



Clausewitz in the Amazon

Clausewitz en la Amazonia

CAROLINA STANGE MOULIN¹

Abstract

From 2004 to 2014, deforestation dropped 80% in the Brazilian Amazon, mainly due to the implementation of the Action Plan for the Prevention and Control in the Legal Amazon (PPCDAm). Among the diverse instruments that composed PPCDAm's policy basket, monitoring and control were the best-performing ones. The agency responsible for inspection operations at the federal level is the Brazilian Institute for the Environment and Renewable Resources (Ibama). Drawing on 44 semi-structured interviews with different actors, this paper analyzes the transformations undergone by Ibama's organizational structure and culture during the implementation process of PPCDAm. Its main finding is to shed light on the genesis of the "doctrine of deterrence", a set of guidelines that oriented Ibama's identity and actions, allowing it to rise to the challenge imposed by the PPCDAm.

Keywords: Brazilian Amazon; Deforestation prevention and control; Environmental law and policy; Clausewitzian studies; Doctrine of deterrence.

Resumen

Entre 2004 y 2014, la deforestación se redujo en 80 % en la Amazonía brasileña, principalmente gracias a la implementación del Plan de Acción para Prevención y Control en la Amazonía Legal (PPCDAm). Entre los instrumentos que componían las políticas del PPCDAm, los de monitoreo y control obtuvieron mejores resultados. El organismo responsable de la inspección a nivel federal es el Instituto Brasileño del Medio Ambiente y los Recursos Naturales Renovables (Ibama). A partir de 44 entrevistas, este artículo analiza las transformaciones en la estructura y la cultura organizativa del Ibama durante la implementación del PPCDAm. El texto arroja luz sobre la «doctrina de la disuasión», un conjunto de directrices que orientaron la identidad y las acciones del Ibama, permitiéndole estar a la altura del desafío impuesto por el PPCDAm.

Palabras clave: Amazonia brasileña; Prevención y control de la deforestación; Derecho ambiental; Estudios Clausewitzianos; Doctrina de la disuasión.

¹ Federal University of Tocantins, Brazil (carolina.stange@uft.edu.br). ORCID: 0000-0003-4484-6545. The research was funded in part by the Deutscher Akademischer Austauschdienst (DAAD) under the program Research Grants - Binationally Supervised Doctoral Degrees/Cotutelle 2021/22 (57552338) and in part by the the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001.

Article received on December 25th, 2024, and accepted for publication on October 13th, 2025. Translated by Daniela Pavez.

How to cite this article:

STANGE MOULIN, Carolina (2026). "Clausewitz in the Amazon", *Latin American Legal Studies*, Vol. 14 N° 1, pp. 279-316.

INTRODUCTION

On February 2014, a director of Brazil's federal environmental agency (Ibama, acronym for Brazilian Institute for the Environment and Renewable Resources), arrived at his office in Brasília and found it full of Kayapó indigenous people of the Mekrãgnoti land, located between the Tapajós and Xingu Rivers in the Amazonian state of Pará. The Kayapó leaders had requested a meeting with Ibama's officials to confront an unfounded rumor circulating in the capital's corridors that they would be accomplices of illegal loggers. This suspicion led to the withholding of governmental funds to which the indigenous community was entitled under the licensing plan of the highway BR163, as compensation for the impacts caused by construction works. Intrigued with the lack of deforestation alerts over the Mekrãgnoti land in satellite images, Ibama's officials set up an on-site task force. Guided through the forest pathways by the Kayapó, the Ibama rangers dismantled five camps and rescued 44 people in conditions analogous to slavery.¹ Subsequent investigations led to the arrest of the scheme's leaders, among which two agribusiness heirs from São Paulo whose family fortunes stem from political ties to the military dictatorship.

This episode—later called Operation Flying Rivers—shed light on the phenomenon of “pulverization” or “termitization” of deforestation that began to be observed in the Amazon in the 2010s. Organized in well-funded networks, loggers started to take advantage of the limitation of satellite resolution and changed their deforestation patterns to non-detectable clearances with less than 25 hectares. Scattered in small camps with up to 10 men—commonly working in conditions analogous to slavery—loggers employed different tactics to fool monitoring and delay detection: to leave tall trees standing, control fire indicators closely, and work mainly on cloudy days. When it became inevitable that their location would be spotted as a deforestation alert, they dismantled the camp and resettled it deeper into the forest.²

Operation Flying Rivers illuminates three key points to understand the dynamics of deforestation and conservation policies in the Brazilian Amazon for the past 20 years. First, the strategy employed to advance the agenda of conservation and protection of non-hegemonic subjectivities in the Amazon at a policy level has pivoted on the notion of deforestation prevention and control. The concept of “deforestation”, apparently restricted to the loss of vegetation cover measured by territorial extension, has been used for more than two decades by the community of policy experts as a macro indicator, that is, as a piece of information that, due to its visibility and comprehensiveness, is capable of condensing, representing, and conveying other, less visible socio-environmental indicators. Forest removal is followed by a range of problems, such as the displacement of indigenous peoples, traditional communities and family farmers, intensification of land conflicts, land grabbing and speculation, reduction in soil quality, loss of biodiversity, destruction of water bodies, contamination by pesticides, mercury poisoning, among others.³ I dub this feature the “intersectionality of deforestation”.

Second, the motivations and techniques fueling deforestation in the Amazon change constantly. The literature usually distinguishes two deforestation cycles. From the 1960s to the mid-1980s, deforestation was strongly motivated by highway constructions, subsidized credit, and colonization policies induced by military governments with the geopolitical goal of consolidating “national sovereignty” over the North region. From the 1990s onwards,

¹ Interview with Ibama civil servant.

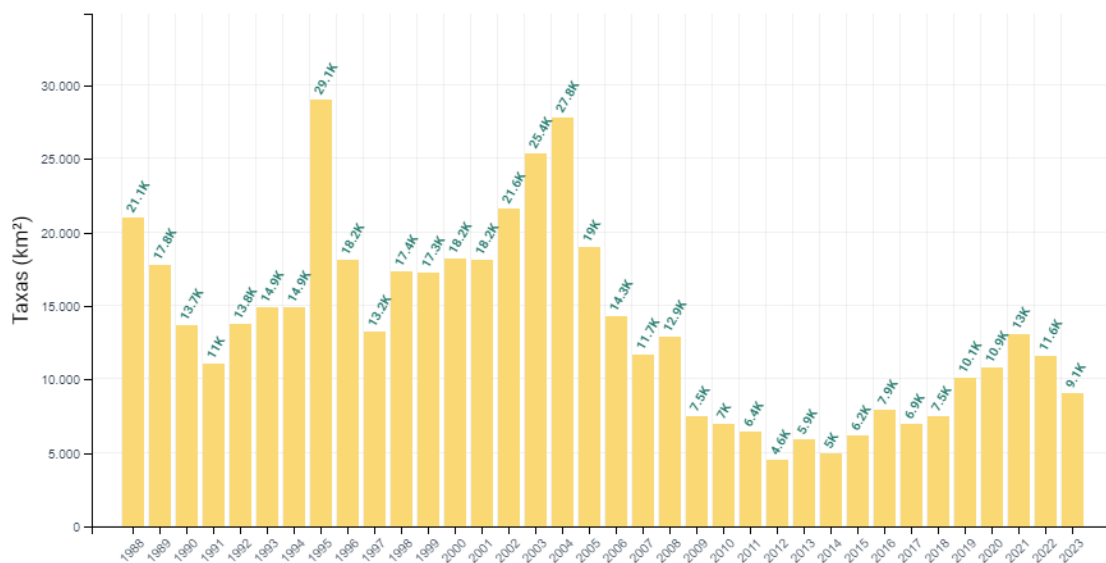
² Interview with Ibama civil servant.

³ SCHILLING-VACAFLOR *et al.* (2020); MIRANDA *et al.* (2019).

deforestation has been motivated by low-value-added economic activities, mostly monocrop agriculture and cattle ranching. After the incentives implemented by military governments gradually phased out, crops and cattle proved to have become economically viable on their own. The dynamics of deforestation, thus, changed from geopolitically-led to commodity-driven.⁴ Activities related to commodity production are highly interdependent: the arrival of more capitalized and technologized large-size agriculture in regions of “consolidated frontier” elevates land prices and pushes the opening of “new frontiers” by loggers, speculators and less professionalized ranchers.⁵

Third, the provision of complex collective goods such as environmental and territorial protection fundamentally requires state capacity and embedded state-society relations.⁶ This assertion becomes more evident when we take a closer look at the factors that led to the 80% reduction in deforestation in the Amazon observed between 2004 and 2014. By some accounts, this achievement represents the largest contribution ever made by a single country to mitigate climate change,⁷ leading, in a partial and conservative estimate, to more than 16 billion tCO₂ in emission reductions.⁸ By way of comparison, in 2021, global CO₂-emissions were estimated to amount to 37.9 billion tonnes, of which the EU produced 3 billion tonnes.⁹

Graphic 1: Deforestation rates in the Brazilian Amazon 1988-2023 (km²/year)



Source: National Institute for Space Research (Inpe 2024)

https://terrabrasilis.dpi.inpe.br/app/dashboard/deforestation/biomes/legal_amazon/increments

The reduction of deforestation happened simultaneously with rising international commodity prices—famously known as the 2000s commodity boom—which peaked in 2008 and was largely triggered by Chinese demand.¹⁰ Even amidst skyrocketing soy and beef prices and a continuous reprimarization of the Brazilian export basket, Brazil succeeded in

⁴ BECKER (2005); MONTEIRO (2021).

⁵ MARGULIS (2004).

⁶ EVANS *et al.* (2017).

⁷ CAPOBIANCO (2021).

⁸ GIZ (2022).

⁹ COMISIÓN EUROPEA (2024).

¹⁰ AGUIAR (2019).

preventing forest clearance, something that was dubbed as the “decoupling” of agricultural commodities from deforestation.¹¹ As noted by MIRAGAYA, from 2004 to 2010 the average export price of beef increased from 2,124 to 4,066 US\$/t and the average export price of soy increased from 277 to 416 US\$/t, whereas in the same period the annual deforestation rate decreased from 27,772 to 7,000 km².¹²

In other words, the main driver behind the largest decrease of deforestation in tropical forests ever recorded in modern history were not prices, but policies.¹³ More specifically, one must acknowledge the manifold policy interventions carried out by the Brazilian federal government under the Action Plan for the Prevention and Control of Deforestation in the Amazon (PPCDAm). The PPCDAm began in 2003/2004 and is now in its fifth phase. It aims to promote sustainable development in the Amazon by implementing an economic model based on the valorization of the region’s rich sociobiodiversity, with a view to raising the standard of living of the Amazonian population. The plan is structured around 3 main axes: (1) territorial planning; (2) monitoring and control; and (3) sustainable productive chains.¹⁴

This paper focuses on monitoring and control, which is credited by internal and independent audits¹⁵ as the best-performing axis within PPCDAm’s framework. It aims to provide a socio-legal description of the transformations undergone by Ibama (the institution responsible for environmental inspections at the federal level) in its organizational structure and culture during the implementation of PPCDAm. The paper’s narrative thread is divided into three parts: section 2.1. gives an account of Ibama’s performance since its creation in the wake of Brazil’s redemocratization in 1989 until the advent of PPCDAm in 2003. Section 2.2. describes the genesis and consolidation of the doctrine of deterrence within the agency. Section 2.3. unfolds the strategy pursued by Ibama public servants to apply the doctrine of deterrence on ground operations.

I. METHODOLOGY

The empirical data comprises mainly documental sources (statutes, decrees, judicial decisions, and other official documents) and 42 semi-structured interviews with current or former environmental civil servants (12), politically appointed officials of different state agencies (8), federal prosecutors (4), NGO representatives (2), and agribusiness actors (16). As the paper aims to provide a socio-legal interpretation of inspection operations and other command and control instruments, the interviews with environmental civil servants compose the bulk of the empirical material hereby employed. The perceptions of other actors (political officials, prosecutors, NGOs, and farmers) are incorporated in a subsidiary manner, with a view to complementing or challenging the views expressed by environmental civil servants on specific, more controversial topics.

Interviews were conducted from October 2021 to May 2022. Some were made online, some were made in person from March to April 2022 in the capital Brasília and the cities of Araguaína, in the state of Tocantins, and Redenção, in the state of Pará. Interviews were fully anonymized to ensure confidentiality. Each interview took an average of 1 hour and

¹¹ MACEDO *et al.* (2012).

¹² MIRAGAYA (2013).

¹³ ASSUNÇÃO *et al.* (2015); MELLO & ARTAXO (2017); CAPOBIANCO (2017); BONELLI (2019); ARAÚJO (2020); HOCHSTETLER (2021).

¹⁴ For a comprehensive account on PPCDAm’s instrumentarium and implementation history, see MOULIN (2023a).

¹⁵ BRAZIL (2013); IPEA *et al.* (2011).

20 minutes. Approximately 60 hours of recording were converted into nearly 700 pages of transcriptions.

II. TRANSFORMATIONS IN IBAMA'S STRUCTURE AND CULTURE

2.1 Pre-PPCDAM Period (1989-2002)

Ibama was created in 1989, one year after the promulgation of the Constitution that inaugurated Brazil's New Republic after 21 years of military dictatorship. The motivation for the creation of Ibama can be largely attributed to international "post-Stockholm pressure", and the need of the Brazilian government to convey a good image during the United Nations Conference on Environment and Development (UNCED) that took place in Rio de Janeiro in 1992.¹⁶ In hindsight, one could say that the creation of Ibama—along with the approval of other environmental laws such as the Environmental Crimes Act in 1998—happened in an unrepeatable "window of opportunity". Unaware of the impacts that the advance of an environmental agenda could have on their economic activities (or skeptical about the efficacy of its implementation), the agribusiness sector practically offered no organized opposition in this initial moment.¹⁷

From 1989 to 2002, Ibama's efforts to combat deforestation in the Amazon region were very precarious. Most significantly, the instruments available for Ibama to induce social change—administrative fines, land embargos, and product seizures—were highly ineffective.¹⁸ Land embargos did not entail any financial or commercial consequences for offenders, who were still able to contract credit and sell goods produced in the embargoed area. Even when the agents managed to seize the machinery employed in illegal activity, geographical conditions made transportation completely impracticable. Thus, the agents ended up having to assign the offenders themselves as trustees of the seized goods.¹⁹

Despite the overall perception of ineffectiveness and precariousness jeopardizing Ibama's performance from 1989 to 2002, one important development was accomplished in this period: The internalization and stabilization of the meaning of "environmental police power" as a guiding concept for inspection activities. The proto-doctrine of environmental police power, as elaborated and put into practice by Ibama's first inspection coordinators, can be read as a forerunner of the doctrine of deterrence that came later in the mid-2000s.

However incipient, environmental police power materialized into Ibama's first inspection training course. Initially, this initiative had no authorization from Brasília. In the one interviewee's words, he "borrowed some weapons" and "went into the forest" with a group of agents from his unit. The use of weapons in inspection, however, was something far from consensual within the agency in the early 1990s. Opposition came mostly from representatives of Ibama's civil servant association, who, in the interviewee's perception, "did not have a culture of confrontation", and were reticent about the adequacy of destroying equipment. Managing to convince the institution's leadership of his interpretation and overcome opposition from colleagues who had a different organizational vision for Ibama, the respondent argued that the institution's police power was not strictly bound to any complementary regulation, the normative availability of the necessary tools and measures for law enforcement being implied in the agency's founding statute. In the end, the respondent was not sued but promoted, and Ibama started acquiring weapons and

¹⁶ Interview with Ibama civil servant.

¹⁷ Interview with Ibama civil servant.

¹⁸ SCHMITT (2015).

¹⁹ RAJÃO & VURDUBAKIS (2013).

training its staff in firearms handling, later issuing an internal regulation with rules for the exercise of police power.²⁰

Winning this first “battle” for the meaning of environmental police power triggered a series of internal changes that reshaped the organization’s identity. Assigned to lecture welcome training courses to new civil servants, the respondent dedicated considerable time in his initial speech to distinguish between “power of the police” [*poder da polícia*] and “police power” [*poder de polícia*]. Although differentiable by a single vowel, the two expressions conveyed opposite ideas. *Poder da polícia*, in the doctrine that started to be delineated by the respondent in Ibama’s first training courses in the 1990s, hearkened back to the dictatorship. It amounted to unchecked violence perpetrated by state agents through illegitimate means to achieve illegitimate ends. In his quite graphic illustration, it was the “power to kill, to shoot, to arrest”, “the power to slap the guy’s ear to the ground”. In other words, “the use of force without legal administration”. Environmental inspections cannot forgo the use of force, but the operative principle animating this use derives from a completely different normative source and has totally distinct outlines. *Poder de polícia* was the expression that best condensed the deployment of institutionalized violence by a state organ in a democratic constitutional order, restricting the use of force to legitimate means to legitimate ends.²¹

One consequence derived from the application of police power to environmental inspections was a clearer distinction between criminal persecution and environmental police power. By the end of the 1990s, Ibama’s personnel had already internalized that their scope of action was restricted to the administrative sphere, implicitly renouncing the prerogative of opening criminal investigations. Rangers can intervene to stop illicit acts by employing inter alia the measures of embargo, seizure and destruction, but for such acts to have consequences in the criminal sphere, they need to file a criminal denouncement like any citizen and handle the issue over to the judiciary police. As Ibama inspectors are usually the first (sometimes the only) state agents to arrive in remote deforestation spots, even if they have no criminal prosecution role, the idea that their primary mission is “to stop crime”, has been gradually consolidated.²²

The publishing of Ibama’s first Manual of Inspection in 1998, with its provisions about firearm handling, represented the consolidation of an organizational view that saw the institution as an environmental-administrative “police” force oriented to stopping environmental crime and causing financial loss to environmental offenders. Taking this mission seriously inevitably required weapons. Without protection, rangers could do little to cease illegal deforestation on the spot and would be left defenseless against potential reactions from loggers, often foremen of powerful economic actors who have the political connections and financial means to evade all sorts of criminal sanctions, and thus are more likely to perceive the destruction of machinery as a much harsher punishment.²³

Had not a nonconformist agent in the mid-1990s challenged the hitherto prevailing interpretation that authorization to use weapons could not be directly implied from Ibama’s

²⁰ Interview with Ibama civil servant.

²¹ Interview with Ibama civil servant. The exercise of environmental police power cannot be mistaken with green militarization. On the latter see TROGISH (2021); VERWEIEN (2020); DUFFY *et al.* (2019), CORREDOR-GARCIA & VEGA (2023). On the militarization of environmental agencies during Bolsonaro’s government, see MENEZES & BARBOSA JR. (2021); LOTTA *et al.* (2024); SILVEIRA (2024).

²² Interview with Ibama civil servant.

²³ In contrast, the National Foundation for Indigenous People (Funai) still demands for additional regulations allowing the use of weapons by its agents. As a matter of fact, Jair Bolsonaro attempted, several times, still as a congressman in 2013 and even more intensely as president from 2019 to 2022, to revoke the permission of Ibama’s agents to carry weapons.

foundational statute, perhaps the organization would have taken a completely different course than it did. Rules, routines, techniques, tools, and language composing the circumambient world of servants allocated to inspection became less and less relatable to those making up the everydayness of civil servants assigned to licensing or environmental education, for instance. Accordingly, this chain of episodes can be read as setting the stage for the genesis of the doctrine of deterrence in the 2000s, which postulated the prioritization of inspection activities on targets of higher visibility. As we will see shortly, the application of the doctrine of deterrence resulted—even if limitedly—in the redirection of a part of the coercive apparatus of the state against the owning class’ wealth, an inversion in distribution patterns that has few precedents in Brazilian history. With the entry of new, different-minded servants during the Lula administration, organizational transformations originally triggered to deal with turtle egg thieves ended up being strategically re-channeled against the largest farmers, ranchers, and businessmen in the country.

2.2 PPCDAM and the Doctrine of Deterrence

From its creation in 1989 until the beginning of Lula’s government in 2003 and PPCDAm’s formulation in 2004, Ibama’s capacity to inspect illegal deforestation had remained very limited. Doctrinal elaborations around the notion of police power (and practical implications derived therefrom, most notably the acquisition of weapons), laid important bricks in the structure of what was to become a high-performance environmental agency in terms of deforestation prevention and control. Yet these measures by themselves were not sufficient to cause any meaningful impact. Groundbreaking change in policy followed “a true change of government”:

It was then, in 2004, that the government decided, Lula took over in 2003 and decided, the government decided to stop deforestation. It was a political decision. PPCDAm was created. Man, what a difference that made. I’ll tell you the difference it made. [...] We were working to combat deforestation and didn’t know what for. In what context, what objectives did I want to achieve by stopping deforestation? What was the public policy to be put into practice? Did I want to reduce emissions? How much? How much deforestation would I have to prevent to comply with the emission reduction policies of the Ministry of the Environment? [...] In the area of combating deforestation, we were born the day PPCDAm was born. It said what we should do. And on the day the National Plan for Climate Change [PNMC] was born, which said how much deforestation had to be reduced to reach the climate targets stipulated in the international agreements. Then we were born. Based on these policies, what they proposed, the result they expected, and the targets they stipulated, we started to direct our workforce.²⁴

The word “decision”, four times reiterated in the quotation above, underscores how the 80% reduction of deforestation in the Amazon experienced from 2004 to 2014 was not a spontaneous natural phenomenon nor a historical given but resulted from a political choice taken by Lula’s government in 2003. Crucially, in the analysis of another respondent, the agribusiness sector, which then sided against Lula, at that moment exerted little or no influence on governmental decisions concerning environmental enforcement. Furthermore, since Lula’s cabinet preferred to rely on “fresh blood” to structure new offices and initiatives, the entrants hired in the 2002 public exam quickly climbed up to leadership positions within Ibama. Having entered the agency through meritocratic recruitment and then being politically appointed to leadership functions shielded from ruralist pressure, this group of servants started to put the environmental legal framework previously built in the first 15 years of the New Republic “to work at full speed”.²⁵

²⁴ Interview with Ibama servant.

²⁵ For a detailed account of the changes in Ibama’s recruitment methods that allowed for the admission of public servants with a new mindset, see MOULIN (2023b).

It is interesting to notice how the advent of PPCDAm was incorporated into Ibama's collective memory as a rebirth, borrowing the words of the interviewee quoted above. In the area of deforestation inspection, Ibama was born the day PPCDAm was born. By articulating a representation of Ibama's identity and disclosing what the organization's purpose ought to be about, PPCDAm succeeded in triggering profound transformations in the agency's organizational structure and culture. Implementation required a plethora of actors; some of them gained more visibility, their names being stamped on the cover of policy documents and their voices heard in television interviews, while others remained invisible, the excavation effort of bringing (even if anonymously) their actions to light being one of the biggest challenges of the research. That being said, the respondents and informants interviewed for this research were in unison in appointing a few individuals as the main ones responsible for the intellectual conception and practical execution of Ibama's doctrine of deterrence. The reader was already introduced to one of them in section 3.1 when we discussed the proto-doctrine of police power. Let us now turn to another player who was paramount to Ibama's later developments.

Born in an urban middle-class family, the official was an activist in the student movement in the aftermath of redemocratization and, in the early 1990s, passed exams to study law in a public university. He was approved in the 2002 Ibama exam and, for a certain period, was affiliated with left-wing parties, a personal decision about which he has always preferred to keep a low profile, possibly from the fear of being stigmatized, as few Ibama employees have a trajectory of engagement in political parties.

In that moment of institutional experimentation, when ideas on how to implement the PPCDAm were simmering and Ibama's newcomers were quickly promoted to leadership positions, this actor went to get inspiration from a reservoir of schemes that at first sight may seem to have little to do with anti-deforestation inspections.

In 2006 I went to an office in the interior of [...]. I started to build what is called local planning, just for the office. It was me plus three other employees [to inspect] 60 municipalities. In order not to sit and cry, I decided to do a theoretical study on war. Look how crazy. I read a book by a German guy, Clausewitz, do you know him? Clausewitz has a book called *On War*. It's a book about this thick. Well, it was not only this book, but I read this book at the time and I decided to organize it better by making, in quotes, a war.²⁶

The reader may be acquainted with Carl von Clausewitz's classical treaty *On War*, most likely for the canonical aphorism "war is nothing but the continuation of politics with other means", later famously inverted by FOUCAULT as "politics is the continuation of war by other means".²⁷ The reader then may also be posing the following burning question: What could a Brazilian environmental agent in the 21st century have possibly derived from the reflections of a 19th-century Prussian general and applied to anti-deforestation inspection operations?

A war in quotes. What the interviewee meant by this caveat was that war here should not be understood literally; first and foremost, it provided a powerful metaphor to apprehend deforestation and the efforts to combat it. Clausewitz constructed his war-politics schemata at the end of the Napoleonic Wars, assuming conflict as a two-way military fight between unified entities (usually imagined as states), which he analogically compared to a duel or litigation. Environmental law enforcement against illegal deforestation obviously bears no resemblance to a war in this sense. However, although we should not take the metaphoric

²⁶ Interview with Ibama servant.

²⁷ FOUCAULT (2003).

use of warfare language in the context of deforestation prevention and control as an absolute referent, it should also not be disregarded as sheer rhetoric or an accidental analogy.

Positioning war as background metaphor for anti-deforestation inspections had at least one concrete implication to the command-and-control strategy devised by Ibama in the scope of PPCDAm. To fully understand this implication, it may be worthy to expand a bit on Clausewitz's account of war and, specially, the concept of "center of gravity", which speaks to the core of his warfare theory.

If "war is an act of force to compel our enemy to do our will", Clausewitz argued, victory is accomplished when the enemy's fighting forces are "put in such a condition that they can no longer carry on the fight" and acquiesce to the political objective sought by the winning forces. It is in this "moment of translation" from a military outcome (e.g. army stampede on the battlefield) to a binding political outcome (e.g. signing instruments of surrender) that conclusive victory becomes recognizable.²⁸ Such assumption provided the basis for what is considered Clausewitz's "most important strategic concept", the center of gravity, meaning the "focal point" to which the mass and energy of the fighting forces on either side converge. The author repeatedly asserted throughout the book that keeping one's forces concentrated and concentrically attacking the enemy's center of gravity is the "higher and simpler law of strategy". "Act with the utmost concentration", he wrote, "is in short the first principle" of warfare theory.²⁹

What was originally conceived as a system of principles to educate military officials in the arts of war was read by a young Ibama environmental agent in the early 2000s with a little leftist twist. If capital is the beating heart of the networks sustaining the conversion of forest into pasture or plantation, it should also point to the center of gravity of the forces fueling deforestation. This insight prompted the agency to include an implicit prioritization criterion in its efforts to curb forest destruction: its coercive apparatus should be redirected toward individuals, farms, or companies that had "higher visibility". In the perception of the servants directly involved with the elaboration of Ibama's inspection strategy, this meant concentrating institutional energies on the individuals with the most economic and political capital. Inspections should not generate voluminous piles of fines against "poor-as-church-mice henchmen", chainsaw operators working in slave-like conditions, or egg turtle thieves. "Large local targets, mayors, important farmers, important companies" should rather be the primary target of inspection operations.

Our objective was not to cover all infractions that occurred in a region. We abandoned this objective because it was unfeasible. We decided to do some of the infractions very well done, complete. Preferably with a large local target, mayors, important farmers, important companies. It was the idea of deterrence: we don't need to get everybody to induce general behavior. We can get one [person] and create general behavior, based on deterrence. Then our objective became feasible. We made large efforts in planning and data analysis, to choose good targets. When we got [a target], we called in the press to have local visibility. Social behavior started to change. Lots of people tried to regularize, deforestation data decreased, [...] society participation in Ibama's activities increased. So the institute of deterrence was achieved in that piece of Brazil there [...] despite resistance from several colleagues who wanted to go after all cases. What was their idea? 'If [a case] comes to Ibama, we have to do it.' No, we don't have to do it. We have limited capacity, so we will focus on the main ones. Because our strategic objective is no longer volume, but deterrence. Our objective became actually a psychological objective.³⁰

²⁸ SIMPSON (2017).

²⁹ VON CLAUSEWITZ (1946).

³⁰ Interview with Ibama servant.

The rationale behind this prioritization of high visibility targets was to increase the perception of risk by deforesters, what the interviewee called a “psychological objective”. Farmers would start to think twice before expanding into areas illegally deforested and grabbed, after hearing about the million-dollar loss of an influential neighbor whose herd was seized; banks would begin tightening their compliance protocols upon knowing of the skyrocketing fine imposed on a renowned financial institution. This change in inspection style would also mean a risk increase for the rangers, who before could go around issuing fines that would never be paid and embargoes that would never be respected without any threat to their lives.

It is no use putting a bunch of cars on the Amazon roads, fining all the deforestation that is occurring at the same time. You will never be able to solve it. Concentrate. Clausewitz's idea. You concentrate your energy; you win that main battle. You can even win the war with just one battle, because the other side gets demoralized; it can't fight you anymore. If we put 30 teams of three people, each car with three people, what are they going to do? They will fine the henchman [laranja], who will show up with the chainsaw hanging from the shoulder, the slave. 'I was the one who deforested.' The guy is instructed to say that: 'I did it.' Then they fine a henchman, who is as poor as church mice, and move on to the next. They could fine without risking their life, without greater contradictions and antagonisms, if it were only the fine and the embargo. Because up ahead the henchman will put cattle there, five years later the guy has the land title. Now, with our strategy of deterrence, we go even in areas that were embargoed two years before. We take away the smart guy's cattle, 1 thousand heads of cattle, that's 1 million BRL. We take the cattle from that guy, put him on the cross with all the carnations for others to see, to discourage others from deforesting so that in two years there won't be any deforestation. You have to concentrate. You concentrate 30 agents, put in logistics – it is expensive, it is a very expensive operation, but it is the same you would spend with all those people spread out. And you defeat [deforestation] in that region. By dissuasion you induce social behavior in the macro area.³¹

Along with the prioritization of targets of higher visibility, Ibama also started concentrating resources on operations that resulted in the immediate decapitalization of offenders. This was mainly done through the real seizure of cattle herds and the destruction of equipment used in illegal mining or logging, measures that Ibama was already authorized to take but lacked detailed regulation. In 2008 a presidential decree (Decree No. 6,514/2008) defining protocols and criteria for seizure, destruction and embargo was enacted. Under the new rules, destroying the instruments used in the infraction became mandatory in three cases: (1) “when necessary to avoid their improper use”; (2) “when the circumstances make unfeasible their transport and custody”; or (3) “when they may expose the environment to significant risks or compromise the safety of the population and the public agents involved in the inspection”. Seized goods could no longer be entrusted to the offender himself but necessarily should be “kept under the custody of the entity responsible for the inspection, and only exceptionally entrusted to another trustee until the judgment of the administrative proceeding”. In practice, these devices empowered rangers to incinerate any tractor, ballast engine, bulldozer, chainsaw, boat, and other equipment found on site. Transporting such heavy machinery from the middle of the forest all the way to an operational base was, in most cases, unfeasible due to the topography, vegetation, and rainfall regime.

In parallel, another presidential decree enacted at the end of 2007 (Decree No. 6,321/2007) established clearer rules to identify priority municipalities; instituted mandatory “re-registration” of land titles in critical municipalities; and prohibited public financial institutions from giving credit to undertakings operating in embargoed areas. The package of decrees also established the legal basis for the shared responsibility of supply chain actors for environmental offenses. “Acquiring, intermediating, transporting, or commercializing

³¹ Interview with Ibama servant.

any product or sub-product of animal or vegetal origin produced in an embargoed area” was transformed into an autonomous infraction, equally punishable by fine, embargo, seizure, destruction, and suspension. Ibama was authorized to require information about the suppliers of agroindustrial undertakings, and the omission of data or the provision of false information started to be also considered an infraction.

All these legal innovations—introduced unilaterally by the Executive through presidential decrees with little or no involvement of the Legislative, to this day still largely dominated by agribusiness representatives—were translated into guidelines of action and consolidated in the editorial form of an updated Internal Manual of Inspection. The 1998 version of the manual was substituted by a new edition in 2009. For the first time the word “doctrine” was enshrined in Ibama’s internal regulations. The ideas of concentrating institutional energy on targets of higher visibility, aiming at the immediate economic incapacitation of the offender, and extending liability across the supply chain gained a textual subtract and an official character. In the manual’s two-page foreword intended for the civil servants, we read the following:

Dear civil servant,

You are receiving the new Internal Regulation of Inspection [RIF] of Ibama. [...] The new regulation goes to the core of the problem of dispersion of energies, which generates little effectiveness of the actions aimed at environmental protection, by establishing deterrence as the central strategic objective of Ibama’s inspection structure, understood as a condition of psychological nature capable of changing undesired behaviors and inducing new practices and conducts that are appropriate to the political will of the power center that establishes it. To achieve this strategic objective, the RIF guides the group of managers and civil servants working in inspection in their daily planning and execution process, and should be carried out with a concentration of efforts on large-scale and visible actions, with objectivity, technical quality, and zeal for discipline. It is noteworthy that the new RIF is part of the general plan to establish a doctrine, understood as a set of principles specific to Ibama’s inspection and aimed at greater standardization and modernization of the activity. [...] [T]he guarantee that we are inaugurating a victorious process lies in the dedication of each Ibama agent in reading, reflecting and applying the rules. This fact will make our new RIF alive and influential.

Good reading, good work, and strength in the fight!³²

Problem of energy dispersion, deterrence as a key strategic objective, concentration of efforts on large-scale and visible actions, dissuasion as a condition of psychological nature, changing undesired behaviors and inducing new conducts that are appropriate to the political will of the center of power, inauguration of a victorious process. It is impossible not to detect the influence of Clausewitz’s theory (or a creative leftist interpretation thereof) throughout these words. The main concern expressed in the foreword, dispersion of energies, was linked to the heterogeneous backgrounds of Ibama’s personnel, as the remnants of the four merged organs and the clash between old servants and newcomers were still very much on the edge. This diversity would have given the agency the advantage of adaptation, but in order to face the politically established challenge of halting the destruction of the Amazon, inspection procedures would have to gain technical quality and be better standardized.

2.3 On-The-Ground Application of the Doctrine of Deterrence

All the planning and documentation techniques that composed the doctrine of deterrence aimed to improve the quality of Ibama’s inspection procedures. The main reason for

³² IBAMA (2010).

Ibama's obsession with standardization was the risk of judicial review against enforcement actions. Offenders commonly contested in court the motivation for Ibama to inspect their land, arguing the agents' choice of target was not systematic but casuistic, and insinuating they intended to solicit bribes. It was not uncommon that landowners were granted favourable judicial rulings, even with such spurious legal argumentation. In the 2000s, around 52% of all appeals against Ibama's precautionary measure of seizure in cases related to illegal deforestation in the Amazon were reverted by the Judiciary. The judges' main arguments for restituting the seized products to landowners were grounded on the Criminal Procedure Code, not on the Environmental Crimes Act, therefore tacitly (and unlawfully) denying application to the latter.³³

In such a scenario, standardization and documentation techniques were conceived as mechanisms to reduce the agents' space of discretion and erect a shield of legality against judicial contestations. With this concern in mind, a set of operations was put into practice between 2008 and 2011, among which operations *Pirate Cattle* and *Herd Bust* stood out in relevance. Besides being carefully planned to test and build favorable judicial precedents regarding the lawfulness of immediate decapitalization measures, this sequence of actions also served to consolidate the doctrine of deterrence internally, demonstrating to those servants who were initially skeptical about its effectiveness that its underlying logic really worked.

Operation *Pirate Cattle* targeted farms irregularly located inside conservation units within the borders of Novo Progresso, Pará. Novo Progresso was listed as a priority municipality. Its first phase lasted six months, from June to November 2008. It targeted the farm *Lourilândia*, situated inside the Ecological Station of *Terra do Meio*. This area was chosen because there was already a disobeyed judicial order determining the removal of cattle heads from the unit. Counting on an assembly of 115 men from five different police forces, 25 vehicles, one helicopter, and one tank truck filled with aircraft fuel, Ibama seized and auctioned off 3,300 heads of cattle. To be removed from the conservation unit, the herd had to be divided into four groups, each with around 800 cattle heads, and driven on foot for 200 km from *Lourilândia* to the municipality of *São Félix do Xingu*, where the auction took place. This journey lasted 18 days. Another 30,000 heads of cattle were voluntarily removed from the Ecological Station of *Terra do Meio* by fourteen other farmers notified by Ibama.³⁴ This is how an interviewee who participated in the operation described its preparation and execution:

In Operation *Pirate Cattle I*, we took advantage of a favorable confluence of factors, because we are not dumb. There was a judicial order to remove cattle from a national park in Pará, a disobeyed order from a federal judge. In Brasília people told us they did not bet on it. This was the case we chose. Unavoidably, we always had controversies with the Judiciary, because the offenders go there trying to block us. In this case it was different, there was already a judicial order. That field was clean. So we went there and seized the cattle on this farm, already fine-tuning the tools of doctrine, regulation, and planning. [...] This operation was very dramatic. We spent six months there. [...] We took the cattle away from the guys. Practically all deforestation in the region collapsed. [...] What we had done so far was to fine and embargo, but what we did now was to take away the patrimony of those who were really profiting from environmental crime. [...] Then we learned. We already imagined what would happen, but it was good to collectivize that the doctrine worked.³⁵

The second phase of Operation *Pirate Cattle* lasted approximately 10 months, from June 2009 to February 2010, and focused on the *Jamanxim National Forest*. There was no

³³ BARRETO *et al.* (2008).

³⁴ INSTITUTO SOCIOAMBIENTAL (2010).

³⁵ Interview with Ibama servant.

disobeyed judicial order addressing Jamanxim. The location was chosen because Ibama wanted to test the Judiciary. By setting up a situation that would certainly prompt a legal reaction by the offenders, it opened up the possibility to obtain a judicial decision favorable to the enforcement of Decree No. 6,514/2008. The agents seized 1,000 cattle heads from a well-known land grabber and local bully alias “Polish”, embargoed 50,000 hectares, and applied BRL 120 million in fines. The seized cattle were transported for 60 km, part by truck, part on foot, and donated to a governmental social program against hunger called *Fome Zero*.³⁶ 40 agents from Ibama and the National Force and 18 vehicles were required to complete the operation. At least another 6,000 cattle heads were voluntarily removed from the conservation unit by farmers notified by Ibama. The strategy to obtain a favorable judicial decision worked:

Then we went for Operation Pirate Cattle II in Jamanxim. That was different, it also was in a protected area but there was no judicial order. But we wanted to test the Judiciary. I wanted to create a precedent around an action of Ibama. I even had a conversation with the president of the Superior Court of Justice (STJ). [...] Just so that you have an idea, 23% of all deforestation in the Amazon in 2009 happened in Jamanxim. Look at the size of the problem. [...] Despite all the drama that this operation turned into, incredible things happened. A judge gave a decision against another judge in the same court. STJ had to break the tie. I had to explain why it was important to adhere to Ibama’s thesis. In the end, we took the cattle away from the guys. And the most interesting was that to achieve this we developed expertise, tested doctrine, adjusted regulations, created the *modus operandi*, trained field coordinators. We took the cattle away from the guys and zeroed deforestation in the region that year.³⁷

Following *Pirate Cattle*, in March 2011 Ibama’s agents went for *Operation Herd Bust*. After *Terra do Meio* and *Flona Jamanxim*, the targets were five different municipalities in the states of Pará, Amazonas and Mato Grosso. From one operation to the other, the “theater of operations” in which Ibama’s doctrine of deterrence was tested gained progressive scale and evolved in a crescendo of complexity. *Herd Bust* resulted in the seizure of 5,400 cattle heads, embargo of 19,000 hectares, and application of BRL 83 million in fines. The seized cattle were also donated to *Fome Zero*. Ibama organized meetings with local farmers in each of the targeted municipalities, to persuade them to remove the remaining irregular cattle voluntarily. The meetings were not always peaceful. In one of them, a group of ranchers tied iron chains to the propellers of Ibama’s helicopter to prevent the agents from returning to their base.

The climax of the process of combating deforestation, in my view, was *Operation Herd Bust*. [...] We seized five herds at the same time: three in Pará, one in Mato Grosso, and one in Amazonas. At the same time. I went to all these regions in person, as soon as the cattle was seized. I met with councilmen, farmers, rural unions. I said: ‘to those who lost the cattle, there is no going back. We can take someone else’s cattle too. In 15 days we will know through satellite if deforestation zeroed here. If deforestation zeroed, we won’t take any more cattle from anyone here, because we have more to do.’ This framing was allowed by the doctrine of deterrence. We don’t need to stay there. Of course, there will be an infinite number of environmental infractions there. But the important indicator was reduction of deforestation. Given the limited resources we had in terms of logistics and personnel, it was the strategy of deterrence. We arrived there [saying]: ‘this one lost the cattle. There is no point in rioting, setting tires on fire, throwing stones at Ibama’s truck. There is no point in doing this. We will multiply our teams here until we take the cattle away from him. What we can do is the following: bring deforestation to zero—we will see it via satellite in 15 days—and we will not take any more cattle from anyone else. We will take the cattle from this guy, his are not going back, and we will send the team somewhere else, where probably there will be a greater need for us.’ *Operation Herd Bust* brought

³⁶ AGÊNCIA BRASIL (2011).

³⁷ Interview with Ibama servant.

another record and influenced until 2012 the deforestation drops in the regions where we operated.³⁸

Although Operations Pirate Cattle and Herd Bust were not the only ones carried out in this period, they are regarded by the servants as constitutive nodes in the chain of actions that tested and consolidated Ibama's new doctrine of deterrence. Their results have received different evaluations. There seems to be little contestation that the effect of inspection operations on deforestation was drastic and immediate. Authors estimate that increased Ibama's presence helped avoid approximately 59,500 km² of deforestation from 2007 through 2011, without adversely affecting municipality-level agricultural production. Counterfactual simulations indicate that, in the absence of Ibama's actions, deforestation would have been 75% higher in the period.³⁹ This correlation is also observable at the municipality level. While from 2009 to 2010 deforestation decreased by 24.8% in the Amazon as a whole, in the municipality of Novo Progresso, for instance, the drop was significantly more pronounced: -83.6%.⁴⁰ More skeptical views on inspection operations, however, point out their short-lived and limited effects, as such intensive use of human resources and vehicles would be difficult to sustain on a permanent basis.⁴¹

The hardening of command-and-control instruments marked a dialectical inflection in the attitude of agribusiness actors toward environmental legislation. Besides contesting fines and seizures in judicial lawsuits, the farmers also brought the complaints to their political representatives in the Executive and Legislative. Even respondents from other institutions who were reluctant to recognize Ibama's lion's share of credit for PPCDAm's results—placing more emphasis, instead, on the overall environmental governance structure built by different ministries with political backup from the Workers Party—did not doubt that what tipped the scales and caused real nuisance among the ruralists were measures aimed at the immediate economic incapacitation of environmental offenders.⁴² As soon as this sector realized that—due to the work of a strong and empowered Ibama—the sanctions established in the Environmental Crimes Act were not dead letter but gained a concreteness that was very detrimental to their business, the rift between ruralists and environmentalists within the presidential coalition deepened, leading to the intensification of pressure in Congress to revise the Forest Code.

Although a thorough account of the perceptions of rural producers about inspection operations and environmental regulation in general exceeds the scope of this paper, it is noteworthy to point out that the success of command and control generated social and political backlash. Farmers who live in Amazonian municipalities where Ibama's presence is more frequent and do not identify themselves as indigenous or traditional populations commonly perceive anti-deforestation operations as illegitimate restrictions on property rights and unjust obstacles to wealth origination.⁴³ This strong aversion against the agency was skillfully exploited by local politicians who used “hate speech” in social media against Ibama as an electoral platform, often successfully.⁴⁴

As for the prosecutors' perspective on inspection operations, institutional relations between Ibama and the Federal Prosecutor's Office have been mostly marked by cordiality and cooperation, yet also by a slight tone of rivalry. Prosecutors seemed to want to have a say in

³⁸ Interview with Ibama servant.

³⁹ ASSUNÇÃO *et al.* (2023).

⁴⁰ IPEA *et al.* (2011).

⁴¹ Interview with an NGO representative; WEST & FEARNside (2021).

⁴² Interview with a former advisor at the federal government.

⁴³ Interview with rural producer.

⁴⁴ On the backlash or *ricochet effect* prompted by the hardening of command-and-control operations in the Amazon, see MOULIN (2024).

the definition of Ibama's inspection targets, especially with a view to subsidizing their initiative "Amazônia Protege", which aims to file massive amounts of lawsuits against deforesters.⁴⁵ At stake in this dispute is that both organizations want to have autonomy to plan strategies of environmental protection in the Amazon, without having to subordinatedly execute orders from the other.

III. CONCLUSIONS

From all the instruments that composed PPCDAm's policy basket, monitoring and control contributed the most to the 80% reduction of deforestation observed between 2004 and 2014. Ibama has risen up to the challenge of coordinating PPCDAm partly due to the arrival of a new batch of civil servants with higher education and no direct connection nor allegiance to the land-owning class, who supplied the brainpower needed to lead the institution's capacity-building process. Hired through public exams, not political appointments, these servants were quickly elevated to leadership positions in the first Lula government and given relatively autonomous conditions to develop new ideas. Reducing deforestation in the Amazon, an objective both derived from the constitutional and infra-constitutional norms already in place and set by a political decision of a left-wing reformist government, was given the highest level of priority in the inspection department.

The coercive apparatus that had begun to be built up in Ibama from 1989 to 2002 was strengthened. Most importantly, it started to be, for the first time, redirected against more high-profile targets, that is, large farmers and other capital-owning individuals involved with illegal deforestation. The main outcome of this process of institutional experimentation was the consolidation of the deterrence doctrine, which translated Ibama's legal attributions into practical guidelines of action to orient the servants in their daily activities. Inspired by a leftist reading of Clausewitz's warfare theory, the doctrine postulated the concentration of organizational energies on operations aiming at high-visibility targets and resulting in the immediate decapitalization of the offenders. Its efficacy was tested in different settings of increasing scale and complexity, and its validity has been endorsed by a Judiciary that previously almost always sided with the offenders. Its results, albeit limited, were harshly felt by agribusiness actors, who were key players in the political backlash that followed suit.

⁴⁵ Interview with federal prosecutor.

BIBLIOGRAPHY

- AGÊNCIA BRASIL (2011). *Operação do Ibama já apreendeu 5 mil cabeças de gado na Amazônia*, 27th April 2011. Available online: <<https://oglobo.globo.com/brasil/operacao-do-ibamaja-apreendeu-5-mil-cabeças-de-gado-na-amazonia-2790553>> [Accessed on 18th July 2020].
- AGUIAR, C. (2019). “O Efeito China no Desmatamento da Amazônia Legal: uma análise para o período 2000”, Master Dissertation, Federal University of Rio de Janeiro.
- ARAÚJO, S. (2020). “Environmental Policy in the Bolsonaro Government: the response of environmentalists in the legislative arena”, in *Brazilian Political Science Review*, Vol. 14, No. 2, pp. 1-20.
- ASSUNÇÃO, J.; GANDOUR, C. & ROCHA, R. (2015). “Deforestation Slowdown in the Brazilian Amazon: Prices or Policies?”, in *Environment and Development Economics*, Vol. 20, No. 6, pp. 697–722.
- ASSUNÇÃO, J.; GANDOUR, C. & ROCHA, R. (2023). “DETERring Deforestation in the Brazilian Amazon: Environmental Monitoring and Law Enforcement”, in *American Economic Journal: Applied Economics*, Vol. 15, No. 2, pp. 125-156.
- BARRETO, P.; MESQUITA, M. & MERCÊS, H. (2008). *A destinação dos bens apreendidos em crimes ambientais na Amazônia*, Imazon.
- BECKER, B. (2005). “Geopolítica da Amazônia”, in *Estudos Avançados*, Vol. 19, No. 53, pp. 71-86.
- BONELLI, F.; ARAÚJO, A.S.; BANDEIRA, D. & DA SILVA, J. (2019). “A atuação dos burocratas de nível de rua na implementação de políticas públicas no Brasil: uma proposta de análise expandida”, in *EBAPE BR*, Vol. 17, pp. 801-816.
- BRAZIL (2013). *PPCDAm fase 3 (2012-2015)*, Interministerial Working Group. Available at: <<https://bibliotecadigital.gestao.gov.br/handle/123456789/143>>.
- CAPOBIANCO, J. (2017). *Governança socioambiental na Amazônia Brasileira na década de 2000*, Doctoral Dissertation, University of São Paulo.
- CAPOBIANCO, J. (2021). *Amazônia, uma década de esperança: como o Brasil controlou o desmatamento entre 2004 e 2014 e está pondo tudo a perder*, Estação Liberdade.
- CORREDOR-GARCIA, J. & VEGA, F. (2023) “The Logic of ‘War on Deforestation’: A Military Response to Climate Change in the Colombian Amazon”, in *Alternatives: Global, Local, Political*, Vol. 49, No. 4, pp. 1-19. DOI: <<https://doi.org/10.1177/03043754231181741>>.
- DEUTSCHE GESELLSCHAFT FÜR INTERNATIONALE ZUSAMMENARBEIT (GIZ) (2021). *Pagamento por resultados de REDD+: manual de elegibilidade*. Available at: <<https://www.giz.de/en/downloads/giz-2022-pt-manual-elegibilidade.pdf>>. [Accessed on 29th September 2024].
- DUFFY, R.; MASSÉ, F.; SMIDT, E.; MARIJNEN, E.; BÜSCHER, B.; VERWEIJEN, J.; RAMUTSINDELA, M.; SIMLAI, T.; JOANNY, L. & LUNSTRUM, E. (2019). “Why we must question the militarization of conservation”, in *Biological Conservation*, Vol. 232, pp. 66-73. DOI: <<https://doi.org/10.1016/j.biocon.2019.01.013>>.
- EUROPEAN COMMISSION (2026). *Global CO₂-emissions - EU vis-à-vis the rest of the world*. <https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Greenhouse_gas_emission_footprints> [Accessed on 29th September 2024].
- EVANS, P.; HUBER, E. & STEPHENS, J.D. (2017). “The Political Foundations of State Effectiveness”, in CENTENO, M.; KOHLI, A. & YASHAR, D.J. (eds.), *States in the Developing World*, Cambridge University Press, pp. 380-408. DOI: <<https://doi.org/10.1017/CBO9781316665657.015>>.

- FOUCAULT, M. (2003). *Society Must Be Defended: Lectures at the Collège de France 1976-76*, ed. by Bertani, M. & Fontana, A., transl. by Macey, D., Picador.
- HOCHSTETLER, K. (2021). “Climate institutions in Brazil: three decades of building and dismantling climate capacity”, in *Environmental Politics*, Vol. 30, No. 51, pp. 549-570.
- IBAMA (2010). *Regulamento Interno de Fiscalização*. Available at: <<https://www.ibama.gov.br/sophia/cnia/livros/rif.pdf>>.
- INSTITUTO SOCIOAMBIENTAL (2010). Ibama fecha operação Boi Pirata II, 1st February 2010. Available at: <<https://uc.socioambiental.org/noticia/78396>> [Accessed on 10 July 2023].
- IPEA, GIZ, CEPAL (2011). *Avaliação do Plano de Ação para Prevenção e Controle do Desmatamento na Amazônia Legal (PPCDAm) 2007 - 2010*. Available at: <<https://repositorio.cepal.org/items/7e8f1201-73ff-4c8e-bc09-25adf44a1e74>> [Accessed on 10th October 2023].
- LOTTA, G.; TAVARES, G.M. & STORY, J. (2024) “Political attacks and the undermining of the bureaucracy: The impact on civil servants’ well-being” in *Governance*, Vol. 37, No. 1, pp. 619-641. DOI: <<https://doi.org/10.1111/gove.12792>>.
- MACEDO, M.; DEFRIES, R.S.; MORTON, D.C.; STICKLER, C.M.; GALFORD, G.L. & SHIMABUKURO, Y.E. (2012). “Decoupling of deforestation and soy production in the southern Amazon during the late 2000s”, in *Proceedings of the National Academy of Sciences*, Vol. 109, No. 4, pp. 1341-1346. DOI: <<https://doi.org/10.1073/pnas.1111374109>>.
- MARGULIS, S. (2004). *Causes of Deforestation in the Brazilian Amazon*, World Bank Paper, No. 22.
- MELLO, N. & ARTAXO, P. (2017). “Evolução do Plano de Ação para Prevenção e Controle do Desmatamento na Amazônia Legal”, in *Revista do Instituto de Estudos Brasileiros*, Vol. 66, pp. 108-129.
- MENEZES, R. & BARBOSA JR., R. (2021). “Environmental governance under Bolsonaro: dismantling institutions, curtailing participation, delegitimizing opposition”, in *Z Vgl Polit Wiss*, Vol. 15, pp. 229-247. DOI: <<https://doi.org/10.1007/s12286-021-00491-8>>.
- MIRAGAYA, J. (2013). *Transformações no Arco do Desmatamento: a expansão da pecuária bovina na Amazônia, pressões sobre o ambiente e o papel das políticas públicas na contenção do desmatamento de 1990 a 2010*, Doctoral Dissertation, University of Brasília.
- MIRANDA, J.; BÖRNER, J.; KALKUHL, M. & SOARES-FILHO, B. (2019). “Land speculation and conservation policy leakage in Brazil”, in *Environmental Research Letters*, Vol. 14, No. 4, 045006. DOI: <10.1088/1748-9326/ab003a>.
- MONTEIRO, R. (2021). *Amazônia: Espaço-Estoque, a negação da vida e esperanças teimosas*, Editora Dalcídio Jurandir.
- MOULIN, C. (2023a). *Deforestation between capacity building and policy dismantling: a socio-legal interpretation of the Action Plan for Prevention and Control of Deforestation in the Brazilian Amazon, 2004-2022*, Doctoral Dissertation, University of São Paulo / Osnabrück University.
- MOULIN, C. (2023b). “Building and dismantling organisational capacity and bureaucratic identity: an analysis of Ibama’s civil service examinations (1989 - 2022)”, in *Sustainability in Debate*, Vol. 14, No. 1, pp. 81-98. DOI: <<https://doi.org/10.18472/SustDeb.v14n1.2023.44346>>.
- MOULIN, C. (2024). “Capacity-Building, Dismantling Strategies, and Resistance Tactics in Brazilian Environmental Agencies: Changes in Ibama’s Authority and Nodality Tools from 2004 to 2022”, in MORAIS DE SA E SILVA, M & GOMIDE, G. (eds.),

- Public Policy in Democratic Backsliding*, Springer, pp. 259-284. DOI: <https://doi.org/10.1007/978-3-031-65707-8_10>.
- RAJÃO, R. & VURDUBAKIS, T. (2013). "On the Pragmatics of Inscription: Detecting Deforestation in the Brazilian Amazon", in *Theory, Culture & Society*, Vol. 30, No. 4, pp. 151-177. DOI: <<https://doi.org/10.1177/0263276413486203>>.
- SCHILLING-VACAFLOR, A.; LENSCHOW, A.; CHALLIES, E.; COTTA, B. & NEWIG, J. (2020). "Contextualizing certification and auditing: Soy certification and access of local communities to land and water in Brazil", in *World Development*, Vol. 140, 105281. DOI: <[10.1016/j.worlddev.2020.105281](https://doi.org/10.1016/j.worlddev.2020.105281)>.
- SCHMITT, J. (2015). *Crime sem Castigo: a efetividade da fiscalização ambiental para o controle do desmatamento ilegal na Amazônia*, Doctoral Dissertation, University of Brasília.
- SILVEIRA, M. (2024). *Navigating challenging settings: bureaucrats' policy entrepreneurship and divergence practices within Brazil's environmental and indigenous agencies*, Doctoral dissertation, Fundação Getúlio Vargas.
- SIMPSON, E. (2017). "Clausewitz's Theory of War and Victory in Contemporary Conflict", in *Parameters*, Vol. 47, No. 4, pp. 7-18. DOI: <[10.55540/0031-1723.3100](https://doi.org/10.55540/0031-1723.3100)>.
- TROGISH, L. (2021). "Geographies of fear: The everyday (geo)politics of 'green' violence and militarization in the intended transboundary Virunga Conservation Area", in *Geogroup*, Vol. 122, pp. 92-102. DOI: <<https://doi.org/10.1016/j.geoforum.2021.03.003>>.
- VERWEIEN, J. (2020). "A microdynamics approach to geographies of violence: Mapping the kill chain in militarized conservation areas", in *Political Geography*, Vol. 79, 102153. DOI: <<https://doi.org/10.1016/j.polgeo.2020.102153>>.
- VON CLAUSEWITZ, C. (1946). *On War*, ed. by Howard, M. & Paret, P., Princeton University Press.
- WEST, T. & FEARNside, P. (2021). "Brazil's conservation reform and the reduction of deforestation in Amazonia", in *Land Use Policy*, Vol. 100, 105072. DOI: <<https://doi.org/10.1016/j.landusepol.2020.105072>>.