

THE SOCIO-ENVIRONMENTAL IMPACTS CAUSED BY MINING ON INDIGENOUS LANDS IN BRAZIL



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ABSTRACT

In Brazil, mining on indigenous lands has increased greatly in recent years, but the extraction of minerals from the subsoil causes numerous socio-environmental impacts, such as the contamination of rivers, especially by mercury, which is toxic if ingested, which generates several diseases in the population that uses the rivers to bathe, wash clothes, get their food through fishing, among others. The objective of this article is to investigate the socio-environmental impacts caused by mining on indigenous lands in Brazil, as well as to analyze what Brazilian legislation provides for the forms of protection of these areas. The relevance of this topic intensifies because recently in 2023 hundreds of children from Yanomami indigenous tribes died through diseases that could be prevented, such as malnutrition. It turns out that these areas of Yanomami lands are being invaded by miners to carry out illegal mining, which has been causing serious damage to the indigenous populations that live there.

Keywords: Socio-environmental impacts. Mining. Indigenous lands.

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INTRODUCTION

Brazil has a vast territory, a part of which is made up of indigenous lands, which play a fundamental role in the preservation of biodiversity and in the maintenance of the knowledge and customs of their ancestors.

However, the preservation of indigenous lands has been increasingly a major challenge. The mineral resources present in the soil are exported by Brazil to several countries around the globe, globalization has allowed this ease in the commercialization of products and ores internationally.

A portion of the unexplored minerals in Brazil are found in indigenous lands, which leads to great economic interest in these lands. Illegal mining is already happening in much of the Amazon, and even in indigenous lands.

Mining causes irreversible damage to the environment, contaminating rivers, soil and forests that are essential for the survival of the indigenous culture that has been preserved over the years.

The Constitution of the Federative Republic of Brazil of 1988 authorizes the exploration and use of water resources in indigenous lands, as well as research for the mining of mineral wealth, provided that they are authorized by the National Congress.

Likewise, the Federal Constitution of 1988 provides for the mandatory need to listen to the affected indigenous communities, and in case of authorization, the right to participate in the results of mining must be ensured.

It is worth mentioning that the high economic potential of indigenous lands intensifies territorial conflicts, which compromises the sovereignty of indigenous communities, as the demand for mining resources around the world is growing.

The study seeks to contribute to the academic debate on the socio-environmental impacts and challenges faced by indigenous communities for cultural and environmental preservation.

INDIGENOUS PEOPLES OF BRAZIL

A little over 500 years ago, the Portuguese arrived in Brazil and began a migration process that took place until the beginning of the twentieth century, and slowly and aggressively settled in the lands that were occupied by indigenous peoples.

The colonization of Brazil cost the lives of thousands of Indians who lived in the newly discovered territory, many of them were killed in conflicts, using weapons, but a large portion was killed by the contagion of diseases brought by the colonizers.

According to data from the National Foundation of Indigenous Peoples – FUNAI, currently the Indigenous population in Brazil is just over 1.6 million people. See:

The first data from the 2022 Census on indigenous peoples were recently released, a work carried out by the Brazilian Institute of Geography and Statistics (IBGE) with the support of the National Foundation of Indigenous Peoples (Funai). The survey points out that the country's indigenous population reached 1,693,535 people, which represents 0.83% of the total inhabitants. According to the IBGE, just over half (51.2%) of the indigenous population is concentrated in the Legal Amazon (FUNAI, 2023).

Although this number is very small if taken into account the more than 200 million Brazilians, it is a growing number of the indigenous population in the country, because according to Funai data, in 2010 about 896,917 indigenous people were counted throughout the national territory.

Brazil is a country with an extensive territory, but indigenous peoples are not equally divided by all states, with almost half of these peoples located in the northern region of the country. See:

A large part of the country's indigenous people (44.48%) are concentrated in the North. There are 753,357 indigenous people living in the region. Next, with the second highest number, is the Northeast, with 528.8 thousand, concentrating 31.22% of the country's total. Together, the two regions account for 75.71% of this total. The others have the following distribution: Central-West (11.80% or 199,912 indigenous people), Southeast (7.28% or 123,369) and South (5.20% or 88,097) (FUNAI, 2023).

It is worth mentioning that in Brazil there are approximately 225 indigenous ethnicities, each of which has divergent beliefs and customs from each other, including different spoken languages.

In this way, indigenous peoples have an important role in the formation of Brazil's cultural identity. Despite its inexpressive population, we cannot deny that they have a rich linguistic and cultural diversity that is important to express the rich cultural diversity of our country.

LEGAL ASPECTS OF MINING ON INDIGENOUS LANDS

In the period when Brazil was still considered a Portuguese colony, the Portuguese Crown established mechanisms that ceded land to those who were willing to work there. However, the Crown reserved the right to retain a fifth of all mineral wealth that was mined.

All mineral wealth was owned by the State, and it was necessary to grant mining rights to private individuals, who were obliged to pay the fifth to the State.

From then on, during the Brazilian Republic, the constitutions had rules on the matter, but it was only with the Constitution of the Federative Republic of Brazil, promulgated in 1988, that mineral exploration activities were treated more broadly.

CF/88 in its article 20, item IX, provides that mineral resources, including those of the subsoil are considered assets of the Union, as well as in its item XI defines that the lands traditionally occupied by the Indians are also assets of the Union.

Although indigenous lands are considered assets of the Union, their usufruct is exclusive to the Indians who traditionally occupy them. This usufruct extends only to the natural riches of the soil, rivers and lakes existing on their lands.

However, this usufruct of natural wealth is not to be confused with the mineral wealth of the subsoil, since these are the exclusive property of the Federal Government, and only it is capable of ceding mining rights for these riches.

MINING ON INDIGENOUS LANDS IN THE FEDERAL CONSTITUTION OF 1988

The Federal Constitution of 1988 expressly deals with mining on indigenous lands, where it establishes specific conditions for carrying out research and mining, as well as for the use of water resources to generate electricity on indigenous lands.

In its article 49, item XVI, the CF/88 provides:

Article 49. It is the exclusive competence of the National Congress:

[...]

XVI – to authorize, in indigenous lands, the exploration and use of water resources and the research and mining of mineral wealth. (BRAZIL. CF/88).

In the same sense, article 231, paragraph 3, reinforces the need for authorization from the National Congress, as well as makes it mandatory to hear the affected communities, and that they be assured of participation in the results of mining, and that such issue be regulated by law.

Article 231. The Indians are recognized for their social organization, customs, languages, beliefs and traditions, and the original rights over the lands they traditionally occupy, and it is up to the Union to demarcate them, protect and ensure respect for all their assets.

Paragraph 3 - The use of water resources, including energy potential, research and mining of mineral wealth in indigenous lands can only be carried out with the authorization of the National Congress, after hearing the affected communities, and they are assured participation in the results of mining, in accordance with the law (BRASIL. CF/88).

Likewise, article 176, paragraph 1, again provides for the need for authorization from the Federal Government, under the justification of the national interest, to carry out mining activities, however, restricting this possibility to individuals, or a company that was duly incorporated under Brazilian laws.

Article 176. The deposits, whether under mining or not, and other mineral resources and the potential for hydraulic energy constitute property distinct from that of the soil, for the purpose of exploration or use, and belong to the Federal Government, with the concessionaire being guaranteed ownership of the mining product.

Paragraph 1 - The research and mining of mineral resources and the use of the potentials referred to in the "caput" of this article may only be carried out upon authorization or concession of the Federal Government, in the national interest, by Brazilians or a company incorporated under Brazilian laws and having its headquarters and administration in the country, in accordance with the law, which will establish the specific conditions when these activities are carried out in the border strip or indigenous lands (BRASIL. CF/88).

Although the Federal Constitution of 1988 establishes parameters for mineral exploration on indigenous lands, the effective regulation of this issue still faces significant challenges. We still do not have specific legislation that details the procedures for these activities, which ends up generating legal uncertainty and opens space for socio-environmental conflicts.

MINING AND THE INDIAN STATUTE

The Statute of the Indian is defined by Law No. 6,001 of December 19, 1973, with the purpose of preserving indigenous culture, as well as integrating them into the national communion.

In article 20, § 1, paragraph "f", the Statute of the Indian provides for the intervention of the Union, with regard to the exploration of the subsoil, which is of relevant interest for national security and development.

Article 20. On an exceptional basis and for any of the reasons listed below, the Union may intervene, if there is no alternative solution, in an indigenous area, determined by decree of the President of the Republic.

f) for the exploitation of subsoil riches of relevant interest for national security and development (BRASIL, 1973).

Article 24, on the other hand, provides that the usufruct is guaranteed to the Indians.
See:

Article 24. The usufruct guaranteed to the Indians or foresters includes the right to possession, use and perception of natural wealth and all the utilities existing on the occupied lands, as well as the product of the economic exploitation of such natural wealth and utilities (BRASIL, 1973).

Further on, articles 44 and 45 deal with the possibility of indigenous communities exploiting both the soil and the subsoil of their lands, provided that the legislation in force on the subject is observed.

Article 44. The riches of the soil, in the indigenous areas, can only be exploited by foresters, and they are exclusively responsible for the exercise of prospecting, sparking and hunting of the aforementioned areas.

Article 45. The exploitation of the riches of the subsoil in areas belonging to the Indians, or in the domain of the Union, but in the possession of indigenous communities, shall be carried out under the terms of the legislation in force, observing the provisions of this Law (BRASIL, 1973).

However, Decree No. 88,895 of 1983 began to regulate articles 44 and 45 of the Statute of the Indian, bringing more detailed definitions on the protection of indigenous lands, but several provisions of the decree were questioned, because, according to its text, the Union did not need to listen to indigenous peoples before authorizing mining on their lands.

As we have already said, the Federal Constitution of 1988 treated the issue of mining on indigenous lands with different eyes, since it established the need for authorization from the National Congress for mineral exploration on indigenous lands to be viable, as long as the affected peoples were heard, and guaranteeing them a share in the results of mining.

Therefore, the authorization of research and mining to third parties, in indigenous lands, would no longer be possible through a prior understanding with the agency that assists the Indian, as provided for in Article 45, § 2 of the Statute of the Indian, and will depend on authorization from the National Congress, in accordance with the Federal Constitution.

BILL NO. 191/2020

In 2020, Bill No. 191/2020 was sent to the National Congress by the government of the then Executive Branch. The main objective of this project was to authorize mining, the construction of hydroelectric plants and other economic activities on indigenous lands.

This project was strongly rejected by both indigenous peoples and indigenous protection organizations, as it advanced on relevant issues not only of economic interests, but also environmental issues, which apparently conflicted with the constitutional guarantees given to traditionally occupied lands.

As we have already seen, the Federal Constitution provides that it is the exclusive competence of the National Congress to authorize the exploitation of resources in indigenous lands, however, going against the constitution, the bill provided for another way, requiring congressional authorization only in lands whose demarcation process had already been ratified by the President of the Republic.

In an article published, Juliana Batista and Marcio Santilli report that in 2022, there were 237 processes for the demarcation of indigenous lands pending ratification by decree.

To give you an idea, there are currently 237 processes for the demarcation of indigenous lands pending ratification by decree, the penultimate phase of a complex administrative process, which involves technical studies prepared by a multidisciplinary team, approval by the president of Funai, administrative challenge, analysis and approval of the studies by the Minister of Justice. Once all these steps have been overcome, the process proceeds to presidential approval and then to registration in a notary's office and at the Secretariat of Federal Heritage (SPU). This procedure is long and time-consuming. There are processes that began in the 80s that have not yet been finalized and cases in which the demarcation process has not yet been opened (Batista; Santilli, 2022).

Thus, the PL provided for the liberation of economic activities on indigenous lands through a provisional authorization from the President of the Republic, without any type of manifestation from the National Congress. After the authorization, it would be sent to Congress, which would have a period of four years to authorize the activity.

In relation to the lands already homologated, Congress would also have to approve the mining research within four years. If the deadline has elapsed without the authorization of the National Congress, tacit approval would be considered for the expiration of the deadline, contrary to the aforementioned guarantees provided for in the Federal Constitution, removing the exclusive competence of Congress, exercisable by Legislative Decree.

In 2023, the Executive Branch sent to the National Congress the request to withdraw the processing of Bill No. 191/2020, preventing the discussion on the processing and approval of mineral exploration on indigenous lands.

THE SOCIO-ENVIRONMENTAL IMPACTS OF MINING ON INDIGENOUS LANDS

ILLEGAL MINING IN YANOMAMI INDIGENOUS LANDS

In May 1992, the then President of the Republic signed Decree No. 25/1992, which ratifies the administrative demarcation of the Yanomami Indigenous Land, located in the Legal Amazon, in the states of Roraima and Amazonas. This decree demarcates this indigenous land in national territory, however the said indigenous land breaks borders, also being located in Venezuelan territory.

The region occupied by the Yanomami is in the northern region of the country, being an extensive and difficult to access place, which makes it difficult to monitor, as well as to control illegal activities in the region. These lands involve conflicts of interest between miners, mining companies, indigenous peoples, the state and society, as it is a large region economically rich in minerals.

Although the Constitution of the Republic provides for clear and specific rules on the exploitation of resources on indigenous lands, illegal mining on Yanomami lands occurs in an uncontrolled manner, generating serious socio-environmental damage.

The situation faced by Brazil in relation to the protection of Yanomami Indigenous Lands is complex and challenging, involving conflicts of interest between miners, mining companies, indigenous people, the State and society. The region occupied by the Yanomami is extensive and difficult to access, which makes it difficult to monitor and control illegal activities.

The protection of indigenous lands is the responsibility of the Union, which is responsible for protecting and respecting all their assets. The Statute of the Indian in its article 2, caput, provides:

Art. 2 It is incumbent upon the Union, the States and the Municipalities, as well as the organs of the respective indirect administrations, within the limits of their competence, to protect the indigenous communities and preserve their rights (BRASIL, 1973).

However, the protection defined by law is not effective when we realize that mining in the Amazon, as well as in indigenous land, has always been an activity present in the region.

In an article published by Victória Freitas and Márcia Buhring, report:

Illegal mining in Yanomami indigenous lands has generated significant socio-environmental impacts in the Amazon region for decades. Among the main problems, deforestation, loss of biodiversity and mercury contamination of soils, rivers and populations stand out. In addition, the exploitation of workers and human rights violations are also common in the region. Conflict and violence against indigenous communities is another serious problem related to illegal mining (Freitas; Buhring, 2024).

Illegal mining is a clandestine activity that directly harms the indigenous population living in the region, generating conflicts between miners and the Indians who originally occupy the lands mined.

The consequences of this illegal activity on Yanomami lands are not limited to environmental degradation, but have also become a serious public health problem in the region.

Mercury is used in the mining process, but authorization from the National Mining Agency (ANM) is required, but illegal mining uses mercury illegally and uncontrollably, which has caused great risks to the health of the Yanomami Indians, who take much of their food from the rivers.

In an interview conducted by the *in vivo* of the Oswaldo Cruz Foundation – Fiocruz, Dr. Ana Claudia Santiago de Vasconcellos, explains how this process of mercury contamination occurs in the populations near illegal mines.

Any organism that lives in the river, in a region close to the mining area, will be contaminated with mercury. And when people eat this contaminated fish, they become contaminated with an organic form of mercury, which is formed at the bottom of the river (methylmercury) (Vasconcelos, 2023).

In this way, mercury contamination not only affects indigenous populations, but also the miners themselves and all the people who use the water of the rivers and consume fish and other food from the rivers where illegal mining activities are carried out.

The Brazilian Journal of Occupational Health – RBSO, in a published article, shows us some of the damage caused to the body due to mercury contamination. See:

The primary targets of mercury toxicity are: nervous system, kidneys, and cardiovascular system, as well as respiratory, gastrointestinal, hematological,

immune, and reproductive systems. Intoxication can be acute, that is, exposure occurs in a short period and in high concentrations; or chronic, when exposures to low concentrations occur over prolonged periods, with the nervous system being the most sensitive target (RBSO, 2022).

As a result of illegal mining activities, the Yanomami indigenous population has been suffering great losses, not only of their lands, but of lives. The contact of miners with the Indians, in addition to causing conflicts, generates diseases that for much of the country is considered common, however, for isolated indigenous populations it is extremely deadly.

In January 2023, the Sumaúma agency denounced the death of 570 children from causes that could have been avoided, but which were neglected by the powers that be.

After the complaint, the Ministry of Health declared a Health Emergency of National Importance, followed by the creation of the Public Health Emergency Operations Center (CEO Yanomami), in Roraima.

Despite this, mining activity in Yanomami lands grew by about 7% during 2023, according to a technical note published in January 2024, a survey carried out by Estêvão Senra.

The total area impacted by mining in the Yanomami Indigenous Land grew by about 7% in 2023, reaching a total of 5432 hectares¹. This number represents a deceleration in the growth rate of the degraded area, compared to the advance of recent years, in which the annual increase rate was 42% (2018-2019), 30% (2019-2020), 43% (2020-2021), 54% (2021-2022). However, this increase also reveals that illegal activity continues to operate with intensity in the territory. (Senra, 2024, p. 1).

It should be noted that despite the death of several Yanomami Indians and the inspection that took place after the complaint, in 2023 illegal mining in that region grew by 7%, a small number if we take into account previous years that reached 54% in 2021 and 2022, however we are far from achieving the legal protection of these lands as provided for by National legislation.

DEFORESTATION, POLLUTION, AND BIODIVERSITY LOSS

The environmental impacts caused by mining are many. It is an activity consisting of the research and exploration of ores present in the subsoil. The northern region of the country has the highest percentage of indigenous lands in Brazil, constantly invaded for the illegal extraction of minerals from the subsoil.

With the evolution of society and the greater dependence on development, the extraction of minerals present in the subsoil has become a major economic activity, since the products derived from ores are present in our daily lives in an increasing way.

In the same sense, Maria Amélia Enríquez, in her work, adds:

Mining is one of the oldest productive activities carried out by humanity. It is no coincidence that the history of civilization adopts its different modalities as dividing marks of its eras: the chipped stone age (Paleolithic), the polished stone age (Neolithic) and the metal age (copper, bronze and iron). Consciously or unconsciously, the consumption of mineral goods is present in almost all sectors of modern life: from inputs for agriculture to sophisticated materials for the electronics industry; from consumer goods to large industrial equipment; from the production of medicines and cosmetics to the aerospace industry, among many other uses. Despite its historical and current importance, there is much controversy regarding the effective role of mining for the development of the territorial spaces where it occurs (Enríquez, 2008. p. 25).

The most common type of mining in Brazil is the so-called open-pit mining, which consists of removing the layer of vegetal soil, to remove the ore that is underground.

This activity has been growing a lot over the years, which has caused deforestation and the loss of biodiversity in a large part of indigenous territories.

In the last 35 years, mining on indigenous lands has increased by 1,217%, according to Elton Alisson in an article published in the magazine Brasil de Fato. See:

Mining on indigenous lands in the Legal Amazon has increased by 1,217% in the last 35 years, jumping from 7.45 square kilometers (km²) occupied by this activity in 1985 to 102.16 km² in 2020. Almost all (95%) of these illegal mining areas are concentrated in three indigenous lands: Kayapó, followed by the Munduruku and Yanomami (Alisson, 2023).

According to the news, in 2020 mining activity occupied about 102.16 km², which represents a great loss of local biodiversity. This process has been causing the extinction of local species, as well as generating conflicts with the indigenous peoples who occupy the region.

In a more recent study, Hyury Potter states that in 2023 the area of indigenous lands deforested for mining purposes exceeded 150 thousand hectares, one of the main reasons being the increase in the value of gold, which leads to the extraction of the ore illegally in the rivers of the Amazon.

We cannot deny that mining is an activity of extreme importance for the global economy, as it provides the raw material for various sectors. Despite this, this activity is responsible for serious environmental impacts, especially when it comes to pollution.

As we have already seen, this activity affects the soil, contaminates the rivers, affecting both natural biodiversity and the lives of the populations that live in the vicinity of this region.

One of the main types of pollution caused by mining is that of water resources, as they dispose of tailings such as heavy metals and toxic products such as mercury, which makes the water toxic and unfit for consumption.

In Brazil, we have already had major disasters as a result of mining activity, such as the rupture of the Mariana Dam in 2015, and Brumadinho in 2019. These disasters caused the contamination of several areas and caused the death of countless species.

Another point to be considered is that mining contributes significantly to global warming, as it releases a large amount of greenhouse gases into the atmosphere into the air. Deforestation caused by mining reduces the amount of trees in the ground, which reduces the ability of forests to absorb carbon present in the air, accelerating climate change at a global level.

The contamination generated by mining activity is an issue that requires immediate attention and sustainable alternatives. Despite its importance for economic progress, the adverse effects should not be relativized. The great challenge lies in establishing a balance between the extraction of natural resources and environmental protection, ensuring that the next generations do not receive a deteriorated world devoid of vitally necessary resources.

FINAL CONSIDERATIONS

Mining on indigenous lands is currently one of the great environmental and social challenges faced by Brazil. We can observe in the course of this study that mining causes irreparable damage both to the environment and to the indigenous population that lives on these lands. We have seen how deforestation in the Amazon, more precisely in indigenous lands for mining activity, has grown in recent years, with the contamination of rivers and animals with mercury, causing the death of several indigenous people, as well as the loss of biodiversity are some of the most visible impacts of uncontrolled exploitation.

Despite the existence of a legal guarantee for the protection of indigenous lands, the absence of inspection means that the economic interests of miners make Brazilian legislation ineffective regarding the protection of lands and their biodiversity. This violation of the legislation violates the rights of indigenous peoples, causing great risk to the safety, health and traditional way of life of these communities.

The denunciation of the death of hundreds of indigenous children on Yanomami lands in January 2023 demonstrates a critical public health scenario, which until then was forgotten by the government. The contamination of rivers through illegal mining does not only affect indigenous tribes, but all people who use river resources to feed themselves, which represents a major health crisis that needs to be seen as a priority by the Brazilian State.

Although the complaint reporting the death of Yanomami children caused pressure in 2023 for the protection and preservation of indigenous lands in the national territory, data presented show us that illegal mining grew by 7% during the year 2023, even though this activity is a great risk to the health of the local population. It cannot be denied that mining activity is extremely profitable, but the socio-environmental impacts caused by it cannot be ignored.

What is clear, therefore, is that Brazil needs to quickly harmonize economic development with social and environmental responsibility. To achieve this, it is essential that the Federal, State and Municipal Governments work together efficiently to safeguard the rights of indigenous communities and ensure the protection of natural resources. Adopting sustainable options for mining, along with strengthening the oversight and participation of indigenous communities in the management of their lands, is vital to redress the damage already done and prevent further disasters.

Thus, the importance of a more comprehensive discussion about the development models of the Amazon is highlighted, not ignoring all the cultural and ecological particularities of indigenous lands, asserting the rights of native communities and ensuring that the natural resources of the area are maintained for the future.

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