Revista ARACÊ
ISSN: 2358-2472

CONTEMPORARY ENVIRONMENTAL SUSTAINABILITY: LEGAL RESPONSIBILITIES FOR FIRES IN AGROPASTORAL AREAS[1]

https://doi.org/10.56238/arev7n4-086

Submitted on: 03/09/2025 **Publication date:** 04/09/2025

Roberto Moita Pierot[2], Clara Rodrigues de Brito[3] and Sandro Marcos Godoy[4]

ABSTRACT

This article examines the relationships between environmental sustainability and the legal responsibilities associated with fires in agropastoral areas in Brazil, focusing on the impacts on public health and the application of environmental law. The research focuses on the analysis of current legislation, identifying regulatory gaps and failures in the application of public policies, especially with regard to the allocation of resources from environmental compensation. The methodology used combines the deductive method based on bibliographic and documentary research with critical analysis of judicial decisions and epidemiological data, in an interdisciplinary perspective on the subject. The results point to the need to revise environmental legislation to explicitly include the allocation of financial resources from environmental compensation for the treatment of respiratory diseases, which have a proven correlation with fires in agropastoral activities, such as sugarcane cultivation and agriculture. In addition, the article highlights the inadequate application of subjective civil liability to the detriment of the theory of risk and strict liability, which compromises the effectiveness of sanctions and the protection of diffuse rights. It is concluded that the updating of legislation and the application of the principles of environmental law in the judicial sphere are necessary measures to reduce damage to public health and the effectiveness of environmental justice.

Keywords: Agropastoral areas. Environmental compensation. Damage to public health. Burned. Sustainability. Risk theory.

[1] Article originally presented at the XXXI NATIONAL CONGRESS OF CONPEDI, WG: Law and Sustainability II, published in the annals of the Law and Sustainability II working group, p. 142 -162. Revised for this publication.

[2]Master's student in Law at the University of Marília – UNIMAR; Graduated in Law from the Unified Teaching Center of Teresina – CEUT; Specialist in Civil and Business Law; Specialist in Health Law; MBA in Public Management.

[3]Dr. in Law – Economic Enterprises, Development and Social Change – from the University of Marília – UNIMAR; Master's Degree in Law – Economic Enterprises, Development and Social Change – from the University of Marília – UNIMAR; Master's student in Legal and Political Sciences at the Portucalense University Infante D. Henrique – (credits completed); Coordinator and Professor of the Lato Sensu Graduate Center at SVT College. Email: clarardebritoadv@gmail.com

[4]Post-doctorate in Law from the Università degli Studi di Messina, Italy, Dr. in Law - Social Function of Law from FADISP - Autonomous Faculty of Law, Master in Law - Theory of Law and the State from UNI-VEM - Euripides University Center of Marília, Graduated in Law from the Toledo Teaching Institution of Presidente Prudente, Specialization in Civil and Civil Procedural Law from the Toledo Teaching Institution of Presidente Prudente. Permanent professor of the Doctorate and Master's Program and undergraduate at UNIMAR – University of Marília-SP, professor at Toledo Prudente University Center. Lawyer at the Basic Sanitation Company of the State of São Paulo – SABESP. Resident in Presidente Prudente-SP, Brazil.
Email: sandromgodoy@uol.com.br

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INTRODUCTION

It is initially considered that in the contemporary contextualization, the intimate relationship established between Economic Law and Environmental Sustainability has been revealed as a mandatory theme in the field of sustainable development of societies. Over the years, there has been a clear global awareness of the finiteness of natural resources and the adverse impacts of anthropogenic activities on the planetary ecosystem, in order to drive a revisitation of traditional economic paradigms.

It is exactly in this aspect that Economic Law emerges as a strong legal figure with great relevance for the implementation of the necessary balance between human development and environmental preservation. In view of this relevant premise, the problem question of this article arises, which consists of observing how the possible normative gaps, as well as failures in public policies aimed at environmental protection in relation to fires in Brazil, reflect on the guarantee of the realization of the fundamental right to health.

This time, it is analyzed, from the perspective of Law, the main measures of protection to the environment, especially the control and prevention of fires, provided for in the Brazilian legal system, in order to understand how public policies and current legal regulations contribute to the promotion of environmental sustainability and to the achievement of the human right to an ecologically balanced environment and without aggression to human health.

As specific objectives, it is highlighted that the present study focuses its discussions on points such as identifying and describing the main environmental protection measures established in the Brazilian legal system; to evaluate the impact of public policies aimed at environmental sustainability in promoting sustainable consumption and encouraging waste and soil management without the use of fire, and finally, to investigate the impacts of environmental protection policies on public health in Brazil.

It can be inferred from the analysis of the constituent norm that the principle of sustainability, inscribed in the Federal Constitution of 1988 in its article 225, is embodied as a guiding element of public policies and contemporary economic relations. From its interpretation, it is concluded that this principle demands a reconfiguration of economic models, with attention to the search for sustainable production and consumption practices.

In this vein, measures to protect the environment then gain prominence in the legal system, alluding to a normative structure aimed at the preservation of natural resources and the reduction of environmental and social impacts.

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In a legal premise, it is known that Economic Law, as a regulatory discipline of economic activities, starts to have an important function in the conformation of public policies aimed at the sustainability and quality of life of individuals. Therefore, through this economic analysis of the law, it is possible to evaluate the legal instruments related to environmental protection measures, as well as to evaluate the normative effect of environmental protection policies on public health in Brazil.

This article proposes to carry out a critical and interdisciplinary analysis of the Brazilian legal system from the perspective of Economic Law, of the main measures of environmental protection foreseen, especially with regard to the consequences of fires for the health of the population. It is intended, therefore, to elucidate how public policies and current legal regulations contribute to the promotion of health in line with environmental sustainability, to the achievement of the human right to an ecologically balanced environment.

In addition, it will seek to identify the elements of impacts for the consolidation of a sustainable economic-legal model, capable of reconciling socioeconomic development with the preservation of health, in line with the principle of sustainability.

Finally, it is well highlighted that in order to achieve the proposed objectives, a qualitative and quantitative methodological approach will be adopted, initially using bibliographic and documentary research for review and critical analysis of the theoretical framework related to Economic Law, Environmental Sustainability, waste treatment, soil management and collective health.

Subsequently, an analysis will be conducted, using statistical data and collective health indicators in Brazil, to assess the impacts of environmental protection policies on the health of the population.

CONCEPTUAL ASPECTS AND INTERPRETATIONS OF SUSTAINABILITY, SUSTAINABLE DEVELOPMENT AND THE RIGHT TO HEALTH

The epistemological approach to the concepts of sustainability and sustainable development dispenses with a critical analysis of the theoretical bases and philosophical foundations that guide these constructs, as well as a reflection on the paradigmatic transformations that have occurred in the understanding of the environment and the relationship between society and nature.

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Historically, the concept of sustainability has its roots in ecology, having been popularized in the 1970s, with the growth of environmental concerns and the emergence of the environmental movement. Since then, the concept has undergone a series of transformations and expansions, incorporating social, economic, and cultural dimensions, and becoming a guiding principle of public policies and development strategies on a global scale. In a more direct way, sustainability is a capacity for resistance or adaptation relative to a human system or not, whether by internal or external changes (Satori; Latronic; Campos, 2014)

Epistemologically, sustainability can be understood as an interdisciplinary knowledge system that seeks to understand the relationships between social, economic, and environmental systems, and to develop strategies and practices that promote harmony and balance between these systems. Undoubtedly, one must consider the fact that the conceptual essence of sustainability is necessarily dynamic and evolutionary, based on the interaction and integration of knowledge from the natural, social and human sciences (Sartori, 2014).

Sustainable development, in turn, provides for an evolution and expansion of the concept of sustainability, incorporating the dimension of economic development and the need to reconcile economic growth with environmental protection and social justice. Epistemologically, it is clear that sustainable development orbits knowledge and aims at the reorientation of practices and development models. In the same sense, one of the most used concepts is that sustainable development is concerns and actions that seek the satisfaction of present generations, without compromising the natural resources to be used by future generations (Faustino; Amador, 2016).

Now, the epistemology of the concepts of sustainability and sustainable development is part of a critical analysis of the theoretical and methodological bases that underlie these constructs, as well as of the values, principles, and worldviews that guide the different approaches and interpretations of these concepts (Faustino; Amador, 2016).

In elucidative continuity, it is added that environmental sustainability, in its most specific sense, refers to the ability to maintain the ecological conditions of the planet, so that present and future generations can enjoy natural resources without compromising their availability for subsequent generations. It is a concept linked to the environment, identified as a precautionary principle and the need to promote harmony between human activities and terrestrial ecosystems.

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The term "sustainable development", which had its essence idealized at the Stockholm Conference, in turn, was popularized by the Brundtland Report, released in 1987 by the United Nations World Commission on Environment and Development, and is commonly understood as a development model that meets the needs of present generations without compromising the capacity of future generations. In this way, it is observed that sustainable development is much more than mere environmental conservation, also encompassing the economic, social and cultural dimensions.

In this sense, Godoy and Maciel adduce that:

> The Federal Constitution of 1988 places development as something desired by the Federative Republic of Brazil with great vehemence, given that already in the preamble of the constitutional text it states that the Brazilian State is established from this Charter and is committed, among other purposes, to ensuring the development of Brazilian society (2021, p. 06).

It is imperative to highlight that the Federal Constitution of 1988 The right to an ecologically balanced environment was clearly recognized as a fundamental right of the third generation, imposing on the State and society the responsibility to preserve it for current and future generations. This recognition demonstrates the evolution of legal and social awareness about the need to implement sustainable practices in the management of natural resources and in the performance of economic activities.

In line with all the above, Economic Law has great relevance for the effectiveness of environmental sustainability, since it can (and should) be used as a tool for regulating economic activities and guiding the implementation of public policies aimed at the protection and preservation of the environment. Therefore, through the economic analysis of the law, it is possible to evaluate the efficiency of environmental protection measures, considering the costs and benefits associated with the adoption of sustainable practices and the use of renewable energies and guarantees of population health (Fonseca, 2015).

In fact, the internalization in human consciousness about sustainable consumption and the transition to a low-carbon economy are such premises - guarantors of the future - that require an urgent review of traditional economic paradigms and the adoption of new models of production and consumption. It is noteworthy that environmental protection policies and incentives for the use of clean and renewable energies have been shown to be necessary for sustainable development and to reduce the adverse impacts of human activities on the environment (Sachs, 2017).

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As an example of this, the fires carried out as part of a production chain stand out, but which undoubtedly have their harmful effects as part of a production, even if necessary. In this sense, he highlights:

> Soil degradation and burning of forests for agricultural use and deforestation are some of the consequences of agriculture, which is largely based on grain production. It is noted that 80% of deforestation is for agricultural purposes (Crippa et al. 2021) and 70% of water use is exploited in regions of high agricultural production (De Souza Pereira, 2023).

Furthermore, it is worth highlighting the close relationship between environmental protection policies and public health. It is clear that environmental degradation, exposure to pollutants and toxic substances have direct consequences on the health of the population, contributing to the emergence and worsening of respiratory and cardiovascular diseases and various types of cancer. In this context, it is necessary to think about the promotion of efficient environmental protection policies in line with a probable transition to a sustainable economy as key to promoting public health and improving the quality of life of the Brazilian population (Macedo, 2024).

In this context, it is worth adding some considerations about the right to health in Brazil, highlighting the fact that the conquest, as well as the consolidation of the right to health in Brazil, took place through a process closely linked to the historical and legal evolution of the country. Since its inception, Brazilian society, immersed in health challenges and inequalities, has been faced with the pressing need to ensure universal access to health services. The trajectory of this fundamental right, however, has revealed itself as a path marked by transformations and progressive advances in the most varied directions, up to the current model of protection (Brito, Trovão, et.al., 2025).

The initial configuration of the right to health dates back to the post-World War II period, when the international community, influenced by the ideals of the Universal Declaration of Human Rights of 1948, began to recognize health as an inalienable fundamental right, so that in the Brazilian social and legal scenario, this movement gained relevance as infra-constitutional legislation expanded to encompass rising social demands.

Among several events and legislations, the 1960s stood out with the creation of the National Institute of Social Security, known by its acronym INPS and which greatly contributed as a precursor to the current Unified Health System (SUS).

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However, it was only with the promulgation of the Federal Constitution of 1988 that the right to health was consolidated and declared a constitutional right. Thus, the magnum text, by enshrining health as "a right of all and a duty of the State", supplanted mere legal recognition, establishing the basis for an integral and universal approach to access to health. Thus, article 196 of the Federal Constitution of 1988 outlined the fundamental guidelines that would guide the construction of a health system based on inclusion and efficiency:

> Health is a right of all and a duty of the State, guaranteed through social and economic policies aimed at reducing the risk of disease and other health problems and at universal equal access to actions and services for its promotion, protection and recovery (Brasil, 1988. art.196).

As can be seen, the understanding of the right to health in the context of the 1988 Constitution is not limited to its normative dimension, but extends to its extremely democratic and solidary nature, so that by providing the constitutional bases for the creation of the SUS, the Magna Carta conferred an individual guarantee, reinforcing the idea of health as an essential vector for the construction of a more just and equitable society.

It is thus noted that the contextualization of the right to health in the Brazilian legal system is an important chapter in the history of the realization of fundamental rights and that the path taken, permeated by alternations of challenges and advances, culminated in the consolidation of a system that, although subject to constant improvements, constitutes a strong and favorable normative and institutional set for the promotion of health as an inalienable good accessible to all citizens (Conceição, 2020).

Thus, it says here that the understanding of the concepts, as well as the relationship between sustainability and sustainable development, as well as the implications of environmental protection policies on public health, is a basic foundation for the critical-reflective analysis of the obstacles orbiting the consolidation of a sustainable economic-legal model in Brazil. It is, of course, an analysis based on the interdisciplinarity between Economic Law, Environmental Sustainability and Public Health, with the clear intention of contributing to the academic debate and subsidizing the formulation of public policies aimed at sustainable development and the promotion of collective health in the Brazilian context.

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LEGAL ASPECTS OF FIRES IN AGROPASTORAL AREAS

The development of many economic activities, historically, has always been closely linked to the use of "controlled" burning, justifying itself as a necessary step in the production process in a very natural way.

In this sense, it is worth highlighting:

> The fires constitute the technical basis of a fabric of social relations that generate occupation, income and food security for a multiplicity of individuals. Among them there are not only agricultural producers, who are directly responsible for the fires, but also middlemen of agricultural production, suppliers of inputs and equipment, transport service providers and the final consumer of production (Fonseca-Morello, 2017. p. 28).

In a practical analysis, two types of agricultural activities that make extensive use of burning as part of the production process stand out, namely, agriculture and sugarcane cultivation. Such a culture is so strong and consolidated that it has already been called the "fire economy" (Fonseca-Morello, 2017).

It is important to emphasize that Brazilian legislation disapproves of such practices, even typifying fire, especially forest fire, as criminal conduct. Federal Law No. 9,605 of February 12, 1998, which provides for criminal and administrative sanctions derived from conducts and activities harmful to the environment, in its article 41, typifies as criminal conduct "Causing fire in the forest or other forms of vegetation", with the penalty being two to four years of imprisonment and a fine.

From the analysis of the decisions rendered in the national courts, it is clear, however, that the applicability of penalties due to convictions has been insufficient. This is because the courts have been unanimous in considering the application of subjective liability for the rendering of decisions. Thus, the economic activities linked to agropastoral do not suffer major legal effects as consequences of its acts, namely:

> ENVIRONMENTAL LAW. ADMINISTRATIVE INFRACTION. BURNING OF SUGARCANE FIELDS. SUBJECTIVE LIABILITY. CAUSAL LINK. ANNULMENT ACTION OF AN ENVIRONMENTAL INFRACTION NOTICE. Rural landowner fined for using fire in an agropastoral area without authorization from the competent environmental authority. Article 58 of SMA Resolution No. 48/2014. No occurrence of intent or fault. Uncharacterized causal link. Maximum scores received in fire prevention criteria, according to CFA Ordinance No. 16/2017. Negative scores that, in the circumstances of the case, do not contribute to characterize the causal link. Sugarcane field hypothesis in which the use of fire brings harm and not benefit to the alleged perpetrator of the infraction. Mechanized harvesting, which does not require the use of fire. Relative presumption of legitimacy of the dismissed

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assessment. Mischaracterized administrative infraction. Fine annulled. Appeal granted to uphold the action (São Paulo; Court of Justice, 2024).

It is noted in view of the decision that the judge prioritizes legal elements and institutes that prioritize the individual right to the detriment of the right of the collectivity and the diffuse interests that govern Environmental Law, annulling a legitimate administrative act, based on subjective civil liability, absolutely ignoring the precepts arising from the "theory of risk" applied to economic activities.

In view of these facts, the analysis of the normative gaps and the failures in the application of public policies aimed at environmental protection, especially in the scenario of fires in agropastoral areas, there is a legal uproar that, as a practical development, undoubtedly reverberates direct effects on the fundamental right to health. Like the aforementioned Law No. 9,605/1998, which deals with criminal and administrative sanctions derived from activities harmful to the environment, Brazilian legislation has effective instruments for the prevention and punishment of conduct harmful to the environment. However, unfortunately, the application of this law by the Judiciary shows inconsistencies, particularly with regard to the accountability of economic agents involved in activities such as sugarcane cultivation and agriculture.

Although Brazilian environmental legislation contemplates both subjective and objective liability, there is a tendency in practice to inadequately apply subjective civil liability in contexts that would clearly require the adoption of the risk theory and the consequent objective liability. Thus, this normative and interpretative mismatch is particularly worrying when one considers that agropastoral activities, by their very nature, involve inherent risks that can result in environmental damage of great magnitude, such as forest fires, whose impacts extend beyond the limits of rural properties, affecting the health and well-being of an indeterminate number of people (Ronquim, 2010).

It is necessary to say that the inappropriate use of subjective responsibility in cases of forest fires in agropastoral areas ignores the diffuse character of environmental rights, since the damage caused by such activities is not limited to the landowner or the executor of the activity, but directly affects the community and the environment as a whole. In this sense, strict liability should prevail, since it is based on the theory of risk, which imposes on the agent who performs a dangerous activity the duty to repair the damage caused regardless of fault. The application of this theory is particularly appropriate in the context of fires in agricultural and agricultural areas, where the risk of fires (integral risk) and its

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consequent environmental and public health impacts is high and predictable (Rezende, De Oliveira, 2015).

In addition, the insufficient application of strict liability in these cases configures a true normative gap, which compromises the effectiveness of environmental protection and, by extension, the protection of the right to health. Brazilian environmental law, based on the principles of prevention and precaution, requires that economic activities that are potentially harmful to the environment be conducted in strict compliance with rules and practices that minimize risks (Ronquim, 2010).

However, the lack of rigor in the application of the sanctions provided for by Law No. 9,605/1998 and the inadequate adoption of subjective civil liability contribute to the perpetuation of harmful environmental practices, aggravating the negative impacts on the environment and public health.

Therefore, the Brazilian Judiciary needs to adopt a more assertive stance in the application of environmental legislation, recognizing the need to objectively hold accountable economic agents whose activities generate significant risks to the environment and public health. Only in this way will it be possible to ensure the full realization of the fundamental rights to a balanced environment and health, as recommended by the Federal Constitution.

The review and improvement of public policies and judicial practices in relation to the prevention and punishment of fires in agropastoral areas are essential to promote a true culture of environmental responsibility in Brazil, capable of protecting diffuse rights and ensuring the sustainability of economic development (Ribeiro; Assunção, 2002).

Taking this analytical approach, the relevance of applying the risk theory and the polluter-pays principle in situations of forest fires in agropastoral areas reinforces the responsibility of the economic agents involved and is in line with the foundations of environmental law, addressed here, which seeks to balance economic development with the preservation of the environment and the protection of public health (França, 2009).

Therefore, such theories are too important in order to ensure that the negative externalities generated by economic activities are properly internalized by those responsible, promoting environmental justice that is reflected both in the reparation of the damage caused and in the deterrence of future harmful practices.

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The theory of risk, as mentioned, is based on the idea that those who carry out a dangerous activity must bear the consequences of the damages that result from it, regardless of fault (França, 2009).

In the context of fires in agropastoral areas, the application of this theory is particularly relevant, as it recognizes that certain activities, such as intensive sugarcane cultivation and cattle raising, involve direct risks to the environment and human health. Therefore, the practice of these activities on a large scale results in severe environmental impacts, such as soil degradation, atmospheric pollution through the emission of smoke and toxic gases, and the loss of biodiversity, in addition to direct impacts on the health of the population, which can suffer from respiratory diseases and other diseases resulting from poor air quality.

This is not only a legal necessity, but especially a measure of social and environmental justice. The reason for imputing strict liability to agents who carry out potentially harmful activities is plausible so that environmental law can ensure that the cost of damage is not transferred to society, being borne by those who derive economic benefits from the exploitation of the environment. This is in line with the polluter-pays principle, which establishes that the polluter must bear the costs of preventing, controlling and repairing the damage caused to the environment.

The polluter-pays principle, enshrined both in Brazilian environmental legislation and in international treaties, aims precisely to prevent environmental damage from being socialized, forcing the polluter to internalize the environmental costs of his activity, namely the lessons of Benjamim, 1998:

> It is easy to observe an indirect preventive result here, since the conviction of the defendant serves, in addition to compensating the victim, to encourage others in a situation similar to him to take the necessary precautions, thus avoiding future damages. If in the orthodoxy of the environmental reparatory technique the motto is who contaminates pays (polluter-pays principle), in prevention - the main objective of Environmental Law and modern civil liability - it becomes do not contaminate.

In the case of fires in agropastoral areas, the application of this principle is necessary to ensure that those responsible for the harmful practices are obliged to take preventive and corrective measures, and to adequately compensate for the damage caused. This includes, for example, the obligation to carry out reforestation in degraded areas, the adoption of clean technologies that reduce the risk of fires, and financial

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compensation to communities affected by impacts on health and the environment (Almeida, 2017).

Likewise, the relevance of the application of these theories is reinforced by the very logic of environmental law, which incorporates strict liability and the polluter-pays principle, in the sense of seeking to repair and prevent new damage and the stimulation of sustainability. In addition, it should be considered that in a country of continental dimensions and with so many green areas as Brazil, fires in agropastoral areas are a serious threat to the environment and public health, so that the application of these theories is necessary to ensure that the economic benefits arising from the use of natural resources are not obtained at the expense of environmental degradation and the violation of human rights. Fundamental.

FIRES IN AGROPASTORAL AREAS: REPERCUSSIONS ON PUBLIC HEALTH AND THE NEED FOR COMPENSATORY MEASURES IN ENVIRONMENTAL LAW

Before starting the development of the section, it is important to outline some considerations about the structuring of this work. Thus, the legal relevance of the three sections that make up this article is based on the need for a joint analysis to understand possible solutions to the sustainability and health problems arising from fires in agropastoral areas in Brazil.

Consequently, the conceptual and interpretative examination of sustainability and sustainable development addressed in the first section provides a necessary set to understand the interrelationship between economic activities and the preservation of the environment. Next, the second section, which discusses the legal aspects related to fires in agropastoral areas, is dedicated to the analysis of the current legislation, especially Law No. 9,605/98 and the failures in its application in some decisions rendered by the Judiciary, highlighting the importance of a more effective regulation and application for environmental protection.

Finally, this section, which aims to demonstrate how the economic and public health consequences of fires demand a coherent standardization that imposes adequate compensatory measures on those responsible, reinforcing the legal responsibility of the agents involved.

The deleterious effects of air pollution, particularly those resulting from fires in cultivation and agricultural areas, have been the subject of extensive scientific research

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(Conceição et al., 2020), evidencing its direct association with the increase in respiratory and cardiovascular diseases, in addition to the increase in the general and specific mortality rate, especially among the most vulnerable groups, such as children under five years of age and elderly people over 65 years of age (Ignottti et al., 2017).

In view of this scenario, the relationship between the atmospheric pollution generated by fires and the impacts on public health becomes even more critical and relevant, especially considering the environmental and climatic conditions typical of the Legal Amazon, characterized by repeated periods of drought that favor the spread of forest fires, whether accidental or from agropastoral activities (Ronquim, 2010).

Thus, it is necessary to study in detail the main health impacts derived from these fires, mainly because it seeks the development of legal strategies and public policies in order to minimize such damages. We are talking here about certain climatic adverse conditions, which usually generate harmful consequences not only for the ecosystem, but also for people's health.

For this reason, the need for a more rigorous action by the State and society in the protection of the environment is discussed, also with the objective of contributing to the guarantee of the right to health.

From a technical-scientific perspective, Ribeiro and Assunção (2002) point out that:

> In addition to direct emissions (primary pollutants), reactions occur in the atmosphere between these emissions and several other compounds present in the air, such as photochemical reactions with an important participation of ultraviolet radiation from the sun, resulting in compounds that can be more toxic than their precursors: ozone (O3), peroxyacyl nitrates (PAN) and aldehydes. Sulfur dioxide is also emitted, because although in very small amounts, vegetables contain sulfur.

In fact, the emission of these pollutants into the atmosphere generates immediate and mediate effects, particularly for the population closest to the affected areas, so that in the most acute cases, it can lead to the individual's death.

Also according to Ribeiro and Assunção (2002), the literature on the subject highlights that air pollution is responsible for many negative impacts on human health, including damage to the nervous system, ophthalmological disorders, dermatological, gastrointestinal, cardiovascular, pulmonary diseases, certain types of cancer, in addition to affecting the distribution of flora and fauna, which, in turn, influences the spread of vector-borne diseases, increasing public health risks.

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Currently in Brazil, the number of researches and literatures that are dedicated to mapping in numbers the harm resulting from the burning of agropastoral areas are still few. However, in an important study, Ronquim (2010) pointed out direct links between specific diseases and the activity of sugarcane burning, namely:

> Particulate matter interferes with the tear film and the epithelial tissue that covers the ocular surface. The emitted material also affects the mucus-producing cells, which are present in the conjunctiva, the mucous membrane of the eye (MATSUDA, 2009). With less mucus and an unstable tear film, workers' eyes are even more exposed to the effects of external agents, such as air pollutants. As for gases, the burning of sugarcane straw releases some primary toxic gases into the atmosphere, such as carbon monoxide (CO), carbon dioxide (CO2), methane (CH4) and hydrocarbons. Studies warn of the risks to human health that these gases offer, not only due to the cardiorespiratory problems caused, but also due to the carcinogenic substances (polycyclic aromatic hydrocarbons – PAHs) found in the smoke (Ribeiro; Aquino, 2010).

Bringing the discussion to a quantitative approach, the data become alarming. The worsening of respiratory diseases such as bronchitis and emphysema, in the vast majority of cases, require the hospitalization of the individual for appropriate treatment in a hospital environment, significantly burdening the public health system in Brazil. In a study entitled "Epidemiological profile of hospitalizations for respiratory diseases in Brazil in 10 years", Da Silva et al. (2023), adduce that in 10 years, between 2003 and 2023, the total number of hospitalizations for these diseases was 935,376 cases distributed in the five regions of Brazil, also showing an increase in cases each year.

Just for the sake of comparison and proportionality of these data, only in the Federal District, during the year 2016, diseases of the respiratory system occupied the second place in the ranking of the main causes of hospitalization, making up a scenario that represented a substantial financial impact, totaling a cost of around R$ 4,572,067.76 for the health system. In addition, the average cost per hospitalization was calculated at R$ 27,709.50, demonstrating the high economic burden that these pathologies impose on the SUS (Santos at al., 2019), thus evidencing the urgency of more effective public policies and laws for the control and prevention of activities that reverberate as causes of respiratory diseases, especially in regions subject to aggravating environmental factors, such as fires, which exacerbate health problems and overload the public health system.

Following the Brazilian normative approach related to the subject, there is environmental compensation, instituted in the environmental licensing process, which is a mechanism that aims to reduce the impacts caused to the environment by large-scale

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activities, which generate significant environmental impacts, as a way to ensure that the damage caused is repaired in proportion to the damage, based on the Polluter Pays Principle (Fonseca, 2015).

This principle, enshrined in Brazilian environmental legislation, especially after the creation of Law No. 12,651/2012, the New Brazilian Forest Code, seeks to ensure that those who cause damage to the environment are held accountable and obliged to compensate for such damage through concrete measures (Almeida, 2017).

Among the laws that deal with environmental compensation in Brazil, Law No. 9,985, of July 18, 2000, stands out, which establishes the National System of Nature Conservation Units (SNUC) and defines the guidelines for environmental compensation, aiming to ensure that the funds collected are directed to the preservation, recovery and maintenance of conservation areas (Fonseca, 2015).

However, when looking at the current normative text, a significant gap is observed, namely: there is no provision for the allocation of resources obtained through environmental compensation for public policies in the area of public health. Thus, this lack of foresight prevents the funds raised from being used to finance health actions, especially in regions where environmental impact has direct consequences on public health (Fonseca, 2015).

This normative limitation reveals a disconnect between the effects of environmental damage on public health and the application of resources intended for compensation. In situations such as fires in agropastoral areas, where air pollution and other environmental damage result in serious respiratory and cardiovascular problems for the population, it would be logical and necessary for part of the resources from environmental compensation to be directed to strengthening public health policies. However, the existing legislation does not contemplate this possibility, restricting the allocation of resources to the strict environmental scope, without considering the broader consequences that environmental damage entails.

Recently, this issue has been the subject of legislative debate, with the processing of Bill No. 5,883/2023 in the Committee on Economic Affairs (CAE). The project proposes changes to Law No. 9,985 of 2000, the City Statute (Law No. 10,257 of 2001) and the Forest Code (Law No. 12,651 of 2012), aiming to allow environmental compensation resources to be applied in actions aimed at improving the quality of the environment. An evident search to expand the use of the resources collected to ensure the environmental

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quality of Brazilian municipalities, which proves to be a positive initiative, while recognizing the need to adapt the application of compensation funds to urban realities (Brasil; Senate Agency, 2024).

However, even this legislative proposal, which truly represents an evolution in the application of environmental compensation resources, still does not provide for the allocation of these resources to actions in the health area, an omission that persists and needs to be corrected.

In view of the relevant impact that environmental damage, such as fires, have on public health, it is more than necessary that national legislation be revised to allow resources from environmental compensation to be channeled to strengthen health services, preferably aimed at the treatment of respiratory diseases, especially in regions where environmental degradation imposes a high burden on the public health system.

FINAL CONSIDERATIONS

The analysis undertaken throughout this article reveals a hasty need to revisit and improve Brazilian environmental legislation, especially with regard to the allocation of resources from environmental compensation applied to agropastoral activities that generate great impacts on the environment, such as fires, which are of great occurrence mainly in agriculture and sugarcane cultivation.

The evidence presented not only confirms the close link between these activities and the worsening of respiratory diseases in the population, but also reinforces the premise that the current legislation lacks better developed and targeted mechanisms to reduce these effects on public health and the Unified Health System (SUS).

From the data analyzed, it is clear that environmental compensation, as provided for in Law No. 9,985, of July 18, 2000, and in the New Brazilian Forest Code, should evolve to explicitly include the allocation of financial resources to specific funds aimed at investing in public health actions, with a special focus on the treatment and prevention of respiratory diseases, making it a very necessary redirection, considering that the environmental impacts caused by fires in agropastoral areas have a direct and proven relationship with the increase in hospitalizations for respiratory diseases and that they generate a significant burden for the Unified Health System (SUS).

The proposal for legislative change that is currently being processed by the Senate's Committee on Economic Affairs (CAE), although of great value, precisely because it allows

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environmental compensation resources to be used in improvements to the urban environment, still does not contemplate the critical need to direct part of these resources to public health. Therefore, this increase in existing legislation reinforces the application of the Polluter Pays Principle, ensuring that the communities and municipalities most affected by the impacts of fires receive the necessary assistance to treat the health problems resulting from these environmental damages.

In addition to the issue of financial compensation, the study identified a worrying distortion in the legal interpretations carried out by Brazilian courts, which have, in an inadequate and worrying way, applied subjective civil liability in cases of damage caused by fires in agropastoral activities.

This interpretation ignores the theory of risk, which advocates the application of strict liability in situations where there is risk intrinsic to the activity, exactly as occurs in the cases of activities that undertake the practice of burning. In any case, such insistence on requiring proof of guilt for the accountability of the agents involved ends up contradicting the principles of environmental law and weakens the protection of diffuse and collective rights, greatly compromising the effectiveness of sanctions and preventive measures.

In view of all the above, the present research points to the need for Brazilian legislation to undergo an evolution in order to ensure that environmental compensation resources are adequately directed to public health, contributing to the reduction of the impacts of fires on the population, in addition to the need for the Judiciary to adopt, consistently, strict liability in cases of environmental damage resulting from agropastoral activities, in line with the principles of precaution and prevention, enshrined in environmental law.

Such considerations do not mean that the implementation of the suggested changes will extirpate all the needs and problems faced in the analyzed scenario, however, they will result in a significant improvement in the damage currently perceived, especially by the population closest to the areas of agropastoral activities. In any case, it is certain that the needs for adjustments identified throughout the work will reverberate in the positive evolution of the legal-environmental system, attributing probity and equity in decisions, also allowing it to protect the environment and public health in a perfectly aligned way.

Furthermore, the guarantee that, with such adjustments, resources will be used in such a way as to repair not only environmental damage, but also damage to public health,

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corroborating so that economic growth does not occur at the expense of environmental degradation and violation of fundamental rights, should be disregarded.

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