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INTERGERATIONAL ENVIRONMENTAL JUSTICE IN BRAZILIAN MINERARY PRODUCTION

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ABSTRACT

This work aims to expose how they have operated the mining activity in Brazil in the context of environmental sustainability and intergenerational justice, considering the damage that this activity causes to the environment and the necessity to preserve resources for use of future generations. Among the specific objectives are: to show Brazilian constitutional and infra-constitutional protection of the environment, the regulation of mining production in the country and to explain how intergenerational justice is supported in the environmental context. The great question of this work is to explain why natural resources must be preserved for future generations and how this can be threatened by minerary extractivism. The method of research used is the deductive, the method of procedure is the monograph and research technique is documentary and bibliographical. As a result we have that mining activity cannot be impeded, given its economic importance, but should be performed according to the constitutional and legal dictates of environmental protection, with the aim of not generating environmental damage, in addition to preserving natural resources and ensure a balanced environment for future generations, but knowing that this requires involvement of the government and the community.

Keywords: Mineral production; Environmental protection; Intergenerational Justice.

A JUSTIÇA INTERGERACIONAL AMBIENTAL NA PRODUÇÃO MINERÁRIA BRASILEIRA

RESUMO

Este trabalho tem como objetivo expor como tem se operado a atividade minerária no Brasil no contexto da sustentabilidade ambiental e da justiça intergeracional, considerando os danos que essa atividade causa ao meio ambiente e a necessidade de se preservar recursos para aproveitamento das futuras gerações. Dentre os objetivos específicos estão: mostrar a proteção constitucional e infraconstitucional brasileira ao meio ambiente, a regulação da produção minerária no Brasil e expor como se respalda a justiça intergeracional no contexto ambiental. A grande questão deste trabalho é explicar por que os recursos naturais devem ser preservados para as futuras gerações e como isso pode ser ameaçado pelo extrativismo mineral. O método de pesquisa usado é o dedutivo, o método de procedimento é o monográfico e a técnica de pesquisa é documental e bibliográfica. Como resultados tem-se que a atividade mineradora não pode ser impedida, dada sua importância econômica, mas deve ser realizada conforme os ditames constitucionais e legais de proteção ao meio ambiente, com o fito de não gerar danos ambientais, além de preservar recursos naturais e garantir um meio ambiente equilibrado para as futuras gerações, mas sabendo-se que para isso é necessário envolvimento do Poder Público e da coletividade.

Palavras-chave: *Produção minerária. Proteção do meio ambiente. Justiça intergeracional.*

INTRODUCTION

This work aims to analyze the condition in which mining operates within the context of environmental sustainability and intergenerational justice. Knowing that this is a highly degrading activity for the environment while being an important component of the Brazilian economic matrix and providing raw materials for other activities, its realization cannot be prevented, but adequate to the dictates of environmental sustainability.

If the present generations can now enjoy natural resources, it is because they have been left by previous generations. However, this assertion is based on philosophical and moral foundations that are not always taken into account but that deserve to be considered in the interpretation and application of the norms that regulate the economic activities consumers of these resources,

Thinking about preserving the environment implies, today, considering the legacy that future generations tend to leave to future generations, in a mobilization of the Public Power and of the collectivity, as entities legitimized by the Federal Constitution of 1988, to preserve natural resources and not to leave debts for the generations to come.

The cases of environmental disasters that occurred in Brazil due to the mining activity, such as the rupture of the mineral waste dam at Samarco, which devastated the municipality of Mariana, in Minas Gerais, draw even more attention to the risks of these operations and bring light to the question of synchronic and diachronic responsibilities, in order to seek the implement of the guidelines provided in Brazilian legislation in favor of the environment and to think of future generations as subjects of the same rights conferred on the current generations.

In this way, the legal provisions for the protection of the environment will be presented in this paper, considering all its aspects, such as Federal Law No. 6. 938/1981, which established the National Environmental Policy, and Federal Law No. 9605/1998, which provides for environmental crimes. In addition, this work will verify the question of objective civil liability in cases of environmental disaster and how mining companies and the State itself can respond.

In order to bring the understanding of how the extraction of mineral resources in the country is regulated, the dictates of Decree-Law no. 227/1967, the Mining Code, as well as the constitutional forecasts for

carrying out this activity will be analyzed, considering that it must meet to the protection of the environment, and that property must fulfill its social function as principles of the constitutional economic order.

In another point, it will be discussed about the intergenerational justice institute, that has been solidifying in the legal doctrines of the world. That said, it will be understood which are the theoretical bases that underlie it, as well as what are the factors that hypothetically generate the obligation of the present generations to maintain natural resources for the future generations. In this context, it will also be pointed out how this conception has been positivized in the constitutions and laws of the most diverse nations and how it can be understood in the context of the environmental impacts caused by the mining. This theme has limited production, so this work seeks to reinforce it and serve as a research source for later work in this respect.

The predominant method of research in this paper will be the hypothetic-deductive one and the procedure method to be used will be the monographic one. The research technique used is documentary and bibliographical, with the use of doctrinal works, especially in environmental law and mining law, as well as international productions with regard to intergenerational justice; analysis of the Federal Constitution of 1988 and of the Brazilian legislation pertinent to the subject as well as some academic works.

1 CONSTITUTIONAL AND INFRACONSTITUTIONAL PROTECTION TO THE ENVIRONMENT

The environment has been contemplated in the constitutions and legislation of several countries, as is the case of Brazil. According to art. 225 of the Federal Constitution of 1988, it is enshrined the right that everyone is entitled to a balanced environment, and it is the duty of the Government and the community to defend and preserve it for present and future generations (BRAZIL, 1988). Regarding the provision of this article, it confers a right to all without distinction, contrary to other constitutional provisions, such as that found in art. 5, in which the inviolability of the right to life, liberty, equality, security, and property is guaranteed to Brazilians and foreigners residing in the country (ANTUNES, 2006, p. 58-59).

This right can be understood in the third-generation fundamental rights, which began to gain momentum at the end of the twentieth century,

referring to rights that were not restricted to a particular individual, group or state, but to the human being itself (BONAVIDES, 2007, p. 569).

Environmental Law is governed by principles, and to meet the objectives of this work, it is necessary to explain the principles of user-payer, polluter pays, precaution, prevention, and repair. The user-payer principle, which contains the polluter-pays principle, considers the use of natural resources for payment, either because of their scarcity, because it causes pollution or because of the need to prevent catastrophes, so that the user is who will bear the costs of the use. The second principle, however, requires the polluter to pay for the pollution that has been caused or that could be caused by it (MACHADO, 2013, p. 94).

The precautionary principle is invoked when scientific information on the generation of damage to the environment by an activity is not conclusive. Through it, hypotheses are raised about potential environmental risks (MILARÉ, 2009, p. 824). This principle is set forth in the 1992 Rio Declaration on Environment and Development (UNITED NATIONS ORGANIZATION, 1992). On the other hand, the principle of prevention is invoked when the danger or damage to the environment is certain, which may mean that the competent authority denies the environmental license for carrying out the activity (MILARÉ, 2009, p. 823).

Under the principle of reparation, he who damages the environment is obliged to repair it. According to the Federal Constitution of 1988 and the Brazilian legislation, this responsibility is objective, that is, it does not depend on the fault of the perpetrator (MACHADO, 2013, p. 124-125). This provision is expressed in Federal Law 6. 938/1981, art. 14, paragraph 1, in which the polluter is obliged to indemnify or repair damages caused to the environment or to third parties arising from their activity (BRASIL, 1981).

The environment has been an international concern since 1972, with the Stockholm Conference, in which guidelines were established for the relationship between human beings and the environment, so that the maintenance of this second entity is established as a precondition for the well- being of the former and for the enjoyment of fundamental human rights, including life itself (STOCKHOLM DECLARATION ON THE HUMAN ENVIRONMENT, 1972).

Historically, protection of the environment has been associated with the need to promote the quality of life of individuals, but today it is elevated to the level of law *per se*, having its own legal value and autonomy

in relation to other assets protected by the constitutional and legal norms (MILARÉ, 2009, p. 144).

Also at the international level, the United Nations Conference on Environment and Development, also known as ECO-92 or Rio-92, defined Agenda 21, a programmatic and consensual document that targets to be implemented by the acceding countries, with an emphasis on sustainable development. Among the objectives of this booklet is the eradication of poverty, the protection of human health and the promotion of sustainable human settlements, which must be achieved through the promotion of environmental awareness and the strengthening of institutions for sustainable development. The provisions of Agenda 21 were reinforced and redrafted at the World Summit on Sustainable Development in the South African city of Johannesburg in 2002, also called Rio+20 (MILARÉ, 2009, p. 90-95).

When talking about sustainability, it is necessary to understand it as a constitutional-synthesis principle, since it is not a vague standard, since it proposes the universalization of the conditions and factors that bring the quality of life, considering, even more, the right to the future. Sustainability has multiple dimensions: social, ethical, legal-political, economic and environmental, which must be perfectly linked because if one is corrupted, it can cause harm to the other (FREITAS, 2012, p. 41-74). However, sustainable development conceives of sustainability as qualifying or characterizing development, antagonistic elements, but which must coexist in order not to invalidate the protection of the environment or the economic aspects (MACHADO, 2013, p. 73-74).

In the Brazilian legal scope, we can highlight Federal Law No. 6. 938/1981, which deals with the National Environmental Policy, whose art. 3, the item I, defines the environment as "the set of conditions, laws, influences, and interactions of a physical, chemical and biological order that allows, shelters and governs life in all its forms ". In addition, the need to reconcile economic and social development with the preservation of the quality of the environment and ecological balance is highlighted, according to art. 4, item I (BRASIL, 1981). Resolution No. 306/2002 of the National Environmental Council (CONAMA) considers other interactions in this set, which includes those of a social, cultural and urban nature, as stated in Annex I, item XII (BRAZIL, 2002).

The aforementioned definitions are comprehensive and open space for the environment to be seen in several ways, with emphasis on the

natural, artificial, cultural and work environment.

The natural environment can be deduced from the Federal Constitution of 1988, the obligation of the Public Power to provide the ecological management of species and ecosystems, preserve the diversity and integrity of the country's genetic heritage and protect fauna and flora, as of the wording on art. 225, §1, items I, II and VII (BRAZIL, 1988). The idea of this aspect of the environment focuses on items that were not produced by the human being, being itself an element of this environment.

The artificial environment considers the human factors and actions that modify and reorganize the natural space. The most obvious example is the construction of cities, creating urban areas, with their facilities to meet the needs of the people. It can be deduced from art. 182 of the 1988 Federal Constitution which considers Urban Policy in its art. 182, considering the Master Plan, the social function of urban property and the expropriation of urban properties, as well as Federal Law No. 6. 766/1979, which provides for the urban land parceling (BRASIL, 1979). Urban policy has as its main fields of action the location of public equipment and the regulation of civil construction and aims to conform the demands for space (PINTO, 2005, p. 45-46). One form of occupation of space by man is through industrialization, which leads to the organization of this activity and the places where the industries can be located, considering socio-environmental aspects. Regarding this, the best example in Brazilian legislation is Federal Law 6. 803/1980, which establishes guidelines for industrial zoning in critical areas of pollution (BRASIL, 1980).

As for the cultural environment, it refers to the framework of elements provided in art. 216 of the Federal Constitution of 1988, covering material and immaterial assets, individual or collective, that refer to the identity, action, and memory of distinct groups that form Brazilian society, such as the forms of expression; the ways of creating, doing and living; scientific, artistic and technological creations; the works, objects, documents, buildings and spaces destined to artistic and cultural manifestations as well as urban complexes and sites with historical, artistic, archeological, paleontological, ecological and scientific value. (BRASIL, 1988). Thus, the aforementioned constitutional provision encompasses the cultural plurality existing throughout the nation, whether tangible or intangible goods, independent of the geographical axis (MILARÉ, 2009, p. 264).

The environment of the work can be deduced from the provision

of art. 7, sections XXII and XXIII, by which urban and rural workers are assured the reduction of the risks inherent in the work activity, through the intermediary of health, hygiene and safety standards, and the provision of additional compensation for unhealthy or dangerous activities. However, this segment of the environment is expressed in art. 200, subsection VIII, which defines the competence of the Unified Health System (SUS) to collaborate with the protection of the environment, including work environment (BRASIL, 1988). With that in mind, it is inferred that the work environment is one in which the workers carry out the work, which implies guaranteeing adequate conditions of safety and hygiene for them.

Returning to the list of laws for environmental protection, it can be pointed out that Federal Law No. 9. 433/1997 represents an important legal framework when establishing the National Water Resources Policy because, given the importance and limitation of water, it is necessary to establish guidelines for the rational and sustainable use of this good (BRASIL, 1997b).

Another important legal instrument in the protection of the environment is Federal Law No. 9605/1998, which establishes administrative and penal sanctions for causing damage to the environment. An important point of this norm is the provision of criminal liability to legal entities, in addition to civil and administrative responsibilities (BRASIL, 1998).

Federal Law No. 12. 651/2012, which repealed Federal Law No. 4. 771/1965 (Forest Code), should also be considered. The most recent Law establishes sustainable development as its objective, based on some principles such as Brazil's sovereign commitment to preserving its forests, strategic role of agricultural activity and promotion of scientific and technological research in the search for innovation for the sustainable use of soil and water (BRAZIL, 2012).

Considering this information, it is verified that Brazil has a wide set of laws to protect the environment in all its aspects, backed by the Federal Constitution of 1988, but in the face of the continued degradation of this good by the most diverse human activities, such as mining, the effectiveness of these laws is sought to ensure the maintenance of natural resources and the quality of life of individuals.

2 THE INTERSECTION BETWEEN MINERAL PRODUCTION AND THE ENVIRONMENT IN BRAZIL

By the Federal Constitution of 1988, the mineral resources, including those of the subsoil, are assets of the Union, according to art. 20, IX. Already in art. 225, §2, an obligation is established for all those who exploit mineral resources to recover the degraded environment. In the same normative document, the defense of the environment is instituted as a principle of the economic order (BRASIL, 1988). It is a taxing principle which, in addition to having an objective in itself, is seen as an instrument to ensure a dignified existence for all, which is the objective of this constitutional economic order (GRAU, 2014, p. 250-251).

Among the generic characteristics of mining, we can highlight: the immobility of the deposit; the deposit is unitary; the need for large economic investments to carry out all production, from research to repair of the degraded area; the long period of time required for mineral extraction; the significant environmental degradation and the appropriation of a nonrenewable environmental resource (REMÉDIO JÚNIOR, 2013, p. 16). This penultimate characteristic is a source of concern for environmentalists, public authorities, non-governmental organizations and society in general, because without doubt, it is one of the most harmful economic activities for the environment (MILARÉ, 2009, p. 178).

The regulation of mining activity in Brazil has as its main legal framework Decree-Law No. 207/1967, the Mining Code; Decree-Law no. 7. 841/1945, the Mineral Water Code and Federal Law No. 7. 805/1989. In addition, there is Bill 5. 807/2013, which if approved, will establish a new legal framework for the country's mineral extraction.

Decree-Law no. 207/1967 regulates all stages concerning mineral extractive activities, namely: the use of mineral substances, types of mines, mineral research, penalties and nullities applicable in case of non-compliance with determinations and failure to comply with obligations arising from research authorizations, mining permits, mining concessions and licensing (BRASIL, 1967).

In turn, Decree-Law No. 7. 841/1945 has the scope to define and regulate the production of mineral waters in the country. At first, this type of water differs from the others because it has other chemical composition or physical or chemical-physical properties that give it a medicinal action (BRASIL, 1945).

Already in 1989, the approval of Federal Law No. 7. 805 brought changes to the Mining Code, especially with regard to the regimes for the use of mineral substances, establishing the permitting regime for mining and extinguishing the registration regime. According to this norm, one of the obligations of the mining exploration permit holder is to reconcile the mining activities with the protection of the environment, according to art. 9th, subsection VI (BRASIL, 1989). By the Mining Code, art. 2, the regimes for the use of mineral substances are concession, authorization, licensing, permission for mining and monopolization (BRASIL, 1967).

In the context of the country's mineral extractive regulation, the acting of the National Department of Mineral Production (DNPM), an agency linked to the Ministry of Mines and Energy, was highlighted. It was created by means of Decree No. 23. 979/1934, but DNPM was only established as a local authority by means of Federal Law 8. 876/1994, granting it legal personality under public law, property, administrative and financial autonomy and leaving it linked to the MME, in addition to providing them with the competencies that, among other things, are worthy of planning and fostering research involving the exploration and production of ores in Brazil (BRASIL, 1994). However, the edition of Provisional Measure 791/2017 revoked Law 8. 876/1994 and created the National Mining Agency (ANM) and extinguished the DNPM, transferring the attributions of this to the one, which is subject to a special autarchic regime (BRASIL, 2017).

Considering the intersection between mineral extraction and environmental protection, it should be noted the Interministerial Ordinance No. 917/1982 (of the Ministry of Mines and Energy, Ministry of the Interior and Ministry of Industry and Commerce), which regulates over procedures to be adopted by coal mining companies. This normative act demonstrated an advance in environmental protection, following the trend of Law 6. 938/1981, which instituted the National Environmental Policy, which has as one of its objectives the compatibility of economic-social development with preserving the quality of the environment and the ecological balance, as stated in art. 4, item I, of the said legal norm (BRASIL, 1981).

Federal Law No. 11. 685/2008 established the Garimpeiro Statute, defining what this professional is, in addition to its participation in entities. This legal enunciation can be considered a form of protection to the environment of the work, since it dictates rights and duties for that category. As an example, art. 12, item III, stipulates that it is the duty of the

miner, the mining cooperative and the person who has signed a Partnership Contract with miners to comply with the current legislation regarding health and safety at work. Regarding environmental issues, it is the duty of these same entities to recover areas degraded by their activities, according to art. 12, subsection I. Also in this sphere, the Ministry of Mines and Energy is responsible for the elaboration of public policies to promote sustainable development in the mining activity, according to art. 10(BRAZIL, 2003)

According to mining legal doctrine, this area of law is also governed by principles. One can emphasize a general principle, which is that of the supremacy of the public interest over the private, over which:

> First, it emphasizes that the supremacy of the public interest over the private concerns the primary public interest, not the secondary one. The primary interest, as the doctrine teaches, is the State in favor of society, the satisfaction of collective needs, such as the satisfaction of fundamental rights be they first, second or third dimension. The secondary public interest, however, is that established in the rights and obligations of the State, that is, the State as an end in itself. From these classifications, the secondary public interest does not deserve a privileged position in the interests of the individual, as opposed to the primary public interest, which, on the contrary, deserves and enjoys a prominent position of supremacy in the face of private interests (FEIGELSON, 2012, p. 76).

A specific principle of mining law to be considered is the socio-environmental function of mining property. Many modern constitutions do not give the property an absolute value, encountering limitations, such as that verified by art. 5, XXIII, of the Federal Constitution of 1988, when establishing that the property must fulfill its social function. Furthermore, mining activity cannot be carried out without environmental sustainability, considering local communities, impacts on municipalities and the private interest of the mineral producer (FEIGELSON, 2012, p. 84-87). The constitutional economic order itself has as one of its principles the social function of property (BRASIL, 1988). There is still in the doctrine the mention of the Principle of eco-efficient mining:

> The fact that mineral resources are essential, rare, of deformed distribution in nature and whose utilization often causes deep

> environmental degradation, by its very nature, requires a different look for the mineral enterprise. [...] If, on the one hand, the miner must be very attentive to the principles of Environmental Law, not procrastinating to carry out measures of prevention and environmental recovery, on the other hand it must be considered that the modification of the environmental *status quo* in mining is a necessity. Therefore, the development of a mining enterprise cannot be impeded simply because it causes environmental degradation if the environmental licensing was regularly carried out with the approval of the environmental recovery projects. Eco-efficient mining, in the constitutional molds, is one that, although it changes the environment, is capable, in economic and technical terms, of making sure that the natural conditions are restored to the maximum, preserving its use, in any hypotheses, for the present and future generations (SERRA; ESTEVES, 2012, p. 48-49).

The legislature determined for the property a private utility, which is based on the power to dispose of it. At the same time, the social bonding of property, which gives rise to restrictions, does not have the function of leaving it exclusively to the State or the community (MENDES; BRANCO, 2011, p. 380).

Considering the provision of subsection VI, of art. 170, of the Federal Constitution, 1988, it is possible to offer differentiated treatment for the production of goods and provision of services through their environmental impacts. Already by subsection IV, of art. 225, the Public Authorities may require, according to the law, a previous environmental impact study for the installation of a work or activity potentially causing significant degradation of the environment (BRASIL, 1988). Thus, from a constitutional point of view, there is no prohibition on mining activity, at the same time as the ordinary legislator was charged with establishing ways to prevent environmental damage (ARAÚJO, 2015, p. 120), as well as recovery:

> The Plan for the Recovery of Degraded Areas (PRAD) has emerged for the recovery of undertakings that are destined to the exploitation of mineral resources. This recovery should aim to return the degraded site to a usable form, according to a pre-established plan for the use of the soil, aiming at obtaining the stability of the environment. Of course, this restoration should be as close as possible to reality,

> but in large mining developments, the possibility of repair is basically restricted to vegetation. Our legislation on the PRAD is very scarce, it was regulated by Federal Decree 97. 632/89 and also follows the guidance of some normative instructions (SOARES, 2012, p. 61).

At the legal level, Federal Law No. 6. 938/1981 provides, in its section IV, art. 9, the licensing and review of activities that are effective or potentially polluting. Complementary Law No. 140/2011 defines environmental licensing as an administrative procedure that has the purpose of licensing activities or undertakings that use environmental resources, or that cause or can cause environmental damages (BRAZIL, 2011).

At the infralegal level, CONAMA Resolution No. 237/1997 offers a broader description of environmental licensing in its section I, art. 1, and also defines what is an environmental license (BRASIL, 1997a).

Environmental licensing is done prior to mineral exploration, and afterward, the technical, environmental and economic feasibility of the mine is evaluated, provided that the mineral research report is approved by the competent mineral regulation body. However, even if the report is approved, admitting the technical and economic feasibility of the deposit, the Public Power, whether in the Federal, State or Municipal sphere, can deny the environmental license for the mining of the deposit, considering that it is unfeasible to recover the area degraded (REMÉDIO JÚNIOR, 2013, p. 324-326).

Resolution 9/1990 of CONAMA is the only one of this body that regulates the environmental licensing in the scope of mineral production (REMÉDIO JÚNIOR, 2013, p. 326). Among the determinations of this normative device, it is the obligation of the mining entrepreneur to submit to the state environmental agency or IBAMA the application for environmental licensing, except in the case of a mining permit system (BRASIL, 1990).

Considering the dimension of police power, which represents "the state's activity of limiting the exercise of individual rights in benefit of the public interest" (DI PIETRO, 2014, p. 124), it is present in mining production at the fact that:

> The use of mineral resources is an act of public interest, and its utilization is done through the granting of authorization for research and concession of mining by the Union, which is a concrete and

> specific manifestation of the police power of the Administration. [...] This *double public interest*, regarding the use of mineral resources - promotion of mining activity and protection of the environment - could lead to great conflicts due to the apparent opposition of interests between mineral extraction and environmental preservation if the law did not establish mechanisms to avoid them. Hence the police power as the instrument available to the Administration to protect the public interest in the use of environmental resources (mineral), in a manner compatible with the protection of the environment [...]. (SOUZA, 1995, p. 115-116, emphasis added).

Considering the characteristic of the mining activity of being degrading to the environment, it is understood the need for a meticulous administrative process to be able to operate the mineral enterprise, especially with regard to environmental licensing, thus guaranteeing the preservation of natural resources, and so the activity will respect the environmental principles of prevention and redress and the supremacy of the public interest over the private.

3 THE INTERGENERATIONAL PERSPECTIVE OF ENVIRONMENTAL PROTECTION

The genesis of the term “intergenerational justice” refers to an article published by the economist James Tobin, in which he talks about the obligation of administrators of heritage institutions to act with a view to preserving this patrimony among the generations (TOBIN, 1974, p. 427).

Consider at first the provision of art. 225 of the Federal Constitution of 1988, in which the Public Power and the community have the duty to protect and preserve the environment for present and future generations (BRAZIL, 1988). From this, it is asked where this obligation of the present generations comes to take care of the environment so as not to exhaust the resources for the later ones. Environmental legal doctrine also includes the existence of the principle of intergenerational solidarity, understood not only in the constitutional text but also in the 1972 Stockholm Declaration on the Environment (STOCKHOLM DECLARATION ON THE HUMAN ENVIRONMENT, 1972) Thus, there is a synchronous responsibility, which occurs between present generations, and diachronic, which occurs between different generations (MILARÉ, 2009, pp. 819-820).

The use of certain natural resources is limited in time due to its scarcity, in the case of mineral resources, by the abusive use, or even by the degradation of ecosystems. Developmental policies that seek to use natural resources to meet the needs of present generations may deprive future generations of the use of these same goods (COSTA, 2012, p. 33).

It is not only the Brazilian Constitution of 1988 that addresses intergenerational ecological justice, other constitutions around the world make mention of the preservation of natural resources for future generations, such as Argentina, Czech Republic, Finland, Sweden, Germany, Greece, Italy, Poland and Portugal (TREMMEL, 2006, pp. 193-196). In spite of the prediction of this institute in constitutional and infra-constitutional level in the different nations, it is necessary to understand the legal and philosophical foundations that support it.

The difficulty in establishing the intergenerational conception of justice is present in liberal theories, both classical and modern because they aim at the relations between contemporary generations, that is, synchronic ones. A second problem lies in the fact that liberals have a central inclination to individual interests, which includes the objectives, needs, and motivations that relate to the desires and circumstances present, or the ideas individuals have about what they want to achieve or enjoy during their lives. However, individuals have interests that flee from the present, for the human being contemplates ideas of hopes for their descendants, respect for ancestors, heritage, events involving the history of their nation, and ideas that will flourish in future generations. Liberals consider these interests, but they consider them to a lesser extent, since they can disrupt present and future individuals who want to live free from the impositions of the past, when in fact these interests are essential for the life of individuals and in diachronic relations (THOMPSON, 2009, p. 27).

Moreover, other theorists claim that the rights or duties they entail always conflict and are not mutually compatible in the legal sense, and therefore any notion of rights must be more local and contingent than is generally considered acceptable by advocates as fundamental principles. A second position that makes it difficult to consider intergenerational justice based on environmental human rights resides in the second-class situation to which environmental rights have been relegated by comparing them with other human rights considered “more fundamental” (HISKED, 2009, p. 8).

However, there are theories that try to justify the obligation

of one generation to maintain resources for another. Among them is the theory of indirect reciprocity, which would be a "descending reciprocity, " which is based on two maxims. The maximum justification considers that the current generation has received something from the generation of their parents has, in turn, the duty to transmit something to the generation of their children. With respect to the substantive maxim, the current generation must transmit to the next generation at least the equivalent of what it received from the previous generation. However, this theory is limited and does not cover all the possibilities of a concrete case, if it is not possible to remove an obligation from the initial benefitor and from an obligation for the third beneficiary, the maximum justification presupposes the idea that we have obligations for past generations, that is, for those who have passed away. It is the obligations of previous generations that attribute to current obligations to the next. An example illustrating this situation is the existence of a person with multiple congenital deficiencies, which in theory will offer society less than those who do not share this condition, which is not to say that it has nothing to offer. In situations like this, many may consider that they have no obligation to care for someone with these limitations because that person or another has not given us or will not give us anything, hypothetically (GROSSERIES, 2008, p. 63-64).

Although the Federal Constitution of 1988 is based on liberal principles, including its economic order, which is based on human work and free enterprise (article 170, caput) and has as its principles property private (art. 170, II), and as already stated above, the protection of the environment, including by differential treatment as the environmental impact of products and services and their development and delivery processes (art. 170, VI). Having said this, it is possible to establish a link between such dictates and the classical liberal ideology of the contractualist John Locke, whose clause enunciates the natural right to property by means of labor, by which the *res nullius* becomes property. From an intergenerational perspective, it must be considered that there is a moral obligation for the fruits of the work on something to be left in equal quantity for the other individuals, which for Locke, a priori, would correspond to an intragenerational duty, whose core is applicable to establishing obligations between diachronic generations and involving natural resources (GROSSERIES, 2008, pp. 66-67). As a moral obligation, it is justified in the possibility of being demandable of all and concrete, but it can be said that its essence is positivized in the disposed of by the art. 225, caput, of the Federal Constitution of 1988,

in signing the maintenance of the environment for present and future generations (BRAZIL, 1988).

In addition, Intergenerational Justice is based on principles, highlighted by Christoph Lumer (2006, pp. 39-45):

a) Ethical Hedonism, welfare orientation: this principle determines what brings an intrinsic moral value or moral value in itself (which is independent of its consequences) and which can be considered as a final moral objective. Items such as income, material resources and balanced ecosystems are important, but do not have an end in themselves, since they aim to guarantee well-being. For something to be considered morally relevant it does not necessarily have to be connected to our basic needs.

b) Beneficiary universalism: all human beings should be equal beneficiaries of the morality of a subject. A very formal reason for beneficiary universalism is that it is, in fact, a condition for global and intertemporal cooperation in order to achieve moral goals.

c) Prioritarianism (or priority view): Hedonism determines what has an intrinsic moral value, that is, well-being, while prioritarianism tells how well-being should be evaluated. Changes in the well-being of people in worse situations are always more considered. This is a principle of distributive justice. People in worst situations have priority in this matter. An intuitive argument for prioritarianism is that help should be given where it is most needed. The justification of motivation for this principle lies in the characteristics of the most important source of our moral: sympathy Our sympathy is touched more deeply when it comes to people who are in great need.

d) Principle of limited commitment: moral commitment must reach at least a little beyond socially valid moral duties, which are supported by formal (legally sanctioned) or informal sanctions. This principle requires two things: what is already socially established and moral good norms must be fulfilled, and moral commitment must go at least a little beyond these standards. The idea behind these two claims is to increase long-term moral commitment and to maintain standards through sanctions. The principle of limited commitment can be justified by the fact that it demands the maximum of what can be demanded of rational affairs.

e) Principle of efficiency or economy: moral commitment should be efficient and employed where the ratio of cost per moral benefit is more favorable. The principle of efficiency must determine the use of individual

moral commitment (complying with valid moral standards) as well as the type of new moral standards to be implemented and the improvement of already valid moral standards. According to the idea underlying the principle of limited, socially valid commitment (reinforced by sanctions), morally justified standards serve to place abstract moral principles in concrete terms, to stabilize moral commitment, and to guide it toward efficient deployment. A new norm of generational justice to be implemented that perhaps can be justified with these principles is, for example, the command of a sustainable use of resources, which says in an original version: Each generation will use only as many renewable resources that can be renewed within of a period of use, and the various non-renewable resources may be replaced by other equivalent ones.

Reflecting on intergenerational justice and its intersection with environmental sustainability gives rise to a reconsideration of the development model adopted by many governments and companies around the world, which has sometimes been responsible for the degradation of the environment and caused disasters with human losses and equity. Some advances have occurred in the sense of proposing new models, due to the so-called “environmental revolution”, so that the ethics that underlies solidarity synchronous with the present generations merged with diachronic solidarity with future generations, allowing the formation of an ethical legacy committed to the totality of living beings. In this wake, it is worth emphasizing the conception of the “greening of thought” proposed by the contemporary thinker Edgar Morin, who considers that the time scale of ecology has been going on for centuries and millennia, and for this very reason, human actions need to be observed in terms of the impacts they can cause in different places from where they happened (SACHS, 2002, pp. 49-50).

It is clear that environmental diversities can influence real incomes and the benefits, such as well-being and freedom, that are gained from them. An example of this is the need for heating and clothing of poor people living in cold areas, which is different from those living in warmer regions. Other factors such as pollution and other forms of environmental degradation directly interfere with the issue of income utilization (SEN, 2000, pp. 90-91).

Several factors have intensified the possibility of environmental disasters and their costs. Among them, it is worth noting: a) the modern economic conditions; b) population growth and demographic trends; c)

decisions on land occupation; d) green and built infrastructure, and finally, e) climate change. In relation to the third factor, it is necessary to highlight the irregular occupation of risk areas, which are more vulnerable to catastrophes, such as landslides and floods, situations that are increasingly common in Brazil (CARVALHO, DAMACENA, 2013, pp. 47-50).

As a result, mineral extractivism is a highly degrading activity for the environment, which is often carried out through the irregular occupation of the soil and to the detriment of the equilibrium of ecosystems, such as the rupture of the mineral tailings dam of the company Samarco in the municipality of Mariana, Minas Gerais, which caused human and material losses, problems in the continuity of economic activities carried out in the area and, of course, damages to river and terrestrial ecosystems.

Situations like this bring to the fore the discussion about why the current generation can not leave this burden to future generations. In spite of the difficulty in establishing theoretical bases to justify the existence of intergenerational justice, the expositions of Grosseries with respect to the models and forms of this institute, which allows to understand that in the same way as the present generation did not assume the expense of an environmental disaster and benefited from the benefits of mining, it could not pass on to later generations the expenses of a catastrophe that it itself had provoked and deprive those coming generations of the benefits of a balanced environment, a condition *sine qua non* for well-being, as enunciated by Amartya Sen.

CONCLUSION

Through this work, it is possible to conclude that mining activity is extremely impacting to the environment and knowing that it receives protection from the Federal Constitution of 1988 and from the legislation, which reveals environmental sustainability as a factor to be considered in the execution of any economic activity.

Brazil has a broad legal framework in defense of the environment, but the norms that have such a goal need to be more effective, even when the numerous damages that the mineral industry still provokes in the country, such as in the case of the disaster caused by the disruption of the Samarco mineral waste dam in the municipality of Mariana, Minas Gerais, causing a catastrophe that affected many ecosystems.

Considering the forecast of art. 225 of the Federal Constitution

of 1988, future generations are also entitled to enjoy natural resources and a balanced environment, just as the present generations. It is based on this premise that we sought to integrate the Brazilian legal system with intergenerational justice conceptions to protect the environment from mining practices, as well as to maintain mineral resources, which are nonrenewable, for the subsequent populations.

Despite the difficulties faced by the doctrine to elaborate a theoretical support for intergenerational justice, an idea that does not always fit the liberal theories, since they consider the individuality and for that reason the capacity of the human being to use his work and the resources available to meet their present needs, in addition to the position for which environmental rights were determined, occupying a position of lesser relevance in relation to other rights considered fundamental.

However, even if a Brazilian constitution is considered, being its economic order based on liberal principles, they do not represent in itself an obstacle to the implementation of intergenerational environmental justice, when economic activities are considered in a scenario of sustainable development. This is because the Constitution itself positivizes this moral obligation among diachronic generations, setting itself as an example for the reconciliation between intergenerational justice and principles of classical liberalism when giving priority to human labor as a creator of property and maintainer of resources.

However, it is necessary to consider that intergenerational justice gains legitimacy when one thinks of the benefits that the present generations received from the previous ones, which would imply to say that this generates a duty of continuity so that these benefits are passed on, using a morality that transcends socially valid moral duties.

From this conception, it can be seen that the positivation of intergenerational justice opens space for the environmental protection to be strengthened, considering that it is also not appropriate for future generations to bear the costs of environmental damage caused by the current generations.

REFERENCES

ANTUNES, Paulo de Bessa. *Direito ambiental*. 9 ed. Rio de Janeiro: Lumen Juris, 2006.

ARAÚJO, Flavia Möller David. *O licenciamento ambiental no direito minerário*. São Paulo: Verbatim, 2015.

BONAVIDES, Paulo. *Curso de direito constitucional*. 21 ed. São Paulo: Malheiros, 2007.

BRASIL. Conselho Nacional do Meio Ambiente (CONAMA). *Resolução nº 9, de 6 de Dezembro de 1990*. Dispõe sobre normas específicas para o licenciamento ambiental de extração mineral, classes I, III a IX. Disponível em: < http://www.mma.gov.br/port/conama/legiabre.cfm?codlegi=106>. Acesso em: 15 out. 2016.

BRASIL. Conselho Nacional do Meio Ambiente (CONAMA). *Resolução nº 237, de 19 de Dezembro de 1997*. Dispõe sobre a revisão e complementação dos procedimentos e critérios utilizados para o licenciamento ambiental. Disponível em: < http://www.mma.gov.br/port/conama/legiabre.cfm?codlegi=237>. Acesso em: 15 out. 2016.

BRASIL. Conselho Nacional do Meio Ambiente (CONAMA). *Resolução nº 306, de 5 de Julho de 2002*. Estabelece os requisitos mínimos e o termo de referência para realização de auditorias ambientais. Disponível em: < http://portal2.tcu.gov.br/portal/pls/portal/docs/2058742.PDF>. Acesso em: 01 out. 2016.

BRASIL. *Constituição da República Federativa do Brasil*. Brasília: DOU, 1988. Disponível em: <http://www.planalto.gov.br/ccivil_03/constituicao/constituicaocompilado.htm>. Acesso em: 15 out. 2016.

BRASIL. *Decreto-Lei nº 207, de 28 de Fevereiro de 1967*. Dá nova redação ao Decreto-lei nº 1.985, de 29 de janeiro de 1940. (Código de Minas). Brasília: DOU, 1967. Disponível em: < http://www.planalto.gov.br/ccivil_03/decreto-lei/Del0227.htm>. Acesso em: 15 out. 2016.

BRASIL. *Decreto-Lei nº 7.841, de 8 de Agosto de 1945*. Código de Águas Minerais. Rio de Janeiro: DOU, 1945. Disponível em: <http://www.planalto.gov.br/ccivil_03/decreto-lei/1937-1946/Del7841.htm>. Acesso em: 15 out. 2016.

BRASIL. *Lei Complementar nº 140, de 8 de Dezembro de 2011*. Fixa normas, nos termos dos incisos III, VI e VII do **caput** e do parágrafo único do art. 23 da Constituição Federal, para a cooperação entre a União, os Estados, o Distrito Federal e os Municípios nas ações administrativas decorrentes do exercício da competência comum relativas à proteção das paisagens naturais notáveis, à proteção do meio ambiente, ao combate à poluição em qualquer de suas formas e à preservação das florestas, da fauna e da flora; e altera a Lei nº 6.938, de 31 de agosto de 1981. Brasília: DOU, 2011. Disponível em: < http://www.planalto.gov.br/ccivil_03/leis/LCP/Lcp140.htm>. Acesso em: 16 out. 2016.

BRASIL. *Lei Federal nº 6.766, de 19 de Dezembro de 1979*. Dispõe sobre o Parcelamento do Solo Urbano e dá outras Providências. Brasília: DOU, 1979. Disponível em: < http://www.planalto.gov.br/ccivil_03/leis/L6766.htm>. Acesso em: 16 out. 2016.

BRASIL. *Lei Federal nº 6.803, de 2 de Julho de 1980*. Dispõe sobre as diretrizes básicas para o zoneamento industrial nas áreas críticas de poluição, e dá outras providências. Brasília: DOU, 1980. Disponível em: <http://www.planalto.gov.br/ccivil_03/leis/L6803.htm>. Acesso em: 14 out. 2016.

BRASIL. *Lei Federal nº 6.938, de 31 de Agosto de 1981*. Dispõe sobre a Política Nacional do Meio Ambiente, seus fins e mecanismos de formulação e aplicação, e dá outras providências. Brasília: DOU, 1981. Disponível em: < http://www.planalto.gov.br/ccivil_03/leis/L6938.htm>. Acesso em: 14 out. 2016.

BRASIL. *Lei Federal nº 7.805, de 18 de Julho de 1989*. Altera o Decreto-Lei nº 227, de 28 de fevereiro de 1967, cria o regime de permissão de lavra garimpeira, extingue o regime de matrícula, e dá outras providências. Brasília: DOU, 1989. Disponível em: < http://www.planalto.gov.br/ccivil_03/leis/L7805.htm>. Acesso em: 16 out. 2016.

BRASIL. *Lei Federal nº 8.876, de 2 de Maio de 1994*. Autoriza o Poder Executivo a instituir como Autarquia o Departamento Nacional de Produção Mineral (DNPM), e dá outras providências. Brasília: DOU, 1994. Disponível em: < http://www.planalto.gov.br/ccivil_03/leis/L8876.htm>. Acesso em: 16 out. 2016.

BRASIL. *Lei Federal nº 9.433, de 8 de Janeiro de 1997*. Institui a Política Nacional de Recursos Hídricos, cria o Sistema Nacional de Gerenciamento de Recursos Hídricos, regulamenta o inciso XIX do art. 21 da Constituição Federal, e altera o art. 1º da Lei nº 8.001, de 13 de março de 1990, que modificou a Lei nº 7.990, de 28 de dezembro de 1989. Brasília: DOU, 1997. Disponível em: <http://www.planalto.gov.br/ccivil_03/leis/L9433.htm>. Acesso em: 16 out. 2016.

BRASIL. *Lei Federal nº 9.605, de 12 de Fevereiro de 1998*. Dispõe sobre as sanções penais e administrativas derivadas de condutas e atividades lesivas ao meio ambiente, e dá outras providências. Brasília: DOU, 1998. Disponível em: < http://www.planalto.gov.br/ccivil_03/leis/L9605.htm>. Acesso em: 14 out. 2016.

BRASIL. *Lei Federal nº 11.685, de 2 de Junho de 2008*. Institui o Estatuto do Garimpeiro e dá outras providências. Brasília: DOU, 2008. Disponível em: < http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2008/lei/l11685.htm>. Acesso em: 16 out. 2016.

BRASIL. *Lei Federal nº 12.651, de 25 de Maio de 2012*. Dispõe sobre a proteção da vegetação nativa; altera as Leis nºs 6.938, de 31 de agosto de 1981, 9.393, de 19 de dezembro de 1996, e 11.428, de 22 de dezembro de 2006; revoga as Leis nºs 4.771, de 15 de setembro de 1965, e 7.754, de 14 de abril de 1989, e a Medida Provisória nº 2.166-67, de 24 de agosto de 2001; e dá outras providências. Brasília: DOU, 2012. Disponível em: < http://www.planalto.gov.br/ccivil_03/_ato2011-2014/2012/lei/l12651.htm>. Acesso em: 14 out. 2016.

BRASIL. *Medida Provisória nº 791, de 25 de Julho de 2017*. Cria a Agência Nacional de Mineração e extingue o Departamento Nacional de Produção Mineral. Brasília: DOU, 2017. Disponível em: <http://www.planalto.gov.

br/ccivil_03/_Ato2015-2018/2017/Mpv/mpv791.htm#art36>. Acesso em: 11 nov. 2017.

BRASIL. Ministério das Minas e Energia, Ministério do Interior e Ministério da Indústria e do Comércio. *Portaria Interministerial nº 917, de 6 de Julho de 1982*. Disponível em: <http://www.ipef.br/legislacao/bdlegislacao/detalhes.asp?Id=5176>. Acesso em: 29 jun. 2016.

CARVALHO, Délton Winter de; DAMACENA, Fernanda Dalla Libera. *Direito dos desastres*. Porto Alegre: Livraria do Advogado, 2013.

COSTA, Hirdan Katarina de Medeiros. *O princípio da justiça intra e intergeracional como elemento na destinação das rendas de hidrocarbonetos:* temática energética crítica na análise institucional brasileira. 2012. 342 f. Tese (Doutorado – Programa de Pós-Graduação em Energia) – EP/FEA/IEE/IF da USP. Universidade de São Paulo, São Paulo, 2012.

DECLARAÇÃO DE ESTOCOLMO SOBRE O AMBIENTE HUMANO – 1972. Disponível em: <http://www.direitoshumanos.usp.br/index.php/Meio-Ambiente/declaracao-de-estocolmo-sobre-o-ambiente-humano.html>. Acesso em: 11 set. 2016.

DI PIETRO, Maria Sylvia Zanella. *Direito administrativo*. 27 ed. São Paulo: Atlas, 2014.

FEIGELSON, Bruno. *Curso de direito minerário*. São Paulo: Saraiva, 2012.

FREITAS, Juarez. *Sustentabilidade:* direito ao futuro. 2 ed. Belo Horizonte: Fórum, 2012.

GRAU, Eros Roberto. *A ordem econômica na Constituição de 1988*. 16 ed. São Paulo: Malheiros, 2014.

GROSSERIES, Axel. Theories of intergenerational justice: a synopsis. *S.A.P.I.EN.S*, v. 1, n. 1, p. 61-71, 15 may 2008. Disponível em: <http://sapiens.revues.org/165>. Acesso em: 30 jun. 2017.

HISKED, Richard P. *The human right to a green future:* environmental rights and intergenerational justice. New York: Cambridge University Press, 2009.

LUMER, Christoph. Principles of generational justice. In: TREMMEL, Joerg Chet (Edit.). *Handbook of intergenerational justice*. Northampton, MA, USA: Edward Elgar, 2006, p. 39-52.

MACHADO, Paulo Affonso Leme. *Direito ambiental brasileiro*. 21 ed. São Paulo: Malheiros, 2013.

MENDES, Gilmar Ferreira; BRANCO, Paulo Gustavo Gonet. *Curso de direito constitucional*. 6 ed. São Paulo: Saraiva, 2011.

MILARÉ, Édis. *Direito do ambiente*. 6 ed. São Paulo: Revista dos Tribunais, 2009.

ORGANIZAÇÃO DAS NAÇÕES UNIDAS. *Declaração do Rio sobre o meio ambiente e desenvolvimento*. Disponível em: < http://www.onu.org.br/rio20/img/2012/01/rio92.pdf>. Acesso em: 02 out. 2016.

PINTO, Victor Carvalho. *Direito urbanístico:* plano diretor e direito de propriedade. São Paulo: Revista dos Tribunais, 2005.

REMÉDIO JÚNIOR, José Ângelo. *Direito ambiental minerário*. Rio de Janeiro: Lumen Juris, 2013.

SACHS, Ignacy. *Caminhos para o desenvolvimento sustentável*. Rio de Janeiro: Garamond, 2002.

SEN, Amartya. *Desenvolvimento como liberdade*. São Paulo: Companhia das Letras, 2000.

SERRA, Silvia Helena; ESTEVES, Cristina Campos. *Mineração:* doutrina, jurisprudência, legislação e regulação setorial. São Paulo: Saraiva, 2012. (Coleção Direito Econômico – Coordenada por Fernando Herren Aguillar).

SOARES, Cristiana Nepomuceno de Sousa. Plano de recuperação de áreas

degradadas (PRAD). In: FERRARA, Marina et al (Orgs.). *Estudos de direito minerário*. Belo Horizonte: Fórum, 2012, p. 51-64. v. 1.

SOUZA, Marcelo Gomes de. *Direito minerário e meio ambiente*. Belo Horizonte: Del Rey, 1995.

THOMPSON, Janna. Identity and Obligation in a Transgenerational Polity. In: GROSSERIES, Axel; H. Meyer, Lukas (Orgs.). *Intergenerational justice*. New York: Oxford University Press, 2009, p. 25-49.

TOBIN, James. What is permanent endowment income? *The American Economic Review*, v. 64, n. 2, p. 427-432, may 1974.

TREMMEL, Joerg Chet. Establishing intergenerational justice in national constitutions. In: TREMMEL, Joerg Chet (Edit.). *Handbook of intergenerational justice*. Northampton, MA, USA: Edward Elgar, 2006, p. 187-214.