the main one.

The result goes from global climate change, which is already negatively affecting the lives of countless people across the planet, to implications for biodiversity loss, making a picture for some of humanity's imminent end, while for others there may still be salvation through nature's own self-regenerating principle.

Like this:

In any case, the duty of precaution is imposed; in any case, we need a greenthinking that, based on the self-eco-organizing conception, considers the connection of every living, human or social system to its environment (Morin, 2003, p. 70).

In Brazil, since the 1960s, when discussions began on the environmental issue, especially during the Civil-Military Dictatorship (1964-1985), until the present day, there were a large number of environmental accidents. Among the main ones, the following stand out:

1. The oil spill of the oil tanker Tarik Iba Ziyad, in Guanabara Bay (1975);
2. Death Valley in Cubatão (1980);
3. Fire in the village of Socó, in Cubatão (1984);
4. Accident with cesium-137, in Goiânia (1987);
5. Oil spill in Guanabara Bay (2000);
6. Oil spill, in the Barigui and Iguaçú Rivers, in Paraná (2000);
7. Sinking of platform P-36 in the Campos Basin (2001);
8. Dam rupture in Cataguases (2003);
9. Rupture of the Bom Jardim dam, in Mirai (2007);
10. Oil spill in the Campos Basin (2011);
11. Fire at Ultracargo, in the Port of Santos (2015);
12. Fundão dam rupture in Mariana (2015);
13. Fire, in Chapada dos Veadeiros (2017);
14. Rupture of the Mina do Feijão dam, in Brumadinho (2019);
15. Oil spill, on the northeast and southeast coasts (2019);
16. Fire, in the Pantanal (2020).

By the way, with regard to environmental disasters in our country, on November 5, 2015, in the municipality of Mariana, located in the region of the State of Minas Gerais known as Quadrilátero Ferrífero, where there is intense exploitation of iron ore, gold and manganese, after the rupture of the tailings dam of the Fundão of the mining company Samarco, used to retain solid tailings and water during the mining process, the waters of the Doce River were contaminated by ores. This also caused the compromise of the marine ecosystem, because the mud spot reached the Atlantic Ocean by the mouth of the Doce em Linhares River (ES). In addition, it caused the destruction of the district of Bento Rodrigues, in the municipality of Mariana, and other localities, causing 19 deaths, hundreds of homeless people and thousands of people without access to clean water, in several municipalities of Minas Gerais and Espírito Santo.

In 2019, in the municipality of Brumadinho, in the State of Minas Gerais, at the time of the rupture of the Fundão Dam of the mining company Samarco, it can be inferred that the environmental impacts were enormous, especially the destruction of all the surrounding vegetation, the rivers affected by the land, the sterilization of floodplains, the extinction of aquatic fauna and flora, in all the rivers affected, in particular the Doce River, causing impact throughout the food chain, the silting of rivers, the diversion of its courses and the burial of several springs. In turn, as far as the affected population is, much of it has been dependent on government and society aid.

In this sense, the companies owned by Samarco – a Brazilian mining company, managed through a joint venture between Vale S.A. and BHP Billiton – were sued and answered for environmental crimes, with the imposition of fines that exceeded R\$ 1 billion, criminal crime, liability for the death of people, and civil compensation, through compensation for damages for those who lost their homes and assets, had family members killed or lost the source of income, such as fishermen and farmers. The fines imposed on the companies involved were paid to the State Undersecretary of Environmental Surveillance and the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA). However, in the case of the rupture of the Fundão da Samarco Dam, in the municipality of Mariana, the slowness of bureaucracy is easing, since 3,000 victims have not yet been reimbursed and are waiting for a solution (Silva, 2021).

Thus, although the companies involved in the rupture of fundão dams have reimbursed public environmental control agencies, the environmental damage is immeasurable and difficult to recover. So, it was essential that this environmental disaster had been predicted and avoided by these companies, which is considered the largest environmental accident in the history of Brazil.

In the case of the Dam I of the Córrego do Feijão Mine, by the mining company Vale S.A, in 2019, in the municipality of Brumadinho, also in the State of Minas Gerais, the mud stain, which contained iron, silica and water, reached the Paraopeba River, negatively affecting the water quality. In this sense, the State Departments of Health (SES), Environment and Sustainable Development (SEMAD), and Agriculture, Livestock and Supply (SEAPA) reported that this water present in the Paraopeba River presented risks.

In this case, the dam belongs to the Brazilian multinational mining company Vale S.A and, as much as this rupture is considered smaller compared to Mariana's, its impacts were equivalent in social and environmental terms. To get an idea of this environmental disaster, it is estimated that the volume of waste expelled was about 12 million m³ and the speed of mud reached 80 kilometers per hour, and at the time of the tragedy, the safety sirens were not touched to alert Vale workers and residents of the region, which caused the counting of 241 deaths and 21 other people who were still missing by the end of August 2019, around 7 months after this environmental disaster. By the way, it should be noted that both the Dam I of the Córrego do Feijão Mine and the Fundão Dam were built in the upstream model of the type, which is a more obsolete and less safe method than the method of dams that have a downstream model (Silva, 2021).

The approach of capitalism and its contradictions in explaining environmental disasters becomes vital. Thus, based on the contradictions of capitalism and the capitalist production of space, there is the denunciation of environmental degradation (Harvey, 2005, 2016, 2018). Thus, it is known that capitalism in its current stage of financialization of markets, that is, the adoption of "speculative casinos" to the detriment of the "real economy", formed by industry, health and education, sectors generating jobs, in the form of the offers of shares of companies on stock exchanges, due to the pressures of shareholders and investors of the speculative market, forces to make greater profits in less time from reducing investments in safety and working conditions.

For David Harvey (2018), contemporary capitalism is trapped within the infinite accumulation, which is bad, and exponential growth, which has no end. In other words, here are

one of the dangerous contradictions of capitalism, that is, "the relationship of capital with nature – reduction of nature and human nature to pure commodity form" (Harvey, 2016, p. 243). Thus, in addressing the Marxist view of the fetishization of merchandise, David Harvey (2018, p. 171) wedges the expression "madness of economic reason", that is, the fetishistic and covert forms in which money is the end in itself, and not the means for meeting social needs, which has exponential growth and re-creation.

For his part, Milton Santos (2015) warned about the perversity of the globalized space economy, particularly in underdeveloped countries. In this sense, it proposes another globalization, which is directed to the interests of the majority of society to the detriment of the *status quo*. He denounced the "tyranny" of globalization and money when he associates the concepts of "space" and "globalization", "perverse globalization" (Santos, 2015, p. 37) and "schizophrenia of space" (Santos, 2015, p. 112). Moreover, with regard to Brazil, with the advent of the Technical-Scientific and Informational Revolution, in the context of the peripheral industrial economic model, the concept of globalization was related to the concepts of "technical-scientific-informational environment" and "used territory", in which the market, due to science, technique and information, became global (Santos and Silveira, 2014, p. 52-53). Therefore, the contribution of these authors was important in the debate generated on the occasion of the environmental impacts of the extractive industry, in particular, and the environmental crisis in general.

Thus, contextualization is something important in the study and action in favor of overcoming this contemporary environmental crisis, since reality is multidimensional and interdependent, whether natural or human. Therefore, the theory of complexity presents greater depth with regard to the representation of natural and social reality, because it brings together the multidimensionality and uncertainty of the physical, biological and human world.

In this regard, with regard to climate change mitigation, while advocating the reduction of greenhouse gases (GHG), particularly carbon dioxide or carbon dioxide, through changing values, technologies and designs, the emphasis should be on political and cultural changes that have to do with social and psychological processes (VEIGA, 2013). In other words, technology is not an end in itself and is unable to mitigate climate change alone, which also leads to reflection on the complexity and multidimensionality involved in overcoming the environmental crisis. In this sense, the challenge is more political than technological, although the political responses to climate change mitigation have been unsatisfactory because of increased conflict and the decision-making model (Viola & Basso, 2016).

2.5 Environmental issues: crisis or agony?

However, such issues involving the environment and humanity, also called agony, may engender both life and death, that is, to cause both the destruction of the biosphere and save it from this danger through awareness, since the uncertainty of the path is something present in the natural and human history of our planet (Morin, 2003). So the future is uncertain for both humanity and nature, and this creates an even greater responsibility on the part of all human beings, because there is no longer room for universal and immutable laws that govern the physical and social world.

According to Morin (2007, p. 85), "So many dramatically united problems make us think that the world is not only in crisis; he is in a violent state in which the forces of death and the forces of life are faced, which can be called agony." In sum, the contemporary environmental crisis is more than a crisis, that is, it corresponds to the state of "trance" of nature in the midst of the devastation engendered by global society.

Thus, the strategy is the most correct way to deal with the uncertainty of the real, which concerns the reflected action that takes into account the risks contained in the possibility that the intention is not reached, and this through the observation of information, chance, opportunities and good results along the way (Morin, 2007). Therefore, both ethical and unethical means may or may not lead to the desired results, thanks to the unpredictability of the inter-retro-actions of the factors involved. Thus, there is correspondence with the following idea: "So it is not absolutely certain that the purity of the means leads to the desired ends, nor that its impurity is necessarily harmful" (Morin, 2007, p. 88).

With regard to the scientific debate on the environmental crisis, man's mechanical actions in relation to nature, based on a rationalist view of total control of human beings over natural life from the technique, fell apart, because the uncertainty of physical phenomena leads to the search for strategies of coexistence and respect for greater harmony with the environment. Faced with the aforementioned situation of disrespect for sustainability, future generations and values aimed at the preservation of life on our planet, human perception of nature and forms of knowledge need to evolve into a complex paradigm, capable of addressing the environmental challenges that lie ahead amid rampant and devastating economic growth.

The change of consciousness, through the adoption of a paradigm that glimpses the totality of natural and human phenomena, is the key to more sustainable, socially just, culturally accepted and economically viable actions. In this sense, "Humanity is a planetary and biospherical entity" (Morin, 2003, p. 63).

Finally, there is an urgent need for a reorganization of scientific thought to change social practices in relation to the environmental imbalance of today. Therefore, it is important to overcome the crystallized forms of human thought that limit the emergence of the new complex thought and institute the environmental crisis.

3. METHODOLOGY

In connection with the article in question, based on the use of a computer connected to the Internet, in addition to the consultation of physical material, a bibliographic review was carried out from e-books, articles from online magazines and books. Thus, we used research around themes related to "international conferences on the environment and the concept of sustainable development", "Industrial Revolution, environment and environmental crisis", "environmental crisis: theoretical contributions", "Anthropocene, climate change and environmental crisis: another world is possible?" and "Environmental issues: crisis or agony?". Finally, we read the bibliographic sources that led this article with the purpose of seeking deepening, clarification and theoretical

foundation for the development of research work on international conferences on the environment and sustainable development.

In view of the above, we intend to contribute to environmental issues based on reflections on the potentialities and limits around the concept of sustainable development at global environmental conferences, particularly climate change and the environmental crisis. With the help of the theory of complexity and historical materialism, we used the contributions of the authors referred to from the theme in question.

4. CONCLUSION

Since the 1970s, with international conferences on the environment, there has been greater concern about environmental issues, whether by environmentalists and environmental protection entities, or political authorities, intellectuals, governments, especially developed nations, and multilateral institutions. However, these debates left numerous gaps regarding the deepening of an environmental awareness more coherent with the mitigation of climate change and the environmental crisis, which were only exposed from Rio-92, Rio+10 and COP-16.

In this sense, there was no commitment among nations to mitigate climate change and environmental issues, especially the more developed ones. Represented by several economic and political actors who participated in these international conferences on the environment, among which stood out transnational corporations, the world financial capital and the governments of developed nations, the latter with access to infrastructure, technologies and money for the implementation of the much-desired "sustainable development", as well as their representatives, were the great responsible for the pífios results of them, along also with the model of developmentalist that denies the ecology, culture and civilization present on the surface of the Earth.

However, due to the origin and development of the concept of sustainable development, such global conferences on the environment were important for the formation of reflection on mitigating and/or overcoming climate change and the environmental crisis. This is due to the fact that they are responsible for the beginning of the debates about the issues that involve the current model of development and its repercussions on the environment.

In turn, with the unsustainability of the modes of production and consumption of industrial and post-industrial societies, the notion of sustainable development or sustainability began from the idea of destitution of the value of nature and institution of the insatiability of desires in individuals. Since the origin of the debates on the meaning of the term sustainable development, there has also been a concern with intra- and intergenerational ethics and an interpretation contrary to economicism. Moreover, there was also a bias of "resistance" to capitalism, whether ideological or just in discourse. In sum, with regard to criticism and interpretations of the concept of sustainable development, there was a mismatch between economic growth, conservation, nature maintenance and social justice in a market economy.

For Loureiro (2012), the debate on sustainable development was restricted to social and environmental problems arising from technique and management. Thus, the notion of sustainable

development is nonlinear, controversial and polysemic, which makes it have strong ethical, political and ideological implications, making a critical debate.

Rio-92 represented a historical milestone for environmental action, particularly in the articulation between environmental and social demands in the development debate, thanks to the technological revolution in global communication through development in information technology and telecommunications. In this regard, although it has not defined specific implementation obligations for climate change mitigation, it is important to highlight the signing of the United Nations Framework Convention on Climate Change (UNFCCC), which initiated the search for solutions to this problem, forcing discussions in the so-called Conferences of the Parties (COPs), that is, periodic meetings that would define the strategies for action of these assumed obligations.

Thus, initiated in 1995, THE COPs are responsible for the beginning of the process of planning, discussion and implementation of mitigating actions with regard to climate change. However, climate change mitigation was unsuccessful in the face of the political-legal system, which did not have as main goals the revision of the concepts of threat to security and national interest and the deepening of global governance.

Since 2000, the social theme has acquired global importance with an environmental focus, particularly in relation to the international commitment to poverty reduction. Thus, the discussion on sustainable development begins to have a more ethical and political reflection. In turn, gross domestic product (GDP) is confronted with the state of happiness and well-being, while modes of production and consumption are obstacles to "sustainable development". which must ensure the right to happiness and well-being in the world.

For Nique (2010), since 1986, when she was first coined by the King of Bhutan, the term "Gross Internal Happiness" has been spread globally by some segments of the United Nations. Since then, for the calculation of wealth, this country has defined four pillars, such as the economy, culture, environment and good governance, while nine dimensions have derived from which Bhutan evaluates development, such as mental and psychological well-being, health, leisure experience and opportunities for socialization with family and friends, education, culture, environment, governance and standard of living. Therefore, the debate on sustainable development is broadened from the reflection on the notion of well-being.

In turn, overcoming the environmental crisis and mitigating climate change were not fully achieved through international conferences on the environment along with the concept, because the resolution of environmental issues depends on political and ideological positioning, acceptance of uncertainty, review of concepts of security threat, national interest and depth of global governance. In other ways, if there is no understanding of the multidimensionality of the environmental crisis, there will only be an ecologism that will not account for the various dimensions that involve environmental issues or, on the other hand, humanism and sociologism disconnected from the environmental, economic, political, cultural and geographical dimensions.

Finally, based on the state is not unitary and still important, a common global agreement and strategy is urgent, since the neoliberal project of today, based on neofascism, authoritarianism, racism and denialism, operates decisively in the deepening of the environmental crisis and climate

change of our day, because the reduction of the role of the State in the organization of geographical space, together with the disrespect for the rights of the environment and society, especially in underdeveloped countries, as is the case in Brazil, it promotes environmental depreciation by orienting itself by the interests of financialization, rather than the interests of the common good. In turn, cooperation and mutual assistance between the working classes, especially in trade unions, community councils and other civil society entities, rather than in political parties or at the institutional level, at all geographical scales, requires the search for solidarity ideological institutional platforms and global cooperatives in the face of the global dilemmas of globalization-fragmentation and the environmental crisis.

5. REFERENCES

- Baroni, M. Ambiguities and deficiencies. *Revista Brasileira de Administração de Empresas*, São Paulo, v. 32, n. 2, p. 14-24, 1992.
- Braga, Freitas, Duarte and Carepa-Sousa. Municipal sustainability indexes: the challenge of measuring. *New Economy*, Belo Horizonte, v. 14, n. 3, p. 11-33, 2004.
- CAPRA, F. *The Web of Life: a new scientific understanding of living systems*. São Paulo: Cultrix, 1996.
- CLIMATE ACTION TRACKER. Climate Action Tracker Update: 2.7 °C is not enough – we can get lower. Disponível em: <http://climateactiontracker.org/assets/publications/briefing_papers/CAT_Temp_Upda-te_COP21.pdf>. Acesso em: 12 fev. 2021.
- Dalby, S. Biopolitics and climate security in the Anthropocene. *Geoforum*. v. 49, p. 184-192, 2013.
- Dalby, S. Rethinking geopolitics: climate security in the Anthropocene. *Global Policy Journal*, v. 5, n. 1, p. 1-9, 2014.
- Eckholm, E. P. *Down to earth environment and human needs*. New York: International Institute for Environment and Development, 1982.
- Gadotti, M. Educating for sustainability. *Social Inclusion*, Brasília, v. 3, n. 1, p. 75-78, 2008.
- Giddens, A. *The consequences of modernity*. São Paulo: UNESP, 1991.
- Goodland, R., Ledec, G. Neoclassical economics and principles of sustainable development. *Ecological Modelling*, n. 38, 1987.
- Gupta, J. A history of international climate change policy. *WIREs Climate Change*, v. 1, p. 636-653, 2010.
- Haesbaert, R., LIMONAD, E. The territory in times of globalization. *Etc: Space, Time and Criticism*, Niterói, UFF, v. 1, n. 2, p. 39-52, 2007. Available from: <https://www.researchgate.net/publication/228455262_O_territorio_em_tempos_de_globalizacao>. Accessed: 4 Nov. 2020.

- Harvey, D. The Capitalist Production of Space. São Paulo: Annablume, 2005. (Geography and Adjacencies Collection).
- Harvey, D. 17 Contradictions and the end of capitalism. São Paulo: Boitempo, 2016.
- Harvey, D. The madness of economic reason: Marx and capital in the 21st century. São Paulo: Boitempo, 2018.
- IEA - International Energy Agency. Key World Energy Statistics 2007. Available in: <<http://www.iea.org/publications/>>. Accessed: 10 Feb. 2021.
- IEA - International Energy Agency. Key World Energy Statistics 2014. Available in: <<http://www.iea.org/publications/>>. Accessed: 10 Feb. 2021.
- IEA - International Energy Agency. Key World Energy Statistics 2015. Available in: <<http://www.iea.org/publications/>>. Accessed: 10 Feb. 2021.
- Irving, M. A. Sustainability and the future we don't want: polysemy, controversy and the construction of sustainable societies. In: IRVING, M. A. (org.). Dossier: sustainability. Rio de Janeiro: SESC. p. 11-36, 2006. Available in: <http://www.sesc.com.br/wps/wcm/connect/488930ad-0522-4b49-bb6f-43d2aae234c5/Revista_SSociais_26web.pdf?MOD=AJPERES&CACHEID=488930ad-0522-4b49-bb6f-43d2aae234c5>. Access: 2 Oct. 2020.
- Irving, M. A., Oliveira, E. Sustainability and social transformation. Rio de Janeiro: Ed. Senac, 2012.
- Jacobi, P. Environmental education, citizenship and sustainability. Cadernos de Pesquisa, São Paulo, n.118, p. 189-205, 2003.
- Jatobá, S.U.S., Cidade, L.C.F., Vargas, G.M. Ecologism, environmentalism, and political ecology: different visions of sustainability and territory. Society and State, Brasília, v. 24, n. 1, p. 47-87, 2009.
- Koenig-Archibugi, M. Understanding the global dimensions of policy. Global Policy Journal, v. 1, n. 1, p. 16-28, 2010.
- Leff, E. Ecology, capital and culture: the territorialization of environmental rationality Petrópolis: Vozes, 2009.
- Leff, E. Environmental rationality: the social reappropriation of nature. Rio de Janeiro, Brazilian Civilization, 2006.
- Loureiro, C. F. Sustainability and education: a look at political ecology. São Paulo: Cortez, 2012.
- Meadows, D. L. The limits of growth. New York: Universe Books, 1972.
- Morin, E. The well-made head: rethink reform, reform thinking. Rio de Janeiro: Bertrand Brazil, 2003.

- Morin, E. The road to the future of humanity. Rio de Janeiro: Bertrand Brasil, 2013.
- Morin, E. The seven knowledge necessary for the education of the future. 12. ed. São Paulo: Cortez; Brasília (DF): UNESCO, 2007.
- Morin, E., Kern, A. B. Homeland. Porto Alegre: Sulina, 2003.
- NAÇÕES UNIDAS. Our global neighbourhood. Report of the Commission on Global Governance. Disponível em:<<http://www.gdrc.org/u-gov/global-neighbourhood/chap1.htm>>. Acesso em: 10 out. 2020.
- Nique, M. W. Evaluation of the happiness level of Porto Alegrens. Porto Alegre: Federal University of Rio Grande do Sul, School of Administration Graduation in Business Administration, 2010.
- Nobre, M., Amazonas, M. Sustainable development: the institutionalization of a concept. Brasília, DF: Ibama Editions, 2002.
- Oconnor, J. Is sustainable capitalism possible? Clacso, Buenos Aires, 2004. Available at em:<<http://biblioteca.clacso.edu.ar/ar/libros/ecologia/connor.pdf>>. Acesso: 22 out. 2021.
- UNITED NATIONS. Millennium goals. Brasília, DF, 2000. Available in: <<http://www.objetivosdomilenio.org.br/>>. Access: 20 Oct. 2021.
- UNITED NATIONS. The future we want. Rio+20 official document. Brasília, Df, 2012. Available in: <<http://www.onu.org.br/rio20-terminae-documento-final-o-futuro-que-queremos-e-aprovado-com-elogios-e-reservas/>>. Access:10 Oct. 2020.
- Pearce, D. Foundations of an ecological economics. Ecological modeling, n. 38, 1987.
- THINKING ABOUT THE ENVIRONMENT: philosophical bases for Environmental Education. (2007). Brasilia: Secad/MEC, UNESCO. (Education for All Collection, v. 26). Available in:<<http://unesdoc.unesco.org/images/0015/001545/154579por.pdf>>. Accessed: 23 Dec. 2020.
- Pezzey, J. Economic analysis of sustainable growth and sustainable development. Washington, DC, 1989: Banco Mundial, Departamento de Meio Ambinete. (Relatório de trabalho, n. 15).
- Pierron, J. P. Thinking about sustainable development. Ellipses: Paris, 2009.
- Rattner, H. Sustainability: a humanistic vision. Environment and Society, São Paulo, n. 5, p. 233-240, 1999.
- Santos, M. For another globalization: from single thought to universal consciousness. 24. ed. Rio de Janeiro: Record, 2015.
- Santos, M., Silveira, M. L. O Brasil: Território e sociedade at the beginning of the 21st century. 18. ed. Rio de Janeiro - São Paulo: Editora Record, 2014.
- Silva, M. F. da. Spatial analysis of the socio-environmental impacts caused by the rupture of two mining tailings dams: Fundão, in the city of Mariana, and Córrego do Feijão, in the municipality

of Brumadinho (Minas Gerais - Brazil). Territorium Magazine, Curitiba, v. 1, n. 28, p. 67-92, 2021. Available in: <<https://impactum-journals.uc.pt/territorium/article/view/8363/6971>>. Access: 13 Sep. 2021.

Scholte, J. A. Reconstructing contemporary democracy. Indiana Journal of Global Legal Studies, v. 15, n. 1, p. 305-350, 2008.

Tavares, F., Irving, M. A. Natureza S.A.: the green consumption in the logic of ecopower. São Carlos: Rima, 2009.

THE ROYAL SOCIETY. People and the planet report. The Royal Society, Londred, 2012.

Underdal, A. Complexity and challenges of long-term environmental governance. Global Environmental Change, v. 20, p. 386-393, 2010.

Veiga, J.E. da. Global sustainability disgovernance. São Paulo, Editora 34, 2013.

Viola, E. The international climate change regime and Brazil. Revista Brasileira de Ciências Sociais, São Paulo, v. 17, n. 50, p. 25-46, 2002.

Viola, E., Basso, L. The international system in the Anthropocene. Revista Brasileira de Ciências Sociais, São Paulo, v. 31, n. 92, Oct. 2016, p. 1-18, 2016. Available in: <<https://www.redalyc.org/articulo.oa?id=10747709001>>. Accessed: Oct. 9 2020.

Viola, E., Franchini, M., Ribeiro, T. L. Sistema internacional de hegemony conservadora: governança global e democracia na era da crise climática. São Paulo, Annablume, 2012.

HOW TO CITE THIS ARTICLE:

Pontes, O. de M., & Figueiredo, F. F. (2023). CONFERÊNCIAS INTERNACIONAIS SOBRE MEIO AMBIENTE E DESENVOLVIMENTO SUSTENTÁVEL: OUTRO MUNDO É POSSÍVEL?. HOLOS, 1(39). Recuperado de <https://www2.ifrn.edu.br/ojs/index.php/HOLOS/article/view/12036>

ABOUT THE AUTHORS

O. M. Pontes

Instituto Federal de Educação, Ciência e Tecnologia do Rio Grande do Norte (IFRN/Campus Natal Central)

E-mail: ziel_pontes@hotmail.com

ORCID-ID: <http://orcid.org/0000-0002-6701-1527>

F. F. Figueiredo

Universidade Federal do Rio Grande do Norte (UFRN)

E-mail: ffabiof@yahoo.com

ORCID-ID: <http://orcid.org/0000-0002-3222-0230>

Editor In Charge: Francinaide de Lima Silva Nascimento

Pareceristas *ad hoc*: João Mateus Amorim e Vandervilson Alves Carneiro





Received February 19, 2021

Accepted: October 14, 2022

Published: April 02, 2023