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Polluter by Proxy: Norwegian Environmentally Harmful Mining Activities in Brazil as State-Corporate Crime

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Abstract

This article examines the role of state actors in polluting activities across borders, focusing on a case study of Norway's role in Norsk Hydro's polluting activities in Barcarena, Brazil from 1967 to 2024. Foreign corporations have long exploited Brazil's natural resources, with Norwegian enterprises increasingly involved. Norsk Hydro's operations, particularly at the Alunorte alumina refinery, have caused severe ecological damage. Using state-corporate crime theory and Southern green criminology, this study analyses leaks, toxic waste disposal in rivers and asymmetrical mining standards. To assess environmental standards, this study conducted interviews, document analyses, site visits and literature reviews. Our findings indicate that Norwegian public and private interests are intertwined, with profit motives undermining environmental aspirations and stated policies. This tendency to subordinate environmental protection abroad to financial expediency domestically is generalized through the concept of *polluters by proxy*. This concept attempts to represent types of activities where state actors produce environmental harm abroad and benefit economically while distancing themselves from direct responsibility by taking advantage of corporate structures.

Keywords: Pollution; proxy; state-corporate crime; Brazil; Norway.

Introduction

Between 16 and 17 February 2018, heavy rainfall struck the city of Barcarena in Brazil. The city is located in the Amazon rainforest in the state of Pará, characterized by wet and dry seasons. In the aftermath, nearby traditional communities living adjacent to the Hydro Alunorte[1] aluminum refinery reported that toxic waste from the industrial complex's tailings dams had leaked, contaminating the Mucurupi River and other water sources, causing illness in local residents and ecological die-off (Carmo, 2019; Comissão Externa, 2018; Comissão Parlamentar de Inquérito, 2018; TJPA, 2018; TRF1, 2018). The incident was considered a serious environmental disaster by local authorities, and initial investigations pointed to the company's liability for misconduct (Comissão Externa, 2018; Comissão Parlamentar de Inquérito, 2018).

Given the Amazon rainforest's natural susceptibility to heavy rainfall, these investigations found that the company had failed to provide adequate security measures to prevent these types of incidents, despite being aware of this natural condition. Problems with leakages at the refinery had occurred previously, but adequate solutions were never sufficiently implemented

(TRF1, 2019a).[2] This latest incident revealed numerous examples of wrongdoing involving the company, such as obstructing inspections by law enforcement agents, discharging toxic waste into the river and using environmentally hazardous technologies (Comissão Parlamentar de Inquérito, 2018; TJPA, 2019; TRF1, 2018, 2019a).

According to investigations conducted by local authorities, Norsk Hydro,[3] a Norwegian state-affiliated company that currently owns Alunorte's refinery, engaged in practices that compounded over time, resulting in this harmful scenario. The downplaying of spills, the covert night-time discharge of untreated toxic effluent into the river and the obstruction of pollution inspections at the mining complex illustrate a pattern of deliberate misconduct that resulted in preventable environmental and social harm. (Comissão Parlamentar de Inquérito, 2018; TRF1, 2018, 2019a). As observed by Carmo (2019), Norsk Hydro's path-dependent tolerance of polluting activities in Brazilian territory was not without precedent. This instance represents a longer pattern dating back to Norway's interest in exploiting natural resources in the region many decades prior (Akerø et al., 1979). Global North–South dynamics surrounding extraction predicated on continuing centre–periphery disparities have led to the normalization of excessive pollution in countries such as Brazil. This occurs through the intensive exploitation of natural resources without the implementation of the corresponding preventative measures that these countries and companies typically enforce domestically. Such dynamics have been observable since the era of European colonialism and continue to affect formerly colonized nations such as Brazil (Fausto, 1995; Mota & Lopez, 2015).

This article focuses on the role of state actors in polluting activities across borders. By means of a case study of Norks Hydro, it examines how the interaction between the Norwegian state and the company contributed to environmentally harmful mining practices in Barcarena, Brazil and the extent to which these actions can be understood as a form of state-corporate crime (Kramer et al., 2002) through the lens of Southern green criminology (Goyes, 2023).

While previous research on state-corporate crimes has focused largely on cases within domestic contexts or on multinational corporations without adequately addressing the role of home-state involvement, this study examines how a Global North state-affiliated company operates in the Global South, based on historical asymmetries rooted in colonial legacies. Spanning the period 1967–2024, it explores how Brazil's military regime facilitated foreign resource exploitation, culminating in Norsk Hydro's acquisition of Alunorte and its environmental harms. This timeframe unpacks the Norway–Brazil connection and broader Global North–South dynamics in resource extraction, environmental degradation and accountability. Such an approach highlights how states can operate as polluters by proxy, where environmental harm is outsourced across borders, allowing states to benefit economically while distancing themselves from direct responsibility for the damages caused.

This article introduces a theoretical framework that draws on state-corporate crime theory and Southern green criminology to establish the analytical lens. The methodological approach, including research design, data collection and analysis strategies is then outlined. The empirical section opens with a discussion of the historical, political and structural conditions that have shaped Brazil's vulnerability to foreign exploitation of its natural resources. This is followed by an examination of the Norwegian state's political and economic involvement in Brazil, particularly how it has facilitated favorable conditions for Norwegian enterprises. The analysis then applies the theoretical framework to the case of Norsk Hydro's harmful activities, highlighting the convergence of public and private interests. The main findings are synthesized and connected to the research question, and the article concludes with a broader discussion, introducing the concept of *polluters by proxy* and outlining directions for future research.

Theoretical Framework

To understand this interaction between state and corporate actors, this article draws on the integrated theory of state-corporate crime (Kramer et al., 2002) and later applications and refinements of that theory (Lasslett 2014; Tombs & Whyte 2020) to study how the interaction of corporate and state interests can result in various illegal or socially injurious actions, including environmental harm (Rothe, 2020). State-corporate crime is not limited to a legalistic definition of crime, instead taking a harm-based approach, because many of the social harms are often denied by the same political and economic elites that caused them (Cohen, 2001; Hillyard & Tombs 2007). Kramer and Michalowski (2012, p. 73) assert that criminologists should escape "the juridical trap that mandates they only study that which states, through their law-making systems, tell them is a crime", and instead utilize concepts such as social injury or analogous forms of social harm to go "beyond conventional understandings of crime" (p. 73). Similarly, Lynch and Stretsky (2003) note that many environmental violations are not sanctioned under criminal law, while others are treated merely as civil, technical or administrative infringements. As explained earlier, Norsk Hydro has been held legally accountable for environmental harms in Brazil, but a harm-based approach would also include how the company's practices impact the environment, even if this falls within permitted limits. These could be both objective harms (e.g., documented river pollution) and subjective harms (e.g., community experiences in which residents reported feeling disrespected by the company).

This analytic framework provides three building blocks ("catalysts for action") to assess on interactional (between individuals), organizational (within organizations) and institutional levels: the pressure for goal attainment; the (perceived) opportunity of illegitimate ways to reach those goals; and the lack of effective social control (Kramer & Michalowski, 2012). These catalysts for action are used to assess the relationship between Norsk Hydro and the Norwegian Government regarding polluting activities undertaken in Brazil.

This study provides a longitudinal perspective on the relationship between a corporation and a state, answering to the criticism that many studies focus on specific situations or moments in time (Whyte, 2014). In addition, here state-corporate crime literature is combined with insights from Southern green criminology (Goyes, 2019, 2023) to clarify, from a situated perspective (Swaaningen, 2021), how Norsk Hydro's operations are carried out in Brazil. As Kramer et al. (2002) note, the theory originally focused "on state-corporate crimes within the private production system of US capitalism" (p. 271). Therefore, this study extends state-corporate crime theory through a Southern and post-colonial epistemology, providing insights on home-state involvement (Goyes, 2019, 2023; Oliveira & Silveira, 2021; Santos, 2014). It provides new insights into the levels of analysis and the catalysts for action described in state-corporate crime theory by aligning them with local realities according to a situated view and Southern elements.

Methodology

This study adopts qualitative methods, focusing on the understanding of social constructions of reality, subjects' viewpoints and reflexivity (Wincup, 2017). It examines the causes and circumstances of state-corporate crime related to Norsk Hydro's mining activities. A literature review, document analysis, site visits and interviews were conducted to investigate how Norsk Hydro's actions, decision-making processes, and its interactions with the Norwegian state influenced mining polluting activities in Brazil in the period.

Documents were gathered from Brazilian, Norwegian and Dutch sources. Brazilian documents included reports from federal and state parliamentary inquiry commissions, reports from environmental agencies such as Instituto Carlos Chagas, SEMAS and IBAMA, and settlements and investigation files from state and federal prosecution offices. Additionally, lawsuits filed against Norsk Hydro in Pará's state and federal courts in Brazil (Actions no. 0824030-11.2019.8.14.0301, 0824887-91.2018.8.14.0301, 0015239-52.2019.4.01.3900 and 1001173-84.2018.4.01.3900) and in the Netherlands (Rechtspraak, 2022; case number C/10/616293/HA ZA 21-315) were analysed. Norwegian documents included reports and press releases from government websites such as Regjeringen, Stortinget, Folketrygdfondet, Klima-og miljødepartementet, the Royal House of Norway, the Norwegian-Brazilian Chamber of Commerce and the Norwegian Consulate General in Brazil. Other sources included annual reports and press releases from Norsk Hydro's website dating back to 1999. The lawsuits are publicly available, but full access to the Brazilian case files requires a legal login or professional registration. All other reports are freely accessible to the public.

A total of 13 semi-structured interviews were conducted with a diverse range of participants, including two experts, two practitioners, two representatives from the Norwegian government, one representative from the municipality of Barcarena, five company representatives and the leader of one of the affected *quilombola* communities.[4] In each case, written informed consent was obtained and anonymity was assured. The interviews were conducted in both Brazil and Norway.

Additionally, site visits were conducted in Barcarena, Pará, Brazil, where reports of environmental harm linked to Norsk Hydro have been presented for many years (Carmo, 2019; Comissão Externa, 2018; Comissão Parlamentar de Inquérito, 2018; TJPA, 2018; TRF1, 2018). A visit was also made to one of the affected *quilombola* communities. Furthermore, a site visit took place at Norsk Hydro's industrial complexes in Øvre Årdal, Norway. These visits aimed to assess the social and environmental impacts of similar operations in both countries.

Lastly, there was a limitation in incorporating all existing data into this research. The most important documents are found from legal proceedings, which together exceed 30,000 pages. As a result, some details could not be thoroughly addressed. Moreover, since this research focused on the interaction between the Norwegian state and Norsk Hydro, it was not possible to explore the claims of the affected victims in depth.

Colonialism, Neocolonialism and the Exploitation of Natural Resources in Brazil

Building on Kramer and Michalowski's (2012) catalysts for action and Goyes' Southern green criminology framework, this section examines how historical and colonial factors have provided foreign actors with opportunities to establish a political and economic scenario in Brazil that is more advantageous to their interests and ultimately also beneficial to Norsk Hydro's harmful activities in the country.

These circumstances can be analysed at the institutional and organizational levels of state-corporate crime theory, recognizing some of the drivers related to motivation and opportunity. In this regard, Norsk Hydro's actions are not the result of a single event, but rather a product of historical circumstances shaping Brazil's past and present. As Böhm (2023) notes, understanding state-corporate crime from a Southern perspective involves examining colonial legacies on realities. Therefore, this section highlights key historical events and circumstances that contextualize the Norsk Hydro case and Norwegian state influence. The analysis reveals a continuous pattern of motivations, opportunities, control and harmful actions by foreign nations pursuing economic and political goals in Brazil, tracing criminogenic asymmetries from colonial times to the present.

Brazil's identity has been shaped as a commodity since colonial times, focusing on the intense exploitation of its natural resources (Hendlin, 2019). The Portuguese colonization era was driven by resource extraction, with significant impacts on Brazil's identity, politics and economy, driven in part by competition with Spain as outlined in the Treaty of Tordesillas (1494). The intense resource extraction led to the deaths of many Indigenous people due to harsh conditions. Moreover, Portuguese viewed the native population as inferior, primitive, under-developed, and as pagans requiring indoctrination (Fausto, 1995; Mota & Lopez, 2015).

As Portuguese influence declined, England emerged as a new economic power, exploiting Brazil's resources through colonial practices. This shift began when King Dom João VI of Portugal fled to Brazil in 1808, opening Brazilian ports to friendly nations, particularly England. The subsequent structural and economic opportunities favoured British enterprises, such as Edward Johnston & Co and São Paulo Railway, which exploited Brazil's resources and labour (Guimarães, 2015; Machado & Figueirôa Silvia, 2001). This era saw the continuation of colonial practices under a new rule, with Brazil's independence from Portugal in 1822 marked by increased British influence and economic dominance (Abreu, 2000; Mota & Lopez, 2015).

By the late nineteenth century, the United States had emerged as a significant power, surpassing British influence in Brazil. The Monroe Doctrine of 1823 sought to limit European interference, leading to greater American involvement in Brazilian resource extraction, particularly in resource-rich areas such as Minas Gerais (Lopez & Mota, 2015). In this regard, the "Washington Agreements" of 1942 between the United States, the United Kingdom and Brazil led to the creation of Companhia Vale do Rio Doce (CVRD) to provide essential materials for the Allies (Côrrea, 2022; Mota & Lopez, 2015; Vale, 2012).

Over time, CVRD, later known as "Vale", became one of the largest mining companies globally. Its privatization in 1997 marked a new era of international competition for Brazilian resources, with companies such as Norsk Hydro seeking stakes in Vale's operations (Vale, 2012).

Against this backdrop, analysing Norsk Hydro's activities through state-corporate crime theory and Southern green criminology highlights the ongoing influence of historical patterns in modern environmental exploitation in Brazil.

Norsk Hydro's Mining Activities in Brazil

Norway's Relationship with the Brazilian Military Regime and Business Opportunities

Norway and Brazil have limited historical, colonial and cultural ties, with early interactions dating back to the nineteenth century through the Norwegian export of salted cod (*klippfisk*) and the Brazilian export of coffee (NSEC, 2007; Regjeringen, 2022; The Royal House of Norway, 2015). During the twentieth century, Norwegian investments in Brazil shifted from salted cod and coffee to focus on oil, gas, fertilizers and aluminium (Innovation Norway, 2019; Regjeringen, 2022). By 2022, Norwegian investments in Brazil had reached US$32.5 billion (Regjeringen, 2022). Norway's success in the Brazilian market was achieved through strategic political actions to overcome competitors and access resources.

A crucial moment in Norwegian business in Brazil occurred during the early years of the Brazilian military regime (1964–1985) (Fausto, 1995; Mota & Lopez, 2015). This period was marked by a strong nationalist ideology that sought to leverage Brazil's abundant natural resources for economic growth while disregarding environmental and human rights concerns

(Benjamin & Bryner, 2019). The Amazon rainforest was viewed by the federal government as a hindrance to progress (Figure 1).

Figure 1

Headline: "Enough Nonsense, Let's Get Rich!" Source: Wenzel (2020)

The military regime's agenda aimed to achieve economic development through intensive exploitation of natural resources (Fausto, 1995; Mota & Lopez, 2015). Despite its nationalist stance, the regime was still influenced by colonial ideas of Western modernity, viewing foreign investments as symbols of progress (Dussel, 1993; Santos, 2014). This extraction-friendly atmosphere created opportunities for international companies seeking to access Brazil's resources.

A key figure in Norwegian–Brazilian relations was Erling Sven Lorentzen, a Norwegian who moved to Brazil in 1953 as a representative of his father's shipping firm, Companhia de Navegação Norsul (Guimarães, 2011; Hinchberger, 1994). Lorentzen's friendship with Eliezer Batista, Brazil's Minister of Mines and Energy and former president of Vale do Rio Doce (Bowles & Prickett, 2001; Loureiro, 2006; Vale, 2012), secured Norwegian business interests in Brazil, including the establishment of Borregard's pulp factory and Araracruz Celulose S/A, both of which faced environmental and legal challenges (Gomes & Overbeek, 2011; Hinchberger, 1994; Loureiro, 2006; Pereira, 2014; Pettersen, 2016).

Lorentzen was also the son-in-law of King Olaf V of Norway's, and due to his proximity, he facilitated an official visit by the royal family to the Brazilian military regime, accompanied by Sverre Walter Rostof, Norway's Minister of Industry, and prominent Norwegian entrepreneurs. The purpose was to build "goodwill" among Brazilians in order to benefit Norwegian businesses (Pettersen, 2016, p. 216). It was the first time in history that a Norwegian head of state had visited South America (Guimarães, 2011). As the local government had been criticized for censorship and restrictions on democracy and human rights (Akerø et al., 1979; Fausto, 1995; Mota & Lopez, 2015), the visit of the Norwegian royal family became a demonstration of international legitimacy and support for the regime and Amazonian development (Figures 2 and 3).

Figure 2

The Norwegian Visit Highlighted in Manchete magazine (Scheier, 1967)

Notes: The Norwegian visit was highlighted in *Manchete* magazine, an important publication at the time, showing President Artur Costa e Silva in a luxurious ceremony with King Olaf V and Princess Ragnhild (Lorentzen's wife). The headline reads: "A king at the court of President Artur" (Scheier, 1967). It metaphorically refers to the "Round Table of King Arthur", symbolizing the international prestige and recognition of the Brazilian government with foreign dignitaries as guests.

Figure 3

King Olav V of Norway was Welcomed in a Solemn Session in the Brazilian Parliament. Source: Scheier (1967)

During this period, the 1967 Brazilian Federal Constitution restricted mineral exploitation to Brazilian entities or companies based in the country (Article 161, §1º). Lorentzen's connections and the royal visit helped Norwegian entrepreneurs to gain goodwill from the Brazilians and secure favourable conditions for their ventures (Akerø et al., 1979; Guimarães, 2011). This period saw significant Norwegian investments in Brazil's mining sector, including the Trombetas River bauxite project in Pará, initially started by the Canadian company Alcan from 1961 to 1967, which was discontinued and then resumed in 1974 with the participation of other companies, including Norsk Hydro and ÅSV, each holding a 5 per cent stake (Meyer, 2012; Siqueira, 2002; Vale, 2012).

Later, in 2003 and again in 2015, the Norwegian Royal family visited Brazil with the aim of strengthening ties between Norway and Brazil, especially in the business sector, where numerous Norwegian companies were established (Royal House of Norway, 2003, 2015). Over the decades, Norwegian political involvement in Brazil has been driven by the pursuit of economic opportunities and favourable conditions for Norwegian companies (Norwegian Ministry of Foreign Affairs, 2011).

Norsk Hydro's History, Corporate Structure and Need for Expansion

To comprehend Norsk Hydro's environmental impact in Brazil, it is essential to understand its origins and motivations. At the end of the nineteenth century, Norway faced starvation and initiated research to develop artificial fertilizers, leading to the

establishment of Norsk Hydro (Bryhn & Gram, 2023; Norsk Hydro, n.d.a; Sanders, 2022). Scientist Kristian Birkeland's breakthrough in artificial fertilizer production laid the foundation for the company, which later diversified into aluminum and oil during the 1950s (Bryhn & Gram, 2023; Norsk Hydro, n.d.; Sanders, 2022).

Norsk Hydro's history in aluminum production is closely tied to Norwegian state interests and can be traced back to before World War II. Post-war, Norsk Hydro transitioned to Norwegian ownership, with 45 per cent state ownership (Akerø et al., 1979; Bryhn & Gram, 2023; Meyer, 2012; Sanders, 2022). Growing global demand for aluminum prompted the Norwegian parliament to support national production, leading to the formation of Årdal og Sunndal Verk (ÅSV) (Akerø et al., 1979; Bryhn & Gram, 2023; Meyer, 2012; Sanders, 2022). In 1966, Alcan, a Canadian company, acquired ÅSV shares, and in 1986, Norsk Hydro merged with ÅSV, consolidating its aluminum production. By 2004, Norsk Hydro had refocused solely on aluminum, demerging from fertilizer production (Bryhn & Gram, 2023; Norsk Hydro, 2021).

This historical context underscores the Norwegian government's pivotal role in aluminum production and its backing of domestic industries. ÅSV and Norsk Hydro's investments in Brazil's Trombetas project (Mineiração Rio do Norte – MRN) exemplify this commitment, driven by resource needs and global competitiveness despite the awareness of the violations committed by the Brazilian military regime (Akerø et al., 1979).

Currently, Norsk Hydro's two main shareholders are Nærings- Og Fiskeridepartementet (Ministry of Industry and Fisheries) and the Folketrygdfondet (Government Pension Fund Norway). According to the company's website, "the Norwegian State is represented by the Ministry of Trade, Industry, and Fisheries (Nærings- og fiskeridepartementet)", which owns 34.26 per cent of the shares (Norsk Hydro, 2023). Folketrygdfondet, the second major shareholder with 6.66 per cent of the shares, is a state-owned investment fund that manages assets for the Government Pension Fund Norway (Regjeringen, n.d.).

This background points to the Norwegian state's dual role as a major shareholder and its strategic objectives in safeguarding local industrial concerns.

Norsk Hydro's Expansion in Brazil and Alunorte

At the end of the nineteenth century, foreign economic interests in Brazil shifted. By the early twentieth century, American influence resulted in the 1942 "Washington Agreements" at a time of high global demand for minerals. This allowed the establishment of Companhia Vale do Rio Doce (CVRD) in Brazil (Corrêa, 2022; Vale, 2012). In 1971, large bauxite deposits were discovered in the Trombetas River, Pará, by the Canadian company Alcan. Due to Brazilian laws against foreign-only resource exploitation, the joint-venture Mineiração Rio do Norte (MRN) was formed with CVRD, Alcan, ÅSV, Norsk Hydro and others as shareholders (Siqueira, 2002; Vale, 2012; Wanderley, 2007).

By acquiring shares in MRN, Norsk Hydro was able to partially achieve its objectives, which would later benefit the company in a more favourable fashion. Conversely, since the Brazilian military regime was carrying on violent internal politics and had not shown any concern for ecological and Indigenous rights, after the situation was exposed by some researchers, the Stortinget (the Norwegian Parliament) criticized the deal and the participation of Norwegian companies (Akerø et al., 1979). One of the main arguments raised was that major companies were causing the displacement of Indigenous peoples, and that the MRN project was full of misinformation and would result in severe ecological damage (Akerø et al., 1979). At the time, washing residues were indiscriminately discharged into Lake Batata, causing its silting up, contamination and the death of animals (Akerø et al., 1979; Borges & Torres, 2021; Carmo, 2019; Comissão Parlamentar de Inquérito, 2018). Subsequently, ÅSV withdrew, but Norsk Hydro stayed regardless of the negative scenario (Akerø et al., 1979; Carmo, 2019; Sanders, 2022).

In 1974, CVRD initiated projects to establish an aluminum production chain in the region, leading to the establishment of the Albras and Alunorte projects near Porto Trombetas in the city of Barcarena, Pará. Nonetheless, financial constraints postponed its conclusion to the 1990s (Siqueira, 2002). Alunorte's operations began in 1995, with bauxite initially sourced under long-term contracts from MRN, in which Hydro already held an equity interest. However, economic crises and mismanagement soon led to significant losses, prompting the Brazilian government, under President Fernando Henrique Cardoso, to privatize CVRD – and consequently Alunorte – in 1997 (Guimarães, 2011; Monteiro, 2005; Siqueira, 2002; Vale, 2012). Following a bidding process, Norsk Hydro's prior expertise with the MRN project led to the company being granted a 25.25 per cent stake in Alunorte by the 2000s, making it the second-largest shareholder (Norsk Hydro, 1999). In the following years, Norsk Hydro participated in several expansions at Alunorte, and in 2010, it became its majority shareholder, holding 91 per cent ownership (Norsk Hydro, 2011a). Since the Norwegian state is the company's main shareholder, the transaction needed its direct approval, and this occurred with the "unanimous" support of the Norwegian parliament, *Stortinget* (Regjeringen, 2010; Stortinget, 2010). Norsk Hydro celebrated this as a new era in the global aluminum market (Norsk Hydro, 2011a; *Aftensposten*, 2010).

In addition, Norsk Hydro informed the Brazilian press at the time that with the transaction it would have "full control" of bauxite extraction and production (Solsvik & Moskwa, 2010). In the Norwegian press, the transaction was also celebrated with enthusiasm. The local newspaper *Aftenposten* (2010) described it as "Hydro: a giant in Brazil's rainforest". Hydro's director at the time hailed the achievement as the apex of an "adventure" that had begun 37 years earlier. (*Aftensposten*, 2010).

Currently, Alunorte is the world's largest alumina refinery outside China, with an annual capacity of 6.3 million tons of processed material (Norsk Hydro, n.d.b). As detailed by historical documentation, Norsk Hydro's involvement in Brazil dates back to the 1970s, during the country's military regime. Despite being aware of Brazil's political and environmental challenges, at every juncture the company expanded its presence, ultimately becoming the majority shareholder of Alunorte by 2010.

Aluminum Production and Tailings Dams

The process of producing aluminum, known as the Bayer process, begins with mining the raw material bauxite, followed by the extraction of alumina (aluminum oxide) in a refinery (Alunorte), and subsequently the production of aluminum in a high temperature and pressure smelter (Albras) (Norsk Hydro, n.d.c). This process generates a reddish toxic sludge with a highly alkaline pH leachate, which is stored in tailings dams (Lemos & Pimentel, 2020). At Alunorte's refinery, there are currently two waste disposal sites: DRS1 (Figure 4) and DRS2.

Figure 4

Alunorte's Tailing Dam, DRS1. Source: Neto (2018)

The 2003 and 2009 Incidents

By 2009, Vale was the majority shareholder followed by Norsk Hydro. At the time, Norsk Hydro was already deeply involved in the company's operations, having expanded its stake over the years to 34 per cent (Norsk Hydro, 2009). According to Norsk Hydro's annual reports (2000–2009), after Alunorte's privatization, the company actively focused on investments and the expansion of the refinery, reducing costs and increasing production capacity. For many years, MRN – which was involved in the pollution of Lake Batata and of which Norsk Hydro was a shareholder – also served as Alunorte's main supplier (Akerø et al., 1979; Borges & Torres, 2021; Carmo, 2019; Comissão Parlamentar de Inquérito, 2018; Siqueira, 2002).

In 2003, the first reports of leaks from Alunorte's industrial plant emerged. According to investigations, there was a leak of toxic mud due to bursting pipes, leakages from the tailing dam and the discharge of toxic waste, which compromised the water table and caused the death of fish and crustaceans, contaminating agricultural land (Comissão Parlamentar de Inquérito, 2018; Lemos & Pimentel, 2020). Despite the significance of these incidents, a later 2009 incident received more attention from the press and local authorities.

In April 2009, the environmental division of the Pará state police began investigating crimes of pollution caused by leaks from Alunorte's plant in the Murucupi River in Barcarena (TRF1, 2019a). A scientific analysis of the water quality of the river was conducted by LAQUANAM[5] and the reports concluded that the leakage of effluents from the Alunorte company into the Murucupi River and its subsequent spread through the study area were responsible for the verified changes. The oxygen depletion killed fish in the river and nearby water bodies, and hazardous waste with corrosive properties was found over a large area in Barcarena (TRF1, 2019a).[6]

During this period, Alunorte was fined several times by Brazilian authorities, and in all the administrative procedures it denied any wrongdoing or violations and, in some cases, blamed the intense rainfall in the investigated period as the cause of some of the abnormalities discovered (TRF1, 2019a).[7] In response to these claims, law enforcement agents certified and fined Alunorte for the leakage incidents as well as for deterring inspection (TRF1, 2019a).[8] Additionally, Para's state attorney also highlighted the recurrence of the company's environmental offences and the severe consequences of its actions for nature as causes for aggravating the penalties applied (TJPA, 2018; TRF1, 2019a). Internally, the company reported that red mud was accidentally discharged into a nearby river and that the system "was unable to handle the large precipitation" (Norsk Hydro, 2009).

Alunorte was convicted in a criminal case for the 2009 leakage by the Brazilian Federal Judiciary on 10 July 2024 (TRF1, 2019a).[9] During the investigation, it was discovered that Alunorte had failed to fulfil its obligation to prevent foreseeable damage. This failure was attributed to the deliberate undersizing of the overflow structures and the freeboard of the tailings dam's north and west walls, as well as the direct discharge of toxic waste into the river. These actions were considered to have been taken to secure economic advantages from bauxite processing, without proper regard for the community's need for a healthy and balanced environment (TRF1, 2019a, p. 82). As a result, the company took on the risk of caustic material overflow due to increased local rainfall on 27 April 2009. The pollution resulted in the discharge into the Amazon of highly caustic solid waste containing heavy metals such as aluminum, iron, sodium and titanium without proper treatment. This waste was released into a preservation area consisting of vegetation and springs of the Murucupi River. As a result, the pollution altered the structure of local biotic communities, caused the mortality of fish, reptiles and terrestrial animals, contaminated artesian drinking water wells and exposed riverside residents to heavy metal intoxication and skin burns. Moreover, the decision affirmed that Alunorte had not provided any assistance to local communities, such as providing water or taking measures to prevent damages, and that leaks from Alunorte had been recurring (TRF1, 2019a, p. 96). The company filed an appeal against this decision.

Figure 5

Effluent from the Tailing Dam Being Released into the Environment Without Treatment and the Overflowing of the Toxic Waste. Source: TRF1 (2019, p. 28, 38)

The 2018 Incident

Between 16 and 17 February 2018, a heavy downpour struck the region around Alunorte. Subsequently, nearby residents reported leaks from one of the tailings dams, which would have resulted in the area being contaminated with toxic waste (Comissão Externa, 2018; Comissão Parlamentar de Inquérito, 2018; TRF1, 2018). The affected communities sought assistance from local authorities, prompting investigations that revealed the company's use of clandestine pipes to discharge toxic waste directly into the Murucupi River (Comissão Parlamentar de Inquérito, 2018; TRF1, 2018).[10]

Local authorities commissioned the Instituto Evandro Chagas (IEC), which had also conducted the tests in 2009, to examine the water. The analysis, led by researcher Marcelo de Oliveira Lima, validated the concerns expressed by the communities. Images from 17 February 2018 revealed reddish waters in streams near the Bom Futuro and Vila Nova communities, indicating potential effluent outflow. Surface water samples collected the following day showed reduced volume and a change in colour (TRF1, 2018). It was also found that the new tailings dam was operating without proper authorization (Comissão Parlamentar de Inquérito, 2018; TRF1, 2018).

Additionally, they noted that a large area of flooding was evident in the SAMP 45 area on 17 and 18 February 2018, contradicting the company's claim of treating all effluents (TRF1, 2018, p. 4).[11] The high alkalinity of untreated effluent (pH = 9.39) exceeded the limits established by Brazilian legislation, and a clandestine pipeline for discharging untreated effluents into the environment was also discovered (Comissão Parlamentar de Inquérito, 2018; TRF1, 2018, p. 8).[12] The affected *quilombola* communities protested, reporting illnesses, animal deaths, destroyed livelihoods, contaminated water and indications that the water tasted "like perfume" (Brasil de Fato, 2018; *Globo*, 2018a; TJPA, 2018).

In its initial response, Norsk Hydro denied that any leakage had occurred, and took no responsibility for the incident. Responding to the Brazilian and Norwegian press, the company maintained its position that it had not committed any illegal acts (*Globo*, 2018b; DN, 2018a; DOL, 2018; Fouche, 2018; Lundgaard, 2018; NRK, 2018; Phillips, 2018). Regarding the allegation that clandestine pipes were used, Norsk Hydro downplayed the situation, reporting that a "reserve pipe" existed but it was not leaking. However, the company stated that it would take measures to seal the pipes (TRF1, 2018). In addition, Norsk Hydro attributed any adverse circumstances to heavy rainfall, repeating its justification used for the 2009 incident, and took legal action against Marcelo de Oliveira Lima for defamation (TRF1, 2019b). The Norwegian press described this as the company "strik[ing] back" (DN, 2018c).

Since the Norwegian state is Norsk Hydro's main shareholder, when questioned about the situation, it denied any involvement in the case and said it did not interfere in the management of the company: Magnus Thue, vice-minister of the Nærings- og fiskeridepartementet, exculpated government responsibility in interviews to the Brazilian press on 28 February 2018, claiming that "the environmental challenges that occurred after the heavy rains in Barcarena and the allegations that the Alunorte refinery could be responsible are issues that must be addressed between Norsk Hydro and the responsible authorities in Brazil" (*Globo*, 2018c). Similarly, in an interview with the Ministry's staff, when asked how they assessed the incidents, they explained that there is a distinction between ownership and management. They affirmed that conversations had taken place with the company, that trust was considered very important, and that nothing was documented (Personal communication, 30 September 2024). In contrast, on 19 March 2018, Torbjørn Røe Isaksen, who was Norway's Minister of Industry at the time, told the Norwegian press that he had met the Norsk Hydro management and "reminded them of the high expectations we have for all Norwegian companies and of course also the partially state-owned companies" (DN, 2018d).

As evidence was presented, Brazilian Federal justice halted Alunorte's operations until proper measures were taken (TRF1, 2018).[13] Facing local pressure and financial losses, Norsk Hydro admitted to dumping toxic waste into the river through the "old pipe" (Comissão Parlamentar de Inquérito, 2018; DN, 2018b; Exame, 2018; UOL, 2018). The CEO of the company, Svein Richard Brandtzæg, declared:

> We have released untreated rainwater and surface water into the Pará river. It is completely unacceptable and a violation of what Hydro stands for. On behalf of the company, I want to say sorry to the local population, authorities and society. (DN, 2018e)

During hearings at Pará's State Parliament, Alunorte executives and employees, including directors Robson Holanda, Domingos Campos and Carlos Neves, and operations manager Sérgio Ferreira, acknowledged they anticipated stress on the effluent treatment station of DRS Basins I and II during the rainy season. They resorted to a clandestine drain to manage excess volumes, leading to at least two overflow incidents. Despite these admissions, they continued operations, obscured risks to the

government and the public, hindered thorough inspections and attempted to conceal additional violations (Comissão Parlamentar de Inquérito, 2018).

Subsequently, an agreement was reached with federal and state prosecutors to implement corrective measures, after which Brazilian federal justice allowed the company to fully resume its activities (MPF, 2019; TRF1, 2018). In the settlement agreement, obligations included providing water and essential services to affected communities. Additionally, despite not formally recognizing any responsibility, Norsk Hydro agreed to adopt measures to fix and enhance the drainage system, as well as to pay ten fines[14] related to illegal discharges and river contamination that were applied administratively against the company because of not only the 2018 incident but also the 2009 incident, amounting to R$33.370.498,00 (MPF, 2019). According to Norsk Hydro, the company agreed to pay the fines outlined in the agreement and to supply drinking water to the local communities because they aimed to build a good relationship with the city and the community that was suffering and be "good neighbors" (personal communication, 10 October 2024). Contrary to that view, from the perspective of one of the nearby *quilombola* residents, the company could not be considered in this way, since "a good neighbor does not poison you and he respects you" (Comunidade Gibrié, personal communication, 23 October 2024). When asked about the benefits brought by the company, the municipal administration stated that the company did not bring tangible benefits to the region and that most of the social projects developed were aimed primarily at publicity and media exposure, without yielding long-term results for the community (personal communication, 24 October 2024).

During one of the legal proceedings, the Barcarena Municipal Attorney's Office issued a brief statement about the company's embargo, labeling it a "social tragedy" due to the significant employment it provided in the city, disregarding the major discussions related to the incident. Prosecutors severely criticized this position (TRF1, 2018). Barcarena's municipal office confirmed that the embargo imposed on the company had deeply impacted the local economy and citizens (personal communication, 24 October 2024). Later, Marcelo de Oliveira Lima was acquitted by the Brazilian Federal Judiciary of Norsk Hydro's defamation accusations (TRF1, 2019b).

Currently, the company denies any wrongdoing and affirms that the discharges were controlled and did not cause any contamination as certified in some scientific reports provided by local authorities (Norsk Hydro, 2024). Conversely, in the legal proceeding involving the embargo, Pará's State Attorney's Office affirmed that the company had already confessed and that the denial was a contradiction (TRF1, 2018). Since the agreement with the prosecutors did not entail the company's acknowledgement of responsibility for the incidents, local communities – feeling inadequately compensated and believing that the contamination issue had not been properly addressed – united under an association named CAINQUIAMA[15] to file lawsuits against the company in both Brazil (TJPA, 2018) and the Netherlands (Rechtspraak, 2022); both are still ongoing.

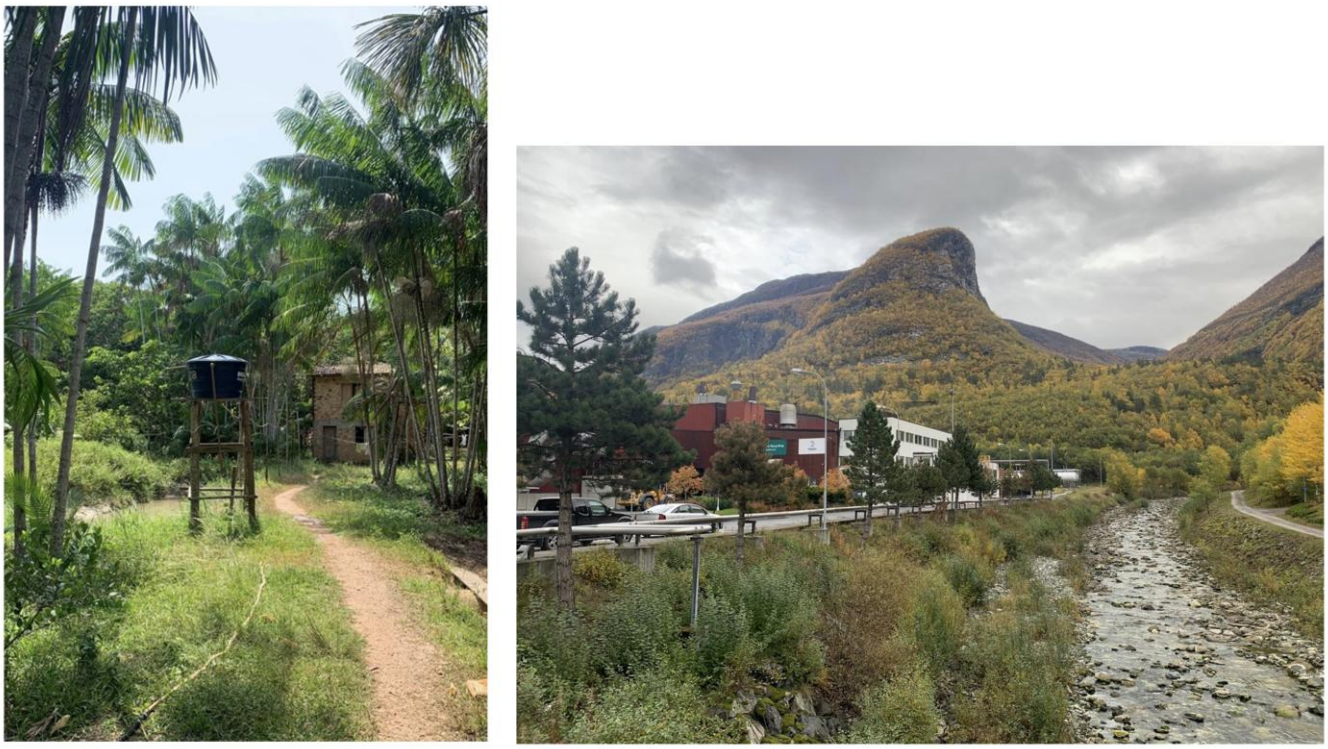
Asymmetries in Mining Environmental Standards

On 3 May 2019, CAINQUIAMA filed a new lawsuit against Norsk Hydro (TJPA, 2019). The focus now was on the whole aluminum production chain and the pollution caused to the environment and the local population. According to their claims, the company uses far more hazardous technologies in Brazil than it does in Norway. The allegation is based on the 2016 Norsk Hydro annual report, in which the company communicated that, "emissions for Hydro's Alunorte refinery relate mainly to steam generation, which relies on coal and heavy fuel oil. The plant emits about 3.8 million metric tons of CO_2 per year" (Norsk Hydro, 2016; TJPA, 2019).

The victims' association argues that Norsk Hydro utilizes cheaper technologies, and generates atmospheric pollution similar to places with active volcanic activities. In this regard, they compare the situation in Barcarena to that in Øvre Årdal, Norway, where since 2011 new technologies have been used to "remove sulfur dioxide (SO_2) from the flue gas from aluminum production", consequently reducing "annual emissions of SO_2 from the technology center by 200 metric tons" (Norsk Hydro, 2011b). Site visits to Barcarena and Øvre Årdal revealed stark contrasts in living conditions and the environmental impact of the company's operations. In Øvre Årdal, where a plant similar to Albras is located, the company had adopted pollution-control measures in response to local protests, resulting in improved environmental conditions and improved living standards (Meyer, 2012). By contrast, residents living near Alunorte in Barcarena continue to face extremely poor living conditions and still lack access to clean drinking water (Figure 6).

Figure 6

The Contrast Between Barcarena, Brazil, and Øvre Årdal, Norway, Where Norsk Hydro Operates Industrial Facilities



Notes: The first image shows a home near Alunorte, where residents continue to depend on the company for drinking water. In contrast, the second image features a well-maintained Norsk Hydro facility in Øvre Årdal, surrounded by clean environmental conditions and clear water.

In addition, the victims' association argued that Norsk Hydro has benefited from tax incentives granted by the government of Pará for 15 years, and should have improved its operations to be more sustainable in the region, but had failed to comply with the agreement (TJPA, 2019).

The company rejected all the allegations, claiming compliance with the government's tax agreements and stating that all its activities undertaken in Brazil strictly observed Brazilian environmental legislation. The company's attorney classified the claims of the victims as a new "legal adventure" (TJPA, 2019).

On 10 May 2024, a ruling was issued in which the judge stated that the company did not refute the pollution data presented by the plaintiff and that the excessive pollution caused by the company was indisputable (TJPA, 2019). The judge also stated that the places where the plaintiffs lived had been permanently impaired by polluting emissions from the defendant's productive activities for decades. Moreover, the decision compared the pollution emitted by the whole aluminum production chain, which each year, exceeded the total of greenhouse gases emissions produced in Belém, the capital of Pará, a city with a population of 1.4 million people. As a result, the judge ordered the company to implement more environmentally friendly technologies under penalty of a daily fine of R$200 thousand, as well as to compensate for the damages caused in the amount of R$50 million (TJPA, 2019). This decision is still subject to appeal.

State-Corporate Crime and Norsk Hydro's Environmentally Harmful Mining Activities in Brazil

Based on Kramer et al.'s (2002) state-corporate crime model, this section analyses the polluting incidents associated with Norsk Hydro's mining activities in Brazil.

Motivation

Brazil's historical context reveals a pattern of foreign exploitation for economic gain, rooted in colonial practices where nations competed for resources. Over time, these practices evolved into a global capitalist economy where companies, rather than nations, became the primary actors (Esambert, 1991). In the twentieth century, Norway was building its industrial base under global economic pressures. As Sanders (2022) points out, Norsk Hydro was in a vulnerable position and needed to guarantee its access to bauxite in order to sustain its aluminum needs. Needing bauxite to sustain its aluminum production, Norsk Hydro was influenced by neoliberal and neocolonial motives, participating in harmful practices in MRN. As data revealed, these motivations were shaped by the Norwegian state's desire to secure national interests and accepted to invest in a company in Brazil that was under the control of a dictatorship. The structural and economic pressures led to reduced safety measures and environmental negligence.

Organizational goals at Norsk Hydro focused on expansion and performance. Initially starting with fertilizers, the company diversified into aluminium production, aiming for a prominent global market position. The success of the Alunorte transaction was a celebrated achievement in Norway, and the annual reports demonstrate the company's awareness of the situation in the region and the continuous pursuit of growth, reflecting a competitive drive that led to harmful environmental practices. The company's culture in Brazil, marked by a stark contrast to Norway's high standards, involved a workforce from marginalized communities subjected to poor conditions, in contrast with the benefits enjoyed by Norwegian workers in similar enterprises, such as in the city of Øvre Årdal, (Meyer, 2012). This division perpetuated a system of low standards and environmental neglect.

Opportunity

Opportunity catalysts for Norsk Hydro's polluting actions are rooted in colonial legacies, where former colonies experienced weak legal and law enforcement frameworks. The colonial past created environments with minimal regulation and oversight for foreign enterprises, from which the company benefited. As Rojas-Paéz (2017) warns, categories of legal and illegal behaviour are shaped differently in colonized countries. Likewise, Goyes (2025) argues that colonialism not only involved the plundering of natural resources during physical occupation, but also established systems of global inequality that continue to shape the political economy of environmental violence. The colonizers accumulated economic, epistemological, political and cultural capital – what he calls a "self-reinforcing logic" – that still privileges corporations from the Global North in extracting resources from the Global South. This differential capital distribution, initiated during colonization and embedded in modern capitalism, created the very conditions under which companies such as Norsk Hydro could exploit environmental and legal vulnerabilities in countries like Brazil.

The military regime in Brazil was indifferent to ecological concerns, viewing foreign investment as a mark of legitimacy, thereby allowing operations with minimal restrictions. The western myth of progress justified harmful activities under the guise of development. Norsk Hydro's management used this narrative to downplay environmental damage. In the case of Alunorte, following the company's admission that it had deliberately discharged toxic waste into the river, the Norwegian manager John Thuestad stated that "the region needs an industrial locomotive like Hydro" (NRK, 2018). Conversely, one of the victims from the *quilombola* community affirmed that his hope was that, despite the long-lasting environmental damage, the community could still live in the place of its origins and grow bananas and cassava from which to make flour. Similarly, another victim mourned the fact that his children would not be able to swim in the river as he did when he was young (Comunidade Gibrié, personal communication, 23 October 2024; NRK, 2018). Lastly, Barcarena's municipal office affirmed that Norsk Hydro's status as the only economic game in town no longer applied, since other relevant sources of revenue existed, such as port activities (personal communication, 24 October 2024).

As a case of state-sponsored green corporate crime, one must also acknowledge that Brazil's weak corporate environmental law enforcement enabled and emboldened the company's operations. The 2018 incident garnered significant attention and led to temporary legal actions, but local financial dependencies resulted in a quick resumption of production without individual accountability. The local scenario facilitated Norsk Hydro's activities, exemplifying how transnational companies can exploit weaker legal environments for profit (van Wingerde & Lord, 2019).

The historical record shows that when Norsk Hydro succeeded in Brazil with a new contract or economic activity, it was widely announced as a Norwegian victory – a point of pride. However, when the leakage became global news, carrying shame, the Norwegian Government declared no direct participation in the management of the company, presenting itself as a neutral agent and pushing responsibility onto a corporate structure based on ownership without direct management, despite holding a seat in the general assembly, voting and participating in other company-related discussions (Royal Ministry of Trade, Industry and Fisheries, 2023).

Control

Control factors in this context involve international reactions, legal sanctions, media scrutiny and public opinion (Kramer et al., 2002). Historically, colonialism disregarded the environmental and human impacts of exploitation, a perspective that has persisted into contemporary times. As Goyes (2025) explains, colonization not only involved the plundering of natural resources and the genocide of Indigenous peoples, but also installed enduring systems of environmental violence. These systems, embedded in capitalist production, racial hierarchies and an unequal world-system, continue to legitimize large-scale ecological degradation in the Global South for the benefit of corporate interests in the Global North. The disregard of environmental and human harm is not an unfortunate oversight but rather a structural feature of modern capitalist coloniality.

Norsk Hydro benefited from a lack of international scrutiny and legal controls during earlier incidents of environmental harm at Lake Batata and the Trombetas Project (Akerø et al., 1979). Similarly, with regard to the 2009 leakage, it took 15 years for a ruling to be issued by the Brazilian judiciary. However, the 2018 incident signalled a shift, with significant media coverage and international criticism prompting temporary legal actions.

Public opinion was shaped by the image of Norway as a leading environmental protector, contrasting with its investments in polluting industries in Brazil. The Norwegian government's substantial donations to the Amazon Fund helped to maintain a positive image, masking the environmental damage caused by Norsk Hydro's operations (Palazzo & Hendlin, 2025; Fundo Amazônia, 2021; Regjeringen, 2013). While the Norwegian government donates substantial amounts to protect the Amazon rainforest, it also invests in and profits from harmful activities carried out by Norsk Hydro in Brazil. The compensation of company-sponsored social events is not perceived as positive by local authorities and *quilombolas* residents, but rather is viewed as mere propaganda and media exposure opportunities (personal communication, 24 October 2024).

Social movements in Barcarena were initially subdued due to isolation and a lack of information, but challenges to the company's practices have begun to emerge in recent years. The remote location and lack of access to information for many years led to a seeming resignation to the ongoing degradation. Unlike Øvre Årdal, where environmental movements and institutions began to confront industrial pollution more decisively, with positive results since the 1960s (Sanders, 2022), the population's claims in Barcarena were dismissed and, as mentioned previously, one recent claim was labelled by Norsk Hydro as another "legal adventure".

Norsk Hydro's internal practices revealed patterns resembling what is described in the literature as criminogenic asymmetries and contradictions, in which transnational corporations exploit structural weaknesses, such as lenient legislation or weak law enforcement, to engage in illegal activities across different countries (van Wingerde & Lord, 2019). In this sense, while the company promoted its successes in Brazil as national achievements, it downplayed the environmental damage from polluting incidents. The company's efforts to mitigate economic losses and maintain a positive image further illustrate how Norsk Hydro managed its internal and external challenges.

Norsk Hydro's operations in Brazil followed historical exploitation patterns, economic pressures and a lack of effective control. The company's actions were shaped by both institutional motivations and opportunity catalysts, which were eventually challenged by growing international and local awareness of environmental injustices.

Discussion

The purpose of this research was to analyse the ways in which Norsk Hydro's interaction with the Norwegian state contributed to environmental pollution in Brazil between 1967 and 2024. The data collected suggest that, over many decades, there has been continuous involvement between Norsk Hydro and the Norwegian government in relation to environmental harm in the country. Most of the drivers described by Kramer et al. (2002) as catalysts for actions were recognized, and when assessed through the lens of Southern green criminology, these drivers were confirmed alongside additional and situated elements.

Taking into consideration that state-initiated corporate crime refers to illegal or socially harmful activities committed by corporations under government direction or approval (Bisschop et al., 2025; Kramer et al., 2002), the aforementioned events reveal several layers of direct and indirect involvement of the Norwegian public and private sectors. In terms of corporate responsibility, Whyte (2020) neatly points out that a corporation can create a multitude of different persons, each with their own identity and status. This fragmentation allows companies to diversify assets and operations across various entities and locations. Moreover, Whyte notes that ownership relationships can be strategically altered in the aftermath of any incident or crisis to deflect accountability. In the case of Alunorte, although the Norwegian government is the main shareholder of Norsk Hydro, it is institutionally distanced from the company's day-to-day management. Nonetheless, dividends from the company

are incorporated into the national budget, and major decisions such as the acquisition of additional shares in Alunorte require approval from the Norwegian Parliament. The Norwegian state tried to distance itself from the polluting incidents that occurred in Brazil, but the data indicate that it was involved in polluting by proxy.

Proxy wars are discussed in the academic literature in the context of military conflict, where third-party external actors support one of the belligerents, who then acts on behalf of the sponsoring party (Moghadam et al., 2024). This idea is analogously applied in the context of environmental harms perpetrated by corporations that act for the benefit – directly and indirectly – of other actors, especially states, providing them with advantages without these being considered a direct part of the activity. Pollution by proxy occurs when a state or non-state actor benefits in multiple ways (financially, politically, strategically etc.) from affiliated such as shareholders, branches, financiers, lobbyists, outsourced companies, contractors, sovereign funds, and others who are directly involved in harmful enterprises, while remaining shielded by legal or corporate structures that prevent proper accountability. Norsk Hydro's production of aluminum polluted the Brazilian environment by proxy, to the benefit – directly and indirectly – of the Norwegian government, its main shareholder. The data reveal that, on one side, there were significant public decision-making processes, while on the other side, the harmful actions were executed anyway. Norsk Hydro's industrial operations in Barcarena served the benefit of, and generated profits for, Norwegian public and private interests.

In effect, the data suggest that, within the model of state-corporate crimes and the proposed conceptualization, Norsk Hydro acted by proxy, with its actions accompanied by the government. None of the events was unknown to them despite attempts to deflect their responsibility through corporate structures. There was no dissociation between public and private interests, and at no point did the Norwegian state intervene to stop harmful action; on the contrary, it acted as if motivated by economic pressure, took advantage of local opportunities and sought to control the situation for its own benefit.

In light of the catalysts for action presented by Kramer and Michalowski, their interaction occurred through the direct participation of the Norwegian government in the company's structure. The majority state shareholding position, directly and through its pension fund, shows a direct interest in the direction it takes and the business it conducts. As proof, since the 1970s, when the company began to operate in Brazil in Mineração Rio do Norte (MRN), until the acquisition of major shares in Alunorte in 2010, its movements have been debated in the Stortinget and had the direct approval of the government. The government not only directly approved Norsk Hydro's operations in Brazil, but also celebrated its achievements. Second, the interaction of Norwegian private and public interests was identified in the strategic position of Norwegian politicians in Brazil. King Olaf V's visit to Brazil was a milestone for Norwegian entrepreneurs in terms of gaining a foothold in the country, creating a favourable position for their interests. The influence of the Norwegian state was embedded in a historical and colonial context in Brazil, where foreign countries and corporations were perceived as benefactors that would bring Western progress and lead the country to so-called industrial development. Third, the Norwegian state was aware of the political, economic and structural situation in Brazil. The dawn of its industrial activities took place during the Brazilian military dictatorship, when environmental and human rights were widely disrespected, but they took advantage of these business-at-any-cost conditions.

Within this nested context (Bernat & Whyte, 2016), criminogenic asymmetries, as described by the literature, were a recurring element in Norsk Hydro's activities in Brazil and played an important role in the execution of polluting mining activities in the country. The polluting incidents, along with allegations of contradictory practices in Norsk Hydro's mining activities, can be seen as the outcome of the convergence of two separate entities: the Norwegian state and Norsk Hydro.

Conclusion

In order to fully understand state-corporate crimes in other regions, especially in the Global South, it is crucial to adopt a more nuanced, situated analysis (Swaaningen, 2021). This requires integrating concepts from Southern green criminology, which offers critical insights into the historical and ongoing dynamics of exploitation between Northern corporations and Southern states (Böhm, 2023; Goyes, 2023). Additionally, it requires looking beyond isolated incidents to recognize the broader ongoing processes that shape social harms (Bernat & Whyte 2016). A more comprehensive approach requires integrating historical knowledge and local circumstances, requiring more than a superficial analysis of environmental disasters. For instance, examining Norsk Hydro's activities in Brazil without considering the historical, structural and colonial contexts would miss critical drivers and forms of control.

A situated understanding of state-corporate crimes is also vital for addressing global environmental challenges. In the context of climate urgency, policy-makers must acknowledge the role of states in ecological damage and work towards effective accountability measures. The recent EU Corporate Sustainability Due Diligence Directive, for example, aims to address issues in global value chains; however, it often encounters complexities rooted in deep criminogenic structures. These structures can

obscure key actors and hinder the development of effective environmental policies. Although Norway is not a member of the European Union, it aligns with European environmental objectives, and its involvement in the Alunorte case highlights contradictions in its environmental policy. The Norwegian state and Norsk Hydro attempted to minimize the incidents and limit their responsibilities, reflecting a historical pattern of Northern entities exploiting Southern resources while evading accountability.

In conclusion, this research proposes introducing the concept of the "polluter by proxy" as a representative model connected to state-corporate crime theory. This model describes a scenario where a polluting enterprise is carried out by one actor who does not directly execute specific actions but benefits from the actions of another within a complex corporate structure. Although the idea is not a binding concept for legal technical formulas, the concept of pollution by proxy serves as a logical and inherent exposition of those entities hiding behind the diffused responsibility of corporate veils, taking advantage of the economic benefits of environmental exploitation without being properly accountable for the harms caused. In times of climate change and climate justice, future research should address these issues in order to more effectively hold states and corporations accountable for their harmful actions on the environment.

Disclosure of Interest

The authors confirm no financial or commercial interests and are not involved in legal proceedings about this case.

Authors' Statement

This research originated as a master's thesis (by Fernando Procópio Palazzo, supervised by Lieselot Bisschop) within the International Master's in Advanced Research in Criminology (IMARC) at Erasmus University Rotterdam, the Netherlands. This master's thesis research was later expanded into a broader project (by Yogi Hale Hendlin & Fernando Procópio Palazzo) of the Climate Social Science Network, funded by Brown University (00002411). The Erasmus Initiative on Dynamics of Inclusive Prosperity provided funding for Yogi Hale Hendlin and Lieselot Bisschop, and the Dutch Sectorplan for Law for Lieselot Bisschop.

Fernando Procópio Palazzo and Lieselot Bisschop developed the initial plan and theoretical framework of the master's thesis research and this article. Fernando Procópio Palazzo & Yogi Hale Hendlin developed this into a broader project, which allowed additional empirical data to be included in this case study. Fernando Procópio Palazzo collected and analysed the empirical data (documents, expert interviews and field visits). Fernando Procópio Palazzo wrote the manuscript in consultation with Lieselot Bisschop and Yogi Hale Hendlin. All authors approved the submitted manuscript.

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[1] The company was initially named "Alunorte S.A." (Alumina do Norte do Brasil). Due to changes in ownership, the company's name was modified. For simplicity, and to cover its entire history, only "Alunorte" will be used in this article.
[2] id 2135492874.
[3] The company's official name is Norsk Hydro ASA (Norsk Hydro, n.d.a).
[4] *Quilombolas* are descendants of African slaves who established communities known as *quilombos* as a form of resistance and refuge during the Brazilian colonial period. Today, they are recognized as traditional communities with distinct cultural, historical and territorial rights under Brazilian law.
[5] Laboratório de Química Analítica e Ambiental (Laboratory for Chemical Analysis and Environment).
[6] id 562235976 and id 562235976.
[7] id 563637457.
[8] id 562635359.
[9] id 2135492874.
[10] id 5242751
[11] id 5257798
[12] id 5334492
[13] id 5334492.
[14] https://monitoramento.semas.pa.gov.br/simlam/index.htm
[15] According to its statute, the association was established on 28 January 2015, with the institutional purpose of defending the diffuse, collective and individual homogeneous rights and interests of members of communities affected by contamination resulting from pollution caused by Norsk Hydro, through its subsidiary Alunorte. The association currently has over 7000 members.

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