

Analysis of Reflection of the War against Illegal Mining in Colombia

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ABSTRACT

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Illegal mining in Colombia has been a persistent challenge, with devastating impacts on the environment, communities, and the economy. This article delves into the strategies implemented by the State to combat this problem, with a particular focus on the role of the Armed Forces. Through a detailed analysis, it becomes evident how military intervention, while crucial for controlling illegal exploitation areas, has generated tensions and challenges in the relationship with communities. Likewise, the importance of articulating efforts among different institutions and involving communities in the search for legal and sustainable alternatives is examined. Finally, the article reflects on the results obtained so far and the challenges that persist in the fight against illegal mining, raising questions about the effectiveness of current strategies and the need to explore new approaches

Keywords: Mining, Illegality, Regulation, Military Forces, Community.

INTRODUCTION

Mining, an ancient activity with a profound impact on human history, has evolved significantly thanks to technological development. Its contribution to economic growth is undeniable, as measured by legal mining activity, which contributes to the nation through systems such as royalties, compensation, and surface royalties, and through taxes, such as rent, parafiscal contributions, fees, and contributions. This total will reach approximately 6 trillion pesos by 2023 and will increase to 205 trillion pesos by 2022 (\$10.1 trillion in rent, \$6.1 trillion in royalties, and \$4.2 trillion in other taxes and compensations), as minerals are essential for the production of a wide range of goods, from food to electronic devices. At the investment level, it is evident that the contributions generated by mineral exports correspond to \$3 for every peso generated and 15% of international investment. As a generator of employment, it reports figures corresponding to 160,000 direct jobs and approximately 700,000 indirect jobs. The difference between legal and illegal mining is key to understanding their impact on society, the economy, and the environment. Legal mining, on the other hand, is distinguished by its regulation, compliance with environmental standards, and inclusion in national revenue systems, thereby generating employment and contributing to territorial development in all its aspects. Illegal mining, on the other hand, represents a threat that leads to the deterioration of the territory's social fabric and ecosystems, weakens institutional frameworks, and generates insecurity due to internal and external conflicts between groups that exploit mining resources outside the law. The difference between these two practices has led control and monitoring mechanisms to implement strategies to promote good practices and social, environmental, and economic responsibility, which can lead to the legality of economic activity throughout the country. (Ministry of Mines and Energy, 2021)

In Colombia, mining activity is strictly regulated and controlled. The State has established that only 5% of the national territory is authorized for mining exploitation, of which 3.4% is currently in production and 1.6% is in the

development phase. This regulatory framework is embodied in 9,602 valid mining titles, which cover a wide range of minerals and are classified into eight large groups according to their use and application (National Mining Agency, 2022).

The Colombian mining sector, framed by robust environmental and social legislation, represents a key driver of the country's economic development. Through responsible and competitive practices, mining generates employment, royalties, and foreign currency, contributing to improving the quality of life of local communities and strengthening public finances. Furthermore, the sector is aligned with the Sustainable Development Goals, promoting mining that respects the environment, fosters social inclusion, and contributes to eradicating poverty. By integrating the SDGs into their operations, mining companies can generate shared value and build a more sustainable future for Colombia. (United Nations Development Programme, 2016).

Figure 1. Sustainable Development Goals.

Sustainable Development Goals that contribute to the mining sector



Note: How mining contributes to the sustainable development goals.

The departments of Antioquia, Bolívar, Boyacá, Caldas, Cauca, Cesar, Chocó, Córdoba, Cundinamarca, Guajira, Nariño, Norte de Santander, Santander, and Tolima concentrate the largest mining activity in the country, contributing significantly to their respective GDPs. However, the persistence of illegal mining in these regions generates serious social and environmental consequences, such as poverty, inequality, and armed conflict. The Pacific Region, in particular, has been particularly affected by this problem, forcing the National Navy to intensify its operations to combat it. A priority for territories or areas that have developed mining is the protection of ecosystems or natural resources, since the threat to these is latent with mining activity, which not only represents their destruction but also a transformation, leading to social transformations. Mancuso (2024). (Portafolio, 2021).

Figure 2. Main impacts generated by illegal mining



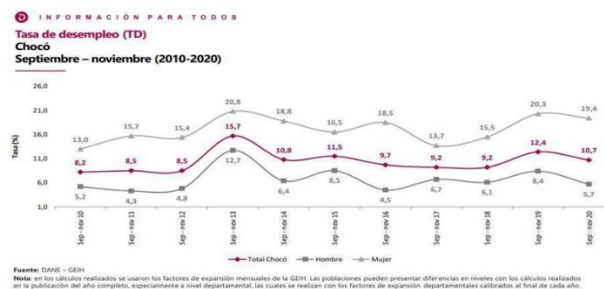
Note: Negative impacts generated in Colombia by illegal mining.

The graph above shows a growing problem in Colombia and is what refers to illegal mining, because it is the economic support of armed groups and drug trafficking where they are located in territories located in prohibited areas and without permits rich in minerals such as: gold, coltan, coal and construction materials, and they carry out improper exploitation, that is, without complying with any of the regulatory processes that Colombia has, which leads to generating environmental, social and economic damage. The above led to more than 5,000 hectares of illegally exploited areas being reported in 2022, among which 73% of the alluvial gold was made illegally. The main environmental damages are accelerated deforestation, the destruction of watersheds, soil deterioration and consequently climate change, putting at risk the availability of drinking water sources for the future, soil pollution and the deterioration of strategic ecosystems such as those of the Chiribiquete National Park. One of the main pollutants is mercury, frequently used in gold mining. By 2024, operations carried out by the military forces had seized 263 kg of highly polluting mercury, as 1 g of Hg contaminates 500,000 liters of water. Socially, these groups are located in regions with vulnerable Afro-descendant and indigenous populations, who are exploited at work. They do not comply with occupational risk management standards, and cause population displacement due to violence, prostitution, excessive consumption of alcohol, or addictive drugs. This is because illegal exploitation does not require compliance with regulations generated by the treasury. This leaves a few people generating wealth, while a large part of the population lives in poverty because they lack basic needs. This increases social gaps, abuses due to extortion, aggression, prostitution, and few guarantees for the youth or child population. What leads to forced displacement and limited guarantees of growth in the region, in the specific case of illegal mining compared to drug trafficking, is that the way to formalize production is easier in the case of minerals, due to the use of laundering and marketing networks through which production enters the legal market without any regulatory compliance with Colombian law. Reports show that illegal groups such as the ELN guerrilla group, the FARC, and criminal gangs like the Clan del Golfo manage to collect more than 12 kg of gold per month, equivalent to \$7.8 billion pesos. This money goes untaxed, does not compensate for environmental damage, and does not facilitate regional growth, in this specific case of the department of Chocó.

For all of the above reasons, the development of military intervention operations against illegal mining with the competent authorities and government support is relevant today. These operations have dismantled a criminal network operating in the region. The operation was a success not only in dismantling the group but also in destroying the machinery used for illegal mining. Numerous investigations have revealed the magnitude of the social, economic, and environmental impact of illegal mining and mining commercialization, as the profits from this activity are channeled into illicit operations, criminality, and corruption where economic activity is prevalent. Therefore, the advancement of state power in protecting territorial interests is relevant. (Colombian Air Force, 2017)

The department of Chocó in Colombia is distinguished by its geography, rich ecosystems, culture, and other distinctive features. Its infrastructure has been a challenge, highlighting the production of gold and platinum, making mineral resources a differentiating factor in the region. The cultural fabric of the region is representative, as is mining, as it is one of the most influential ancestral activities across generations, demonstrating that it is the source of employment for the region's communities. This activity has been a source of social tension and environmental impact. For example, the Maquí and Timbiquí estuary basins, which, as a history of mining exploitation, bear witness to the current realities of the territory, causing social transformation to go hand in hand with difficulties.

Choco gold production in 2006 contributed approximately 8,138.11 kilograms of gold to the national output. Although the effect of mining production is significant for the country, the impact of economic activity on the armed groups surrounding the area and such activity is not unknown. This has led to conflict, violence, displacement, and the extermination of indigenous peoples.

Figure 3. Unemployment rate in Chocó 2010-2020

Nota. Información extraída de (DANE, 2021). Tasas de desempleo en los últimos años.

Theoretical reference

This theoretical framework is designed to analyze various studies, not only nationally but also internationally, that address mining from both legal and illegal perspectives, contributing to discussion within the context of the current situation of the silver problem with this economic activity in the country. It is important to mention that the rise in prices of products derived from mining activity has brought with it significant investments from large companies. Latin America has seen a boost in the mining sector, which has led to benefits in both foreign investment and exports. Colombia, with respect to mining activity, has demonstrated that this activity has led to constant growth, which has had a significant impact on the country's social and economic development. (Cárdenas & Reina, 2008)

The increase in global prices of mining products has boosted activity in Colombia, providing macroeconomic stability. This context has motivated a greater presence of the State to combat corruption and illegality in the mining sector. However, despite recognized efforts, the expected results have not materialized in the short term. In its reports, the government has stated that the goal of mining activity in the country is the efficient use of resources through energy transition, reindustrialization, food sovereignty, and ecosystem protection. These objectives benefit communities, natural resources, and the State. To achieve greater dynamism, complementary approaches have been proposed, including implementation, alignment, and monitoring through public policies, as well as international regulations on human rights, gender, gender equality, climate change management, and systematization (Ministry of Mines and Energy, 2023).

In Colombia, mining is concentrated in certain municipalities due to their geographical location, which contributes significantly to the Gross Domestic Product (GDP). By 2019, approximately twelve municipalities, including the Department of Meta, depended on mining activity for 80%.

Figure 4. Mining Municipalities of Colombia.

Note: Figure taken from the (DANE, 2021) report.

Artisanal mining in Colombia is woven into the social and economic fabric of several regions of the country, which have carried on this economic activity from generation to generation, not only for daily living but also as a preserve of their ancestors.

This practice, which is typically carried out informally, has generated a range of social and environmental challenges. Artisanal miners, mostly from vulnerable and remote populations, have long faced labor realities characterized by precariousness, a lack of state social protection, and a lack of guidance regarding risks related to compliance with occupational health and safety standards, all of which have compromised the physical and emotional integrity of these individuals who have worked in illegal mining. At the same time, the informal nature of these illegal mining operations has had significant environmental impacts, such as land degradation, ecosystem degradation, and water pollution, among others. Poverty and inequality have been perpetuated in mining communities, highlighting the immediate intervention of the State through the development of public policies geared toward formalization and good environmental practices. (United Nations Environment Programme - UNEP, 2012)

Natural resources in Colombia have historically been at the heart of the armed conflict, serving as a driving force for the illegal economy, which several illegal armed groups have exploited and protected from the State. Natural resources have been used as a financing center for operations through the extraction and sale of minerals, timber, and other material resources. It is estimated that this dynamic has generated a vicious cycle of inequality, violence, and environmental degradation.

The war economy, based on the exploitation of natural resources and extortion, has allowed these groups to consolidate their territorial power and finance their criminal activities. Illicit value chains, which connect the extraction, processing, and marketing of illegal resources, have facilitated the integration of these activities into the formal economy, generating millions in profits for criminal actors and undermining the rule of law. (Rodrigo Lara Bonilla Judicial School, 2022).

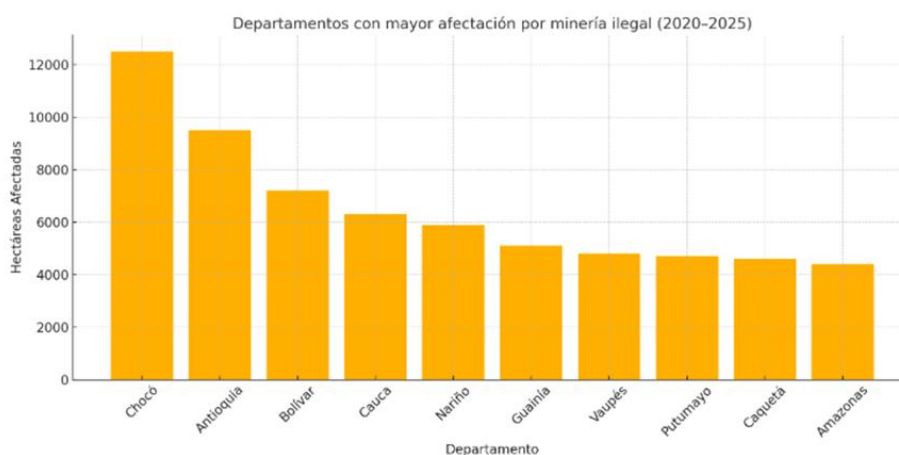
METHODOLOGY

This study was developed using a qualitative approach, as it established a reflection resulting from the study of the social, environmental, and ethical conditions of the war against illegal mining in Colombia. This approach allows for a deep dive into the context and the collection of information based on institutional narratives, official discourses, and the experiences of stakeholders, making it ideal for understanding the social processes underlying this issue. In this study, qualitative techniques such as in-depth interviews with key stakeholders and document analysis will be employed. These techniques seek to identify the mechanisms linking the exploitation of natural resources with violence and crime, as well as the perceptions of the stakeholders involved (Sánchez, 2019). It was also framed within a descriptive research framework, as it enabled the characterization of key elements such as military strategies, the regulatory component, economic and social dynamics, and the environmental impacts that directly affect the communities involved in illegal mining. Because while descriptive research focuses on describing what is happening, it also provides important clues for exploring possible causes and factors associated with this problem. The choice of this approach is justified by its broad application in the social sciences, where it is especially useful for analyzing complex and multifaceted phenomena (Martínez, 2020).

To achieve the objectives, documentary and normative analysis were carried out.

RESULTS

The results of the documentary review show that the department most affected by illegal mining in the last 5 years is Chocó, with more than 12,000 hectares affected, followed by Antioquia with more than 9,000 hectares, and in third place, Bolívar, with approximately 7,000 hectares. Putumayo, Caquetá, and Amazonas, with more than 5,000 hectares each, are less affected. Significant data on the negative impact on the environment are reflected in more than 40,000 hectares of Colombian territory affected by deforestation, river and soil pollution, and social and economic impacts resulting from internal conflicts in these departments due to the presence of illegal armed groups in the region. Despite government efforts to combat this phenomenon, illegal mining persists due to the high profitability of these activities, the complexity of the territory, and institutional weakness in some areas.

Figure 5. Impact of illegal mining in Colombia 2020-2025

Note: Representation by hectares and departments affected by illegal mining in Colombia

Table 1. Activities with the Most Mining Exploitation in Colombia.

Activity	Exploitation
Construction	57%
Coal	17%
Minerals	11%
Limestone	5%
Industrial Minerals	4%
Precious Stones	4%
Other Metals	2%

Note: Information extracted from (National Mining Agency, 2022), showing that 90% of Colombian territory is directly or indirectly mined.

Colombia's mineral wealth, a result of its privileged geographic location, makes it an attractive target for illegal mining. The diversity of metallic (gold, silver, copper), non-metallic (emeralds), and energy (coal, oil) minerals present in the Colombian subsoil has fostered the indiscriminate exploitation of these resources. However, it is essential to emphasize that responsible and sustainable mining must be based on the identification and exploitation of mineral reserves, in order to ensure economic viability and minimize environmental and social impacts.

Table 2. Classification of Activities and Minerals to be Exploited in Colombian Territory.

Activity	Minerals for exploitation
Construction and Infrastructure	Sand – Gravel – Gypsum – Iron – Copper – Silica – Aluminum – Zinc.
Medicine	Copper, titanium, strontium, barium, gold, uranium, copper, magnesium, sulfur, iron, selenium, iodine, zinc, kaolin, salts, calcite, calcium, copper, potassium.
Aeronautics	Gold, aluminum, iron, nickel, and titanium
Power Generation	Coal and uranium
Jewelry	Gold, silver, platinum, precious and semiprecious stones
Agriculture	Phosphate rock, limestone, sulfur, magnesium, manganese, zinc, and kaolin
Food Industry	Salt, limestone, dolomite, magnesium, mica, sulfur
Automotive	Iron, aluminum, copper, palladium, nickel, cobalt, mica, titanium, kaolin, talc, wollastonite, mica, talc, and lead
Steel Production	Coal, iron, nickel, titanium, limestone, and fluorite

Technology

Copper, aluminum, gold, platinum, tungsten, tungsten, tin, tantalum, niobium, silver, iron, nickel, zinc, rhodium, palladium, beryllium, lithium, magnesium, molybdenum, vanadium, cobalt, mica, talc, borates, carbonates, feldspars, and quartz

Note: Information extracted from (Ministry of Mines and Energy, 2021). The mining sector represents a development driver.

Colombia has a network of regional service centers that provide technical and administrative assistance to facilitate the legalization process for mining sites in municipalities. These centers play a crucial role in the formalization of mining and the promotion of responsible mining practices. Although the legalization process is slow, a percentage has been achieved that allows the State to control and monitor the parameters for the development of economic activity.

Table 3. Regional Service Points.

Zone	PAR
Center	Bogotá
	Nobsa
North	Bucaramanga
Center	Cartagena
	Cúcuta
	Valledupar
	Cali
	Ibagué
	Manizales
	Medellín
	Pasto
	Quibdó

Note. Information extracted from (National Mining Agency, 2022). There are three (3) zonal coordinations that group together service points, where the inspection work is carried out.

To ensure the environmental and economic sustainability of mining activity in Colombia, legislation establishes maximum monthly production limits for various minerals. For example, limits have been set at 20 grams for precious metals such as gold, silver, and platinum, 60 cubic meters for river sand and gravel, 75 tons for clay, and 50 carats for precious and semi-precious stones. These limits seek to prevent the overexploitation of natural resources and promote responsible mining practices. Illegal mining in Colombia not only represents a threat to the environment but also a factor in social and political instability. Despite regulatory efforts and the efforts of stakeholders involved in combating it, this activity continues to be a source of conflict and inequality. It is essential to strengthen coordinated actions to guarantee the legality and sustainability of mining in the country.

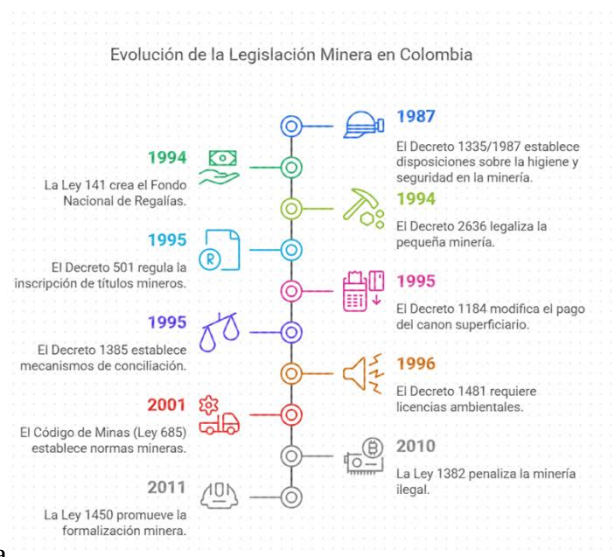


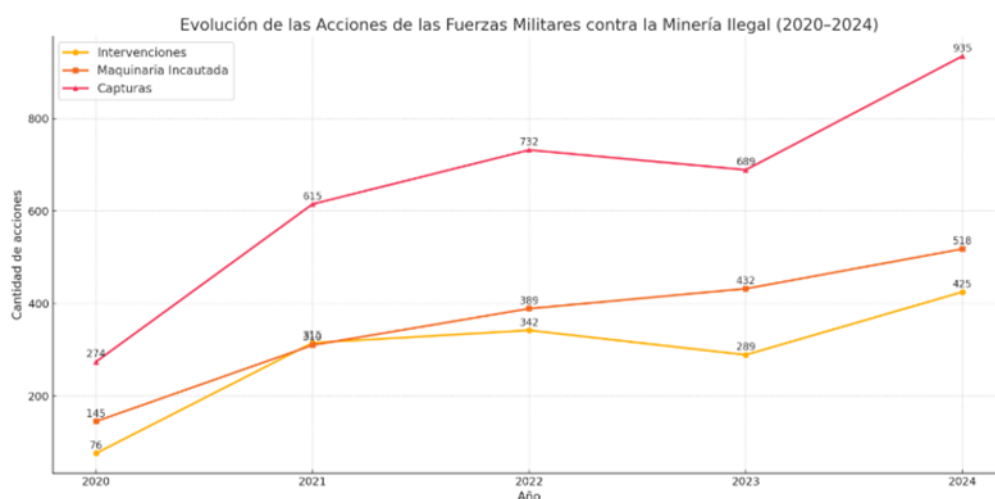
Figure 6. Mining Legislation in Colombia

Nota: Representación de la evolución en la línea de tiempo de la normativa colombiana en minería. para el proceso de la actividad minera desde la Función Pública, 2010, Ministerio de Minas y Energía, 2022

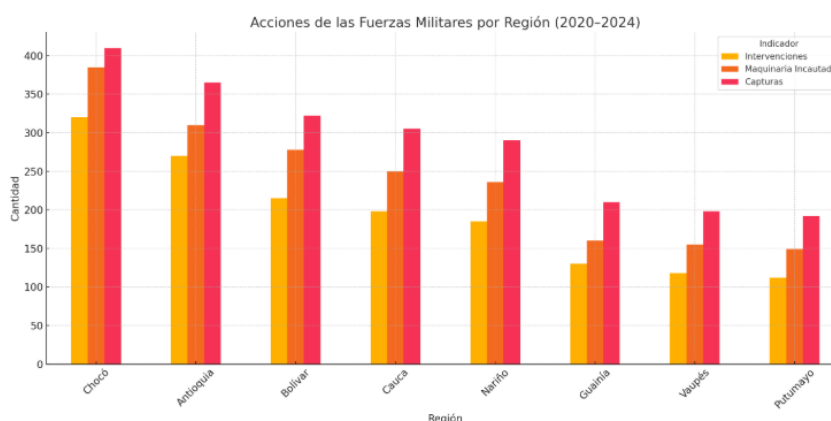
This regulation refers to the guidelines for mining exploitation in Colombia, indicating how it will be carried out within the territory without being a destructive factor for the environment and the community. This demonstrates that the integration of regulations with mining has made significant strides in addressing the responsibility for natural resources and the community, assigning a duty of protection to a ministry and law enforcement.

To combat illegal mining, Colombia has structured a mining management system with the aim of promoting the responsible exploitation of natural resources. The Ministry of Mines and Energy leads this effort, with entities such as the National Mining Agency, responsible for administering mining titles, and the Colombian Geological Service, responsible for assessing the country's mining potential. However, despite these institutional efforts, illegal mining persists, highlighting the need to strengthen control and surveillance mechanisms.

Figure 7. Actions of the military against illegal mining (2020-2024).



Note: The trend of intervention in illegal mining in Colombia is increasing.

Figure 8. Military actions by region against illegal mining (2020-2024).

Note: The trend of interventions targeting illegal mining in Colombia in the Chocó, Antioquia, and Bolívar regions is the most representative.

The growing threat of illegal mining, linked to illegal armed groups and drug trafficking, has prompted the implementation of more robust control strategies. Concentrating more than 50% of the military's efforts in these three regions, the results in Chocó have been similar by 2024: 320 interventions, 385 pieces of machinery seized, and 410 people captured. This demonstrates that the river system surrounding Chocó is an opportunity exploited by illegal groups such as the ELN and the Gulf Clan. This is achieved as a result of the Ayacucho Strategy, developed in 2023. It is an example of this inter-institutional coordination, resulting in 354 operations and causing losses of more than \$77 million to criminal organizations. The Attorney General's Office plays a relevant role in this process, not only through arrests but also by consolidating evidence that allows for the dismantling of criminal networks dedicated to illegal mining, thereby developing mitigation strategies for illegal mining. All of the above highlights the need to continue focusing the resources and comprehensive efforts of the military forces to continue counteracting the negative impacts on social and environmental security in these regions.

A highlight is the development of academic events that have demonstrated the adaptability of illegal mining to regional and national contexts. To address this challenge, the Armed Forces, in coordination with other institutions, have implemented high-precision strategic operations, using artificial intelligence and drones to locate and destroy illegal mining sites. However, illegal mining is a multifactorial phenomenon that requires a comprehensive response, including the formalization of mining, the protection of local communities' rights, and the restoration of affected ecosystems. In the long term, it is necessary to address the root causes of illegal mining, such as poverty, inequality, and lack of economic opportunities. (Sandoval, 2022)

The destruction of machinery used in illegal mining has been an effective strategy to weaken the criminal structures involved in this illicit activity. By affecting their operational capabilities and reducing their profits, this has had a significant impact on the economy of these organizations, while contributing to strengthening the national economy. At the same time, the Colombian Military Forces have developed a comprehensive approach to combat illegal mining, combining operational actions with prevention and education activities. The creation of the Brigade Against Illegal Mining Deposits in 2016 has been a milestone in this fight, allowing for greater inter-institutional coordination and a more effective response to this threat. (Céspedes, P., 2020)

The protection of natural resources is a fundamental pillar of these strategies. Through training and the implementation of joint operations, the Armed Forces have strengthened their capacity to combat illegal mining and ensure the protection of ecosystems. This approach is supported by the Colombian Political Constitution, which establishes the State's obligation to protect and conserve the environment for present and future generations. The Colombian National Army has played a crucial role in the protection of natural resources, materializing in inter-institutional operations that have achieved concrete results. An example of this is the intervention at the Pate Queso

mine in Valle del Cauca, where criminal networks dedicated to illegal mineral exploitation were dismantled and the use of highly polluting substances such as mercury was revealed.

To carry out these operations, the Armed Forces have employed a variety of tools and techniques, among which controlled explosives stand out. These explosives, such as Afo, Emulind-E, Emulind-S, Indugel Plis PM, and Indugel AV800, allow for the safe and efficient destruction of illegal mining infrastructure, minimizing risks to personnel and the environment. Furthermore, the use of detonators such as the Exel™ MS Connector and the Exel™ MS has facilitated the execution of controlled blasting at different types of mining sites. The experience at the Pate Queso mine demonstrates the National Army's ability to confront the challenges of illegal mining and protect the country's natural resources. However, it is essential to recognize that this problem requires a comprehensive approach that combines military action with prevention, education, and sustainable development measures.

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