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EVIDENCE-BASED ENVIRONMENTAL PROTECTION? INSTITUTIONAL DEVELOPMENT, PLANNING AND BUDGET ENFORCEMENT AT IBAMA

Suely Mara Vaz Guimarães d'e Araújo¹

1 INTRODUCTION

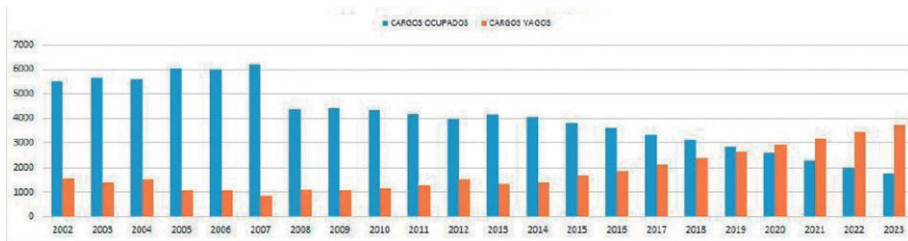
The Brazilian Institute of Environment and Renewable Natural Resources (Ibama) can be considered the main operational agency in the National Environmental System (Sisnama). Established by Act No. 7.735/1989, it gathered the attributions of four agencies: Special Secretariat of Environment (Sema) of the Ministry of Interior, Brazilian Institute of Forest Development (IBDF), Superintendence of Fisheries Development (Sudepe) and Superintendence of Rubber (Sudhevea).

Its founding act, updated in 2007, basically grants the agency the following attributions: to execute the environmental police power; to enforce federal attributions in the National Environmental Policy regarding environmental licensing, environmental quality control, permission for the use of natural resources, and environmental supervision, monitoring, and control; and to perform supplementary actions under the power of the federal government, which occurs mainly in environmental supervision, with a special focus on Brazil's Legal Amazon. Ibama has been facing serious problems to ensure the execution of its institutional tasks, both due to the progressive reduction in the number of employees and insufficient budgetary resources.

The agency had 2,618 active workers in June 2020. A technical note of that year (Ibama, 2020) presented a demand for a competitive examination to fill 2,311 positions in the agency, of which 970 were for environmental analysts, 336 for administrative analysts and 1,005 for administrative technicians. Figure 1 presents the personnel development and perspectives.

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FIGURE 1
Ibama employees (2002-2023)



Source: Ibama (2020).

Obs.: Figure whose layout and texts could not be formatted due to the technical characteristics of the original files (Publisher's note).

The Ibama (2020) document also highlights the significant reduction in the number of employees designated to act as federal environmental agents (AAF), that is, for environmental inspection activities. There are said to be 591 AAF, while in 2010 the figure was 1,311. This number speaks for itself, being clearly insufficient to ensure the effective performance of the agency in inspection operations that take place all over the country and cover different types of environmental violations, not only those related to areas controlled by the Federal Government or to activities licensed by the agency.

The largest part of Ibama's budget is for personnel expenses. The agency is responsible for the payment of retirees from the agencies involved in its constitution and, due to the growing pace of retirements, the payment load of the inactive is relevant. In the discretionary expenses, the budget actions under the responsibility of the Environmental Protection Directorate (Dipro), responsible for environmental supervision, prevention and fighting of wildfires, and environmental emergencies, stand out.

The purpose of this chapter is to present how environmental supervision and the prevention and fighting of wildfires, led by Ibama, were institutionalized as concrete public policies. This concern was unfolded into some reflections: i) the development of the agency, in the sense of using technical information and relying on information technology in its decision-making processes regarding environmental inspection and fire prevention and control; ii) the main lessons learned on these topics; and iii) how these processes are reflected in the agency's planning and budgetary execution.

The research includes the analysis of the use of scientific evidence or other kinds by the federal bureaucracy (Pinheiro, 2020; Koga et al., 2020), of institutional changes over time (Mahoney and Thelen, 2010), and the lessons derived from these processes (Sabatier, 1988; Sabatier and Jenkins-Smith, 1999; Sabatier and Weible, 2007). A view on advocacy coalitions along the lines of the advocacy

coalition framework (ACF) continues the author's research on the application of this theoretical framework to environmental policy in Brazil (Araújo, 2007; 2013; Capelari et al., 2020).

Public data and documents were used, as well as semi-structured interviews guided by the questions highlighted in the previous paragraph. The respondents were free to include additional comments. The six interviewees, all of them long-time Ibama employees, responded in writing and requested anonymity. Three of them have already worked in coordination positions at Dipro, and the other three were selected for their informal leadership role in the inspection team. In addition, participant observation was relevant due to the author's experience as president of the agency during the Temer administration (June 2016 to December 2018). Budgetary data were highlighted, with details regarding the past five years, under the assumption that the budget is an important mirror of political options and an adequate parameter, in its execution, for the analysis of the fulfilment of public policies.

2 LITERATURE REVIEW

A large set of factors influence the production of public policy, among them the availability and use of evidence. The evidence-based public policy approach (EBPPs) has generated growing interest from academics and other researchers and analysts. In this context, it is important to understand that the term *evidence* can have several meanings when applied to public policy decision-making processes: it can refer to scientific evidence, managers' personal experiences, previous organizational experiences, beneficiaries' opinions about public policies, and other players. In practice, evidence can also be used to justify decisions already made (Koga et al., 2020, p. 7-8).

Pinheiro (2020) intends to shed light on the concept of evidence, a central element from the perspective of EBPPs. Usually, the approaches on the subject state that research evidence should play a central role in the formulation and implementation of public policies, but there is room for other forms of knowledge and interests. Pinheiro (2020, p. 17) raises the following question: "since we are not only talking about scientific evidence, how would one define the information used in the actions and decisions of policymakers and other stakeholders?"

According to Pinheiro (2020, p. 18), the analysis of the concept of evidence requires a method based on moderate, reasonable, and pragmatic criteria. Following his analysis, the author also explains that the concept of evidence in public policies can be placed at different points of a continuum, in which the two poles are two general models, the rationalist one and the constructivist one. Given the limitations of leaning simplistically towards one of these two extremes, the author proposes a middle ground – the *moderate model* – which makes the following epistemological assumptions:

P1) to perceive the social, economic and political systems as complex, but rationally analyzable ones; P2) to consider the limits of knowledge in general, the fallibility of scientific knowledge and the specificities of knowledge in social sciences; P3) to consider the epistemological (scientific) status of the subject or policy area in question; and P4) to understand the use of evidence within a general framework of action of the policymaker or other stakeholders (according to the particular case), which, in turn, is specified within a contextual framework (Pinheiro, 2020, p. 21).

When making a concrete decision, public agents use a variety of information, influenced by their beliefs and knowledge, their goals, and the path taken to achieve them. This structure is influenced, in turn, by a context in which political, epistemological, normative, institutional and organizational factors must be considered (Pinheiro, 2020, p. 23).

In this study, we follow Pinheiro's (2020) perspective, which sees evidence that will support EBPPs as included in social and decision-making processes that need to be understood within a contextual framework and not as external and neutral parameters.

The moderate model presented by the author is epistemologically compatible with the public policy subsystem view presented by Sabatier and partners in the ACF (Sabatier, 1988; Sabatier and Jenkins-Smith, 1999; Sabatier and Weible, 2007). The different players, individual and collective, public and private, who act systematically over the years trying to influence decisions on a given public policy issue are driven by beliefs, which also reflect different types of interests. Moreover, the dynamics of this network of actors are influenced by external, structural, and cyclical factors. Rationality is worked in the ACF under the perspective of bounded rationality (Simon, 1985), which also seems to be featured in Pinheiro's (2020) moderate model.

The conflicts between the advocacy coalitions addressed by the ACF are embedded in a specific social, political, economic, historical, and sectoral context (embedded conflict hypothesis). The players' beliefs, in turn, are endogenous and dynamic, varying in a structured way out of these conflicts (socially induced learning hypothesis). Policy-oriented learning is an important element in the ACF. It will stem from technical information, but also from conflict and coordination relations among actors (Araújo, 2013). Vicente and Calmon (2011, p. 2) point out that, from the perspective of the ACF, the evolution of technical-scientific knowledge is important to understanding policy-oriented learning and that directed to public policies and institutional change, which contributes to the interaction with the EBPP approach.

Since the earliest versions of the ACF, technical information has been seen as a relevant resource for the advocacy coalitions that make up each policy subsystem. However, groups will incorporate this information differently, with different optics influenced by their respective belief systems.

Araújo (2007; 2013), in his application of the ACF, identified four advocacy coalitions in the green agenda subsystem, each with their own set of beliefs directed at environmental policy: i) the traditional developmentalists; ii) the modern developmentalists; iii) the socio-environmentalists; and iv) the enlightened technocrats.² Ibama was classified by Araújo (2007; 2013) as an enlightened technocrat between 1992–2002 and as a socio-environmentalist between 2003–2009. The division into four groups was adopted here due to the connection of this work with the research developed by the author on advocacy coalitions in Brazilian environmental policy.

The environmental policy subsystem, during the Bolsonaro administration, is under the dominance of traditional developmentalists, at least if one considers the formal powers (Capelari et al., 2020).

As per the view of these four groups, technical-scientific knowledge is stressed by enlightened technocrats and modern developmentalists, combined with traditional knowledge by social-environmentalists, and undervalued by traditional developmentalists (Araújo, 2007; 2013).

Finally, as Araújo (2007; 2013) found frequent evidence of gradual changes in environmental policy, characterized as layering changes according to Mahoney and Thelen's (2010) classification, we should present the typology of changes elaborated by these authors (table 1). In the Bolsonaro administration, this gradual approach has been broken (Capelari et al., 2020).

2. Among the beliefs of traditional developmentalists are: a vision of natural resources that tends towards pure utilitarianism; appreciation of cultural aspects (or, in certain extreme manifestations, disregard for knowledge as a value); and opposition to environmental policy instruments and conservation units. Among the beliefs of modern developmentalists are: focus on the sustainable use of natural resources; defense of a minimal State; priority to technical-scientific knowledge; and emphatic valorization of economic instruments of environmental policy. Among the beliefs of the socio-environmentalists are: focus on reconciling sustainable use and preservation; emphasis on democratic and participatory processes in state decisions; valuing traditional knowledge, without disregarding technical knowledge; emphatic defense of indigenous and other traditional populations; and valuing different types of environmental policy instruments. Finally, among the beliefs of enlightened technocrats are: priority for the preservation of natural resources; defense of a State characterized more by its vigorous action than by its democratic aspects; priority for technical-scientific knowledge; tendency to understand that government decisions should be centralized in the Union; emphasis on regulatory instruments; and priority for fully protected conservation units (Araújo, 2007; 2013).

TABLE 1
Typology of gradual changes

	Change by displacement	Layering	Drift changes	Change by conversion
Elimination of previous rules	Yes	No	No	No
Denial of previous rules	-	No	Yes	No
Change in the impact/application of previous rules	-	No	Yes	Yes
Introduction of new rules	Yes	Yes	No	No

Source: Mahoney and Thelen (2010, p. 16).

In layering, an institution, defined as a formal or informal rule, is complemented by rules that add to it. “*Layering of rules* tends to cause a thickening in the governance regime, altering its functioning and regulatory capacity” (Barcelos, 2012, p. 198). The elements added over time may supplant the previous systems (Gomes and Calmon, 2012, p. 5).

3 INSTITUTIONAL DEVELOPMENT

3.1 The perception of environmental agents

The content of this section seeks to expose and analyze, in an integrated manner, the responses of the interviewees to the following questions: i) “how have environmental enforcement actions and the prevention and fighting of wildfires changed over the years?”; ii) “how much has the agency evolved in the sense of using technical information and relying on information technology in its decision-making processes regarding environmental inspection and the prevention and fighting of wildfires?”; and iii) “what were the main lessons learned on these topics?”. The interviewees were also asked about the budget issue over the years, without further demand for details on the subject. The comments that make up the text are derived from the content emphasized by the respondents.

According to the interviewees’ statements, Ibama’s main asset in its initial phase was the dedication of its employees to the cause of environmental protection. They performed their tasks amidst adversities, such as poor commuting conditions, lack of technology and effective monitoring instruments, weak rules on sanctions and the environmental sanctioning process, immense logistical difficulties to enforce the environmental legislation and, above all, lack of consistent planning and a robust doctrine to overcome the challenges of environmental inspection and wildfire prevention and fighting.

From this perspective, it is worth noting that the passing of Act No. 9.605/1998 (Environmental Crimes Act – LCA), which brought together in a single piece of legislation the rules on criminal and administrative sanctions applicable to

violations against the environment, took place only in 1998. Its first regulation dates from 1999, and the one currently in use is from 2008.³ This act is the main foundation for the actions of environmental inspectors. Prior to the LCA, the rules on environmental violations were dispersed in various legal documents and were contradictory when considered together. This picture reinforces the reference made by the interviewees about the fragility of the legislation in the initial phase of Ibama's operation.

It is a consensus among the interviewees that the professionalization of the fight against environmental crimes and the prevention and fighting of wildfires was enabled mainly through: i) the competitive examination for environmental analysts in 2002 and subsequent ones; ii) the systematic partnership with the National Institute for Space Research (Inpe); iii) the strengthening of environmental policies within the Ministry of the Environment (MMA) and other ministries, especially the Action Plan for the Prevention and Control of Deforestation in Brazil's Legal Amazon (PPCDAM) and the National Plan on Climate Change; and iv) the improvement of the agency's internal planning tools regarding the subjects addressed here, expressed mainly in the Annual National Plan for Environmental Protection (PNAPA).

PPCDAM was launched in 2004 and initially involved seventeen ministries. The coordination was under the Office of the Chief of Staff, which is coherent with the interdisciplinary perspective adopted for the plan but was transferred to the MMA in 2013.⁴ From the beginning, the plan worked with three axes: land and territorial planning; environmental monitoring and control; and promotion of sustainable productive activities. In the fourth phase of the plan (2016-2020), a fourth axis was added, that of economic and regulatory instruments (Brasil, 2018).

Also as of 2004, Inpe began to operate the Real-Time Monitoring System (Deter), which enabled alerts on the occurrence of deforestation in the Brazilian Amazon, making it possible for Ibama agents to act more efficiently in the field and, consequently, rationalizing the use of human and budgetary resources.

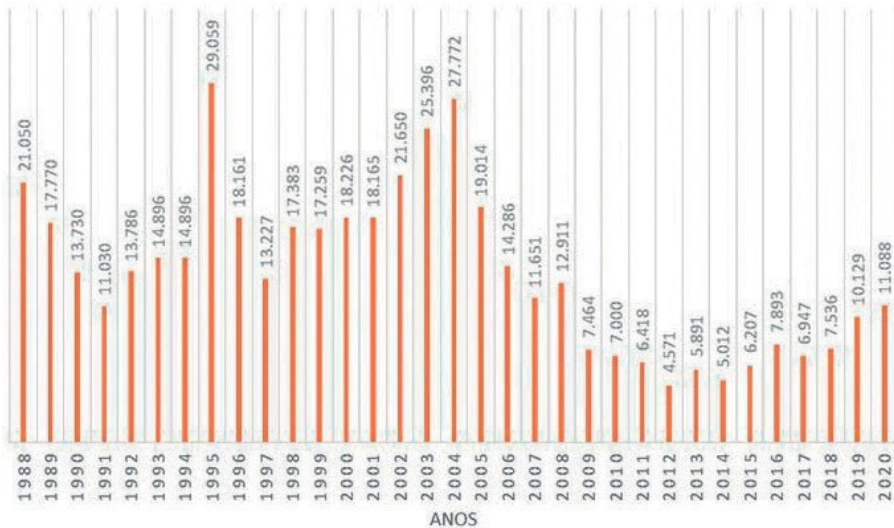
Ibama and Inpe have always been key players in the implementation of the environmental monitoring and control axis of PPCDAM – in the perception of the interviewees, the only axis that managed to remain solid throughout the duration of the plan. This is pointed out as the main factor responsible for the 83% reduction in deforestation rates in the Amazon between 2004 and 2012, as shown in figure 2.

3. Please check Decrees No. 3179/1999 (available at: https://www.planalto.gov.br/ccivil_03/decreto/D3179imprensa.htm) and 6514/2008 (available at: https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2008/decreto/d6514.htm), with an updated text.

4. Please check Decree No. 7.957/2013, available at: http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2013/Decreto/D7957.htm.

For five interviewees, the results for the 2013-2018 period are due to the lower amount of resources allocated to inspection, which places budgetary aspects in a prominent position in the perception of the inspectors. Another factor mentioned is the flexibility of the legislation brought by Act No. 12651/2012, the new Forestry Act, which allowed the regularization of irregular suppression of vegetation that occurred before July 2008. Probably, problems were also generated with the displacement of coordination from the Office of the Chief of Staff to the MMA, accompanied by the weakening of the performance of other ministries, but this was not highlighted by the respondents. The period 2019-2020 will be discussed in subsection 3.2.

FIGURE 2
Deforestation rates in the Brazilian Amazon (1988-2020)
(In km²)



Source: Inpe. Available at: http://terrabrazilis.dpi.inpe.br/app/dashboard/deforestation/biomes/legal_amazon/rates. Accessed on: Apr. 15, 2021.

Obs.: Figure whose layout and texts could not be formatted due to the technical characteristics of the original files (Publisher's note).

Three interviewees emphasized the use of Inpe data also by the team of Ibama's Center for Wildfire Prevention and Fighting (Prevfogo). Prevfogo has followed the whole trajectory of the agency,⁵ having been transformed into a specialized center in 2001.

5. Please check Decree No. 97635/1989, available at: https://www.planalto.gov.br/ccivil_03/decreto/1980-1989/D97635Impressao.htm.

With the organization of Inpe's fire data bank,⁶ Prevfogo's coordination team and its firefighters began to fight the events with more precision and speed. The interviewees reported that Prevfogo adopts ever-updated detection technologies, combining Inpe data and maps of combustible material concentration developed by the center's analysts. In addition, it has been called to perform consultancy work for other Latin American countries.

Prevfogo has improved, in partnership with universities, integrated fire management techniques, also used by the Chico Mendes Institute for Biodiversity Conservation (ICMbio) and other agencies. Integrated management is defined as:

a planning and management model that associates ecological, cultural, socio-economic, and technical aspects in the execution, integration, monitoring, evaluation, and adaptation of actions related to the use of prescribed and controlled burning and the prevention and fighting of wildfires, with the aim of reducing emissions of particulate matter and greenhouse gases, conserving biodiversity and reducing the severity of wildfires while respecting the traditional and adaptive use of fire.⁷

In the scope of integrated fire management, controlled burning is included in areas with a previously mapped accumulation of biological material, especially near conservation units or indigenous lands. As defined in an integrated fire management plan, prescription burning can be carried out for research or management purposes in determined areas and under specific conditions.

Five of the interviewees highlighted the relevance of Prevfogo's work not only in preventing and fighting wildfires but also in cooperation with other government agencies that work in this area. This work led the center to coordinate the International Wildland Fire Conference (Wildfire) in 2019.

In addition to Prevfogo, four of the interviewees highlighted the relevance of Ibama's environmental monitoring center, which was initially part of Dipro and later became a broader unit that can meet the technical demands of all the directorates, the National Center for Environmental Monitoring and Information (Cenima). The center coordinates, controls and executes activities related to the monitoring and management of environmental information, through the processing and development of technologies, research and the integration of databases and geospatial environmental information, as well as providing access to information and knowledge to the agency's internal and external public.

The organization of the coordination of environmental intelligence, integrated into the Brazilian Intelligence System (Sisbin) and the coordination of environmental emergencies, as well as the development of the electronic notification of

6. Available at: <https://terrabrasilis.dpi.inpe.br/queimadas/bdqueimadas/>. Accessed on: Apr. 15, 2021.

7. Available at: https://www.camara.leg.br/proposicoesWeb/prop_mostrarintegra;jsessionid=E5117E00962F961FFE120433C8BFB37E.proposicoesWebExterno2?codteor=1707953&filename=Avulso+-PL+11276/2018. Accessed on: Apr. 15, 2021.

infractions and remote inspection operations, were also emphasized. In the words of one of the interviewees:

the establishment of the intelligence coordination and centers and the inclusion of Ibama in Sisbin also contributed significantly to the planning and development of the institute's inspection operations, providing environmental protection actions at local and national levels with qualified and reliable information for the compilation of the evidentiary set of environmental crimes identified, in addition to providing greater safety for inspection agents in field actions (Interview).

Overall, the interviewees' narrative sought to highlight both the progressive use of technical information and scientific evidence, from the perspective of EBPPs (Pinheiro, 2020), and the gradual implementation of improvements in the agency's performance, predominantly framed as layering in the typology of Mahoney and Thelen (2010). It also evidenced the concern to highlight the lessons learned in this progressive evolution, in line with the ACF (Sabatier, 1988; Sabatier and Jenkins-Smith, 1999; Sabatier and Weible, 2007), for example, in the references to remote enforcement actions, which complement the field operations, or the work with indigenous firefighters, which shows an alignment of the agency with socio-environmentalism, consistent with the findings of Araújo from 2003 (Araújo, 2007; 2013).

It is worth noting, finally, that internal training was a topic pointed out by five interviewees. According to an inspector recognized as an important informal team leader:

among the internal actions that significantly contributed to the consolidation of Ibama as the main environmental protection institution in the country and one of the most important in the world, we can mention the investment in periodic refreshing and qualification courses for federal environmental agents. This qualification, in turn, resulted in the creation of an internal critical mass, which saw the problems and the solutions differently. As a consequence of this, we saw the creation of the Internal Regulation of Inspection (RIF), which provided greater standardization and modernization of the activity and procedures of environmental inspection, establishing deterrence as the central strategic objective of Ibama's inspection structure (Interview).

The tone of the interviewees' answers was marked by their support for the agency's history, which is expected given the critical position of the current federal administration regarding environmental policy, its rules, and its agents. We are going through a process of large-scale change, of deconstruction, in this field of public policies (Capelari et al., 2020). The interruption of the process of gradual construction that occurred in 2019 also accounts for the disruption of production circuits of technical information capable of informing decisions regarding Ibama management. This is expressed in the respondents' accounts.

3.2 Critical topics

As previously mentioned, the insufficiency of human and budgetary resources is a central problem for Ibama's performance in terms of environmental inspection and wildfire prevention and fighting. Naturally, the deficiencies in this regard also have an impact on the other activities of the agency.

As this is an aspect directly related to environmental inspection, its historical difficulties with the environmental sanctioning processes must be pointed out. The agency faces serious problems to handle the sanctioning processes and effectively collect the fines applied, whose funds raised are destined, in part (20%), to the National Fund for the Environment (FNMA) and the rest to the Treasury.⁸

Considering that the environmental sanctioning process ends with the administrative *res judicata*, the average time for its completion in the period 2005-2012 was 5 years and 7 months. In 2013, this time was reduced to 4 years and 3 months and, in 2014, to 2 years and 11 months. As the teams were reduced, the duration increased again in 2015 and 2016, to 4 years and 1 month. In more recent years, the teams started working with a goal of 3 years (Ibama, 2019).

It is worth clarifying that the number of cases tried annually by the Ibama team is high. In 2018, 13,071 cases were completed (Ibama, 2019), but the liability is very large. The time of just over three years to finish the cases needs to be reduced. To face this challenge, it is necessary to take it as a priority in the agency. Without the completion of sanctioning processes, the dissuasive power of fines and other environmental sanctions is greatly weakened.

From this perspective, Ibama has been investing in the mechanism of converting fines into environmental services.⁹ If compliance with the conversion were to become viable, there would tend to be a significant reduction in terms of the backlog of unadjudicated environmental sanctioning processes.

The conversion of fines was regulated by Decree No. 6514/2008 and was applied by Ibama until 2012 when it was suspended due to the realization that rules about the types of services to be performed were necessary, as well as due to the agency's difficulties in monitoring small projects throughout the country. Refining the rules of the mechanism based on previous experience and evidence that more structuring actions were needed to obtain results with the application of the mechanism, Decree No. 9179/2017 resumed the conversion of fines.

Among other points, it made explicit the actions regarded as environmental services and created the indirect conversion modality, aiming to carry out larger

8. Please check Act No. 9605/1998, art. 73 (available at: http://www.planalto.gov.br/ccivil_03/leis/19605.htm) and Decree No. 6514/2008, art. 13 (available at: http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2008/decreto/d6514.htm).

9. Please check the art. 72, § 4^o of Act No. 9605/1998.

projects, strategically chosen in light of the country's environmental reality and international commitments on environment and climate, such as the Paris Agreement (2015).

The decision at the time can be qualified as based on technical evidence and had the political support of the Presidency of the Republic, which was seeking resources for some projects. Environmental recovery in the headwaters region of the São Francisco River was prioritized as the subject of the first call for the indirect conversion of fines, to be launched in early 2018. The narrative was “planting trees to harvest water” at a time of pronounced water crisis. This interaction between technical and political factors is consistent with the moderate model presented by Pinheiro (2020).

Under the Bolsonaro administration, Decree No. 9760/2019 maintained the two conversion modalities (direct and indirect) but referred the details of indirect conversion to later regulation. There were adjustments to the regulation and the adoption of a provisional measure that centralized decisions about the allocation of conversion resources to the Minister of the Environment. This provisional measure¹⁰ was unsuccessful and expired. There was the cancellation of Ibama's first call for indirect conversion, launched in 2018, which had selected environmental recovery projects in the São Francisco and Parnaíba basins, and since then, the implementation of the conversion of fines remains at a very slow pace.

Only Ibama's second call for indirect conversion, which provides support for environmental recovery projects in the araucaria region in Santa Catarina, has not been suspended by the current management, certainly because it arises from a court settlement. The next subsection deals exactly with the period 2019-2020.

3.3 The period 2019-2020

The Bolsonaro administration brings a historical rupture characterized by successive gradual changes that have marked the evolution of the National Environmental Policy since its formalization by Act No. 6938/1981. It is a radical change in terms of the ideology that had been guiding this field of public policies so far. Environmental control, especially, has been the object of frequent criticism in the speeches of government authorities, who emphasize the importance of prioritizing the urban environmental agenda, as well as voluntary tools and support to the productive sector. Command and control have been put in check and, as a result, the so-called “excessive” rigor of the environmental rules and the enforcement agents, especially Ibama.

For the public policy subsystem in focus, adopting the conception of Sabatier and partners (Sabatier, 1988; Sabatier and Jenkins-Smith, 1993; 1999; Sabatier and

10. Please check Provisional Measure No. 900/2019, available at: <https://bit.ly/3D5kHRB>.

Weible, 2007), there is a turning point, marked by increasingly intense controversies and conflicts.

A process of de-institutionalization is underway, coordinated by the traditional developmentalist group. The dominant coalition actually denies the very existence of the subsystem and questions structural elements of environmental policy in the country – for example, how it was built, and the interaction between the government and civil society organizations, among others. In this extremely conflicting scenario, the concern with EBPPs and with learning directed at public policies loses almost all space and becomes empty (Capelari et al., 2020).

The interviewees' comments about these two years stressed, in addition to criticism by government authorities about the strictness of enforcement, the abandonment of PPCDAM without justification, the paralysis of new hires in the Amazon Fund, which has guaranteed important support in Ibama's enforcement actions in the Amazon since the end of 2016,¹¹ and the changes in the rules about the environmental sanctioning process, which have made it difficult to try and close the cases. Regarding the sanctioning process, the main questions are in the previous phase of mediation, which in practice has not yet taken off, and in the centralization of decision-making power in the state superintendents of the agency, who are chosen mainly based on political criteria.

These issues, it should be noted, are subject to legal action before the Supreme Court (STF).¹² Reflecting a subsystem that has become hyper adversarial (Capelari et al., 2020), the intensity of the judicialization of the federal government's environmental decisions has increased significantly. There are lawsuits filed by opposition parties to the government in the STF, lawsuits in the first instance filed by environmental organizations, in addition to lawsuits in the STF and in the first instance filed by the Public Prosecutor's Office. Furthermore, very recently, there has been an innovative citizen suit filed by six young climate activists, which calls for the suspension of the Nationally Determined Contribution (NDC) presented in 2020 under the Paris Agreement, on the grounds that an accounting gimmick had occurred that violated the requirement of progressivity in Brazil's climate ambition.¹³ Let us now see how this large-scale change will reflect in the budget.

11. The first version of the Profisc 1 project in the Amazon Fund was hired in November 2016. Available at: <https://www.fundoamazonia.gov.br/pt/projeto/Fortalecimento-do-Controle-e-do-Monitoramento-Ambiental-para-o-Combate-ao-Desmatamento-Ilegal-na-Amazonia/>. Accessed on: Apr. 15, 2021.

12. See respectively Action Against the Violation of a Constitutional Fundamental Right. (ADPF) No. 760 (available at: <https://portal.stf.jus.br/processos/detalhe.asp?incidente=6049993>), Direct Action for the Declaration of Unconstitutionality by Omission (ADO) No. 59 (available at: <https://portal.stf.jus.br/processos/detalhe.asp?incidente=5930766>) and ADPF No. 755 (available at: <https://portal.stf.jus.br/processos/detalhe.asp?incidente=6034288>).

13. Citizen Suit No. 5008035-37.2021.4.03.6100, pending before the 14th Civil Federal Court of São Paulo. Available at: <https://pje1g.trf3.jus.br/pje/ConsultaPublica/listView.seam?numeroProcesso=A%C3%A7%C3%A3o%20Popular%20n%C2%BA%205008035-37.2021.4.03.6100>.

4 THE BUDGET: PUBLIC POLICY BEYOND THE DISCOURSE¹⁴

Since the environmental policy is marked more by regulatory and control actions than by the transfer of resources, the budget for the MMA and its agencies has never been high. In recent years, however, the amounts have fallen sharply.

Araújo and Feldmann (2019) highlight, among other points, the tiny amount allocated to the MMA and its agencies in the 2020-2023 Pluriannual Plan:

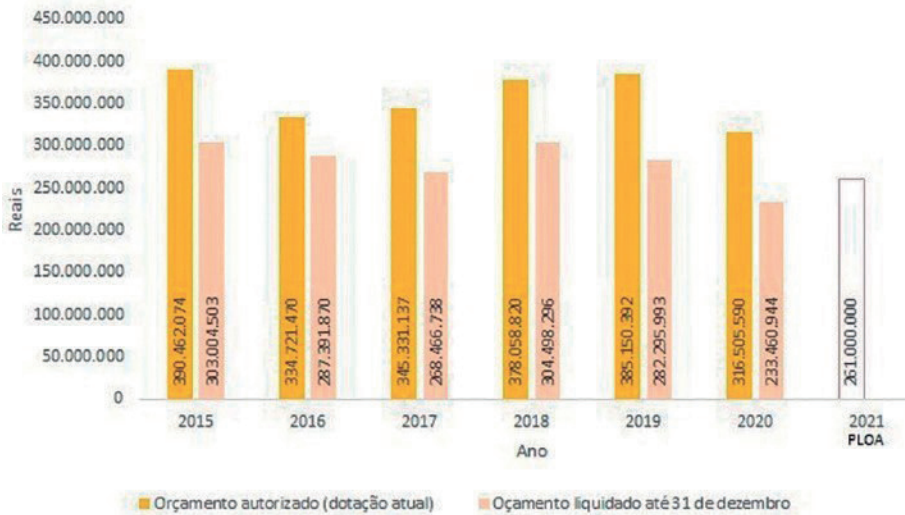
of the total resources destined for the environment axis, the Ministry of Agriculture (MAPA) will be responsible for 98.4% of the resources in the next four years, with 95.6% (more than R\$ 133 billion) going to sustainable agriculture and livestock program. The Ministry of the Environment programs – climate change, conservation and sustainable use of biodiversity and natural resources, and urban environmental quality – account for 1.6% of the total resources of the axis. If the calculation is made considering the total governmental resources foreseen in the PPA proposal (R\$ 6.8 trillion), the MMA's programs will represent 0.03%, which is unacceptable.

According to calculations by Werneck et al. (2021), the 2021 budget proposal for the MMA and its agencies, considering mandatory and discretionary expenses, brought the lowest amount in two decades. The resources are clearly insufficient if compared to the expenses necessary for the realization of the National Environmental Policy, as evidenced by the budget execution in previous years (Werneck et al., 2021). A problem of disregard for technical evidence is characterized, which contradicts the perspective of EBPPs.

As the research focuses on Ibama's activities in environmental inspection and preventing and fighting wildfires, it is necessary to analyze Ibama's discretionary budget and, subsequently, the specific budget actions related to these themes. Figure 3 shows the authorized and liquidated amounts (up to December 31) for the years 2015 to 2020 and makes a projection for the year 2021.

14. The data in this section were consolidated on April 15, 2021, prior to the enactment of the 2021 Budget Law. Also not included is the proposal for budget complementation presented by the Executive Branch to the National Congress on May 20, 2021, resulting from the promise made by the President of the Republic to increase resources for environmental policy, expressed at the meeting organized by the President of the United States on April 22 and 23, 2021.

FIGURE 3
Ibama's discretionary budget (2015-2021)
 (In R\$ 1 million)



Authorized budget (current appropriation) Budget paid up to December 31

Source: Werneck et al. (2021).

- Obs.: 1. Amounts updated according to the IPCA (Central Bank of Brazil – Citizen Calculator), considering the month of December of each year and the month of November 2020.
2. It was considered as effectively authorized the amount corresponding to the column “current appropriation” of the Integrated Planning and Budgeting System (Siop).
3. The 2019 budget action 21BS was not considered because Ibama did not internalize the corresponding resources, destined for the states.
4. In the Annual Budget Law Project (PLOA) 2021, the resources conditioned to legislative approval under the terms of item III of article 167 of the Federal Constitution of 1988 were not considered.
5. Figure whose layout and texts could not be formatted due to the technical characteristics of the original files (Publisher’s note).

As previously mentioned, among the discretionary expenses, the budget actions under the responsibility of the Environmental Protection Directorate (Dipro), which is responsible for environmental inspection and prevention and fighting of wildfires, as well as action in environmental emergencies, not covered in this text, stand out.

There are three Ibama budget actions directly related to environmental inspection and wildfire prevention and fighting, as follows:

- environmental control and inspection (214N);
- prevention and control of wildfires in priority federal areas (214M); and
- prevention, inspection, fighting and control of illegal deforestation, wildfires and other environmental violations in Brazil’s Legal Amazon and its border area (21BS).

Action 21BS was created to accommodate R\$ 280 million arising from the Lava Jato anti-corruption agreement, of which R\$ 230 million were passed on to the states in 2020 – as remainders payable from 2019 – and R\$ 50 million were internalized in Ibama, also in 2020. It should be clear that this is a temporary budget action, which will not be repeated in subsequent years.

Even in the Bolsonaro administration, which has reduced the attention to environmental enforcement by Ibama, with the empowerment of the military in operations, especially in the Amazon, actions 214M and 214N continue to be the agency's discretionary actions with the largest volume of resources, second only to the unit administration (budget action 2000), which covers the resources of the headquarters and those passed on to the state superintendencies. As an example, in 2019, R\$ 46 million were effectively authorized in action 214M and R\$ 103 million in 214N, in nominal values. The finalist action with the largest volume of resources after these two was the one related to the management of the sustainable use of biodiversity (214O), with just over R\$ 18 million authorized. These amounts were considerably reduced in 2020, a situation that becomes even more complicated when the 2021 PLOA is considered, but 214M and 214N continue to show a higher total than the other Ibama finalist actions. Table 2 shows the situation of budget action 214M between 2016 and 2020.

TABLE 2

Appropriation and execution of budget action 214M (2016-2020)
(In R\$ 1 million)

Year	Initial appropriation	Authorized	Pledged	Paid	Paid + RP ¹ paid
2016	66,521,601	66,723,084	55,251,809	46,863,414	46,683,016
2017	57,492,477	50,645,920	36,388,637	24,211,500	30,556,115
2018	60,843,645	43,212,653	41,468,806	34,203,475	41,829,959
2019	49,568,647	50,025,027	43,423,405	39,051,593	43,936,778
2020	40,371,413	40,371,413	39,645,268	30,635,631	32,183,893

Source: Siga Brasil/Senado. Available at: <https://www12.senado.leg.br/orcamento/sigabrasil>.

Author's elaboration, with the support of the Institute of Socioeconomic Studies (Inesc).

Note: ¹ RP = remainders payable.

Obs.: Data adjusted by Dec. 2020 IPCA, includes the execution of amendments.

Action 214M funds wildfire control activities in the so-called priority federal areas, by means of prevention, education, management, preparation, fighting, recovery of areas and replacement of the use of fire in the rural environment, as well as training, hiring and management of temporary fire brigades. The priority areas for Ibama's work are, in general, indigenous lands, settlements of the National Institute for Colonization and Agrarian Reform (Incra) and, in joint action with ICMBio, conservation units.

The execution amounts for this action show a significant drop in initial and authorized amounts between the years 2019 and 2020, which was also reflected in lower executed amounts, in a year marked by wildfires. It was already known that the year 2020 would be especially problematic, especially in the Pantanal region at Mato Grosso.¹⁵ Furthermore, there was a delay in hiring the brigade workers,¹⁶ which made the low execution even less effective, since, whether in the control of wildfires or environmental monitoring, it is not only important to execute but to execute at the right time throughout the year. From this perspective, it can be said that the government's actions did not respond adequately to the technical evidence presented, also in this matter clashing with the notion of EBPPs.

The scenario for 2021 gets worse: the PLOA proposed only R\$ 29.7 million and the amount approved by the Congress and sent for sanction is R\$ 35.7 million. The forecast is for a continuation of the drought,¹⁷ which would impose an increase in resources from the perspective of EBPPs and not a reduction. Table 3 shows the situation of budget action 214N between 2016 and 2020.

TABLE 3
Appropriation and execution of budget action 214N (2016-2020)
(In R\$)

Year	Initial appropriation	Authorized	Pledged	Paid	Paid + RP paid
2016	80,301,164	93,292,162	84,292,629	81,073,046	80,608,513
2017	112,817,193	101,235,805	97,121,448	85,933,570	87,198,932
2018	124,421,192	103,576,349	100,250,400	92,236,761	96,622,436
2019	112,088,291	112,088,291	104,534,589	90,375,940	93,124,878
2020	80,336,103	67,632,816	67,504,035	61,163,640	60,385,224

Source: Siga Brasil/Senado. Available at: <https://www12.senado.leg.br/orcamento/sigabrasil>.

Author's elaboration, with the support of Inesc.

Obs.: Data adjusted by Dec. 2020 IPCA, includes the execution of amendments.

Action 214N funds inspection actions aimed at verifying environmental compliance and enforcement of environmental norms, as well as the prevention and punishment of different types of environmental infractions, including deforestation and exploitation of forest resources.

The reduction in values, in 2020, in all budget phases, stands out. With R\$ 80 million in the initial appropriation and, especially, with R\$ 67 million in

15. Available at: <https://www.dw.com/pt-br/inc%C3%AAndios-e-seca-nas-nascentes-do-pantanal-alertam-paramudan%C3%A7as-clim%C3%A1ticas/a-55372348>. Accessed on: Apr. 15, 2021.

16. Available at: <https://oeco.org.br/noticias/atraso-do-governo-em-contratar-brigadistas-pode-piorar-cenario-de-queimadas-em-2020/>; and <https://oglobo.globo.com/brasil/combate-queimadas-na-amazonia-no-pantanal-foi-atrasado-em-quatro-meses-24686841>. Accessed on: Apr. 15, 2021.

17. Available at: <https://climainfo.org.br/2021/03/01/seca-persiste-e-pantanal-teme-mais-uma-temporada-de-incendios-em-2021/>. Accessed on: Apr. 15, 2021.

the actually authorized expenses, there was no room for Ibama to internalize the R\$ 47 million per year in financial resources from the contract with the Amazon Fund, which covers the expenses with the leasing of helicopters and vans used for monitoring the biome. These expenses are very important for inspection, and the resources from the Amazon Fund were essential for the inspection operations in 2017 and 2018.

If these resources from the Amazon Fund were to enter in full in 2020, there would only be R\$ 30 million for the remaining environmental supervision expenses throughout the country. Dipro's annual planning consolidated in the PNAPA always involves more than a thousand annual operations. Instead of the annual R\$ 47 million planned in the Profisc 1-B project, only R\$ 24 million were used in 2020, more than half in December.¹⁸

All Amazon Fund contracts are non-reimbursable resources, donated with the sole condition of being used for the contracted purposes, which are always related to the control of deforestation in the biome. There is no technical justification for such a low authorized amount in the 2020 budget, with direct consequences in the amounts throughout the budget cycle.

Action 214N's 2021 figures have improved a little, but did not meet the monitoring demands: the PLOA proposed R\$ 82.9 million and the amount approved by Congress and sent for sanction is R\$ 94.5 million.

It should be noted that, as of 2021, there is no forecast for additional resources in action 21BS, established to receive the resources of the Lava Jato anti-corruption agreement. The amount of R\$ 50 million allocated to Ibama was partially executed in 2020, with a total payment of R\$ 31 million. Most of the amount authorized in 2019 in this action – R\$ 230 million, in nominal values – was not released to the agency but was automatically transferred to the states of Brazil's Legal Amazon, as established in the agreement. Table 4 presents the data of action 21BS, with updated amounts.

TABLE 4
Appropriation and execution of budget action 21BS (2019-2020)
(In R\$)

Year	Initial appropriation	Authorized	Pledged	Paid	Paid + RP paid
2019	0	293,380,424	240,991,062	0	240,407,785
2020	0	52,474,184	50,721,431	32,680,869	31,610,789

Source: Siga Brasil/Senado. Available at: <https://www12.senado.leg.br/orcamento/sigabrasil>.

Author's elaboration, with the support of Inesc.

Obs.: Data adjusted by Dec. 2020 IPCA (which explains the difference in amounts compared to the original Lava Jato anti-corruption deal), includes the execution of amendments.

18. Available at: <https://www.fundoamazonia.gov.br/pt/projeto/Profisc-I-B/>. Accessed on: Apr. 15, 2021.

5 FINAL CONSIDERATIONS

The research conducted sought to describe and analyze the institutionalization process of environmental inspection actions and prevention and fighting of wildfires at Ibama, combining the theoretical perspective of the EBPPs, according to the moderate model presented by Pinheiro (2020), as well as elements of the ACF, previously applied by the author concerning environmental policy, and the classification of gradual changes presented by Mahoney and Thelen (2010).

In the more than three decades of the agency's existence, through the information in public documents and legislation, a gradual development can be seen, with changes mainly in the layering category (Mahoney and Thelen, 2010). This conclusion is also obtained from the responses of the interviewees, employees with extensive experience working in the local government.

The interviewees emphasized the progressive use of technical information and scientific evidence, from the perspective of EBPPs (Pinheiro, 2020), as well as policy-oriented learning (Sabatier, 1988; Sabatier and Jenkins-Smith, 1999; Sabatier and Weible, 2007). Examples are the emphasis on the joint work with Inpe, the relevance of Cenima and the coordination of environmental intelligence, as well as innovations such as remote surveillance operations. These manifestations are coherent with the formal records about Ibama's activities that can be found on the agency's website and in its annual management reports.¹⁹

With the beginning of the Bolsonaro administration, the environmental policy subsystem becomes dominated, at least formally, by traditional developmentalists. With this, gradualism gives way to rupture (Capelari et al., 2020). We do not yet know the extent of the effects of the radical changes underway. In addition to the deregulation effort, in the budgetary plan, there has been a decrease in the resources allocated to environmental policy, which is of great concern to those who work in this field of public policy. Finally, the weakening of the importance given to technical-scientific evidence, characterized, for example, by the abandonment of PPCDAM and other plans and programs that were being implemented, regardless of changes in government, until 2018, is cause for concern.

It is expected that this rupture process will be reversed and there will be room for greater balance within the environmental policy subsystem, with the appreciation of the expertise of public employees working in this field and the reinforcement of learning oriented to public policies and the EBPP perspective, facing all the challenges stemming from it. The institutional rupture underway in environmental policy, including the rules and practice of Ibama's actions, has

19. Available at: <https://www.ibama.gov.br/component/phocadownload/category/82-relatorios-de-gestao>. Accessed on: Apr. 15, 2021.

also led to the weakening of information production circuits that can be used as evidence, with negative effects that will probably take years to be solved. Reconstruction will not be simple.

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