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Analysis of How the State Member in Brazil Can Proceed to Promote Environmental Accountability

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Abstract: This article aims to analyze how the State Member in Brazil can proceed to promote environmental accountability by the class action demands. In Brazil, a limited number of legitimate authors can propose the class action demand, so this paper has an exploratory goal to discuss how one of them can proceed, considering what the *Parquet* does (the main legitimate author). Consequently, this paper has a qualitative character and a study of case design. In order to develop this research, the bibliographical method was necessary and so does the documentary one to analyze the discussion in the literature and in "Superior Tribunal de Justiça" (the literal translation is Superior Court of Justice) jurisprudence, that is responsible to unify the application of Brazilian federal law. Accordingly, the defense of the balanced environment and the acting of the State to have the damage minimized highlights its legal and social relevance. Thus, one of the main results is that it is possible for the State Member to use the evidence collected in the administrative procedure resulting from the fine or the embargo of the area to subsidize his petition.

Key words: environmental law, civil accountability, class action demand, state attorney, Brazil

1. Introduction

The present paper aims to analyze how the State Member can proceed to promote environmental accountability by the class actions demands. Therefore, it is noteworthy that article 225 of the Constitution of the Federal Republic of Brazil in 1988 (CFRB/1988) [1] established the fundamental right of a balanced environment.

At that time, transnational constitutionalism introduced the paradigm of sustainable relations between men and the environment. In this context, Brazilian constituent assembly established an inter-generational duty in which the State will play a fundamental role in the defense of the environment. Notably by the definition of the normative competence to the Federal, the State and the city government to rule this theme and the administrative one that allows them to use their police power. Thus, in the harmonic actions of the Brazilian State, the first State-member establishes the minimum and the last one the maximum protection to the environment.

Even though environmental disasters, like the break of a dam mine in Mariana city (MG) or the one in Brumadinho city (MG) happened, because of the nonobservance of the laws. Moreover, the Amazon's deforestation in order to open new areas of extensive agriculture and to extract minerals is one of the biggest environmental impacts.

Consequently, the social and the legal relevance of this research relies on the need to mitigate the environmental damage and the reflection of possible actions that the State may adopt. In this context, it was asked: How can the State Member proceed to promote environmental accountability by the class action demands.

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In order to answer this question and to achieve the main goal, the specific ones are: (I) describe the environmental accountability regime in Brazil; (II) identify the application of the Summary No. 618 of Brazilian Superior Court of Justice [37].

Otherwise, there are three sections in the literature review. The first one is going to discuss the general aspects of environmental protection in Brazilian context, notably about the duty of the State to promote sustainability in human relations. In the second one, the discussion will be about environmental accountability, focused on the civil and the administrative one. In the third, the discussion will be about the environmental class action demands in Brazil.

After the material and method section, there will be a section about the possible administrative actions to subsidize the proposal of environmental class actions demands in Brazil.

To sum it up, this paper will not settle the discussion on this theme; on the other hand, it seeks to explore it, to induce reflections and to renew concepts.

2. Literature Review

2.1 General Approach on Environmental Protection in Brazilian Law

The World Commission on Environment and Development started the discussion of the sustainability of socioeconomic relations and of the model of development in the edition of the Brundtland report [2]. Consequently, the right to a sustainable development has been reinforcing the transnational constitutionalism movement in a way that CFRB/1988 [1] "erected the environment to a category of constitutional good essential to Brazilian's quality of life. Because of this, Édis Milaré (2005, p. 184) refers to it as the 'Green Constitution'" [3] [our translation], or it can also be called the Citizen Constitution [1], considering the numerous fundamental rights in it.

On this path, it is possible to infer that the tutelage of the environment is codified in many articles. The article 24, VI, VII and VIII, and the article 30, I and II, all of the CFRB/1988 [1] say that the Federal member has the legislative competence to edit the general rules. The States, on the other hand, are able to complete them to protect regional interests and the city can rule the local interests. In other words, "we can conclude that The Union is responsible to fix the ground floor of environmental protection, while the States and the cities, attending their regional or local interests, fix the ceiling of protection" [4] [our translation].

Under the view of the administrative competence, the article 23, VI and VII, of CFRB/88 [1] gives to all State members a common competence. According to Andreas J. Krell (2008) apud RAMMÊ, this kind of frame action is "based on sharing tasks between the levels of govern, demanding mechanisms capable of actions and policies together, and the participation of all State members" [5] [our translation].

Otherwise, it is possible to infer that right to a balanced environment is a fundamental right and a human one of the third generation, because "its features is that the legitimate is not the individual anymore […], but the groups of people or the categories of men" [6] [our translation]. Consequently, the sustainability of relations should NOT ONLY be a goal of the State, but also a new paradigm [7].

Therefore, the tutelage of balance environment is an inter-generational right that is in the article of 225 the Green Constitution [1], *in verbis*:

> Art. 225. Everyone has the right to an ecologically balanced environment, good for common use by the people and essential to a healthy quality of life, imposing on the Public Power and the community the duty to defend and preserve it for the present and future generations.

Considering the systematic analysis of this article, the authors Ingo Sarlet and Tiago Fenterseifer apud FERNANDES have the thesis of "recognizing the fundamental right of a socio-environmental existential minimum" [8] [author's emphasis] [our translation]. According to this thesis, society must observe the minimum status of environmental quality, the limit of nature's endurance to human action while it is possible

to promote the quality of life to people [9]. In this line of ideas, the absence of this status is a violation of human dignity.

Thus, this minimum status of socio-environmental welfare can be measured, briefly, according: "a) the pattern of material life; b) healthy; c) education; d) personal activities; e) political voice and governance; f) social connection and relationships; g) the present and the future environment; h) economic and physical safety" [5, p. 8] [our translation].

2.2 The Accountability Regime for Environmental Damage

In Brazilian law the conduct considered harmful to the environment it can cause criminal and administrative sanctions, and civil accountability without occurring the "bis in idem" [4], according to the paragraph 3rd of the article 225 of CFRB/1988 [1],

> Art. 225[...] § 3 The conduct and activities considered harmful to the environment will subject the offenders, natural or legal persons, to criminal and administrative sanctions, regardless of the obligation to repair the damage caused.

In the systematic point of view, it is able to conclude that to have criminal liability it is required that the conduct is typical, unlawful and culpable. Equally, the administrative one is based on strict liability, but the States and the cities can apply either their own legislation or the federal legislation [10], and civil accountability is promoted according to the Civil Code.

Besides, Sarlet, Fensterseifer [11] argue that the *Parquet*, based on the article 14, paragraph 1st, of the Law n. 6.938/81, is the author of the civil and the criminal liability process, while the Federal administration, the State, or the City promote the administrative one, that is not a judicial procedure.

Considering that the administrative competence is ordinary, The Brazilian Superior Court of Justice (BSCJ) [12] has the understanding that all of the State-members can act, enforcing their police power in a subsidiary manner of the one that gave the license.

Albeit these spheres are independent, there is a possibility to bind the civil to the criminal, when there is an acquittal based either on the nonexistence of the fact or the absence of the elements that shows the authorship, as the article 935 of the Civil Codex [13] says:

> Art. 935. Civil liability is independent of criminal liability, and one cannot further question the existence of the fact, or who the author is, when these issues are decided in the criminal court.

In Godoy, Peluso [14] point of view when the acquittal is found in the absence of evidence, or one of the reasons for extinction of liability or the atypical criminal conduct it doesn't bind the others, especially when the conduct is prohibited by the police power.

When it comes to the possibility of binding the criminal sphere and the administrative one there is an absence of laws saying so, that's why many lawyers require the Judicial Power to apply that understanding analogically. Hence, the Brazilian Superior Court of Justice [15] has some decisions that recognize the binding of these spheres, through the analogical application of the article 935 of the Civil Codex [13].

By the way, in Brazil the judicial review of the administrative act that imposes the administrative liability just analyzes if there is procedure nullity, without entering the administrative merit.

Therefore, there is not a subsection on criminal liability for the environmental damage, because this paper is focused on the possibility to use the evidence in the administrative procedure to propose the civil lawsuit.

2.2.1 The Civil Liability for the Environmental Damage

In Brazil's Civil Code [13] there is the general rule that the civil liability depends on the demonstration of the elements of unlawful conduct, damage, the causal link between the former and the latter and the *latu* sense guilty [16]. Nevertheless, in the article 927 of this law [13], there is also the possibility of an objective liability, by law or the risk theory, as it says:

> Art. 927. Anyone who, through an unlawful act (arts. 186 and 187), causes damage to others, is obliged to repair it. Single paragraph. There will be an obligation to repair the damage, regardless of fault, in the cases specified by law, or when the activity normally carried out by the author of the damage implies, by its nature, a risk to the rights of others.

In this context, the Brazilian National Policy of Environmental Affairs [17], in its article 14, paragraph 1st, says that the civil responsibility shall be objective, *in verbis:*

> Art 14 - Without prejudice to the penalties defined by federal, state and municipal legislation, failure to comply with the measures necessary for the preservation or correction of inconveniences and damages caused by the degradation of environmental quality will subject the transgressors: [...] § 1 - Without prejudice the application of the penalties provided for in this article, the polluter is obliged, **regardless of the existence of fault, to indemnify or repair the damage caused to the environment and to third parties affected by its activity.** The Federal and State Public Prosecutor's Office will have the legitimacy to file civil and criminal liability actions for damages caused to the environment. [our emphasis].

According to the systematic view, it is possible to infer that the Federal and State Public Prosecutor's Office or the State-members' Public Advocacy are able to file the public class action to repair the environmental damage (subject that will be approached on the topic 2.3.1). Thus, this kind of action aims to "demonstrate that: a) there was an environmental damage and; b) the causal link between the individual conducts and the damage, in order to have the civil liability" [18] [our translation].

On the other hand, considering the environmental function of the land, the owner is responsible to preserve the environment according to the law, even if he didn't cause the damage, he would have to repair it, because it is a *propter rem* obligation. In other words, the limitations on the land right are the cause of the civil obligation to restore the environmental damage, even in the hypothesis that a third person has done the damage and been sanctioned in the criminal and administrative sphere. That is the case of the following decision of the BSCJ:

> CIVIL PROCEDURE. ADMINISTRATIVE. ENVIRONMENTAL DAMAGE. CLASS ACTION DEMAND. PURCHASER'S RESPONSIBILITY. RURAL LANDS. RECOMPOSITION. FORESTS. TEMPUS REGIT ACTUM. 20% PERCENTAGE REGISTRATION. SUMMARY 07 STJ. **1. [...]. 2. The obligation to repair environmental damage is *propter rem*, which is why the Law 8.171/91 is in force for all rural landowners, even if they are not responsible for any previous deforestation, especially because the aforementioned norm endorsed the Forest Code itself (Law 4,771/65) which established an administrative limitation to rural properties, obliging their owners to establish legal reserve areas, of at least 20% of each property, in favor of the collective interest. STJ Precedent: RESP 343.741/PR, Rapporteur Minister Franciulli Netto, DJ of 10.07.2002**. 3. As well as pointed out by Minister Herman Benjamin, in REsp No. 650728/SC, 2nd Panel, unanimous: '(...) 11. The so-called disaffection or tacit legal disqualification due to a fait accompli is incompatible with Brazilian law. 12. [...]. 13. **For the purpose of determining the causal link in the environmental damage, those who do it, who do not do it when they should do it, who does it, who does not care what they do, who finances them to do it, and who benefits when they do it are equated**. […]. 5. The Federal Constitution enshrines in its art. 186 that the social function of the rural property is fulfilled when it meets, following criteria and levels of demand established by law, certain requirements, including the 'appropriate use of available natural resources and preservation of the environment'. 6. The adoption of the principle *tempus regit actum* imposes obedience to the law in force when the fact occurred. 7. *In casu*, the facts determined as an environmental infringement occurred in 1997, when the Forest Code Law nº 4.771/65 was already in force, and there was no need to inquire about the application of Decree nº 23,793/94, which it was even revoked by that law. […]. 9. In casu, verification of proof that the property does not reach a minimum of 20% of the area covered by a legal reserve, as well as the exploitation of forests by the owner, would imply the revolving of evidential factual material, which is prohibited to this Superior Court. 10. Indeed, the lower court, in light

> of broad cognition of factual and evidentiary aspects, concluded that: The defendants' excuse that the obligation to repair environmental damage cannot be imposed on the individual who acquired the land already deforested or that the registration did not can surpass the remnant of native forest existing in the area is not convincing; as well exposed by the Attorney of Justice on pages 313/314: 'the registration is not intended to be made prior to the entry into force of Law 7,803/89, which amended provisions of Law 4,771/65. **It so happens that, from the effective date of that first law in our legal system, the former owners (Mr. Renato Junqueira de Andrade and Ms. Yolanda Junqueira de Andrade – p. 77) had since then the obligation to have registered the legal reserve, being that the Defendant, when buying a property without observing the precepts of the law, assumed the obligation of the previous owners, with the exception, however, of any possible regressive action (p. 335) [...]. 12. Appeal partially known and, in this part, denied**. [19] [Our translation] [our emphasis].

According to this decision, the purchase of a rural land must verify if the land has any environmental debts before buying it, because, if he doesn't observe the precepts of the law he may be held responsible for the previous owners actions. To sum it up, civil accountability does not aim to sanction the environment's offender, but to repair the damage. Which is different from the criminal and the administrative liability that aims to impose sanctions to the offender [20].

2.2.2 The Administrative Liability for the Environmental Damage

The administrative liability, as the criminal one, aims to sanction who caused an environmental damage, through the exercise of the police power. This administrative power can be preventive, when, for instance, the administration conducts studies to demonstrate what activities can be done at a place (ecologic zoning) and, in a specific situation, the process of licensing activities that are potentially harmful to the environment. On the other hand, it can be repressive, when the administration sanctions someone that made a forbidden action by the law [21].

It is important to emphasize that the Federal Decree n. 6.514, of July 22nd, 2008 [22], is the general rule that typifies the administrative sanctions, that the States or cities can apply or rule their own, arising legal micro systems [10].

Because the Union edited a Decree instead of a Law in a strict sense, many lawyers argued that it would be unconstitutional. However, this thesis did no move forward at the Superior Court of Justice that recognized the reflex constitutionality of this decree, as the following decision shows:

> ENVIRONMENTAL. ADMINISTRATIVE INFRINGEMENT. APPLICATION FIELD. LAW 9.605/1998. IRREGULAR TRANSPORTATION OF VEGETABLE CHARCOAL FROM NATIVE SPECIES. STEEL INDUSTRY. CRIMINAL AND ADMINISTRATIVE INFRINGEMENT. TRAFFIC TICKET. LEGALITY. DISTINCTION BETWEEN ADMINISTRATIVE SANCTION AND CRIMINAL SANCTION. LEGITIMACY OF THE REGULATORY DECREE. (...) 4. Law 9,605/1998, although popularly and imprecisely known as the Law on Crimes against the Environment, strictly addresses, simultaneously and in different parts of its text, criminal and administrative infractions. 5. In the field of administrative infractions, the ordinary legislator is only required to establish the generic conduct (or generic type) considered illegal, as well as the list and limits of the foreseen sanctions, leaving the specification of those and these for the regulation, through Decree. **6. In a legally adequate, albeit generic, form, art. 70 of Law 9,605/1998 provides, as an environmental administrative infraction,' any action or omission that violates the legal rules of use, enjoyment, promotion, protection and recovery of the environment'. This is enough, with the complementation of the Regulatory Decree, to comply with the principle of legality, which, in Administrative Law, cannot be interpreted more rigorously than in Criminal Law, a field in which open and even blank types are admitted**. [23] [our translation] [our emphasis]

From the analysis of this decision, it is possible to infer that the criminal type and administrative one tutelage the same legal good, so, the interpretation applied to the administrative sanction must not be more rigorous than the criminal law, thus it is the last ratio of

the State, and this hypothesis is against the principle of legality.

Furthermore, in Brazilian legal order there is no law that says if the administrative liability regime is either subjective or objective. Consequently, the literature and the courts have been discussing which one should be applied. The following citation summarizes this controversy:

The understanding formulated by us is consistent with the doctrinal position of Leme Machado: "of the 10 sanctions provided for in art. 72 of Law 9,605/98 (items I to XI), only the simple fine will use the criterion of liability with fault, and the other nine sanctions, including the daily fine, will use the criterion of liability without fault or objective, continuing to follow the system of Law 6.938/81, where there is no need to assess the intent and negligence of the offender submitted to the process". There is, however, a dominant position today in doctrinal terms in the opposite direction, that is, in favor of the subjective nature of environmental administrative responsibility, which was further strengthened after the understanding consolidated by the STJ. The discussion about the nature of environmental administrative responsibility was the subject of great controversy recently due to the consolidation of the STJ's understanding on the subject, verified, among other judgments, respectively, in REsp 1,251.697/PR (2nd Panel), under the report of Minister Mauro Campbell Marques, judged on 04.12.2012, and in the AgRg in REsp 62.584/RJ (1st Panel), under the report for the judgment of Minister Regina Helena Costa, judged on 06.18.2015. In the two judgments mentioned, the STF adopted a position in the sense of the subjective nature of environmental administrative responsibility. In REsp 1,251,697/PR, it was stated by the 2nd Panel of the STJ that "the application of administrative penalties does not comply with the logic of strict liability in the civil sphere (to repair the damage caused), but must comply with the system of the theory of culpability, that is, the conduct must be committed by the alleged offender, with demonstration of its subjective element, and with demonstration of the causal link between the conduct and the damage". In the AgRg in REsp 62.584/RJ, the 1st Panel of the STJ followed the same understanding by establishing that "environmental civil liability is objective; however, in the case of environmental administrative responsibility, the third party, owner of the cargo, as it is not the actual cause of the environmental damage, is subjectively responsible for the environmental degradation caused by the transporter" [11]. [our translation].

Thus, the majority of the authors and jurisprudence understand that the administrative responsibility is subjective, even though, many authors, like Sarlet, Fensterseifer (2020), argue the possibility of objective responsibility in the administrative liability, considering dubious the article 14, 1st paragraph, of the Law No. 6.938/81, when it comes to the administrative liability [24].

2.3 Environmental Class Action Demand in the Brazilian Context

The Class Action Demand in Brazil is a kind of collective action in its legal order, which purpose is to tutelage the diffuse and collective rights [25], and this procedure instrument is in the institutional actions of the Public Prosecutor's Office, according to the article 129, III, of the CFRB/1988 [1],

It is important to mention that this procedure was provided by Law No. 7347 of July 24, 1985, so the Green Constitution [1] accepted this law, because there is an agreement between them, in order that the former validates the latter. In this path of ideas, the article 1st of this law tutelage the following rights:

> Art. 1 The provisions of this Law are governed by the provisions of this Law, without prejudice to popular action (sic), liability actions for moral and property damage caused: l - to the environment; ll - to the consumer III - to goods and rights of artistic, aesthetic, historical, touristic and landscape value; IV - to any other diffuse or collective interest. V - for infraction of the economic order; VI - to the urban order. VII – the honor and dignity of racial, ethnic or religious groups; VIII - to public and social assets

Analyzing these items, it is able to classify these collective litigations in (I) a globally diffuse one, considering the possibility to affect the entire society uniformly, albeit the impact on the individual sphere is low; (II) a local one, targeting a specific group of the society or (III) an irradiated one, that many social groups are target, but their interest can be diverse in this matter, in some situations they can even be antagonistic [26].

Considering the goal of this lawsuit, the article 3rd of the Law No. 7.347/85 [27] provide the possibility to impose the obligation to do not do something (because of the danger of damage or to stop it), or to impose the obligation to do the reparation of the damage or to compensate the Public Power and the society for the State obligation to repair the damage in the absence of the individual's action [28]

According to Machado, Aquino [29], there is a harmony between this law and the Civil Procedure Code of 2015 (CPC/2015), consequently the latter's injunction rules are applicable to the class action demands expanding the possibility of the article 12 of the Law No 7.347/85

Furthermore, the principles of prevention and precaution can be the *ratio decidendi* of this judicial decision. The former principle is based on a scientific certainty that the individual's conduct has a high risk to cause environmental damage, consequently it must be stopped. The latter, on the other hand, is based on the reasonable doubt that a certain activity may cause damage to the environment. Thus, to be cautious, the judge is required to refrain from doing it, because the risk is not acceptable [30].

On Didier J. R. [31] point of view, it is possible to apply the theory of the structural process to the environmental class action demands, inasmuch as they are structural problems, after all, it can be labeled as an irradiated litigation. Albeit the structural procedure is not provided in Brazilian legal order this author argues that the CPC/2015 is compatible.

In this point of view, the irradiated collective litigations, in which there are public structures, or public service concessionaires, or other private companies essential to society that cause damage to the environment can be resolved through a structural process [26].

This kind of process is organized in a way that in the first moment it declares the status of nonconformity, continuously, the expected state of affairs. Afterward, there is a management step that plans how to achieve the last state, considering the goal to be executed along the time. By the way, the author and the defendant can make and agreement about how to solve the problem, like the case of the break of a dam mine in Mariana (MG), the company created a foundation to manage the compensation to that affected areas [31, 32].

Therefore, the class action demand is an important procedure to promote a balanced environment beyond the promotion of the civil liability of those that cause environmental damage.

2.3.1 The Procedure Legitimacy

The active legitimacy to propose a Class Action Demand in Brazil is in the article 5th of the Law No. 7.347/85 [27], consequently, each one of those legitimates are able to file this procedure autonomously or together (in active joinder), on the other hand, the passive legitimate can be anyone or any business [18] [33].

On this path, DANTAS [34] teaches that in the Brazilian legal order there is no application for the theory of the adequate representation of the author of the collective procedure to the group to be benefit of the judicial tutelage, albeit some authors, like Ada Pellegrini Grinover and Antonio Gidi, argue its application. It is important to clear that, according to this American theory, the judge analyses the adequate and sufficient representation of the class when he receives the petition [33].

Furthermore, the Prosecutor's Office has been the legitimate that most file this demand [28], this happens because this instrument is part of the institutional

objectives of the *Parquet*, as the article 129, III, of the Citizen Constitution [1]. In order to do that, this legitimate opens an administrative procedure called civil inquiry, which nature is inquisitorial, and has the specific goal to collect proves to subsidize the filing of this action and other demands that they think is needed [35].

To sum it up, this lawsuit "is developed through the action of a legitimate, which figures as a plaintiff, but litigates in name of the real ones" [26, p. 338] [our translation].

2.3.2 The Lawsuit's Procedure

Considering the assumption that the civil liability for environmental damage is objective, through the application of the integral risk, the judge aims to declare (or not) if there is an unlawful conduct, the extension of this damage and causal link between them.

The article 2nd of the Law No. 7.347/85 [27] establishes that the place of the damage is the competent court, it shows that "the intention of the legislator was to privilege the physical proximity between the judge and the place where the damage has occurred or might occur" [11]. Moreover, it is important to highlight that:

Within the scope of State Courts, the location of the damage is a District, except in cases where the damage may have occurred in more than one District. If the damage has occurred in more than one District, the CPC rules on connection, prevention, etc. shall apply […]. In the case of a public civil action whose purpose is the protection of a legal asset owned by the Federal Government or one of its autarchies or public companies, the competence, in our opinion, is, of course, federal. Such cases do not require further inquiries if the damage occurs in the capitals or in cities that are the seat of a federal court [25] [our translation].

When it comes to the discussion of the evidential burden of proof the plaintiff or the defendant, the general rule in the article 373 of CPC/2015 [36] is mitigated by the Summary No. 618 of the BSCJ that says the defendant is responsible to demonstrate the regularity of his actions, *in verbis:*

> Summary 618 - The reversal of the burden of proof applies to actions of environmental degradation. [37]

Thus, it is possible to conclude that it is an application of the inquisitorial principle [38], because of the dynamic distribution of evidential burden. After all, it is a matter of application to the principal of precaution, as the decision that subsidize this summary says:

> [...] ENVIRONMENTAL. EXPERT COSTING TO ASSESS IF THERE WAS AN INVASION OF A PERMANENT PRESERVATION AREA. PRINCIPLE OF PRECAUTION. REVERSAL OF THE BURDEN OF PROOF. POSSIBILITY. [...] In the case of the case records, the original Court stated that the reversal of the burden of proof resulted from the application of the precautionary principle, as reported by the appellant on page 579/STJ. In this sense, the decision is in line with the guidance of this Superior Court that the precautionary principle presupposes the reversal of the burden of proof. [...] 2. The Court of origin added that the burden of proof fell on the appellant, as it was the applicant who had requested the production of expert evidence […] [39] [our emphasis].

Pursuant to this decision, its *ratio decidendi* was the application of the principle of precaution in order to invert the burden of proof. In addition to that, the defendant required the production of a proof that reinforces that assumption as an *obter dicto*.

However, the Brazilian Superior Court of Justice has also the understanding that the Summary No 618 [37] is applicable to individual litigation, as the following decision says:

> [...] CONSTRUCTION OF HYDROELECTRIC. RIVER MADEIRA. FISHERMEN. […] INVERSION OF THE BURDEN OF PROOF IN ACTION FOR INDEMNITY FOR ENVIRONMENTAL DAMAGE. [...] The reversal of the burden of proof with regard to environmental damage is in accordance with the jurisprudence of this Court, which has already stated that, 'in the case of an action for damages for environmental damage, the responsibility for damage caused is objective, as

> it is founded on the theory of integral risk. Thus, the inversion of the burden of proof is appropriate' [...] [40]

In this process, there is a group of fishermen that filed the petition against the Hydroelectric of Saint Antonio, in Porto Velho (Rondonia). They claim that their land suffered environmental damage because of the construction of the dam. In this line of ideas, it is possible to infer that the application of the Summary No. 618 of BSCJ [37] in individual litigation as the collective one as an equity measure, notably when someone has been affected by great public constructions or private ones.

Thus, the essential assumption to apply this summary is the discussion of an environmental degradation, or the possibility of this damage, as consequence of the principle of precaution, that:

> [...] originates in German Law and is certainly one of its main contributions to Environmental Law. [...]. In its original formulation, the principle established that precaution was to develop processes in all sectors of the economy that significantly reduce environmental burdens, especially those caused by hazardous substances. Other formulations of the principle were being built and, in a short time, the *Vorsorgeprinzip* expanded to international law and to several domestic laws, including the Brazilian one [25] [our translation].

In this way, there is "an egalitarian and participatory procedural panorama in tune with the expansion of access to justice in environmental matters, as set forth, for example, in Principle 10 of the Rio Declaration (1992) and the Escazú Agreement (2018)" [11] [our translation], notably about the diagonal efficiency of fundamental rights, allowing more participation in the studies of viability, licensing of a construction in order to have a more accurate dimension of the impact of a business.

> Likewise, there is "[...] access to environmental information in three meanings that can be identified as access to information itself, public participation and access to justice" [41]. [our translation]. In this way, "the measure in question also contributes to ensuring the effectiveness of the right to environmental information, stimulating a more active participation of organized civil society (NGOs) in the scope of the Justice System" [11].

3. Material and Methods

It used a bibliographical method and a documentary one, in order to characterize the general premises of environmental protection, the accountability regime, and also to identify the premises that guide the class actions demands in Brazil, pointing out the qualitative character of the study.

Afterward, the hypothetical-deductive method was applied to analyze the possible lines of action to be used by state attorneys in the environmental class actions demands.

Thus, legal documents, judicial decisions and other papers were the material used in this research.

4. Results and Discussion

4.1 The Analysis of How the State Member Can Proceed to Promote the Environmental Accountability

The Prosecutor's Office is the legitimate that most file the class action demand in Brazil, in order to defend the third generation of human rights. Therefore, civil inquiry is essential to collect evidence, and it usually comes before the judicial action [42]. About latter instrument

> […] it is of paramount importance for its legitimate, because, as a rule and already rejected, through the establishment and instruction of the competent procedure, the *Parquet* collects elements of conviction for the formation of the *opinio actio* and, thus, promotes civil action competent public for the protection of diffuse or collective and homogeneous individual interests [43, p. 226] [our translation].

Pursuant to this assumption, it is possible to do syllogism to investigate how the State-member may collect the needed proof to subsidize the filing of the class action demand to require the mitigation of the environmental damage. Thus, the environmental agency may have an administrative process that ratified the fine or the embargo of the area as a consequence of

the exercise of the police power, in which there might be documents that show the damage and causal link.

The administrative process that is based on the Federal Decree No. 6.514/08 [22] begins with the drawing up of the infraction notice. When it is "done by a capable agent, pursuant to the law, […], it has an assumption of truthfulness. To question this assumption the defendant may not just argue, but prove them" [44] [our translation].

In addition, if the agent understand that precautionary measures are needed, he may adopt the instruments in the article 101 of the Federal Decree No. 6.514/08:

> Art. 101. Once the environmental infringement is verified, the taxing agent, in the use of its police power, may adopt the following administrative measures: I -apprehension; II - embargo on work or activity and their respective areas; III - suspension of the sale or manufacture of the product; IV - partial or total suspension of activities; V - destruction or destruction of the products, by-products and instruments of the infringement; and VI – demolition [22].

Pursuant to these measures, the research focused on the embargo on work or activity and their respective area, that "aims to stop the continuity of the environmental damage, allowing the environmental regeneration and the recovering the damaged area, where the unlawful act happened" [42]. The reason for that is the duty to mitigate the damage or totally repair it in order to end this limitation of property, according to the article 15-B of this decree. Thus, these documents can be used in the lawsuit, by the administration.

Furthermore, it is noteworthy that:

> The embargo comes as a sanction applied by the public administration, through the environmental agency, and aims to promote the regeneration of the environment and make the recovery of the degraded area viable. The end of the embargo and the penalties will depend on the decision of the environmental authority, after the presentation, by the assessed company, of documentation that regularizes the work or activity. In other cases, until the damaged area is fully recovered. Therefore, the deforested area should remain without activity, awaiting natural regeneration. [45, p. 1600-1601] [our translation].

But, this action alone is not enough to mitigate the damage, consequently, it is necessary to conjugate with the civil liability. For example, the research done by De Moraes et al. (2018), that analyzed the IBAMA's embargoes in the cities of Dom Eliseu, Paragominas, Rondon do Pará e Ulianópolis, all at the State of Para (in the northern part of Brazil), from 2004 to 2016, the result was:

> [...] of the 144 samples of embargoes for environmental offenses selected, in only 30% of the polygons there was compliance with the embargo (natural regeneration), while the other 70% were irregular, having been found agricultural or pasture classes, characterizing non-compliance of the embargo [45, p. 1613] [our translation].

Thus, it is possible to infer that the embargo on the work or area may not mean the compliance of the activities or the recovery of the area, because beyond the fine, it is important to compensate the damage to avoid the continuity of the action, and illegal usage of the area.

On other side, the Federal Decree No. 6.514/08 [22] "has a specific chapter to rule the administrative process to analyze the environmental fines, from the article 94 to 148, highlighting each one of their phases: assessment, defense, instruction and judgment" [11] [our translation]. According to the attributes of the administrative act that drew up the infraction notice or the embargo, the individual has the burden to prove that the activity is according to the law, consequently, he has to show documents that demonstrate the development of sustainable activities. Furthermore, he can require the production of proof by the administration, but he has to show its relevance in the terms of the article 120 of the Federal Decree No. 6.514/08 [22].

It should be noted that the first administrative judge "has the power and duty to request (rectius: determine) the performance of the evidence he deems necessary

for the formation of his conviction as to the facts presented to him and confirm or reform the contested decision" [25] [our translation]. That is, it is inferred that "the search for the real truth is also the responsibility of the judging authority" [46] [our translation]. In addition, he could ask the following actions:

> (I) technical advice to clarify complex issues that require deeper and, above all, specialized analysis. The opinion may be requested from bodies outside the administration which, however, are not obliged to provide them without the respective remuneration, or the existence of agreements between the requesting bodies and the requested; (ii) what is contradicted is the information provided by the filing authority which, through it, may defend the practice of the act challenged by the appellant. [25, p 294].

Beyond those proves, the authority can require from the sector responsible for the georeferencing of rural properties, to analyze the changes of forest areas in these properties registered by the satellite. This kind of document is relevant to verify the deforestation, the forest fire, and to identify the bodies of water, kind of the forest formation and the topographic relief, essential to the formation of the Rural Environmental Registry ("Cadastro Ambiental Rural – CAR"), a data set in charge of the information about rural properties in Brazil. By the way, the "multitemporal analysis is an active research field in remote sensing that consists in evaluating the different spatial dynamics through identification and changes in the earth's surface" [47] [our translation].

Likewise, it is relevant to point out that:

> With the enactment of Federal Decree No. 7,029, of December 10, 2009, which created the More Environment program (Programa Mais Ambiente), the CAR gained nationwide coverage. This program was intended to support the environmental regularization of rural properties of those owners or squatters who adhered to it, obtaining as a benefit the suspension of environmental fines issued by the environmental agency. [48, p. 84] [our translation].

Therefore, the public power, through the licensing process and the process of administrative liability for environmental damage, shall have documents that show the need to repair the environment, so they can subsidize the lawsuit's file.

5. Conclusion

This article aims to analyze how the State Member in Brazil can proceed to promote environmental accountability by class actions demands. Considering the assumption that the environmental damage is a structural problem to be dealt with, the Green Constitution established the civil, criminal and administrative liability. It is important to highlight that the first one is different from the others, hence its goal is to repair or compensate for the damage, instead of punishing them.

In this line of ideas, the civil liability for environmental damage is objective, so it is required the demonstration of the defendant's conduct and the causal link between them and the damage. When it comes to damages at rural properties, the owner is responsible even if he didn't cause any damage, but it happened because of another individual. The reason for that is the legal order in Brazil says that the owner of a property has to observe its social function, pursuant to the limitations of usage determined by the environmental laws.

On the other hand, It is possible to the judge to invert the burden of proof against the defendant, because the Summary No. 618 of BSCJ the application of the principle of precaution. In other words the defendant has to demonstrate that his activities are according to the law, which is relevant to those processes that the author does not have many resources.

When it comes to the class action demands, it was seen that the Prosecutor's Office is the legitimate that has filed the most. In order to do so, it opens the civil inquiry as a preparatory procedure to collect proof of the liability.

Likewise, the State-members can use the proves in the process of administrative liability to demonstrate the duty to repair the environment in the civil lawsuit. Moreover, the environmental agencies can share the information collected in the licensing process, inspections and their data set to subsidize the lawsuit.

The geographical referencing, for instance, is able to demonstrate the changes in the property's forest, identify the burned areas. Consequently, the embargo of the area is a notable measure to stop the conduct until the mitigation of the damage.

Although there is no law in Brazil that recognizes the structural process, its existence can not be denied. In other words, it is possible to apply the structural process theory in the class action demands in Brazil.

Thus, in order to instigate other scientific investigations, it was proposed the following hypothesis: (I) in the actions that have an obligation to do something the State agencies like EMATER or EMBRAPA, responsible to invest in the technology and practices to develop a sustainable economy. (II) there is a lack of integration between the environmental agencies and agricultural ones in order to promote sustainable development. (III) the data set of the Rural Environmental Registry needs to be improved to make it easy to all environmental agencies to check if the owner's activities are against the law.

References

[1] Brazil, Constituição da República Federativa do Brasil/ the Constitution of the Federal Republic of Brazil in 1988 (CFRB/1988), also called Green Constitution or Citizen Constitution**,** Promulgada em 5 de outubro de 1988, Acesso em 25 de agosto de 2017, Disponível em: http://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm.

[2] Barroso Leticia and Rezende Vera F., O diálogo da cidade com a sustentabilidade: uma análise de possibilidades, in: *VIII Seminario Internacional de Investigación en Urbanismo, Barcelona-Balneário Camboriú*, Departament d'Urbanisme i Ordenació del Territori. Universitat Politècnica de Catalunya, Junio 2016, Acesso em: 10 de abril de 2019, Disponível em: https://upcommons.upc.edu/bitstream/handle/2117/101703/70CAM%20leticia%20barroso.pdf?sequence=1&isAllowed=y.

[3] Fernandes Eduardo Faria and Saddy André, Evolução da tutela do meio ambiente nas constituições brasileiras, *Revista de Direito Econômico e Socioambiental* 10 (2019) (3) 148-181, doi: 10.7213/rev.dir.econ.soc.v10i3.24425.

[4] Fiorillo Celso Antonio Pacheco, *Curso de direito ambiental brasileiro* (livro eletrônico) (18th ed.), São Paulo: Saraiva, 2018.

[5] Rammê Rogério Santos, Federalismo ambiental cooperativo e mínimo existencial socioambiental: A multidimensionalidade do bem-estar como fio condutor, *Veredas do Direito: Direito Ambiental e Desenvolvimento Sustentável* 10 (2013) (20) 145-145, Acesso em 23 de novembro de 2020, Disponível em: https://doi.org/10.18623/rvd.v10i20.380.

[6] Wolkmer Antônio Carlos, Direitos Humanos: novas dimensões e novas fundamentações, *Revista Direito em Debate* 11 (2002) 16-17, Acesso em: 11 de dezembro de 2020, Disponível em: https://revistas.unijui.edu.br/index.php/revistadireitoemdebate/article/view/768/490.

[7] Bosselmann Klaus, *O princípio da sustentabilidade: transformando direito e governança*, Philip Gil França (tradução); Ingo Wolfang Sarlet (prefácio), São Paulo: Editora Revista dos Tribunais, 2015.

[8] Fernandes Bernado Gonçalves, *Curso de Direito Constitucional* (livro eletrônico) (9th ed.), rev. ampl. E atual. – Salvador: JusPODIVM, 2017, p. 728.

[9] Gadotti Moacir, Educar para a sustentabilidade, *Inclusão social* 3 (2008) (1), Acesso em: 30 de maio de 2018, Disponível em: http://revista.ibict.br/inclusao/article/view/1624.

[10] Alves Arthur Bartolomeu Lima and Correia Alisson Barbalho Marangôni, Poder de polícia ambiental: análise das fiscalizações realizadas pela secretaria do desenvolvimento ambiental do estado de rondônia no período de 2014 até 2019, in: Vasconcelos Adaylson Wagner Sousa de, Vasconcelos Thamires Nayara Sousa de (Coord.), *Direito: justiça, políticas públicas e as relações entre estado e sociedade 2*, Ponta Grossa, PR: Atena, 2021. Acesso em: 03.05.2021, Disponível em: https://www.atenaeditora.com.br/post-artigo/44406.

[11] Sarlet Ingo Wolfgang and Fensterseifer Tiago, *Curso de direito ambiental* (livro eletrônico), Rio de Janeiro: Forense, 2020.

[12] BRASIL, Superior Tribunal de Justiça (STJ), AgInt no REsp 1.530.546/ AL, 2ª T., Rel. Min. Herman Benjamin, j. 07.02.2017.

[13] BRASIL, Lei n. 10.406, de 10 de janeiro de 2002, Institui o Código Civil (Civil Code). Publicado no DOU de 11.1.2002, Acesso em 31 de outubro de 2017, Disponível em:

http://www.planalto.gov.br/ccivil_03/leis/2002/L10406.htm.

[14] Godoy Claudio Luiz Bueno de and Peluso Cezar et al. (Coord), *Código civil comentado: doutrina e jurisprudência* (livro eletrônico) (12. ed.), rev. e atual. - Barueri [SP]: Manole, 2018.

[15] BRASIL, Superior Tribunal de Justiça- MS 20556 / DF - MANDADO DE SEGURANÇA - 2013/0362160-9, Relator(a): Ministro Benedito Gonçalves, 2016.

[16] Nader Paulo, *Curso de direito civil*, Vol. 7: *responsabilidade civil* (6th ed.), rev., atual. e ampl, Rio de Janeiro: Forense, 2016.

[17] BRASIL, Lei n. 6.938, de 31 de agosto de 1981, Dispõe sobre a Política Nacional do Meio Ambiente (PNMA)/ the Brazilian National Policy of Environmental Affairs, seus fins e mecanismos de formulação e aplicação, e dá outras providências, Acesso em: 11 de novembro de 2017, Disponível em: http://www.planalto.gov.br/ccivil_03/leis/L6938.htm.

[18] Silva Romeu Faria Thomé da, Manual de direito ambiental (7th ed.), rev. Atual. e amp., Salvador: Editora, JusPODIVM, 2017.

[19] BRASIL, Superior Tribunal de Justiça, Resp 1090968/SP RECURSO ESPECIAL 2008/0207311-0. Relator Min. Luiz Fux. Órgão julgador Primeira Turma, data do Julgamento, 15.06.2010, Publicação DJe 03/08/2010, RSSTJ, Vol. 48, p. 155 RSTJ vol. 239 p. 362, Acesso em 29 de dezembro de 2020, Disponível em: https://scon.stj.jus.br/SCON/GetInteiroTeorDoAcordao?num_registro=200802073110&dt_publicacao=03/08/2010.

[20] De Brito, Beatriz Duarte Correa and Mastrodi Neto Josué, As esferas de responsabilidade pelo dano ambiental: aplicação ao caso Samarco, in: *Desenvolvimento e Meio Ambiente* 39 (2016), Acesso em: 03 de janeiro de 2020. Disponível em: https://revistas.ufpr.br/made/article/view/47182/30126.

[21] Santos Messias Araújo dos, Análise da responsabilidade administrativa pelo dano ambiental por extração de minério de aluvião em localidade especialmente protegida, in: *Repositório São Lucas*, 26.06.2017, Artigo Científico (Bacharelado), Centro Universitário São Lucas, 2017. Orientação Prof. Mário Jonas Freitas Guterres, Coordenação de Direito, Acesso em 31 de outubro de 2017, Disponível em: http://hdl.handle.net/123456789/2150.

[22] BRASIL, Decreto Federal n. 6.514, de 22 de julho de 2008, Federal Decree n. 6.514, of July 22nd, 2008. Dispõe sobre as infrações e sanções administrativas ao meio ambiente, estabelece o processo administrativo federal para apuração destas infrações, e dá outras providências, Publicado no DOU de 23.7.2008, Acesso em: 12 de novembro de 2017, Disponível em: http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2008/decreto/d6514.htm.

[23] BRASIL, Superior Tribunal de Justiça. Recurso Especial (REsp) n. 1137314/MG, Rel. Ministro HERMAN BENJAMIN, SEGUNDA TURMA, julgado em 17/11/2009, DJe 04/05/2011, Acesso em 12 de novembro de 2017, Disponível em: https://stj.jusbrasil.com.br/jurisprudencia/19099708/recurso-especial-resp-1137314-mg-2009-0081174-5.

[24] Gomes Khrisna Nadjanara de Lima and Sousa Filho, Rômulo Rodrigues de. DIREITO AMBIENTAL: Responsabilidade no que tange às Infrações Ambientais Administrativas: Objetiva ou Subjetiva? Monografia (bacharelado em Direito), sob orientação da Profª Ma. Andréa Santiago Drumond, Centro Universitário São Lucas. Porto Velho, 2016, p. 50, Acesso em: 10 de novembro de 2017, Disponível em: http://repositorio.saolucas.edu.br:8080/xmlui/handle/123456789/1852.

[25] Antunes Paulo de Bessa, *Direito ambiental* (20th ed.), São Paulo: Atlas, 2019.

[26] Vitorelli Edilson, Levando os conceitos a sério: processo estrutural, processo coletivo, processo estratégico e suas diferenças, *Revista de Processo* 284 (2018) 333-369.

[27] BRASIL, *Lei n. 7.347, de 24 de julho de 1985*, Disciplina a ação civil pública de responsabilidade por danos causados ao meio-ambiente, ao consumidor, a bens e direitos de valor artístico, estético, histórico, turístico e paisagístico (VETADO) e dá outras providências. CLASS ACTION DEMANDS LAW, Law No. 7.347/85. DOU de 25.7.1985, Acesso em: 02 de abril de 2020, Disponível em: http://www.planalto.gov.br/ccivil_03/leis/L7347orig.htm.

[28] Lamy Marcelo, De Oliveira and Flávio Antonio, Legitimidade da Defensoria Pública para promover Ação Civil Pública por improbidade administrativa decorrente da omissão de políticas de saúde, *Revista Eletrônica do Curso de Direito da UFSM* 13 (2018) (1) 340-369.

[29] Machado Maykon Fagundes and Aquino Sérgio Ricardo Fernandes de, A relevância da ação civil pública frente aos objetivos do desenvolvimento sustentável, *Revista Eletrônica Direito e Política* 12 (2017) (1), Disponível em: http://www.univali.br/direitoepolitica.

[30] Ramos Carlos Fernando Silva, A efetividade da ação civil pública ambiental: acesso à justiça na confluência entre o Estado Democrático de Direito ambiental e a sociedade de risco, in: *Repositório UFMG*, 24.04.2017, Orientador: Fernando Gonzaga Jayme. Tese (doutorado) – Universidade Federal de Minas Gerais, Faculdade de Direito, 2017, Acesso em: 15 de abril de 2020, Disponível em: http://hdl.handle.net/1843/BUOS-ASPFVD.

[31] Didier Júnior Fredie, Curso de direito processual civil v. 1: introdução ao direito processual civil, parte geral e processo de conhecimento (livro eletrônico) (22nd ed.), ver. Atual. e ampl. Salvador: Ed. Jus Podivm, 2020, p.

960.

[32] Reis Neto and Afonso Feitosa et al., Caso samarco em mariana/mg e ação civil pública: Busca pelo meio ambiente ecologicamente equilibrado, *Revista Gestão & Sustentabilidade Ambiental* 7 (2018) (1) 315-328.

[33] Coelho Fernanda Rosa, A legitimidade ativa da ordem dos advogados do Brasil para a ação civil pública, *Coletânea do III Seminário Internacional Tutelas à Efetivação dos Direitos Indisponíveis*, Porto Alegre: FMP, 2019, pp. 243-258.

[34] Dantas Marcelo Buzaglo, Ação civil pública e meio ambiente: teoria geral do processo, tutela jurisdicional e execução/cumprimento (livro eletrônico), São Paulo: Saraiva, 2009.

[35] Nalin Alves Letícia and Ferreira Morong Fábio. A nova tutela de urgência nas ações civis públicas ambientais: Um instrumento de efetivação da proteção ao meio ambiente, *Colloquium Socialis* 1 (2017) (1) 1-4.

[36] BRASIL, Lei n. 13.105, de 16 de março de 2015. Código de Processo Civil (CPC)/ Civil Procedure code (CPC/2015). DOU 17.03.2015, Acesso em: 16 de julho de 2019, Disponível em: http://www.planalto.gov.br /ccivil_03/_ato2015-2018/2015/lei/l13105.htm.

[37] BRASIL, Superior Tribunal de Justiça, SÚMULA 618, CORTE ESPECIAL, julgado em 24/10/2018, DJe 30/10/2018. Súmulas Anotadas. Summary No. 618 of Brazilian Superior Court of Justice (BSCJ), Acesso em: 30 de dezembro de 2020, Disponível em: https://scon.stj.jus.br/SCON/sumanot/toc.jsp#TIT1TEMA 0.

[38] Rodrigues Marcelo Abelha and Lenza Pedro (Coord), *Direito ambiental esquematizado* (livro eletrônico) (3rd ed.), São Paulo: Saraiva, 2016.

[39] BRASIL, Superior Tribunal de Justiça, AgInt no AREsp 779250 SP, Rel. Ministro HERMAN BENJAMIN, SEGUNDA TURMA, julgado em 06/12/2016, DJe 19/12/2016, Acesso em 30 de dezembro de 2020, Disponível em: https://scon.stj.jus.br/SCON/ GetInteiroTeorDoAcordao?num_registro=201502288719 &dt_publicacao=19/12/2016.

[40] BRASIL, Superior Tribunal de Justiça, AgInt no AREsp 846996 RO, Rel. Ministro RAUL ARAÚJO, QUARTA TURMA, julgado em 04/10/2016, DJe 19/10/2016, Acesso em 30 de dezembro de 2020, Disponível em: https://scon.stj.jus.br/SCON/GetInteiroTeorDoAcordao?n um_registro=201600128320&dt_publicacao=19/10/2016.

[41] Tybusch Jerônimo Siqueira and Martins Evilhane Jum, O Direito à Informação Ambiental Sustentável no Contexto Brasileiro: A Declaração Sobre o Princípio 10 na América Latina e no Caribe e o Projeto de lei Nº. 4148/2008. *Revista de Direito e Sustentabilidade* 1 (2015) (1) 1-26, Acesso em 01 de janeiro de 2021, Disponível em: https://indexlaw.org/index.php/revistards/article/view/784 /779.

[42] Trennepohl Terence Dorneles, *Manual de direito ambiental* (livro eletrônico) (6th ed.), São Paulo : Saraiva Educação, 2018.

[43] Do Amaral and Gabriela Silva et al., Inquérito civil: O valor probatório das provas colhidas no procedimento administrativo de atribuição do ministério público, que possam servir de subsídio para propositura de uma futura ação civil pública, *Revista Ciência & Cidadania* 2 (2016) (1) 209, Acesso em 30 de dezembro de 2020, Disponível em: http://periodicos.unibave.net/index.php/cienciaeci dadania /article/view/69/58.

[44] Trennepohl Curt, Infrações contra o meio ambiente: multas, sanções e processo administrativo: comentários ao Decreto n. 6.514, de 22 de julho de 2008. – 1. Ed. Andreas J Krell. 2. Ed. 1. Reimpr. Belo Horizonte: Fórum, 2013.

[45] D. R. V. De Moraes, L. C. Ferreira Neto, M. Do S. S. Costa, A. M. M. De Lima, I. C. G. Vieira, J. L. Filho and M. Adami, Monitoramento de áreas embargadas por desmatamento ilegal, *Revista Brasileira de Cartografia* 70, (2018) 1595-1617, Acesso em 23 de abril de 2020 Disponível em: http://www.seer.ufu.br/index.php/ revistabrasileiracartografia/article/view/44566/pdf.

[46] Oliveira Fabiano Melo Gonçalves de, *Direito ambiental* (livro eletrônico) (2nd ed.), atual. e ampl. – Rio de Janeiro: Forense; São Paulo: MÉTODO, 2017.

[47] Rodrigues Ana Beatriz Matos et al., Análise multitemporal da supressão vegetal com o uso de georreferenciamento, *Revista Brasileira de Gestão Ambiental* 14 (2020) (3) 286-293, Acesso em: 09 de janeiro de 2021, Disponível em: https://www.editoraverde.org/gvaa.com.br/revista /index.php/RBGA/article/view/7114/7891.

[48] Pires Mauro Oliveira and Savian Gabriela Canto Pires Santos, A Implementação da política de regularização ambiental nos estados da Amazônia e as propostas de alteração da Lei n. 12.651/2012. 2016, in: *Repositório do Conhecimento do IPEA*, Acesso em: 23 de abril de 2020 Disponível em: http://repositorio.ipea.gov.br/bitstream /11058/9223/1/A%20Implementa%c3%a7%c3%a3o%20 da%20pol%c3%adtica.pdf.