

SPATIAL TRANSFORMATION BY MINING ACTIVITY IN THE TOWNSHIP GUAYABAL- QUIBDÓ, BETWEEN THE YEARS 2000-2018

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Abstract

The purpose of this paper is to analyze the spatial transformation resulting from economic activity. Man as a transforming agent has shaped in the space he inhabits all his nature, from using ancient tools made of rock and wood to the current machinery with which he adapts and transforms the reliefs to extract minerals. Mining activity has caused an enormous impact on the environment and the community, so this paper used a method of analysis of concepts and criteria within a narrative approach, with basic assumptions that contribute to the solution of the problem. A bibliographic review intends to answer to the following question: How can mining activity transform the environment? It is understood that mining activity must be controlled, otherwise it be faced with desert plains, felled forests and soils of low fertility. This paper will allow to determine how, during the years 2000 to 2018, mining activity has generated environmental impacts in the Corregimiento Guayabal- Quibdó. These environmental affectations on the soil and water resources and the disturbance of ecosystems have their cause, that is, mining. This mining activity must be developed under strict surveillance for compliance with current environmental regulations, because this activity is inherent to the transformation of ecosystems, starting from its base, the soil, thus transforming its environmental resources.

Keywords: Spatial transformation, mining activity, environmental impact.

Introduction

According to the Brazilian geographer Santos (1997), "Space is formed by an indissoluble, solidary and also contradictory set of systems of objects and systems of actions not considered in isolation, but as the unique context in which history takes place". Space then becomes the referent to be taken into account when it comes to understanding the social dynamics of each epoch. Space, society and time interacting in a new particular dance where the product of social elaboration, in this case objects, obey processes endowed with different purposes which are called actions.

According to Paruna (2012): "Space could thus be compared to a bed where a large number of blankets are spread out, and each of these represents a certain space in a certain historical epoch lived by society, and in which different systems of objects remain standing that speak to us of particular dynamics or actions related to the cultural, social, political or economic of the time". According to Lefebvre quoted by Lezamo (2005) regarding the historical phases of space: "The history of space goes through different forms according to the society that produces it; there are, for example, the cases of absolute space, historical space, abstract space, contradictory space and differential space".

In Colombia, mining has existed since before the time of the Conquest and has continued to the present. In 1999, the International Labor Organization (ILO) estimated that small-scale

mining employed between 1.4 and 1.6 million people in Latin America. However, it is believed that this figure could be much higher today given the increase in the value of some minerals such as gold and coal, and that it represents a unique opportunity for the world's poorest people, especially in the most remote rural areas with high levels of unsatisfied basic needs.

Geographic location of the Guayabal- Quibdó township

Quibdó is a Colombian municipality, capital of the department of Chocó and one of the most important towns in the Pacific region of Colombia. The city is located in one of the most biodiverse regions of Colombia, close to large ecological reserves such as the Emberá National Park. It is also one of the regions with the largest number of indigenous reserves.

The Guayabal district is located north of the city of Quibdó. It is bordered to the north by San Antonio de Ichó, to the east by La Troje, to the west by the Barranco district and to the south by the urban area of Quibdó; it has a population of 400 inhabitants. The institutional area consists of the school and the health post; the green areas of the landscape are the Hugón and Serrano rivers and the isolation between the banks of these rivers and the housing structure. The main activity is mining, with agriculture as a complementary activity.

Description of mining activity

Gold mining

The problems related to gold mining in the Corregimiento Guayabal-Quibdó, in the department of Chocó are based on mechanized mining using backhoes and dredges and the granting of titles that overlap with collective territories or indigenous reserves. In the department of Chocó there are 165 titles in force, corresponding to an area of 310,881 hectares, 134 of the titles are in the exploration stage, 23 are in construction and assembly, and 8 are in the exploitation stage.

Exploration, construction and assembly exploitation.

There are 20 titles granted to extract gold ore, ten of which are located in the municipality of Quibdó, including Río Quito, and the rest are located in the municipalities of Lloró, Bagadó, Carmen del Darién and Riosucio. Of these 20, five are in the construction and assembly stage, 14 in the exploration stage and only one in the exploitation stage. Of these titles that are in force for gold extraction, some overlap totally or partially: two titles with mining areas of indigenous communities, covering an area of 7,281.25 ha, one belonging to AngloGold Ashanti in the exploration stage and the other to Exploraciones Chocó Colombia S.A.S., which is in construction and assembly.

The IIAP58, in its Final Report on the Strategic Plan for the Pacific Macro-basin 59, states that "artisanal mining, based on the use of family labor and low levels of technology, continues to be one of the main sources of subsistence for many of the inhabitants of the Colombian Pacific. However, the possibilities offered by this activity for the livelihood of mining families are increasingly scarce. The product obtained from this activity does not always compensate the miner's hard work; the money received from the sale of the metal is often barely enough to cover debts and provide food and supplies for the family group". Although there are no figures from any official entity on the dynamics of artisanal mining, in conversations with different leaders and community members, they pointed out that this type of activity tends to disappear, since gold mining is currently carried out using equipment such as earth elevators, low and high pressure pumps, backhoes and dredges; similarly, the Chocó Government states: "at present, artisanal mining has been losing market representation in the face of the advance of

dredge and backhoe mining"¹: Mining operations are developed without the respective environmental permits. According to information provided by the Governor's Office in recent years, Chocó has maintained the first place in platinum production in Colombia, for the year 2019.

Territorial dimension

In addition to the productive dimension, the investment flows around mining and the growing international trade, there is a territorial dimension that is important to take into account in order to understand what has happened in the last two decades. Mining has expanded territorially and, increasingly, diverse ecosystems are now under pressure from this activity.

In the last two decades, mining has grown not only in countries where it was already well established, but also in new countries where there was no mining or mining was a very small-scale activity. The truth is that mining is now being developed in more and more remote regions: in Central Asia and West Africa, Oceania, from Alaska to Patagonia in the Americas, all this dynamic expansion can be seen.

Mining investments nowadays have access to areas that until recent times were considered protected: Mongolia, for example, only a few years ago allowed foreign investors to enter its territories for the exploration and eventual exploitation of natural resources. Another example is the border areas of countries where, for reasons of national security, investments by private companies, especially foreign investors, were not allowed until recent years.

Legal-social dimension

This chapter analyzes the integrity of the land and territories of the communities versus mining legislation, beginning with an analysis of the Latin American legal context, going through what is happening in Colombia, pointing out how the mining legal framework has evolved since the 1991 Constitution; the regulatory mechanics when natural resources are found on private land property; the defense of these territories when a multinational enters; the effects of the decision to declare mining of public utility with respect to the territories of indigenous communities.

The land law itself stipulates that, if there is already exploitation, the victims must conciliate with the company and allow the exploitation of natural resources in order to be "compensated", even though there is the possibility of annulling or suspending any mining title if it is proven that it has been the product of dispossession and violence against the natural owners. This case has already occurred, but the companies solve the problem with the so-called bacrim, which "confidentially" operate in these areas under the protection of battalions paid by these companies.

Rodríguez and Gómez Rey (2011) provide an important analysis of how reserve areas are subtracted from Law 2 of 1959. The authors of this paper begin with a legal description of what a forest reserve is, the types of reserves, and then list each of the existing reserves in the country, the inhabitants of each one and how they have been able to "culturally" defend the territory where they develop their life projects. They analyze the confrontations generated in relation to these reserves, the conditions for subtracting territories and the percentages of subtraction so far declared, concluding that the forest reserves not only conserve the land, but also the territory, the

¹ Formulation and Implementation of Mining Formalization Actions in the Department of Chocó", Quibdó, September 2013. P. 20. 59.
<http://annalsofrscb.ro>

inhabitants who live in them and their cultural expressions, who daily resist this type of subtraction that affects their lives.

The paper by Sergio Coronado Delgado and Adriana Beltrán Ruiz (2018) on legal institutions and community action begins by raising the debate on resource ownership and how the State should determine the rights, the conditions under which they are exploited and the rents to be produced by this industry. This author then analyzes the concepts that serve as constitutional support, such as the general interest that opposes the particular interest, and the social and cultural rights of the so-called ethnic minorities. In the Colombian case, he highlights how, structurally, there is a private appropriation of these resources, to the detriment of the general interest expressed by the nation's inhabitants as a whole. Regarding the homogenization of mining legislation and the rights of indigenous peoples, he makes a practical comparison of the effects of this legislation in Afro and indigenous areas, which are a minimal portion of the national territory. An important analysis is the examination of state land use rights for mining exploitation versus the different categories of exclusion from exploitation, such as forest reserves, territories catalogued as common goods, etc.

Socio-Political Dimension

For the exploitation of the mining activity, in the Guayabal-Quibdó district, a concession contract L-685 was signed, a mining title of approximately 20,000 hectares for the exploitation of copper, gold, zinc and its concentrates, and other concessionable minerals, whose holder is Luis Hernando Peñaloza Rodríguez.

The extractivist plans are being built since December 2019, members of the company are taking advantage of the confinement to carry out explorations without any type of socialization to the communities in the area of influence of the project, because apparently, the mining company does not have the necessary permits to carry out exploration activities. The project would affect not only the village of El Plejo, but also eight other neighboring areas belonging to Armero Guayabal and one in Falan.

In addition, the area of influence of the project functions as the agricultural pantry of Armero Guayabal, where small farmers live in micro-holdings that have never had to undergo a change of vocation in their economic activities.

But mining operations would not only threaten the farmers' agricultural vocation, but also the area's ecosystems, given that the municipality of guayabal is located on the eastern slope of the central mountain range, in a broad valley formed by the lagunilla, sabandija, cuamo and magdalena rivers. It is also located in the hydrographic basin of the Santo Domingo stream, where most of the region's subway aquifers are found. The area's forests also play an important role in the conservation not only of the environment but also of specially protected species such as the gray marmoset, a small primate that is on the verge of extinction due to the alteration of its natural habitat and other factors such as hunting and illegal trade.

The communities in the area show complete rejection of the project that seeks to change the agricultural vocation that they have maintained for generations. Even in the midst of the pandemic, they have remained firm and resisted the intervention of the mining company Group S.A.S., and any other company that threatens to threaten the customs and ecosystems of their territory.

Economic Dimension

Mining accounts for about 11% of GDP, contributes more than 50% of foreign exchange, contributes 20% of tax revenues and accounts for most foreign investment. To understand its dimension in the national economy, it is sufficient to compare it with other sectors: mining generates US\$20 billion in foreign currency, while it is estimated that agriculture could reach US\$5 billion, and the fishing and forestry sectors approximately US\$3 billion each. In a favorable scenario, the IDB considers that the tourism sector should contribute US\$6.8 billion by 2021.

The IPE² estimated the aggregate impact of mining activity on the economy and other economic sectors, finding that for every US\$1 billion of additional mining exports, US\$1.47 billion of additional GDP is generated. Of this, more than half is generated outside the mining sector, through complementary goods and services. Furthermore, the increase in mining exports would generate 78,156 jobs, 90% of which would be generated outside the mining sector.

The development of extractive industries involves profound socio-economic impacts at the local level that have the potential to exacerbate the vulnerability of communities. Large investments attract foreign workers, presumably better trained than locals and better paid, to the communities in the zones of influence, which see their lifestyles altered by this migration. Moreover, workers arrive at the mining camps leaving their families behind. The proliferation of services to meet their needs has a social and cultural effect on the communities that is not always measured or considered. The creation of jobs for local labor has an impact on traditional productive activities. Most of the jobs generated are for men, and although women in the community may have opportunities in indirect industries, the increase in men's income will not necessarily be reflected in improved household and family conditions. There is also a negative economic impact, since the increase in income tends to generate inflation, which directly affects the consumption of basic necessities for families³.

The characterization of the type of productive subsystem carried out by the community of Guayabal shows a mining-agricultural system, as they identify mining as the main activity, the exploitation that is carried out is artisanal and semi-industrial, the equipment used are motor pumps, dredges. In this context, agriculture is a complementary activity.

Legalization and formalization

Due to the special condition that the Corregimiento de Quibdó has in the mining area, the following is a brief analysis of the regulatory changes that have taken place in the last few years. As a result of Law 685 of 2001 and in the exercise of its functions as National Mining Authority, the Ministry of Mines and Energy delegated since 2001 to the Governorates of Antioquia, Bolivar, Boyaca, Caldas, Cesar and Norte de Santander the functions of Mining Control¹³ within the jurisdiction of the respective department and with respect to certain minerals. Decree 4134 of November 3, 2011 created the National Mining Agency (ANM)⁴, as a state agency of a special nature, of the decentralized sector of the executive branch of the national order. It is a monitoring and follow-up tool to oversee compliance with the regulations and obligations contracted through a mining contract and to which the holders of mining rights must be subject for the proper exploration and exploitation of non-renewable natural resources. The process has an approach

² Instituto Colombiano de Economía "Efecto de la Minería sobre el Empleo, el Producto y Recaudación en Colombia" Bogotá, 2012, p 131 .

³ World Bank "The World Bank, Extractive Industries and Development" 2009, p 29

⁴ Defensoría del Pueblo de Colombia, "La minería sin control", 2006, p 23.

that integrates the documentary evaluation with what was verified in the field visits, reviewing at each stage technical, legal, environmental, economic and mining safety and hygiene aspects. The Ministry of Mines and Energy and delegated to the Geological Survey, through Resolution No. 18 2306 of December 22, 2011, which set the terms and procedure to reassume and delegate such competence, as well as the scope of the same. Through Resolutions Nos. 18 0876 of June 7, 2012, and 18 1016 of June 28, 2012, the Ministry of Mines and Energy reassumed the oversight function that had been delegated since 2004 to Ingeominas and then to the Colombian Geological Service and delegated it to the National Mining Agency. Through Resolution 18 1492 of August 30, 2012, the Ministry of Mines and Energy modified Resolution 18 1016 of June 2012.

Much of the mining that takes place in the Municipality of Quibdó is gold mining, both alluvial and vein, a situation that has historically been evidenced, so much so that most gold mining titles are in the Bajo Cauca Antioquia and more recently in the town of Guayabal, municipality of Quibdó, department of Chocó⁵. However, only about 25% of the formal titles are in the exploitation phase, so it could be expected that gold production will increase exponentially in the coming years, without taking into account the informal and illegal mining that is currently taking place in the region.

Environmental impacts

Water

The removed material (conglomerate) is dragged by the water current, producing sediment, and there is also contamination from the disposal of chemicals used in the activity. The extractive activity has changed the cross-section of the riverbed, modifying the edges of the river and stripping the soil of its vegetative cover. The overexploitation of minerals in the riverbed has caused the wetted perimeter, the hydraulic radius and therefore its profile to change considerably.

Flash floods erode the soil that supports riverside dwellings and, consequently, cause flooding that affects fishing and crops. Exploitation within riverbeds increases the production of sediment, which is stored in low velocity areas and forms islets, thus reducing the hydraulic capacity for navigability. The large amount of minerals in the water has negative effects on the health of the inhabitants, fishing, and in times of flooding, it is also noted that the small rivers whose tributaries serve as a source of water for human consumption and domestic and wild animals are contaminated with mercury, which is why this liquid element is severely polluted.

Soil

Logging of the tropical rainforest, native plant material in the area, which generates the natural change in the profile of the riverbed with cutting and removal of material. In order to expand the mining frontier, the tropical rainforest typical of the entire area has been deforested, which has largely generated the spatial transformation in this area, observing infertile areas that 20 years ago were considered cultivated fields and were intended for agriculture.

Soil contamination is devastating to the environment and has consequences for all life forms it affects. Unsustainable mining reduces soil organic matter and can facilitate the transfer of contaminants into the food chain. Soil contamination also has a high economic cost, due to reduced crop yields and quality.

⁵ "Formulation and Implementation of Mining Formalization Actions in the Department of Chocó", Quibdó, September 2013. Page 20 .
<http://annalsofrscb.ro>

In the Guayabal sector, there has been a spatial transformation in such a way that soils that were arable 10 or 20 years ago have been devastated by formal and informal mining, making the area infertile, and the size of trees has caused the morphology of the area to change greatly.

Air

Atmospheric emissions from the gold, silver and other mining process, due to the high temperatures generated by the process, the exploitation that is being carried out in this sector is illegal and affects the water, air and soil resources.

Social impacts

According to the Ombudsman's Report, the lack of capacity of the entities and the migratory dynamics of the extraction activity, both the environmental authority and the Governor's Office do not offer official figures on how many dredges or "dragons" (as the community calls them) are operating in the department; the inhabitants of the region indicate that there may be more than 230⁶, without counting the mining companies that use backhoes for gold extraction. Finally, although mining activity in the department of Chocó has developed historically and has been a source of work for the communities that live there, the current conditions under which the extraction of metals such as gold and platinum is being developed, as well as the socio-environmental conflicts that converge around mining, are violating the rights of the communities that live there, are violating the rights of the Afro-descendant ethnic communities, due to the pressure exerted on the environmental heritage, the fragmentation of the social fabric of the ethnic communities, the lack of capacity for action of the departmental entities, the armed conflict that is present in many areas of Chocó, as well as the dispute of different actors for territorial control and control over environmental assets.

Basically, in Guayabal, the population's main activity is mining and its complementary activity is agriculture, which consists of banana, chontaduro, lulo, and other plantations.

The community does not have an aqueduct; the sewage system consists of sanitary rates with septic tanks, which needs to be expanded. Power is supplied by the interconnection system and telephone service is provided by a Telecom line and Compartel's rural telephone service operates with two lines and a fax⁷.

Legal analysis

Mining in Colombia, according to the Ministry of Energy and Mines, is monitored by entities, highly specialized agencies and citizens in general, which operate on different fronts, such as direct monitoring or monitoring by other types of organizations. direct surveillance by governmental entities: (i) national mining agency (ANM); (ii) national environmental licensing authority (ANLA); (iii) ministry of mines and energy; (iv); (v) ministry of interior; (v) ministry of labor and social protection; (vi) regional autonomous corporations (car); (viii) mayors' offices and municipal councils, as well as citizen and environmental watchdogs, also community action boards, non-governmental organizations (NGOs), the ombudsman's office⁸, among other bodies.

According to the guidelines of the Constitutional Court rulings for the mining titling process, in addition to the consultation with the mayors and the technical, economic and legal evaluation, the national mining agency must hold a citizen participation hearing, in which all

⁶ Retrieved from <http://www.upme.gov.co/>.

⁸ Reality of Mining in Colombia, "Plan Voceros", 2018, p.10.
<http://annalsofrscb.ro>

mining projects that were evaluated as viable for the municipality are presented⁹. Those who register and participate can express their concerns, questions and comments on these proposals. However, although there are specialized agencies for direct and indirect oversight, in reality there is no participation in the Corregimiento de Guayabal. There are countless laws and regulations that we have cited in the previous pages, which are not enforced due to the lack of direct and immediate actions by the government.

Conclusions

Mining activity has a significant impact on the environment; it destroys and disturbs the natural environment, affects and reduces the availability of non-renewable natural resources, in turn modifying the ecosystemic functions of the areas where the extractive activity is carried out, either slowly and imperceptibly or in a notoriously transforming way.

Mining generates changes in the natural and social environment, which produces adverse effects on the environment and generates or exacerbates socio-environmental conflicts. Impacts can be direct, indirect, short, medium and long term, reversible or not, some avoidable; since human beings are in an indissoluble relationship with their environment and nature, so our present and future quality of life, our health, and even our material and cultural heritage are linked to the biosphere. Our life depends on the life of the planet, its resources and its species.

The community, miners, institutions and companies agree that all forms of mining produce environmental impacts, effects that are of great magnitude when carried out in an irrational and uncontrolled manner, as in the case of illegal mining, which accounts for 56% of the country's activity.

The illegality and informality present in the mining sector prevent the identification of a legal responsible party that is obliged to implement the necessary environmental measures for the exploration and exploitation of natural resources in a sustainable manner; a situation that has currently been potentiated by the lack of control and follow-up by the competent authorities, causing the State to assume the environmental debt and the costs of remediation. The direct relationship between the adverse environmental effects of uncontrolled mining and climate change is highlighted.

In the country, in recent decades due to the interference of illegal armed groups, mining has become an urgent and priority issue to be resolved legally and socially by the Colombian State, a problem that involves citizens in general, ethnic and mining communities, national and international companies interested in using the territory covered by the title, local authorities that do not have the capacity to control the exploitation of minerals, and national authorities that have to reevaluate the mining policy.

Mining without complying with industrial hygiene and safety standards and without the application of techniques for the excavation and removal of large volumes of earth represents an imminent danger for hundreds of miners who risk their lives daily and are sentenced to remain under earth, debris and water if no decisive action is taken against this scourge.

As there is no regulatory framework to address the phenomenon of illegal mining, disjointed efforts are made that yield no major results, which makes it necessary to create an entity to coordinate actions to address this problem. In the case of territories that are off-limits to the authorities, it is imperative to recover the sovereignty of the State.

⁹ Technical Report carried out in the framework of the Interinstitutional Agreement No. 072 of 2013 Minminas - IIAP, "Formulation and Implementation of Mining Formalization Actions in the Department of Chocó", Quibdó, September 2013. Page 20.

Finally, there is no effective policy that includes all stakeholders in the economic development model, that allows the State to take direct action against actions that deteriorate the environment, and that offers real opportunities to vulnerable people who subsist on mining activities.

DISCUSSION

The national government requires to promote the issuance of a special regulatory framework to address the scourge of illegal mining, as well as the creation of a body to lead actions to eradicate illegal mining in the country.

The Ministry of Mines and Energy urges to implement reconversion programs that allow traditional miners to subsist in a dignified manner and effectively guarantee their rights to work and food security.

The Ministry of Environment and Sustainable Development urge to carry out an inventory of the environmental liabilities left by illegal mining and establish programs and strategies for environmental recovery.

Demand from the national environmental licensing authority, the regional autonomous and sustainable development corporations and the environmental authorities of large urban centers: Effective control of the obligations established in the environmental licenses, in the event of non-compliance with the obligations established in the environmental license, with due opportunity and speed, initiate investigations and use the tools established in the legislation, such as the suspension of activities when there is evidence of damage or risk of affecting the environment.

To urge the national mining agency, in accordance with the principles of due process, to initiate administrative actions for non-compliance with the obligations derived from the concession contract and, if appropriate, to declare the expiration of the concession contracts that are being exploited without the proper environmental license. To finish the study of the legalization requests that are in process and adopt the respective administrative decisions, in order to stop the risk situation in which the workers find themselves due to lack of compliance with mining hygiene and safety standards and inadequate extraction techniques, as well as to prevent further serious deterioration of natural resources and the environment. Refrain from decreeing mining zones or blocks or issuing mining titles without taking into account the territories of ethnic communities and the land-use plans established by the municipal authorities.

Request departmental, district and municipal disaster risk management councils to conduct studies to identify risk scenarios for future flooding and landslides caused by the effects of climate change in areas where uncontrolled mining is carried out and its surroundings. Likewise, implement actions to reduce the threat to which communities are exposed due to uncontrolled mining activities.

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