

GREENPEACE

STOP

THE EXCAVATORS

How heavy machinery used for illegal gold mining threatens the survival of Indigenous Peoples and our future





Introduction

On 24 January 2023, the Brazilian government declared a medical emergency after hundreds of Indigenous Yanomami children died from malnutrition.¹ The humanitarian crisis in the Yanomami Indigenous Land has been a direct consequence of illegal mining in the region – carried out by more than 20,000 individuals who invaded the sacred territory of the Yanomami in pursuit of profits from the illegal extraction of gold or diamonds.²

The Amazon rainforest is being poisoned by small-scale and often illegal gold mining,³ which Brazilians refer to as *garimpo*.⁴ *Garimpo* is a highly visible and fast-increasing threat to Indigenous territories and peoples, having grown nearly 500% in Indigenous Lands over the last 12 years.⁵ Besides contributing to the elevated level of deforestation in the Brazilian Amazon, illegal gold mining devastates the environment and livelihoods of Indigenous Peoples. Runoff into rivers and water contamination by toxic mercury – direct consequences of this activity – pollute waterways, aggravate multi-generational and often irreversible health problems, and fundamentally disrupt traditional food sources.⁶ Driven in large part by organized crime syndicates, illegal mining is dividing Indigenous communities, bringing conflict and social disorder into Indigenous Lands, and perpetuating high levels of violence in the Amazon.⁷

Heavy industrial machinery, such as hydraulic excavators, has played a key role in accelerating destruction from illegal mining.⁸ Aerial flyovers and satellite mapping analysis carried out by Greenpeace Brazil between 2021 and 2023 found at least 176 hydraulic excavators in the three Indigenous Lands accounting for almost the entirety of illegal mining in Indigenous Lands in the Brazilian Amazon.⁹ In addition, these aerial flyovers also found that HD Hyundai Construction Equipment's excavators, produced by its subsidiary Hyundai Construction Equipment Brasil, are apparently the favored brand of heavy machinery used in the destruction of Indigenous Peoples' Lands in the Amazon rainforest.¹⁰ Out of the 176 excavators within the Yanomami, Munduruku, and Kayapó Indigenous Lands between 2021 and 2023, no less than 75 were produced by the South Korean company.¹¹

The three territories analyzed by this investigation account for more than 95% of the area mined in all Indigenous Territories in the Amazon.¹² Illegal mining in Indigenous Lands disrupts the way of life of these peoples and thus violates the right of these populations to live according to their customs and traditions, as guaranteed in Brazil's Constitution's explicit provisions for Indigenous Peoples' rights.¹³

Ending activities that harm the environment and public health and violate human rights will require a new development pathway that addresses the underlying conditions that allow for calamities like illegal mining. Such a new development model must coexist with nature, respect the socio-territorial rights of the Indigenous Peoples and Traditional or Local Communities, and address income inequality.

This report is more than an exposé; rather, it is a call to heavy machinery manufacturers to become part of the solution and take measures that prevent their equipment being used in illegal activities that yield repeated violations of human rights.¹⁴

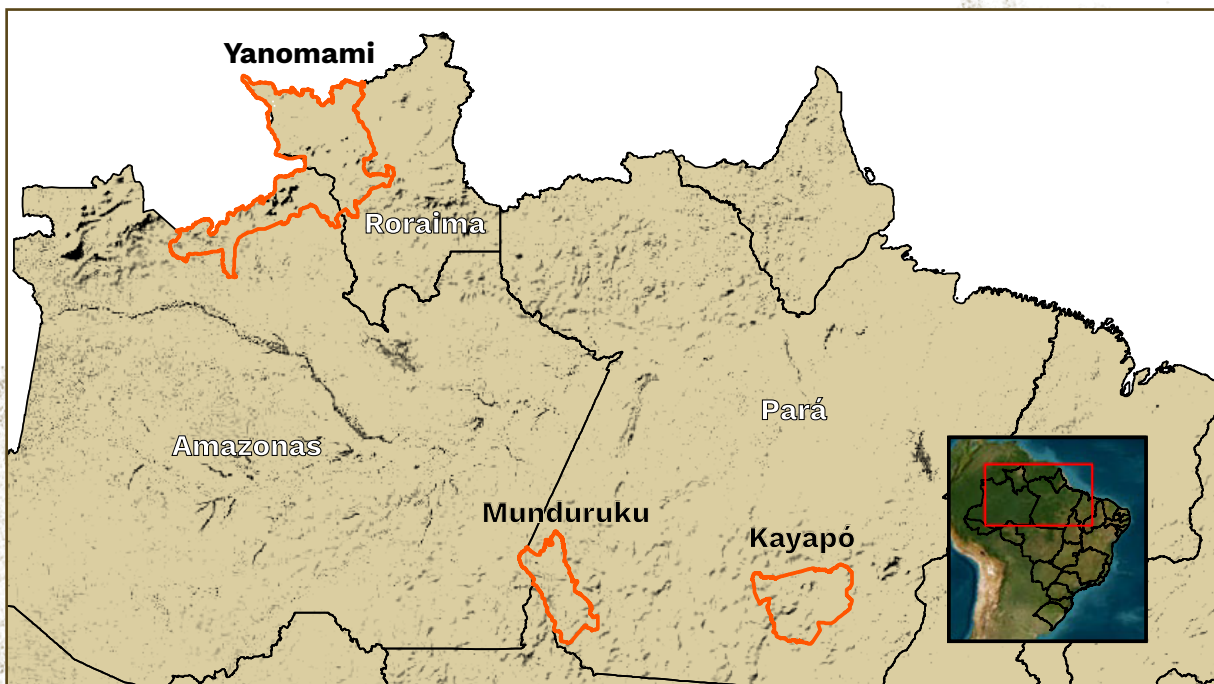




© Chico Batata/Greenpeace

In an overflight carried out in October 2021, Greenpeace Brazil found several mines operating illegally within the Munduruku Indigenous Land.

Map 1 - 3 Indigenous Lands mapped in this study: Kayapó, Yanomami and Munduruku



The epidemic of “Garimpo” illegal mining in the Amazon

“

The Yanomami never died of hunger. I’m here, I’m 66 years old, and when I was little, no one died of hunger. Now mining is killing my people and also my Munduruku and Caiapó relatives. When Indigenous People get sick, they can’t work [in the fields] or hunting”¹⁵

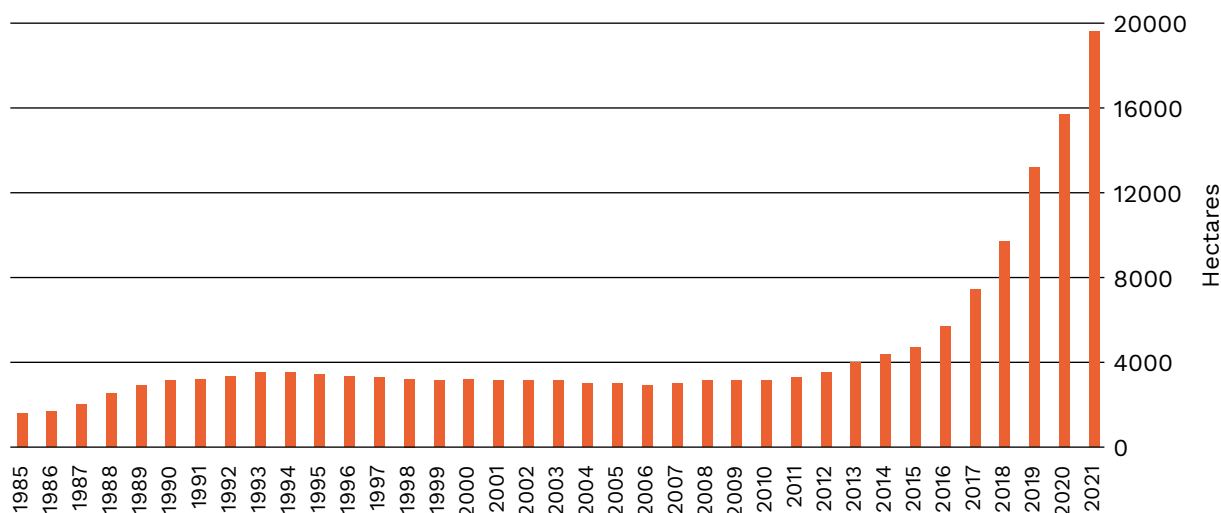
”

Davi Kopenawa - Political leader, shaman, and president of the Hutukara Yanomami Association

Over the last 36 years, the area mined in Brazil has increased by 1,107%.¹⁶ By 2021, mining in Brazil had already degraded 212,504 hectares - an area equivalent to 3.5 times the area of the city of Seoul.¹⁷ More than 90% of this destruction occurred in the Amazon Biome.¹⁸

In January 2023, incoming Brazilian President Luiz Inácio Lula da Silva (“Lula”), accompanied by the Minister of Indigenous Peoples of Brazil, Sônia Guajajara, visited the Yanomami Territory to witness firsthand the malnutrition impacting hundreds of Yanomami.¹⁹ The visit elevated the global profile of the disastrous consequences of garimpo and confirmed the many warnings issued over the last few years by

Graph 1 - Evolution of the mining area in Indigenous Lands



organizations representing the Yanomami people as well as NGOs that work in the defense and promotion of Indigenous Peoples' rights.²⁰

In Brazil, the previous four years were marked by President Jair Bolsonaro's political agenda that openly defended *garimpo*.²¹ Under his government, despite efforts by NGOs, scientists, and leaders of social movements, Brazil was victim of excessive greed for the natural resources present in the Indigenous Lands.²² Bolsonaro radically dismantled environmental and human rights protections, resulting in continual violations of the rights of Indigenous Peoples.²³

During Bolsonaro's four years in power, 2019 to 2021, the average area degraded by mining within Indigenous Lands was 202% greater compared to the average of the previous ten years.²⁴ According to research by Instituto Escolhas, 98% of the gold originating from the surroundings of Indigenous Lands has high indications of illegality.²⁵ Instituto Escolhas also calculated in 2021 that 52.8 tons of gold, or 54% of Brazil's gold production, had "serious indications of illegality."²⁶

Bolsonaro's rhetoric supported *garimpo* while admonishing Indigenous Peoples and his government proposed policies that would legalize mining in Indigenous Lands such as the notorious Federal Legislation PL 191/2020.²⁷ PL 191/2020 flagrantly disrespects the Brazilian Constitution's explicit prohibition on mining in Indigenous Peoples' lands.²⁸ These rhetorical and political signals from Bolsonaro's government gave way to the rapid growth of illicit mining and threw Indigenous Peoples into the eye of the hurricane.



In March 2023, we flew over Kayapó Territory, in Pará. Greenpeace Brazil found 88 excavators at work in an area where such activities are prohibited.

Indigenous Peoples in the eye of the hurricane

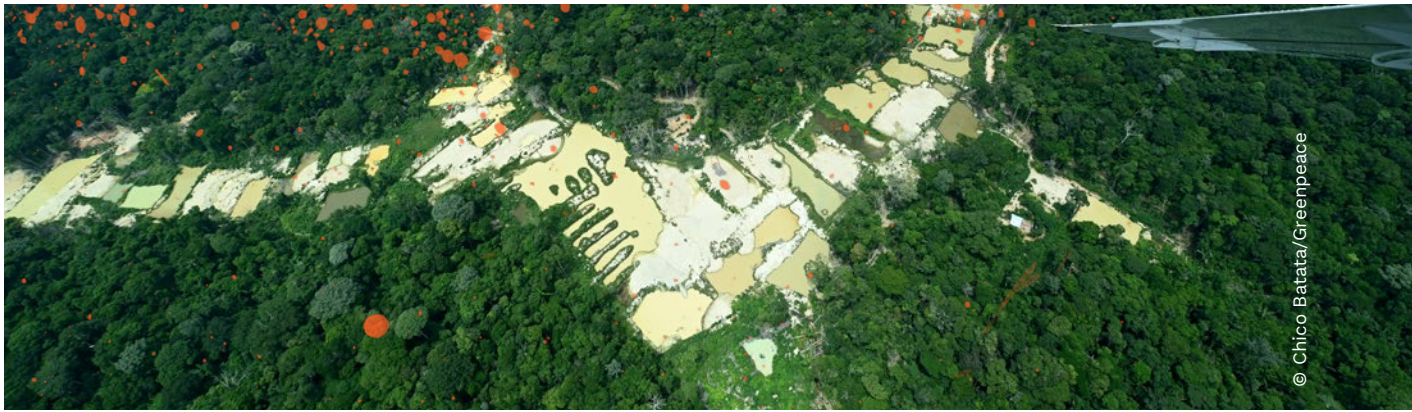
Few win and many lose with the expansion of illegal mining. Among the few who benefit from the destruction are the mining barons, some of whom have never set foot in the mercury-contaminated mining pits.²⁹ Between 2016 and 2020, mining in the Yanomami territory increased by 3,350%.³⁰ The increase and associated invasions profoundly disrupted this Indigenous People's way of life and led to hunger and malnutrition amongst a considerable part of the 28,000 Yanomami, including some in voluntary isolation.³¹

Together, Munduruku, Kayapó, and Yanomami Indigenous Lands contain 25,135 hectares of degradation from mining.³² These Peoples are forced to live alongside thousands of uninvited outsiders associated with illegal mining.³³ The 2022 Yanomami-authored report, "Yanomami Under Attack," detailed the brutal reality their villages and communities confront as a result of this mass invasion.³⁴

In addition to disturbing people's way of life, outsiders associated with illicit mining have acted as transmission agents for various diseases, such as Malaria. Malaria thrives in mining pits, as the activity produces still pools of water, the perfect condition for malaria's development cycle.³⁵ In addition to the health threats of malaria, Indigenous Peoples are exposed to high levels of mercury as mining uses the chemical in the gold extraction process.³⁶ Mercury emissions from mining end up accumulating in several species of commonly consumed fish³⁷ for the diet not only of Indigenous Peoples but also of a large part of the nearly thirty million Brazilians who live in the Amazon.³⁸

Indigenous lands with the largest mining areas within their boundaries	Area mined until 2021 (in hectares)
Kayapó (PA)	11,542
Munduruku (PA)	4,743
Yanomami (RR/AM)	1,156

Despite the recognized risks, the Minamata Convention, the international agreement to address the use and trade of mercury,³⁹ still allows the trade of this toxic chemical for "artisanal scale gold mining," including mercury for garimpo.⁴⁰ The UN Special Rapporteur on Toxics and Human Rights⁴¹, Marco Orellana, advocated an immediate ban on the use of mercury⁴² because, in addition to contaminating the environment, the use of mercury in garimpo is closely linked to repeated violations of human rights.⁴³ According to the United Nations Environment Program, small-scale gold mining is far and away the largest source of mercury emissions, accounting for 28% of all global



© Chico Batata/Greenpeace

The death of rivers is one of the most serious consequences of illegal mining. This photo taken during a Greenpeace Brazil flyover shows a river destroyed by mining in the Munduruku Territory.

emissions. Due in part to the expansion of gold mining in South America, the continent is the source of more than half of all global mercury emissions.⁴⁴

Tired of waiting for help, leaders of the Munduruku and Yanomami people sought support from the Oswaldo Cruz Foundation, known by its abbreviation Fiocruz, a leading Brazilian Health Research Institute. Fiocruz conducted a series of studies on mercury contamination.⁴⁵ In 2016, 92% of 239 people tested in the vicinity of sites with mining activity in Yanomami territory had mercury concentrations in their bodies above acceptable limits.⁴⁶ In 2020, a study among the Munduruku showed that of 200 people evaluated, almost 60% had mercury in their bodies above recommended limits.⁴⁷ At the time, reports found that four out of ten children under five years of age had high concentrations of the metal.⁴⁸

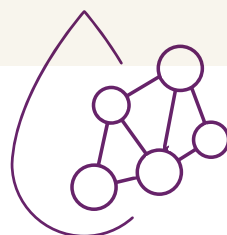
The violence with which illegal mining has advanced into Indigenous Lands, and the leniency with which the Bolsonaro government has dealt with the issue, is in direct violation of several treaties to which Brazil is a signatory, including the Convention 169 of the International Labor Organization (ILO)⁴⁹ and the UN Declaration on the Rights of Indigenous Peoples.⁵⁰ The Inter-American Commission on Human Rights, in 2020 had requested Brazil to adopt the necessary measures to protect the rights to health, life, and integrity of indigenous peoples Yanomami, Ye`kwana, and Munduruku, went a step forward.⁵¹ On May 22, 2022, the Commission elevated the issue to the Inter-American Court of Human Rights due to the extreme gravity and urgency of the situation.⁵²



Because of mining, **South America** accounts today for

53% of global mercury emissions

In 2016, **92%** of a population tested in the vicinity of sites with mining activity in the Yanomami territory had **mercury levels above safe limits in their bodies**



By **December 2022**, mining had impacted

1,793 kilometers of rivers in the Yanomami, Munduruku and Kayapó territories

Biodiversity

Brazilian research institute Imazon has documented how the expansion of garimpo has had consequences for the wildlife around the rivers.⁵³ Individuals in mining operations indiscriminately hunt monkeys, pacas, agoutis, armadillos, and capybaras, among other animals. Several of these species feed on fruits and play essential roles in seed dispersal and pollination.⁵⁴ As the size of a given animal population decreases, these ecological functions are compromised.⁵⁵

Besides the disruptive mercury pollution, mining also yields an influx of sediments into rivers.⁵⁶ These sediments increase turbidity and reduce the entry of sunlight into the water.⁵⁷ The lack of sunlight significantly harms fish populations that depend on sunlight to hunt prey.⁵⁸ Sediments can also affect fish's respiratory processes by sticking to fish gills and interfering with gas exchange.⁵⁹ Sediments also can disrupt fish spawning when sediments pollute headwaters that are critical for some species' spawning cycles.⁶⁰

The scale of this additional sediment is significant, given that, on average, for every 2 grams of gold, an average of 1 cubic meter of sediment is produced.⁶¹ In 2013 alone, the State of Pará produced 100 tons of gold,⁶² an estimated 50 billion cubic meters of sediment, into the rivers.

In 2021, the Conservation Strategy Fund (CSF) developed a methodology to estimate the economic value of impact from garimpo.⁶³ The results showed that each kilo of gold extracted yields 1 and 2 million Brazilian Reais in damages, mainly related to human health.⁶⁴ If one assumes that each kilo of gold yields 100,000 Brazilian Reais of profit (30% of the market price of roughly 300,000 Brazilian Reais),⁶⁵ the social cost of gold is more than ten times greater than its private benefit of the few that profit from garimpo.⁶⁶



The Kayapó Indigenous Land is currently the Territory most impact by illegal mining in terms of area destroyed.

The Need to stop the machines

The first major cycle of mechanization of garimpo in the Brazilian Amazon occurred in the 1980s, as gold prices increased steadily through the 1970s and mining had depleted the richest surface deposits.⁶⁷ Garimpo operations then began using water-pressure jet hoses to expose deeper deposits.⁶⁸ This mechanization doubled production and sped up the rate of destruction from garimpo.⁶⁹

The depletion of secondary deposits and increasing gold prices around 2010 forced a second cycle of mechanization that introduced the use of industrial hydraulic excavators.⁷⁰ Despite their high cost, exceeding 700,000 Brazilian Reals, or 133,000 USD, they have proven to be an excellent investment, as they perform in 24 hours the same work that three men would take forty days.⁷¹ Satellite images show that from 2010 onwards, there was an explosion of degradation from garimpo activity in the Amazon.⁷²

With the depletion of more accessible mineral deposits, garimpo has shifted towards areas with still-unmined mineral deposits.⁷³ In this way, men and machines went deeper into Indigenous Peoples' Lands and Protected Conservation Areas where Brazilian Law prohibits garimpo.⁷⁴



According to experts, an excavator performs in 24 hours the same work that three men would take about 40 days to complete.⁷⁵ Depending on the model, an excavator can burn up to 5 thousand liters of diesel monthly, emitting no less than 16 tons of CO₂.

Excavators are responsible in part for the rapid expansion of illegal mining in Indigenous Lands in recent years.

The sale and maintenance of excavators in the main mining regions of the Amazon represent an important and profitable branch of business - which, in turn, feeds on the destruction of the forest and exerts enormous pressure on Indigenous Peoples' lands. Preventing these machines from entering protected areas is an urgent task to be undertaken by governments, manufacturers, and retailers. To do so would require new measures to control the acquisition and use of this equipment. For example, the Brazilian Public Prosecutor - Ministério público federal, has proposed a federal registry capable of tracking the ownership and purchases of heavy machinery.⁷⁶

In investigative flyovers evaluating the impacts produced by illegal mining on the Yanomami, Munduruku, and Kayapó indigenous lands, Greenpeace Brazil confirmed the presence of excavators operating in illegal mining within these territories. Among these territories, Greenpeace Brazil identified excavators from brands **Hyundai, LiuGong, Caterpillar, Volvo, Sany, John Deere, Komatsu, Link Belt, XCMG, Case, and New Holland**. Hyundai-brand excavators are by far the most found amongst illegal mining in the Munduruku and Kayapó Indigenous Lands.

The Yanomami Indigenous Land situation is no less serious despite excavators being first recorded in the second half of 2022. Four excavators were registered at the end of a clandestine road 150 kilometers long, close to Yanomami groups that live in voluntary isolation.⁷⁷ Illegal mining operations are investing in road building in intact forests, assumingly in order to bring excavators deeper into the Indigenous Lands. In building such a road for excavators, illicit mining operations are putting at risk the ecological balance necessary for these groups' physical and cultural continuity.⁷⁸

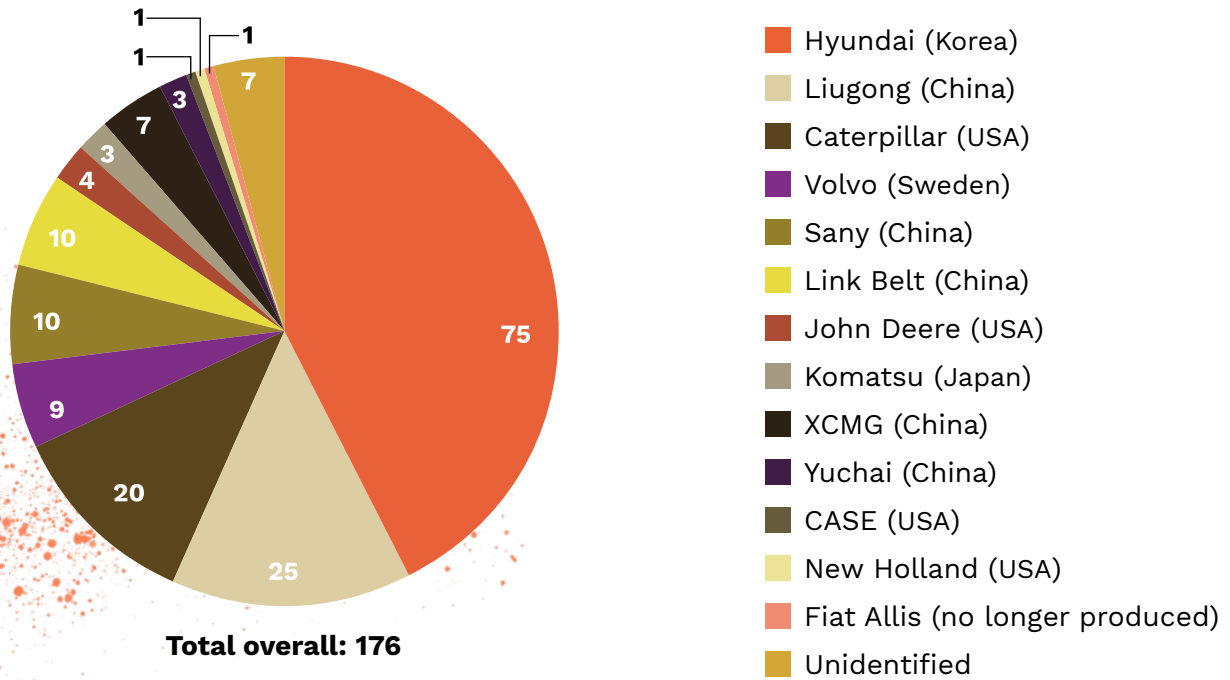
The Munduruku leaders, also in Pará state, have reported excavators in their territory since 2014.⁷⁹ Their reports coincided with the explosion of the illegally mined area within their territory.⁸⁰ Despite the operations carried out by Brazilian Environmental Enforcement Agency IBAMA and Brazil's Federal Police, excavators have continued to appear.⁸¹ Between 2021 and 2023, Greenpeace Brazil's flyovers registered at least 32 excavators within Munduruku territory, with 53% of these being the Hyundai brand. The March 2023 flyover found ten excavators in these lands, and 80% were from the South Korean company.⁸²

The Kayapó Indigenous Land was found to have been most impacted by the use of hydraulic excavators for mining. Greenpeace Brazil's flyovers 2021 and 2023, detected that out of a total of 176 excavators amongst these three Indigenous Lands, 140, or 79%, were in the Kayapó Indigenous Territory.⁸³ In the March 2023 flyover over Kayapó Indigenous Lands, Greenpeace Brazil witnessed 88 excavators operating, and 34 of them or 38% were Hyundai.⁸⁴

Public data show that the Brazilian Institute for the Environment and Renewable Natural Resources (Ibama) has, over the last few years, found, seized, and disabled dozens of hydraulic excavators in the Indigenous Lands of the Amazon. However, recent numbers also show that despite the limited speeds of heavy machinery, excavators are moved quickly over long distances.

Brand	Indigenous Territory		
	Kayapó	Munduruku	Yanomami
Hyundai (Korea)	58	17	
LiuGong (China)	23	2	
Caterpillar (USA)	16		4
Volvo (Sweden)	9		
Sany (China)	9	1	
Link Belt (China)	7	3	
John Deere (USA)	3	1	
Komatsu (Japan)	3		
XCMG (China)	5	2	
YuChai (China)		3	
CASE (USA)	1		
New Holland (USA)	1		
Fiat Allis (no longer produced)	1		
Unidentified	4	3	
Total on each Indigenous Lands	140	32	4
Total Overall		176	

Graph 2 - Number of excavators found by brand in the Kayapó, Munduruku and Yanomami Indigenous Lands between 2021 and 2023, according to Greenpeace monitoring



In December 2022, Greenpeace Brazil exposed the opening of an illegal road inside the Yanomami Indigenous Land. The illegal road, counting its ramifications, is, as of today, 189-kilometers long and is being used as access for the excavators to enter the territory.

The Munduruku territory has about of 700 kilometers of roads registered within of its limits. They are used as access points and connection between several mining pits there.

© Valentina Ricardo

In December 2022, we denounced the construction of an illegal road inside the Yanomami Indigenous Land.

From Seoul to the Amazon

HD Hyundai Construction Equipment is a subsidiary of Seoul-based HD Hyundai, the ninth-largest South Korean conglomerate,⁸⁵ which owns 36 subsidiaries mainly engaged in shipbuilding, heavy equipment, machinery, oil, and energy.⁸⁶ Formerly known as Hyundai Heavy Industries Group, it changed its name to HD Hyundai in 2022 in celebration of its 50th anniversary.⁸⁷ On its website, it describes itself as a company responsible for society and respected for customer satisfaction and sustainability.⁸⁸ HD Hyundai's Environmental Management Declaration has among its objectives to fulfill its social responsibilities as a sustainable global green company, which includes compliance with national and international laws and regulations.⁸⁹

HD Hyundai Construction Equipment's parent company HD Hyundai has adopted an ESG vision centered on the "Future of the Ocean" and a slogan "Beyond Blue Forward To Green."⁹⁰ HD Hyundai President and CEO Kisun Chung declared in an address at CES 2023: "We have been putting unsustainable pressures on our environment for too long. These crises are probably the last warning signs warning us about irreversible degradation."⁹¹ His speech affirmed HD Hyundai's commitment to a more sustainable future, emphasizing climate change's devastating impacts.⁹² He also made bold statements about the company's commitments to combating climate change, mitigating environmental impacts, and ethical management.⁹³ Kisun Chung's father, Mongjoon Chung, is the sixth son of Hyundai's founder and the largest shareholder of HD Hyundai.⁹⁴ Mongjoon Chung is also a high-profile figure in Korean politics, elected seven times as a Member of Parliament.⁹⁵ He was also a FIFA Vice President and credited for securing South Korea's role as a co-host for the 2002 FIFA World Cup Korea/Japan.⁹⁶

HD Hyundai has 100% shares of an intermediary holding company, HD Hyundai XiteSolution (known until recently as Hyundai Genuine)⁹⁷. HD Hyundai XiteSolution effectively owns the largest share (36%) of HD Hyundai Construction Equipment, a manufacturer specializing in construction and material handling equipment such as excavators, wheel loaders, backhoe loaders, and skid steer loaders.⁹⁸ HD Hyundai Construction Equipment was established in 2017 when it was spun off from Hyundai Heavy Industries.⁹⁹ HD Hyundai Construction Equipment has local subsidiaries in Brazil, China, Europe, India, Indonesia, and North America.¹⁰⁰

In Brazil, the history of what is known today as Hyundai Construction Equipment Brasil started twenty years ago when Hyundai-branded construction equipment was first exported to Brazil in 2003.¹⁰¹ Soon after, in 2007, a new joint venture company, BMC Hyundai, became the distributor for Hyundai-branded heavy machinery on Brazilian soil.¹⁰² BMC had been developed as a joint venture with HD Hyundai Construction Equipment (at that time called Hyundai Heavy Industries).¹⁰³ According to the audit reports of Hyundai Heavy Industries, Hyundai Heavy Industries terminated its Joint Venture agreement and sold its share of BMC Hyundai to another company called BMC Partners for 1.00 Brazilian Real in February 2018.¹⁰⁴ BMC Hyundai has an extensive sales network and representatives, and today it is the largest distributor of heavy machinery from the South Korean headquarters in Brazil.¹⁰⁵ On Brazilian Trade Board documents, BMC Hyundai uses the same address as the Hyundai Construction Equipment Brasil factory in Rio de Janeiro.¹⁰⁶

Hyundai Construction Equipment Brasil's factory is located in Itatiaia, southern Rio de Janeiro State.¹⁰⁷ The factory opened in 2013, and it is HD Hyundai Construction Equipment's first manufacturing unit outside Asia.¹⁰⁸ This factory has reportedly begun to increase production capacity from 3000 to 4000 heavy construction vehicles to meet increasing demand in Brazil. Since 2018 demand for excavators in Brazil has increased an average of 40% each year, according to the Brazilian heavy machinery industry association ABIMAQ.¹⁰⁹

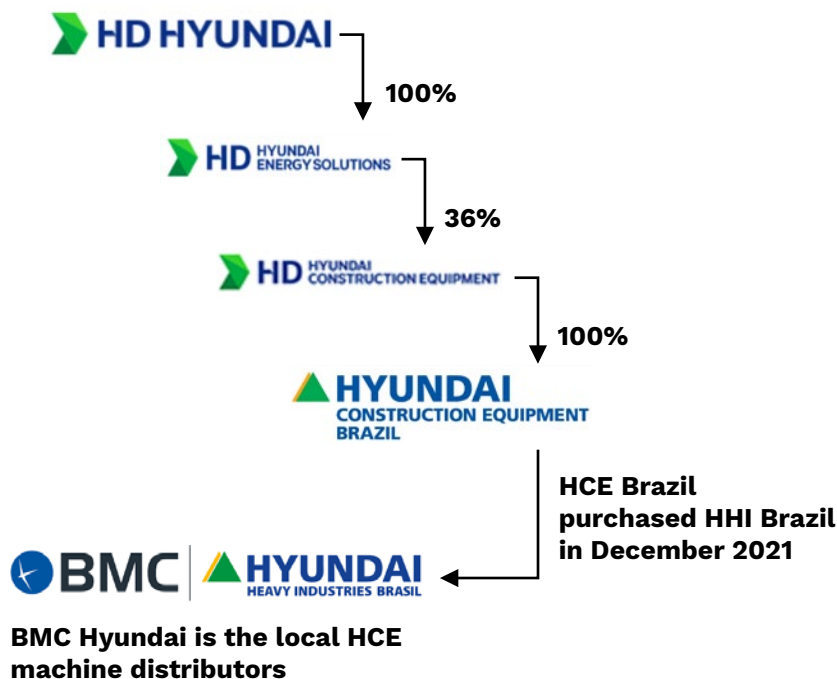


© Valentina Ricardo

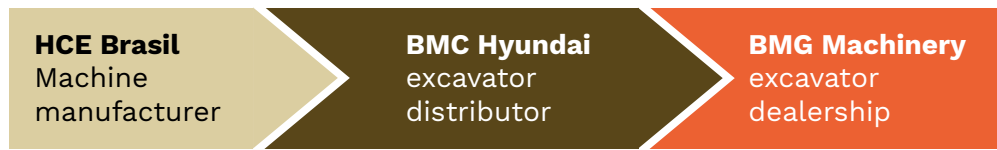
In December 2022, Greenpeace Brazil exposed an illegal road that was serving as an access for excavators to the interior of the Yanomami.

More than just a manufacturer

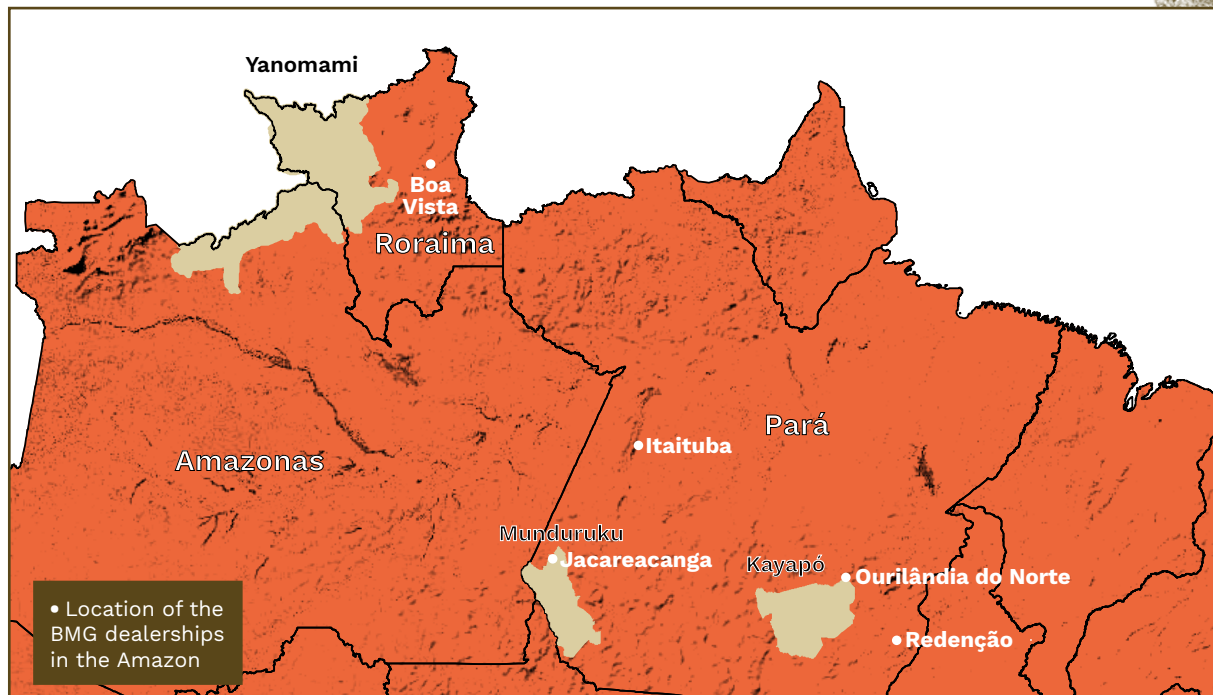
BMC Hyundai has sales representatives and several authorized resellers present throughout Brazil.¹¹⁰ Among these is the company BMG Comércio de Máquinas EIRELI- (“BMG”).¹¹¹ When looking at the map of these resellers, it is possible to see a pattern: BMG established dealerships and facilities in the vicinity of the three Indigenous Lands that account for 95% of the Indigenous Lands impacted by illegal mining, which are the focus of this report.¹¹² An executive from BMG in the city of Itaituba has stated in interviews that he represents the Hyundai brand.¹¹³ Itaituba is a small city in Para State in the heart of the Amazon with a population of approximately 100,000.¹¹⁴ It is known as a hub for garimpo, and Itaituba’s municipal anthem features its nickname Cidade Pepita or “Nugget city.”¹¹⁵



From production to distribution



Map 2 - BMG Comércio de Máquinas Ltda. Hyundai Authorized Dealer locations in relation to Indigenous Territories most impacted by illegal mining



BMG, this authorized reseller, apparently takes pride in selling in its ability to furnish garimpo clientele with the latest models of heavy machinery.¹¹⁶ In an interview given to a local journalist, BMG’s representative stated that he had successfully “convinced the Koreans” to invest in Itaituba, in garimpo, making them believe in the financial abilities of informal mining operations to buy expensive heavy machinery made by Hyundai Construction Equipment Brasil.¹¹⁷ In this TV interview, BMG’s representative outlined how his sales today were due to his anticipation of the expansion of mining eight years prior.¹¹⁸ BMG also offers what its representative described as a “simplified line of credit” that makes it easier to purchase heavy machinery.¹¹⁹ In the same interview, the representative of Hyundai Construction Equipment Brasil’s Authorized Reseller stated that he stands in solidarity with the miners and that he is proud of how he has publicly supported the “fight for the legalization of garimpo.”¹²⁰ In a separate interview, the same representative also said that he admires then-President Bolsonaro’s approach to mining.¹²¹

Profiting while not responding to authorities' request for collaboration

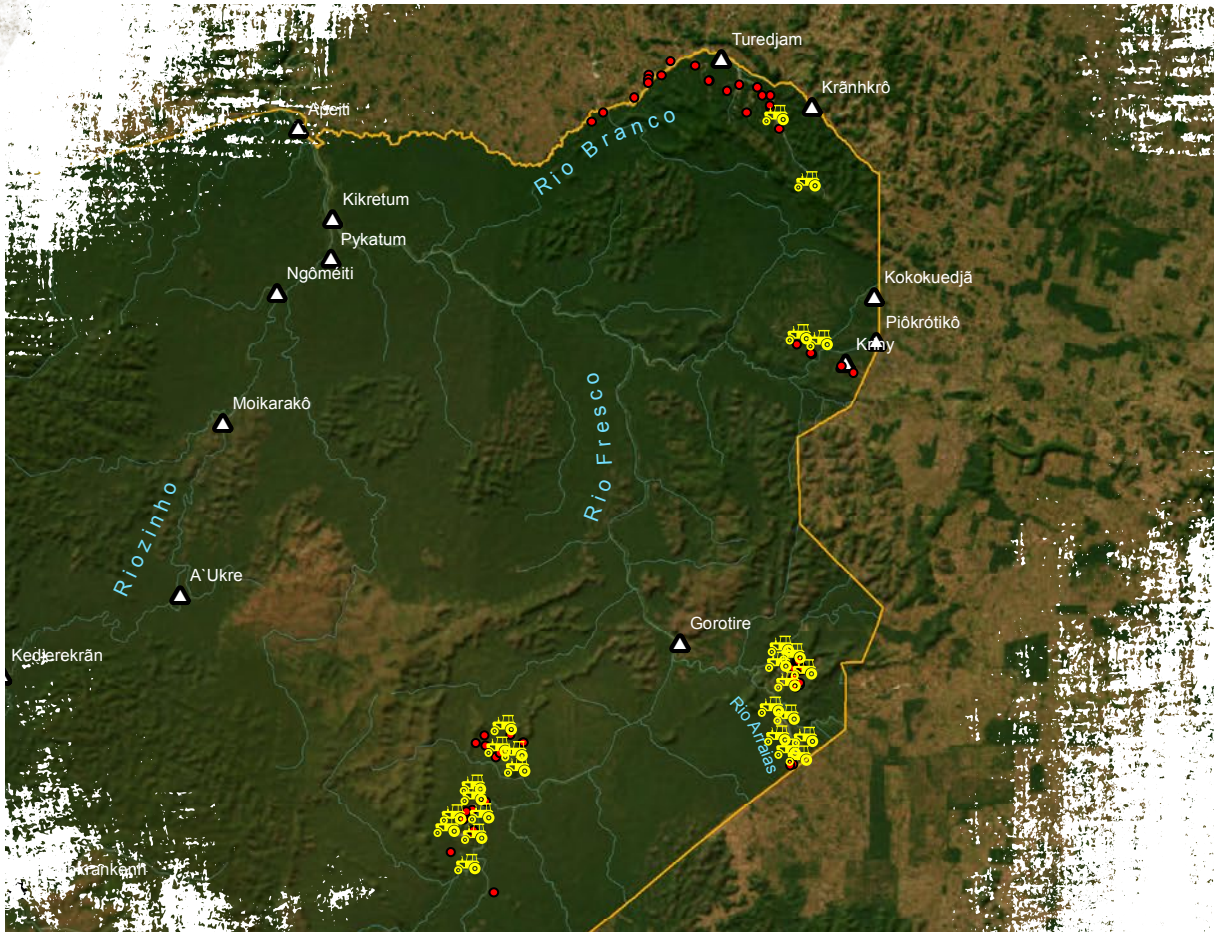
In 2020, the Federal Public Prosecutor's Office (MPF) - Attorney's Office in Itaituba initiated a civil inquiry¹²² to determine the responsibility of manufacturers and suppliers of heavy machinery, given damages resulting from illegal mining in Indigenous Lands and Protected Conservation Areas from the use of this equipment.¹²³ In its report, MPF describes that:

“

The mining activity has undergone a strong transformation in recent years with the introduction of hydraulic excavators, machines with a destruction power several times greater than the traditional methods used in other times. Although it is not for exclusive use, it has been directed towards fulfilling the demand of the illegal mining market in the Amazon, with no effective use control measures being observed by the companies responsible. In these terms, it becomes essential to assign due responsibility to all actors that make up the chain of illegal extraction of gold and other minerals, with a direct or indirect contribution, including undoubtedly the companies that manufacture heavy machinery, in view of the massive use of these for illicit purposes.¹²⁴

”

Map 3 - Excavators in the Kayapó Indigenous Land



 **34 Hyundai excavators**

 **54 excavators of different brands**

The excavators were identified during flyovers in March 2023. Most excavators are Hyundai's (42.9%). There were 17 LiuGong excavators (17.3%) and 10 Caterpillar excavators (10.2%). Volvo, Sany, John Deere, XCMG, Link-Belt, Komatsu, CASE, New Holland and Fiat Allis excavators were also observed.

In its investigation, MPF also requested information¹²⁵ from the various brands operating in Brazil. Among the clarifications requested are what measures companies have adopted to inhibit the use of their machines in illegal activities; above all, the mining in protected areas of the Amazon under special protection, such as the possibility of installing technologies to avoid the use of machines in prohibited areas.¹²⁶ Only three of the six companies investigated responded – Hyundai Construction Equipment Brasil did not respond to the Brazilian Public Prosecutor.¹²⁷ Hyundai Construction Equipment Brasil was reportedly also silent when Repórter Brasil asked the company for clarification as part of the publication of the 2021 report *How excavator manufacturers fuel illegal mining in the Amazon*.¹²⁸

Business and human rights - protect, respect and remedy

Companies are responsible for respecting Human Rights. This responsibility includes preventing negative impacts on human rights from their actions, and they must provide remedies for when negative impacts occur.¹²⁹

This responsibility was recognized by the United Nations (UN): in 2011, the UN Human Rights Council approved, by consensus, the Guiding Principles on Business and Human Rights, which recognize the “role of business as specialized organs of society that perform specialized functions and that must comply with all applicable laws and respect human rights.”¹³⁰

These Guiding Principles apply to all States and companies, whether transnational or otherwise, regardless of their size, sector, location, ownership, and structure.¹³¹ To this end, companies must adopt due diligence in their business processes in terms of Human Rights¹³² to actively identify, prevent, mitigate and account for and manage their potential and actual negative impacts on Human Rights.¹³³

In December 2021, HD Hyundai Construction Equipment confirmed¹³⁴ its adherence and committed itself to implement UN principles in the United Nations Global Compact¹³⁵, one of the world’s largest voluntary corporate accountability initiatives. By adhering to the Global Compact, member companies undertake to implement ten principles in the areas of human rights, labor, the environment, and the fight against corruption.¹³⁶



Hiding excavators under trees is one of the tricks used to evade authorities.

The responsibility of heavy equipment manufacturers under Brazilian law

Brazilian environmental legislation is clear that anyone who develops an economic activity with possible impacts on the environment must guarantee environmental preservation and will always be considered responsible for any damages related to this activity.¹³⁷ This responsibility stems from the integral risk theory,¹³⁸ which governs Brazilian legislation on environmental damage.

Furthermore, if there is more than one cause of environmental damage – direct or indirect – all parties responsible are jointly and severally responsible for repairing it.¹³⁹ Brazil's National Environmental Policies apply this framework in defining “polluter”: “any natural or legal person, public or private, responsible, directly or indirectly, for an activity that causes environmental degradation.”¹⁴⁰ This definition may apply to HD Hyundai Construction Equipment Brasil for its indirect role in causing environmental degradation. Brazil's Superior Court of Justice has determined that accountability depends on the connection between the activity and environmental damage, regardless of the action or omission of the person responsible, even if the cause of the ecological damage is an element external to the activity.¹⁴¹ Companies cannot even claim nonliability due to “acts of God,” that is, events or situations that are unpredictable or difficult to predict and avoid.¹⁴²

Brazil's Superior Court of Justice states that this applies “to those who ‘do,’ [those] who do ‘not do when they should,’ [those] who ‘let them do it,’ [those] who ‘do not mind what they do,’ [those] who ‘finances for them to do it,’ and [those] who ‘benefits when others do it.’”¹⁴³

Based on these sets of rules, all the actors that make up the chain of illegal extraction of gold and other minerals, with a direct or indirect contribution, must fulfill their responsibilities – including, unquestionably, the companies that manufacture machinery, central pieces in the increasing escalation of destruction and violation of several fundamental rights.

Major international treaties and voluntary commitments that are being violated

1. United Nations Declaration on the Rights of Indigenous Peoples
2. A Universal Declaration of Human Rights (UDHR), particularly the Resolution HRC/48/L.13 that recognizes the human right to a clean, healthy, and sustainable environment¹⁴⁴
3. Under the UN Guiding Principles on Business and Human Rights and its due diligence duties, Hyundai Construction Equipment is a signatory
4. United Nations Global Compact, a voluntary corporate accountability initiative in which member companies undertake to implement the ten principles in the areas of human rights, labor, the environment, and the fight against corruption, a voluntary commitment made by Hyundai Construction Equipment in December 2021¹⁴⁵



Indigenous Peoples demonstrate against illegal gold mining in Brasília, the capital of Brazil, during the Free Land Camp in 2022.

Hyundai has the necessary technology

HD Hyundai Construction Equipment is able to prevent its equipment from operating in prohibited locations by activating existing technologies that track excavators' locations in real-time.¹⁴⁶ HD Hyundai Construction Equipment and authorities could compare the excavators' locations against data sets of the perimeters of protected areas, such as Indigenous Lands, whose coordinates are publicly accessible.¹⁴⁷

Since 2008, HD Hyundai Construction Equipment has had a remote management system called Hi Mate, which uses GPS to collect data about its machines, such as service and maintenance data. From any computer or smartphone with internet access.¹⁴⁸ The users can locate their machines from digital maps and delimit virtual borders for the equipment's work area.¹⁴⁹ The system helps, as HD Hyundai Construction Equipment describes, generate information, plan maintenance, reduce machine downtime and save time and money.¹⁵⁰ HD Hyundai Construction Equipment could implement this technology in its machinery on a mandatory basis, incorporated as a precondition to sales contracts. This technology would facilitate the Brazilian government's ability to track heavy machinery operating illegally in Indigenous Lands or other protected areas and increase their ability to respond.

The technological possibilities to address this problem go even further: Brazilian and international organizations and companies also joined together to develop an initiative called Code of Conscience, open-source software that limits the use of heavy machinery in Protected Areas.¹⁵¹ Once installed, the system detects when machinery approaches the boundary of a protected area and sends an alert to the driver.¹⁵² If the driver continues advancing into a protected area, the machine can be remotely disabled.¹⁵³



© Marizilda Cruppe/Greenpeace

Excavator manufacturers need to take responsibility for how their equipment is used.

Resolving the problem

The crisis related to illegal mining must and can be overcome because it is not an economic activity capable of coexisting with the preservation of nature required to sustain humanity. The most durable solution for illegal mining would be a new development pathway that addresses the conditions that attract the expansion of illegal mining.¹⁵⁴ Such an alternative development pathway would need to address the 45% poverty rate and inequality that confront nearly 30 million Brazilians in the Amazon while being grounded in the ecological limits of nature and respecting human rights.¹⁵⁵

Until such systemic shifts occur, it is up to governments to immediately reverse the cycle of expansion of illegal mining in the Amazon. The Brazilian government must incorporate the diverse set of recommendations by Brazilian NGOs and scientists into an integrated strategy against destructive mining.¹⁵⁶ Such a strategy would address various dimensions of the complex problem, including Indigenous land rights, perimeter defense, remediation, organized crime, prosecutorial standards, financiers, and particularly the laundering of illegal gold into the global market.¹⁵⁷

One concrete example of a proposed solution for illegal gold laundering is adopting a digital gold tracking and monitoring system through safe and trustworthy records.¹⁵⁸ To this end, some Brazilian NGOs have recommended using a technology known as DLT (Distributed Ledger Technology).¹⁵⁹ DLT creates a verifiable database where users enter blockchain-registered sales and shipment information.¹⁶⁰ Connecting these records in a publicly accessible way would allow for control and transparency in the sector.¹⁶¹

The expansive and complex problem of mining in the Amazon needs to be confronted with a comprehensive set of solutions. In the context of heavy machinery connected to mining, the Brazilian government should employ protocols for traceability of machines like excavators that prevent their use in illegal mining. Authorities should also investigate and identify who is responsible for bringing excavators into illegal mining operations. It should also prevent the use of public financing programs¹⁶² that facilitate the purchase of such machines for illegal mining. While public policy solutions take time for development and implementation, companies like HD Hyundai Construction Equipment have a critical role to play in removing its machines from the hands of criminal mining operations. Taking these catalysts of destruction out of the equation would significantly curb the speed of mining's expansion. Such additional time is necessary for comprehensive and durable solutions to be developed, resourced, and deployed.

Demands:

Hyundai Construction Equipment and its competitors MUST:

- 1.** Withdraw business from high-risk areas until you can ensure machines will not be used for destructive activities in Indigenous Lands, Protected Areas, or High Conservation Value Ecosystems. This includes
 - a.** Introduction of GPS-linked devices that disable the machines from operating in Indigenous Peoples' Lands, Protected Areas, or High Conservation Value Ecosystems.
 - b.** Develop a strong and consistent know your client (KYC) compliance policy to monitor who is buying its machines and avoid selling to individuals and entities involved in illegal and destructive activities in Indigenous Lands, Protected Areas, or High Conservation Value Ecosystems.
 - c.** Stop selling, financing, or providing spare parts to individuals or entities involved in destructive activities in Indigenous Lands, Protected Areas, or High Conservation Value Ecosystems.
 - d.** Identify where sold machines are operating and for what use.
 - e.** Support policies that prevent the use of heavy machinery in destructive activities in Indigenous Lands, Protected Areas, or High Conservation Value Ecosystems
- 2.** Restore ecosystems and pay remedies to Indigenous Peoples who have suffered due to its business practices.

References

- 1 Reuters. “Brazil Declares Emergency over Deaths of Yanomami Children from Malnutrition.” Reuters, Reuters, 22 Jan. 2023, www.reuters.com/world/americas/brazil-declares-emergency-over-deaths-yanomami-children-malnutrition-2023-01-22/. Accessed 28 Mar. 2023.
- 2 Gozzi, Laura. “Brazil Airlifts Starving Yanomami Tribal People from Jungle.” BBC News, BBC News, 24 Jan. 2023, www.bbc.com/news/world-64381922. Accessed 28 Mar. 2023.
- 3 Molina, Luísa Pontes (Org.), Benfica Senra, Estêvão, et al., Aliança em Defesa dos Territórios (Ed.), “Terra Rasgada: Como Avança O Garimpo Na Amazônia Brasileira. | Acervo | ISA.” 2023, acervo.socioambiental.org/acervo/documentos/terra-rasgada-como-avanca-o-garimpo-na-amazonia-brasileira. Accessed 28 Mar. 2023.
- 4 Authors’ note: “Garimpo” has a particular meaning and connotation in Brazil, but is difficult to translate in other cultural contexts. For the purposes of this report we will use Garimpo to encompass small-scale gold mining both legal and illegal, while affirming that garimpo is categorically illegal in Conservation Areas and Indigenous Lands in Brazil.

Garimpo is defined within Brazil as mining or prospecting for minerals in a way that is less professional and less regulated, and purportedly smaller scale than “mineração” the portuguese word for “mining” which refers to professional industrialized mining. The closest concepts in international policy dialogues in English are “small-scale mining,” “Artisanal-scale gold mining,” ‘informal’ gold mining, or “prospecting.” As garimpo has evolved to present a threat at a larger scale and become associated with illegality and organized crime, these translations would inaccurately imply a benignness of the impact of garimpo in Brazil whose connotation has transformed from its initial provincial image few people in remote areas using rustic equipment and having a minimal impact on the environment. As this report illustrates, garimpo today cannot be defined as small-scale given the use of industrial equipment and the extent of its impacts. Brazilian law has defined garimpo as mineral extraction carried out in small volumes and with low environmental impact. Such a definition is problematic given the reality of garimpo in terms of its high volumes and high environmental impact.

- 5 “Mapbiomas Brasil | Área Ocupada Pela Mineração No Brasil Cresce Mais de 6 Vezes Entre 1985 E 2020.” Mapbiomas.org, 2020, mapbiomas.org/area-ocupada-pela-mineracao-no-brasil-cresce-mais-de-6-vezes-entre-1985-e-2020. Accessed 13 Mar. 2023. “A expansão do garimpo coincide com o avanço sobre territórios indígenas e unidades de conservação. De 2010 a 2020, a área ocupada pelo garimpo dentro de terras indígenas cresceu 495%; no caso das unidades de conservação, o crescimento foi de 301%. No ano passado, metade da área nacional do garimpo estava em unidades de conservação (40,7%) ou terras indígenas (9,3%). As maiores áreas de garimpo em terras indígenas estão em território Kayapó (7602 ha) e Munduruku (1592 ha), no Pará, e Yanomami (414 ha), no Amazonas e Roraima. Entre as 10 unidades de conservação com maior atividade garimpeira, oito ficam no Pará. As três maiores são a APA do Tapajós (34.740 ha), a Flona do Amaná (4.150 ha) e o Parna do Rio Novo (1.752 ha).”
- 6 Molina, Luísa Pontes (Org.), Benfica Senra, Estêvão, et al., Aliança em Defesa dos Territórios (Ed.), “Terra Rasgada: Como Avança O Garimpo Na Amazônia Brasileira. | Acervo | ISA.” 2023, acervo.socioambiental.org/acervo/documentos/terra-rasgada-como-avanca-o-garimpo-na-amazonia-brasileira. Accessed 28 Mar. 2023.
- 7 Abdenur, Adriana Erthal (Igarapé Institute), “Organized Crime in the Amazon: Illegal Mining Hotspots.” Climate-Diplomacy, 2019, climate-diplomacy.org/magazine/environment/organized-crime-amazon-illegal-mining-hotspots. Accessed 28 Mar. 2023.

- 8 Hofmeister, Naira, “Como Fabricantes de Escavadeiras Alimentam Garimpo Ilegal Na Amazônia.” Repórter Brasil, 28 Oct. 2021, reporterbrasil.org.br/2021/10/como-fabricantes-de-escavadeiras-alimentam-garimpo-ilegal-na-amazonia/. Accessed 28 Mar. 2023.
- 9 Greenpeace Brazil flyover data, documentation on file with Greenpeace Brazil.
- 10 Ibid.
- 11 Ibid.
- 12 Alisson, Elton. “Mineração Em Terras Indígenas Da Amazônia Aumentou 1.217% Nos Últimos 35 Anos.” Brasil de Fato, Brasil de Fato, 3 Feb. 2023, www.brasildefato.com.br/2023/02/03/mineracao-em-terras-indigenas-da-amazonia-aumentou-1-217-nos-ultimos-35-anos. Accessed 28 Mar. 2023.
- 13 Molina, Luísa Pontes (Org.), Benfica Senra, Estêvão, et al., Aliança em Defesa dos Territórios (Ed.), “Terra Rasgada: Como Avança O Garimpo Na Amazônia Brasileira. | Acervo | ISA.” 2023, acervo.socioambiental.org/acervo/documentos/terra-rasgada-como-avanca-o-garimpo-na-amazonia-brasileira. Accessed 28 Mar. 2023.
- 14 Ibid.
- 15 Moraes, Carolina, & Gabriel, João. “Yanomamis Não Morriam de Fome; Agora, Garimpo Mata Meu Povo, Diz Davi Kopenawa.” Folha de S.Paulo, Folha de S.Paulo, 27 Jan. 2023, www1.folha.uol.com.br/cotidiano/2023/01/yanomamis-nao-morriam-de-fome-agora-garimpo-mata-meu-povo-diz-davi-kopenawa.shtml. Accessed 28 Mar. 2023.
- 16 “Mapbiomas Brasil | Área Ocupada Pela Mineração No Brasil Cresce Mais de 6 Vezes Entre 1985 E 2020.” Mapbiomas.org, 2020, mapbiomas.org/area-ocupada-pela-mineracao-no-brasil-cresce-mais-de-6-vezes-entre-1985-e-2020. Accessed 13 Mar. 2023.
- 17 Mapping analysis by Greenpeace Brazil.
- 18 de. “Amazônia Concentra 91,6% de Toda a Área Afetada Pelo Garimpo No Brasil, Aponta MapBiomias.” G1, 27 Sept. 2022, g1.globo.com/meio-ambiente/noticia/2022/09/27/amazonia-concentra-916percent-de-toda-a-area-afetada-pelo-garimpo-no-brasil-aponta-mapbiomas.ghtml. Accessed 28 Mar. 2023.
- 19 Mansoor, Sanya. “Why Lula Accused Bolsonaro of ‘Genocide’ against Brazil’s Yanomami People.” Time. Time, 23 Jan. 2023. Web. 13 Mar. 2023. <[time.com/6249369/lula-accuses-bolsonaro-genocide-yanomami/](https://www.time.com/6249369/lula-accuses-bolsonaro-genocide-yanomami/)>, Toledo, Marcelo. “Lula Fala Em ‘Situação Desumana’ E Anuncia Auxílio a Yanomamis Em Roraima.” Folha de S.Paulo, Folha de S.Paulo, 21 Jan. 2023, www1.folha.uol.com.br/cotidiano/2023/01/lula-fala-em-situacao-desumana-e-anuncia-auxilio-a-yanomamis-em-roraima.shtml. Accessed 13 Mar. 2023.
- 20 Hutukara Associação Yanomami, Associação Wanasseduume Ye’kwana, & Instituto Socioambiental, “Yanomami Sob Ataque: Garimpo Ilegal Na Terra Indígena Yanomami E Propostas Para Combatê-Lo. | Acervo | Isa.” Socioambiental.Org, 2022, acervo.socioambiental.org/acervo/documentos/yanomami-sob-ataque-garimpo-ilegal-na-terra-indigena-yanomami-e-propostas-para-combate-lo. Accessed 28 Mar. 2023.
- 21 Observatório da Mineração & Sinal de Fumaça, “Pure Dynamite: how Bolsonaro’s Government (2019-2022) Mineral Policy Set Up a Climate and Anti-Indigenous Bomb” Smoke Signal, 27 Mar. 2023, www.sinaldefumaca.com/en/especiais/pure-dynamite/. Accessed 29 Mar. 2023.

- 22** Molina, Luísa Pontes (Org.), Benfica Senra, Estêvão, et al., Aliança em Defesa dos Territórios (Ed.), “Terra Rasgada: Como Avança O Garimpo Na Amazônia Brasileira. | Acervo | ISA.” 2023, <https://acervo.socioambiental.org/acervo/documentos/terra-rasgada-como-avanca-o-garimpo-na-amazonia-brasileira>. Accessed 28 Mar. 2023.
- 23** Molina, Luísa Pontes (Org.), Benfica Senra, Estêvão, et al., Aliança em Defesa dos Territórios (Ed.), “Terra Rasgada: Como Avança O Garimpo Na Amazônia Brasileira. | Acervo | ISA.” 2023, <https://acervo.socioambiental.org/acervo/documentos/terra-rasgada-como-avanca-o-garimpo-na-amazonia-brasileira>. Accessed 28 Mar. 2023.
- 24** Oviedo, Antonio, Instituto Socioambiental, & Crivellaro, Gabriel, Instituto Nacional de Pesquisas Espaciais, “Expansão do Garimpo de Ouro e Estimativa do Impacto Ambiental na Amazônia Legal,” 2021 (Forthcoming, on file with Greenpeace East Asia).
- 25** Instituto Escolhas. “Ouro acima da lei: áreas protegidas da Amazônia em perigo”. São Paulo, 2022. escolhas.org/ouro-acima-da-lei-areas-protegidas-da-amazonia-em-perigo/. Accessed 29 Mar. 2023.
- 26** Instituto Escolhas. “Raio X do Ouro: mais de 200 toneladas podem ser ilegais”. São Paulo, 2022. www.escolhas.org/novo-estudo-do-escolhas-revela-quase-metade-do-ouro-produzido-no-brasil-pode-ser-ilegal/. Accessed 29 Mar. 2023.
- 27** Observatório da Mineração & Sinal de Fumaça, “Pure Dynamite: how Bolsonaro’s Government (2019-2022) Mineral Policy Set Up a Climate and Anti-Indigenous Bomb” Smoke Signal, 27 Mar. 2023, www.sinaldefumaca.com/en/especiais/pure-dynamite/. Accessed 29 Mar. 2023.
- 28** *ibid.*
- 29** Fantástico. “Barões’ Do Ouro Ilegal No Brasil: Dinheiro Movimentado Às Margens Da Lei Chegou a R\$ 16 Bilhões Em Dois Anos.” G1, 11 July 2022,, g1.globo.com/fantastico/noticia/2022/07/10/baroes-do-ouro-ilegal-no-brasil-dinheiro-movimentado-as-margens-da-lei-chegou-a-r-16-bilhoes-em-dois-anos.ghtml. Accessed 13 Mar. 2023.
- 30** Hutukara Associação Yanomami, Associação Wanasseduume Ye’kwana, & Instituto Socioambiental, “Yanomami Sob Ataque: Garimpo Ilegal Na Terra Indígena Yanomami E Propostas Para Combatê-Lo. | Acervo | Isa.” Socioambiental.Org, 2022, acervo.socioambiental.org/acervo/documentos/yanomami-sob-ataque-garimpo-ilegal-na-terra-indigena-y-anomami-e-propostas-para. Accessed 28 Mar. 2023.
- 31** *Ibid.*
- 32** Mapping Analysis conducted by Greenpeace Brazil.
- 33** Hutukara Associação Yanomami, Associação Wanasseduume Ye’kwana, & Instituto Socioambiental, “Yanomami Sob Ataque: Garimpo Ilegal Na Terra Indígena Yanomami E Propostas Para Combatê-Lo. | Acervo | Isa.” Socioambiental.Org, 2022, acervo.socioambiental.org/acervo/documentos/yanomami-sob-ataque-garimpo-ilegal-na-terra-indigena-y-anomami-e-propostas-para. Accessed 28 Mar. 2023.
- 34** *ibid.*
- 35** Maciel, Giovana Belem Moreira Lima, & Oliveira, Elaine Cristina de. (2014). Perfil entomológico e epidemiológico da malária em região garimpeira no norte do Mato Grosso, 2011. *Epidemiologia e Serviços de Saúde*, 23(2), 355-360. Recuperado

em 28 de março de 2023, de http://scielo.iec.gov.br/scielo.php?script=sci_arttext&pid=S1679-49742014000200017&lng=pt&tlng=pt.

- 36** United Nations Environmental Programme (UNEP). “Global Mercury Assessment 2018.” UNEP - UN Environment Programme, 2019, www.unep.org/resources/publication/global-mercury-assessment-2018. Accessed 13 Mar. 2023.
- 37** “Peixes Contaminados Por Mercúrio: Ameaça Ao Ambiente E à Saúde - ECycle.” ECycle - Sua Pegada Mais Leve, 17 Nov. 2014, www.ecycle.com.br/mercurio-em-peixes/. Accessed 29 Mar. 2023.
- 38** Redação CicloVivo. “Peixes Mais Consumidos No Amapá Estão Contaminados Por Mercúrio - CicloVivo.” CicloVivo, 3 Sept. 2020, ciclovivo.com.br/planeta/meio-ambiente/peixes-mais-consumidos-no-amapa-estao-contaminados-por-mercuro/. Accessed 29 Mar. 2023.
- 39** United Nations Environmental Programme (UNEP) “Minamata Convention on Mercury.” [Mercuryconvention.org](http://mercuryconvention.org), 2021, mercuryconvention.org/en. Accessed 29 Mar. 2023.
- 40** Orellana, Marcos, “A/HRC/51/35: Mercury, Small-Scale Gold Mining and Human Rights – Report of the Special Rapporteur on the Implications for Human Rights of the Environmentally Sound Management and Disposal of Hazardous Substances and Wastes.” OHCHR, 2022, www.ohchr.org/en/documents/thematic-reports/ahrc5135-mercury-small-scale-gold-mining-and-human-rights-report-special. Accessed 29 Mar. 2023.
- 41** Alternatively referred to as the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes,
- 42** ONU News, “Relator Da ONU Pedu Proibição Do Comércio De Mercúrio E Uso Em Mineração De Ouro.” ONU News, 21 Sept. 2022, news.un.org/pt/story/2022/09/1801691. Accessed 13 Mar. 2023.
- 43** Orellana, Marcos, “A/HRC/51/35: Mercury, Small-Scale Gold Mining and Human Rights – Report of the Special Rapporteur on the Implications for Human Rights of the Environmentally Sound Management and Disposal of Hazardous Substances and Wastes.” OHCHR, 2022, www.ohchr.org/en/documents/thematic-reports/ahrc5135-mercury-small-scale-gold-mining-and-human-rights-report-special. Accessed 29 Mar. 2023.
- 44** United Nations Environmental Programme (UNEP). “Global Mercury Assessment 2018.” UNEP - UN Environment Programme, 2019, www.unep.org/resources/publication/global-mercury-assessment-2018. Accessed 13 Mar. 2023.
- 45** Fundação Oswaldo Cruz, “Impacto Do Mercúrio Na Saúde Dos Indígenas Munduruku: Uma Abordagem Integrada Pesquisa-Serviço-Educação.” Fiocruz.br, 2023, www.epsjv.fiocruz.br/pesquisa/projetos-de-pesquisa/impacto-do-mercurio-na-saude-dos-indigenas-munduruku-uma-abordagem. Accessed 13 Mar. 2023.
- 46** “Levantamento Revela Alto Índice de Contaminação Por Mercúrio Entre Indígenas.” Fundação Oswaldo Cruz, 2016, portal.fiocruz.br/noticia/levantamento-revela-alto-indice-de-contaminacao-por-mercurio-entre-indigenas. Accessed 13 Mar. 2023.

- 47** “Estudo Analisa a Contaminação Por Mercúrio Entre O Povo Indígena Munduruku.” Fiocruz, 2020, portal.fiocruz.br/noticia/estudo-analisa-contaminacao-por-mercúrio-entre-o-povo-indígena-munduruku. Accessed 29 Mar. 2023.
- 48** Fundação Oswaldo Cruz & WWF-Brasil, Nota Técnica, “Mundurukus Têm Saúde Afetada Por Mercúrio.” 2020, www.wwf.org.br/informacoes/noticias_meio_ambiente_e_natureza/?77388/Mundurukus-tem-saude-afeta-da-por-mercúrio. Accessed 29 Mar. 2023.
- 49** International Labor Organisation, “Dia Da Pessoa Indígena: Entenda a Importância Da Convenção No. 169 Da OIT Sobre Os Povos Indígenas E Tribais.” Ilo.org, 19 Apr. 2021, www.ilo.org/brasilia/noticias/WCMS_781508/lang--pt/index.htm. Accessed 29 Mar. 2023.
- 50** “UN Declaration on the Rights of Indigenous Peoples.” OHCHR, 2023, www.ohchr.org/en/indigenous-peoples/un-declaration-rights-indigenous-peoples. Accessed 29 Mar. 2023. 51 Organization of American States, “A CIDH Solicita a Corte IDH Medidas Provisórias Em Favor Dos Povos Indígenas Yanomami, Ye`kwana E Munduruku No Brasil Devido à Extrema Gravidade Em Que Se Encontram.” Oas.org, 2022, <https://www.oas.org/pt/cidh/jsForm/?File=/pt/cidh/prensa/notas/2022/107.asp> Accessed 16 Mar. 2023.
- 52** Ibid.
- 53** Amazon Institute of Man and Environment (Imazon), “The Threat to Biodiversity in the Eastern Amazon (No. 6) - Imazon.” amazon, 2 July 2013, amazon.org.br/a-ameaca-a-biodiversidade-na-amazonia-oriental-n-6/#:~:text=O%20impacto%20regional%20mais%20s%C3%A9rio,separ%C3%A1%2Dlo%20de%20outros%20materiais. Accessed 23 Mar. 2023.
- 54** Ibid.
- 55** Ibid.
- 56** Ibid.
- 57** Ibid.
- 58** Ibid.
- 59** Ibid.
- 60** Ibid.
- 61** Ibid.
- 62** Ibid.
- 63** “CSF’s Mining Calculator Makes an Impact on the Ground | Conservation Strategy Fund.” Conservation-Strategy.org, 2 May 2023, www.conservation-strategy.org/news/csfs-mining-calculator-makes-impact-ground. Accessed 29 Mar. 2023.
- 64** Ibid.
- 65** “CSF’s Mining Calculator Makes an Impact on the Ground | Conservation Strategy Fund.” Conservation-Strategy.org, 2 May 2023, www.conservation-strategy.org/news/csfs-mining-calculator-makes-impact-ground. Accessed 29 Mar. 2023.

- 66 “Ibid.
- 67 Wanderley, Luiz Jardim, “Geografia Do Ouro Na Amazônia Brasileira: Uma Análise A Partir Da Porção Meridional,” Tese de Doutorado apresentada ao Programa de Pós-Graduação em Geografia, Universidade Federal do Rio de Janeiro, como requisito parcial para obtenção do grau de Doutor em Ciências, Rio de Janeiro, 2015 [https://www.gomiam.org/wp-content/uploads/2015/08/Geografia-do-Ouro-na-Amaz%C3%B4nia-Tese-Luiz -Jardim-Wanderley-2.pdf](https://www.gomiam.org/wp-content/uploads/2015/08/Geografia-do-Ouro-na-Amaz%C3%B4nia-Tese-Luiz-Jardim-Wanderley-2.pdf), 29 Mar. 2023. acervo.socioambiental.org/acervo/documentos/o-cerco-do-ouro-garimpo-ilegal-destruicao-e-luta-em-terra-s-munduruku-resumo. Accessed 29 Mar. 2023.
- 68 Ibid.
- 69 Ibid.
- 70 Ibid.
- 71 Ibid.
- 72 Mapbiomas Brasil | Área Ocupada Pela Mineração No Brasil Cresce Mais de 6 Vezes Entre 1985 E 2020.” Mapbiomas.org, 2020, mapbiomas.org/area-ocupada-pela-mineracao-no-brasil-cresce-mais-de-6-vezes-entre-1985-e-2020. Accessed 13 Mar. 2023.
- 73 Wanderley, Luiz Jardim, “Geografia Do Ouro Na Amazônia Brasileira: Uma Análise A Partir Da Porção Meridional,” Tese de Doutorado apresentada ao Programa de Pós-Graduação em Geografia, Universidade Federal do Rio de Janeiro, como requisito parcial para obtenção do grau de Doutor em Ciências, Rio de Janeiro, 2015 [https://www.gomiam.org/wp-content/uploads/2015/08/Geografia-do-Ouro-na-Amaz%C3%B4nia-Tese-Luiz -Jardim-Wanderley-2.pdf](https://www.gomiam.org/wp-content/uploads/2015/08/Geografia-do-Ouro-na-Amaz%C3%B4nia-Tese-Luiz-Jardim-Wanderley-2.pdf), 29 Mar. 2023
- 74 Ibid.
- 75 Wanderley, Luiz Jardim, “Geografia Do Ouro Na Amazônia Brasileira: Uma Análise A Partir Da Porção Meridional,” Tese de Doutorado apresentada ao Programa de Pós-Graduação em Geografia, Universidade Federal do Rio de Janeiro, como requisito parcial para obtenção do grau de Doutor em Ciências, Rio de Janeiro, 2015 [https://www.gomiam.org/wp-content/uploads/2015/08/Geografia-do-Ouro-na-Amaz%C3%B4nia-Tese-Luiz -Jardim-Wanderley-2.pdf](https://www.gomiam.org/wp-content/uploads/2015/08/Geografia-do-Ouro-na-Amaz%C3%B4nia-Tese-Luiz-Jardim-Wanderley-2.pdf), 29 Mar. 2023
- 76 Ministério Público Federal- “Mineração Ilegal de Ouro na Amazônia: Marcos Jurídicos e Questões Controversas 4a Câmara de Coordenação e Revisão”, accessed 29 Mar. 2023.
- 77 Dantas, Jorge Eduardo, “Estrada ilegal ameaça povo isolado na Terra Indígena Yanomami” Greenpeace Brasil, 2022, www.greenpeace.org/brasil/blog/estrada-ilegal-ameaca-povo-isolado-na-terra-indigena-yanomami/. Accessed 29 Mar. 2023.
- 78 Hutukara Associação Yanomami, Associação Wanasseduume Ye’kwana, & Instituto Socioambiental, “Yanomami Sob Ataque: Garimpo Ilegal Na Terra Indígena Yanomami E Propostas Para Combatê-Lo. | Acervo | Isa.” Socioambiental.Org, 2022, acervo.socioambiental.org/acervo/documentos/yanomami-sob-ataque-garimpo-ilegal-na-terra-indigena-y-anomami-e-propostas-para. Accessed 28 Mar. 2023.
- 79 Interviews conducted by Greenpeace Brasil.

- 80** Greenpeace Brazil Flyover, documentation held with Greenpeace Brazil, Mapping Analysis done by Greenpeace Brazil
- 81** Greenpeace Brazil Flyover, documentation held with Greenpeace Brazil.
- 82** Greenpeace Brazil Flyover, documentation held with Greenpeace Brazil.
- 83** Greenpeace Brazil Flyover, documentation held with Greenpeace Brazil.
- 84** Greenpeace Brazil Flyover, documentation held with Greenpeace Brazil.
- 85** “South Korea: Leading Conglomerates by Total Assets 2022 | Statista.” Statista, Statista, 2022, www.statista.com/statistics/1313153/south-korea-leading-conglomerates-by-total-assets/. Accessed 29 Mar. 2023.
- 86** HD Hyundai. “History.” Hd-Hyundai.com, 2023, www.hd-hyundai.com/history. Accessed 29 Mar. 2023. 87 He-rim, Jo. “Hyundai Heavy Industries Renames Itself HD Hyundai - the Korea Herald.” The Korea Herald, The Korea Herald, 26 Dec. 2022, www.koreaherald.com/view.php?ud=20221226000528. Accessed 16 Mar. 2023.
- 88** “HD.” Hyundai-Ce.com, 2020, www.hyundai-ce.com/en/about/company/history. Accessed 29 Mar. 2023.
- 89** In Brazil, among its sustainability principles It is environmental guidelines we fear “Prevention of negative environmental impacts” It is “ for the success of our business, we must create a sustainable future through continuous improvement of our environmental, social and economic performance”. <https://www.hyundai-ce.com.br/hyundai/sustentabilidade>.
- 90** HD, “ “Beyondblue Forward to Green.” <https://esg.hdhyundai.co.kr/> Accessed 16 Mar. 2023.
- 91** HD. “[CES 2023] HD Hyundai Press Conference Opening Remarks.” YouTube, YouTube Video, 5 Jan. 2023, www.youtube.com/watch?v=LY4ARiqL6hw. Accessed 16 Mar. 2023.
- 92** Ibid.
- 93** HD. “[CES 2023] HD Hyundai Press Conference Opening Remarks.” YouTube, YouTube Video, 5 Jan. 2023, www.youtube.com/watch?v=LY4ARiqL6hw. Accessed 16 Mar. 2023.
- 94** Wikipedia Contributors. “Chung Mong-Joon.” Wikipedia, Wikimedia Foundation, 2 Mar. 2023, en.wikipedia.org/wiki/Chung_Mong-joon. Accessed 29 Mar. 2023.
- 95** Ibid.
- 96** Ibid.
- 97** McCloud, Don. “Hyundai Drops ‘Doosan’ Name to Change to ‘HD Hyundai Infracore.’” Equipment World, 30 Mar. 2023, www.equipmentworld.com/business/article/15382390/hyundai-drops-doosan-name-to-change-to-hd-hyun-dai-infracore. Accessed 4 Apr. 2023.
- 98** “2023.03.14.” Fss.or.kr, 2023, dart.fss.or.kr/dsaf001/main.do?rcpNo=20230314000697. Accessed 30 Mar. 2023. HD Hyundai XiteSolution has 33.12% and ‘specially affiliated people’ has 3.06%. Therefore, HD Hyundai XiteSolution ‘in effective’ has 36.18%.

This is according to the 2022 Business Report of HCE which you can find in the DART (Data Analysis, Retrieval and Transfer System). DART is a repository of Korea's corporate filings and it is an electronic disclosure system that allows companies to submit disclosures online, where it becomes immediately available to investors and other users.

- 99 HHI Group, "Hyundai Heavy Industries," <http://www.hyundai-ce.com/en/about/group>.
- 100 "HD." Hyundai-Ce.com, 2020, www.hyundai-ce.com/en/about/company. Accessed 30 Mar. 2023.
- 101 Hyundai Heavy Industries Brasil, 'Nossa Historia,'Hyundai Heavy Industries Brasil, 2021, www.hyundai-ce.com.br/hyundai/nossa-historia. Accessed 16 Mar. 2023.
- 102 BMC Hyundai, "Institucional,"Bmchyundai.com.br, 2014, bmchyundai.com.br/institucional/. Accessed 16 Mar. 2023; Hyundai Heavy Industries Brasil, 'Nossa Historia,'Hyundai Heavy Industries Brasil, 2021, www.hyundai-ce.com.br/hyundai/nossa-historia. Accessed 16 Mar. 2023.
- 103 <http://www.thebell.co.kr/free/NewsPrint.asp?key=201311210100032370001910>
- 104 HYUNDAI HEAVY INDUSTRIES CO., LTD. Separate Financial Statements, 31 Dec. 2017 available at [http://www.hhi.co.kr/uploadFiles/upload/newsdata/Upload/IR/Board/%E2%97%8FFY2017_HHI_English%20FS\(Separate\)_FIN.PDF](http://www.hhi.co.kr/uploadFiles/upload/newsdata/Upload/IR/Board/%E2%97%8FFY2017_HHI_English%20FS(Separate)_FIN.PDF) p. 11, 117.
- 105 the same 17
- 106 BMC HYUNDAI S.A. - Federal Register at Brazil - CNPJ n. 14.168.536/0001-25 - Government of the State of Sao Paulo,Commercial Board of the State of São Paulo, "Jucesp Online: Researched Company."Sp.gov.br, 2023, https://www.jucesponline.sp.gov.br/Pre_Visualiza.aspx?nire=33300301631&idproduto= and HYUNDAI HEAVY INDUSTRIES BRASIL-INDUSTRIA E COMERCIO DE EQUIPAMENTOS DE Construção S.A. - HCE -Federal Register at Brazil - CNPJ n. 13.837.846/0001-22 https://www.jucesponline.sp.gov.br/Pre_Visualiza.aspx?nire=33300312161&idproduto=
- 107 Hyundai Heavy Industries Brasil, "O Group."Hyundai Heavy Industries Brasil, 2020, www.hyundai-ce.com.br/hyundai/grupo. Accessed 16 Mar. 2023.
- 108 Ibid.
- 109 Theguru.co.kr, 7 July 2022, theguru.co.kr/news/article.html?no=38183. Accessed 29 Mar. 2023.
- 110 BMC Hyundai, "Revenda Autorizada." Bmchyundai.com.br, 2023, bmchyundai.com.br/peças-originais/revenda-autorizada/. Accessed 31 Mar. 2023.
- 111 Government of the State of Sao Paulo, Commercial Board of the State of São Paulo, "Jucesp Online: Researched Company."Sp.gov.br, 2023, https://www.jucesponline.sp.gov.br/Pre_Visualiza.aspx?nire=15600275054&idproduto= . Accessed 16 Mar. 2023.
- 112 BMC Hyundai, "Revenda Autorizada." Bmchyundai.com.br, 2023, bmchyundai.com.br/peças-originais/revenda-autorizada/. Accessed 30 Mar. 2023.
- 113 Brito, Eduardo,www.facebook.com/eduardocomunicador, "Last Saturday I interviewed businessman Roberto Katsuda, owner of BMG Yundai, [sic] to talk about his trajectory in Itaituba, and his commitment to the fight for the legalization

of gold prospectors.”Facebook.com, 23 March 2020, www.facebook.com/watch/?v=232724911201473. Accessed 14 Mar. 2023.

- 114** Instituto Brasileiro de Geografia e Estatística, “Itaituba, Pará, Brasil”, 2023, cidades.ibge.gov.br/brasil/pa/itaituba/panorama. Accessed 29 Mar. 2023.
- 115** Prefeitura Municipal de Itaituba, “Hino Da Cidade.” Pa.gov.br, 2023, www.itaituba.pa.gov.br/cidade/hino. Accessed 29 Mar. 2023.
- 116** Brito, Eduardo, www.facebook.com/eduardocomunicador, “Last Saturday I interviewed businessman Roberto Katsuda, owner of BMG Yundai, [sic] to talk about his trajectory in Itaituba, and his commitment to the fight for the legalization of gold prospectors.”Facebook.com, 23 March 2020,
- 117** *ibid*
- 118** *ibid*
- 119** *ibid.*
- 120** *ibid.*
- 121** Repórter Brasil, “Em Ofensiva Contra Indígenas No Pará, Garimpeiros Ilegais Movimentam Mercado Bilionário.” Repórter Brasil, 24 Nov. 2019, reporterbrasil.org.br/2019/11/em-ofensiva-contra-indigenas-no-para-garimpeiros-ilegais-movimentam-mercado-bilionario/. Accessed 29 Mar. 2023.
- 122** Federal Public Ministry (MPF) – Civil Inquiry n. 1.23.008.000291/2020-68 - Attorney’s Office in the Municipality of Santarém- Itaituba- Civil - Collective Guardianship – 4CCR.
- 123** *Ibid* 104
- 124** *Ibid* 104
- 125** *Ibid* 104 -”1. Does the company recognize that there are ways to control and inhibit the use of its machines in illegal activities in Brazil, mainly mining? 2. Is the company adopting any measures to inhibit the use of its machines in illegal activities, mainly mining in areas of the Amazon under a special protection regime? 3. Does the company, when selling the excavators, request the Operating License, which is required by the National Council for the Environment (CONAMA), in the Plan for the Control of Environmental Impacts in Mining? 4 Does the company use the telemetry feature on the equipment manufactured and sold, or another that allows machine tracking?”
- 126** *Ibid.*
- 127** *Ibid.*
- 128** Repórter Brasil, “Íntegra Das Respostas Da Komatsu, Link Belt E Volvo.” Repórter Brasil, 28 Oct. 2021, reporterbrasil.org.br/2021/10/integra-das-respostas-da-komatsu-link-belt-e-volvo/. Accessed 29 Mar. 2023. <https://reporterbrasil.org.br/2021/10/como-fabricantes-de-escavadeiras-alimentam-garimpo-ilegal-na-amazonia/>; Repórter Brasil “Como Fabricantes de Escavadeiras Alimentam Garimpo Ilegal Na Amazônia.” Repórter Brasil, 28 Oct. 2021, reporterbrasil.org.br/2021/10/como-fabricantes-de-escavadeiras-alimentam-garimpo-ilegal-na-amazonia/. Accessed 29 Mar. 2023.

- 129** United Nations Office of The High Commissioner on Human Rights, “Guiding Principles on Business and Human Rights: Implementing the United Nations “Protect, Respect and Remedy Framework,” New York and Geneva 2011, https://www.ohchr.org/sites/default/files/documents/publications/guidingprinciplesbusinesshr_en.pdf, Accessed 29 Mar. 2023.
- 130** Centro De Direitos Humanos E Empresas Da Fundação Getúlio Vargas,” Implementando os Principios Orientadores Sobre Empresas e Direitos Humanos Da ONU: O Dever Do Estado de Proteger e a obrigacao das empresas de respeitar os Direitos Humanos”, Brasilia 2017, <https://epge.fgv.br/files/default/empresas-e-direitos-humanos.pdf> Accessed 29 Mar. 2023.
- 131** It is worth highlighting the Guiding Principle n. 23 which determines that in any context, companies must comply with all applicable laws and respect internationally recognized human rights, wherever they operate.
- 132** Batista, Jeferson. “Entenda O Que é Devida Diligência Em Direitos Humanos.” Conectas, 21 Jan. 2022, www.conectas.org/noticias/entenda-o-que-e-devida-diligencia-em-direitos-humanos/. Accessed 29 Mar. 2023.
- 133** Conectas Direitos Humanos, “Empresas e Direitos Humanos: Parâmetros Da ONU Para Proteger, Respeitar, e Reparar, Relatório Final de John Ruggie- Representante Especial do Secretário-Geral,” Sao Paulo, March 2012, https://site-antigo.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/conectas_principios_orientadoresruggie_mar20121.pdf Accessed 29 Mar. 2023.
- 134** <https://unglobalcompact.org/what-is-gc/participants/149579-Hyundai-Construction-Equipment-Co-LTD-> and <http://unglobal.pp-story.co.kr/our-work/image-gallery/?pageid=1&mod=document&uid=2178>
- 135** <https://unglobalcompact.org/what-is-gc/participants/149579-Hyundai-Construction-Equipment-Co-LTD->
- 136** <https://www.pactoglobal.org.br/10-principios> - And among the principles, it is worth mentioning those that are directly related to this report. “1 - Companies must support and respect the protection of internationally recognized human rights; 2- Ensure that you do not participate in violations of these rights; 07 - Companies should support a preventive approach to environmental challenges; 8 Develop initiatives to promote greater environmental responsibility, and 9 - Encourage the development and dissemination of environmentally friendly technologies”.
- 137** Brazilian Federal Constitution (CF/88) art. 225, § 3 & art. 14, § 1. Law no. 6,938/1981- National Environmental Policy (PNMA) of Brazil.
- 138** TJSP -<https://www.tjsp.jus.br/download/EPM/Publicacoes/CadernosJuridicos/48.03%20valerymirra.pdf>
- 139** Art. 942 of the Brazilian Civil Code - “Art. 942. The assets of the person responsible for the offense or violation of the rights of others are subject to compensation for the damage caused; and, if the offense has more than one author, all will be jointly and severally liable for the repair”..
- 140** Ibid.

- 141** STJ – 2nd Section – REsp n. 1,374,284/MG – j. 27.08.2014 – v.u. – rel. Min. Luís Felipe Salomão – appeal processed under the regime of repetitive appeals of art. 543-C of CPC/1973; STJ – 4th T. – AgRg no AgRg no AREsp n. 153,797/SP – j. 05.06.2014 – rel. Min. Marco Buzzi; STJ – 3rd T. REP n. 1373788/SP – j. 06.05.2014 – rel. Min. Paulo de Tarso Sanseverino; STJ – 4th T. – AgRg in REsp n. 1412664/SP – j. 02/11/2014 – rel. Min. Raul Araújo; STJ – 2nd Section – REsp n. 1,114,398/PR – j. 08.02.2012 – rel. Min. Sidnei Beneti – appeal processed under the regime of repetitive appeals of art. 543-C of CPC/1973; STJ – 4th T. – AgRg in AREsp n. 273.058/PR – j. 09.04.2013 – rel. Min. Antonio Carlos Ferreira. The application of the *fait accompli* theory (Sumula n. 613 of the STJ) and the possibility of invoking the principle of insignificance (STJ – 2nd T. – AREsp n. 667.867/SP – j. 17.10) are also excluded in this matter. .2018 – rel. Min. Og Fernandes), as expedients tending to exclude or restrict the broad liability of conduct and activities harmful to the environment.
- 142** Ibid.
- 143** STJ – 2a T. – REsp 650.728/SC – j. 23.10.2007 – rel. Min. Herman Benjamin. Aínda, no mesmo sentido, STJ – 2a T. – REsp n. 1.071.741/SP – j. 24.03.2009 – rel. Min. Herman Benjamin.
- 144** <https://sdg.humanrights.dk/en/instrument/signees/24>; <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G21/289/50/PDF/G2128950.pdf?OpenElement>
- 145** Pp-Story.co.kr, 24 Jan. 2019, unglobal.pp-story.co.kr/our-work/image-gallery/?pageid=1&mod=document&uid=2178. Accessed 31 Mar. 2023.
- 146** Hyundai Construction Equipment Americas, “Manage Your Fleet with Hi MATE - Hyundai Construction Equipment Americas, Inc.” Hyundai Construction Equipment Americas, Inc., 17 Nov. 2022, www.hceamericas.com/parts-service/hi-mate/. Accessed 29 Mar. 2023.
- 147** Fundação Nacional dos Povos Indígenas, “Geoprocessamento E Mapas.” Fundação Nacional Dos Povos Indígenas, 2023, www.gov.br/funai/pt-br/atuacao/terras-indigenas/geoprocessamento-e-mapas. Accessed 29 Mar. 2023.
- 148** “Hyundai Construction Equipment.”Hyundai-Ce.com, 2020, www.hyundai-ce.com/en/innovation/himate. Accessed 17 Mar. 2023.
- 149** “Hyundai Construction Equipment.”Hyundai-Ce.com, 2020, www.hyundai-ce.com/en/innovation/himate. Accessed 17 Mar. 2023.
- 150** “Hyundai Construction Equipment.”Hyundai-Ce.com, 2020, www.hyundai-ce.com/en/innovation/himate. Accessed 17 Mar. 2023.
- 151** “Code of Conscience.” Code of Conscience, 2023, www.codeofconscience.org/. Accessed 29 Mar. 2023.
- 152** Ibid.
- 153** Ibid.
- 154** Uma Concertação pela Amazônia, “Uma Agenda Pelo Desenvolvimento Da Amazônia,” <https://concertacaoamazonia.com.br/estudos/uma-agenda-pelo-desenvolvimento-da-amazonia/>. Accessed 29 Mar. 2023, p. 58.

155 Ibid.

156 Potter, Hyury, “Garimpo Ilegal Zero’: Nove Medidas Urgentes Para Acabar Com O Crime.” Repórter Brasil, 17 Feb. 2023, reporterbrasil.org.br/2023/02/garimpo-ilegal-zero-nove-medidas-urgentes-para-acabar-com-o-crime/. Accessed 29 Mar. 2023; Molina, Luísa Pontes (Org.), Benficia Senra, Estêvão, et al., Aliança em Defesa dos Territórios (Ed.), “Terra Rasgada: Como Avança O Garimpo Na Amazônia Brasileira. | Acervo | ISA.” 2023, acervo.socioambiental.org/acervo/documentos/terra-rasgada-como-avanca-o-garimpo-na-amazonia-brasileira. Accessed 28 Mar. 2023; Instituto Escolhas. Blockchain, rastreabilidade e monitoramento para o ouro brasileiro. São Paulo, 2022, <https://escolhas.org/publicacao/blockchain-rastreabilidade-e-monitoramento-para-o-ouro-brasileiro/>, Accessed 28 Mar. 2023

157 Ibid.

158 Ibid.

159 Ibid.

160 Ibid.

161 Ibid.

162 Hofmeister, Naira, “Máquinas Pesadas Aceleram Desmatamento Ilegal Em Lavouras E Garimpos Na Amazônia.” Repórter Brasil, 4 Aug. 2022, reporterbrasil.org.br/2022/08/maquinas-pesadas-aceleram-desmatamento-ilegal-em-lavouras-e-garimpos-na-amazonia/. Accessed 4 Apr. 2023.



The background of the cover is a light beige color, heavily textured with numerous small, irregular red and orange splatters and spots. In the top left corner, there are several larger, dark brown or black ink-like splatters. On the right side, there is a large, irregular, greyish-green textured area that looks like a smudge or a piece of paper. At the bottom of the cover, there are several horizontal, wavy lines in a light olive green color, resembling water or a stylized landscape.

GREENPEACE

East Asia