Illegal Gold Mining:

Impacts on Human Rights and Biodiversity in the Amazon

Six Countries Report

CEDIB · Fundación Pachamama · dplf Fundación para el Debido Proceso · Gaia Amazonas · Hutukara · Monitoring of the Andean Amazon Project · People in Need · SPDA · SOS Orinoco

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Content

Executive Summary

This report, prepared by several organisations from six Amazonian countries (Bolivia, Brazil, Colombia, Ecuador, Peru, and Venezuela), addresses illegal gold mining's impacts in the Amazon, focusing on its devastating effects on human rights and biodiversity. The Amazon, one of the most biodiverse regions in the world, is home to numerous Indigenous peoples who depend on its resources. However, illegal gold mining has accelerated the destruction of the Amazon's ecosystems, causing serious environmental and social consequences. Each of the countries participating in the report identifies impacts in specific geographical areas within their respective regions of the Amazon. The same pattern of destruction is repeated in each of these areas. Although many of the affected areas are legally protected as Indigenous territories or protected areas, the lack of effective law enforcement has allowed illegal mining to flourish. Illegal mining uses mercury to extract gold, contaminating rivers and destroying vital ecosystems. Effects also include deforestation, loss of biodiversity, alteration of hydrological cycles, and most notably, damage to the health of indigenous and local populations, who depend on local resources. Mercury accumulates in fish, a major food source for these communities, causing serious health problems. Indigenous peoples and local communities are the primary victims of illegal mining, facing forced displacement, violence, loss of their territories and serious health problems caused by mercury. Furthermore, environmental defenders and journalists who denounce this situation are under constant threat and danger. In many cases, illegal mining in the Amazon is controlled by criminal networks, enabled by corruption and a lack of state presence. States have a duty to prevent, mitigate and punish environmental damage and human rights violations arising from extractive activities, including illegal gold mining. States must adopt regulatory frameworks to govern and oversee extractive activities, including illegal mining, prevent and mitigate their negative impacts, guarantee access to justice and protect Indigenous peoples, local communities and environmental defenders. Furthermore, the report highlights the black market use of mercury in illegal mining, which represents an additional challenge for states. The Minamata Convention, which regulates the use of mercury, has been ratified by many of the countries studied, but its implementation remains weak. Among other policy recommendations, the report recommends strengthening cooperation among Amazonian countries to coordinate regional monitoring and sanctioning efforts, prioritising the delineation and titling of Indigenous territories, establishing systems to track and progressively reduce the use of mercury, and promoting Indigenous participation in decision-making on environmental and conservation policies, while respecting their knowledge and cultural practices.

Figure 1. Geographical limits of the Amazonian biome, from an ecological and bio-geographical perspective. Source: MAAP, 2022.

Introduction

For the purposes of this publication, the Amazon is considered, from an ecological and bio-geographical perspective (*Hylea amazonica*), as the great continuum or blanket of forests that encompasses both the Amazon River basin and a large part of the Orinoco River basin and the forest formations of the Guiana Shield (Figure 1). This immense region, measuring about 7.640.665 km^2, constitutes the most biodiverse biome in the world, supporting approximately 10% of all currently known vascular plant and vertebrate animal species on the planet. Estimates (generally underestimated and/or biased towards the Brazilian Amazon) point to a wealth of species, including about 50.000 vascular plants, at least 2.406 fish, 427 amphibians, 371 reptiles, 1.300 birds and 425 mammals, all concentrated in only 0,5% of the total surface of the Earth. In addition, the Amazon maintains an impressive cultural diversity. It is home to about 47 million people, of which about 2,2 million are part of around 410 distinct ethnic groups, including 80 groups that remain in voluntary isolation, all of whom have different spoken languages and cosmovisions (Science Panel for the Amazon, 2021).

On the other hand, the region is an important carbon sink. It is estimated that the Amazon stores an amount of carbon equivalent to 15 to 20 years of global CO_2 emissions (150 to 200 Pg C), which demonstrates its crucial role in regulating the global climate (IPCC, 2021). Likewise, the Amazon holds 20% of the planet's freshwater, which in itself makes it one of the fundamental resources for life. Its proper use is not only essential for the region's growing population, which benefits directly from it, but is also decisive in maintaining the planet's stability, affecting the gravitational equilibrium and continental ocean current flows (Bernal *et al.*, 2009).

Despite being considered a unique, irreplaceable, megadiverse and invaluable region, the Amazon is under serious threat. The Science Panel for the Amazon (PCA) states in its 2021 report that around 65% of the region's endemic species are classified under some risk category on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (Critically Endangered, Endangered or Vulnerable), warning that this percentage is well above the global average risk, which is estimated at 47% for tropical countries (Pitman and Jørgensen, 2002 cited in the Science Panel for the Amazon, 2021).

Deforestation, forest degradation and climate change are seriously jeopardizing the functionality of Amazonian ecosystems and decreasing the resilience of a forest that has been able to respond to climate variability for more than 65 million years. Flores *et al.*, (2024) combined spatial information on various disturbances and estimated that by 2050, between 10% and 47% of Amazonian forests will be exposed to compound disturbances which could trigger unexpected ecosystem transitions and potentially exacerbate regional climate change.

Deforestation in the Amazon is a product of increasing pressures such as population density, natural resource extraction, infrastructure development and illicit crops, among other drivers (Davidson *et al.*, 2012). Gold mining, a productive activity that has boomed in recent decades, has exacerbated deforestation and caused a range of other negative impacts on ecosystems, local communities and human rights (Espinosa and Beyeler, 2021). For example, the use of mercury in extraction processes pollutes rivers and affects the health of Indigenous and local populations, causing serious public health problems (Bell *et al.*, 2021).

This report focuses on the general impacts of illegal gold mining in six Amazonian countries (Bolivia, Brazil, Colombia, Ecuador, Peru and Venezuela) and seeks to highlight the severe impacts this activity has on the Amazon and the communities that inhabit it, analysing concrete cases that illustrate the magnitude of the problem. Through a review of the technical and scientific literature, the report documents some of gold mining's effects on biodiversity and the human rights of Indigenous and local communities. While this report focuses on illegal mining, in some cases it refers to different types of mining: artisanal, industrial, small-scale or medium-scale. These references to other types of gold mining are made to illustrate its effects or impacts on the countries studied. The report will explicitly state when types of gold mining other than illegal mining are mentioned.

Total transformation of the banks and course of the Mapiri River, Mapiri Municipality, Bolivia. Source: CEDIB.

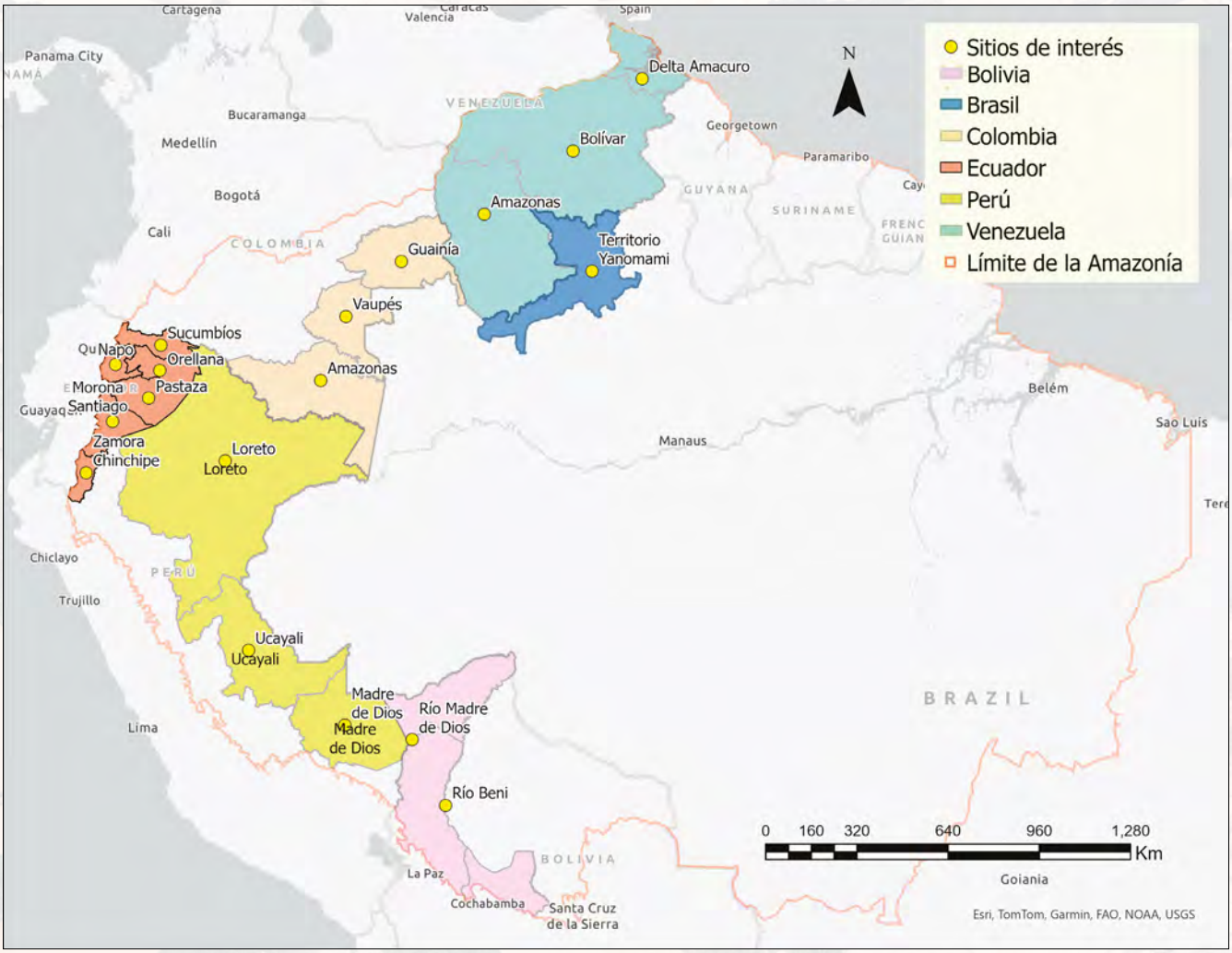

Figure 2. Location of the Amazonian geographical areas analysed in the report. Source: Prepared by the authors based on layers available in ArcGis Online.

Geographical Areas Emphasized in this Report

To create this report, each organisation from the six participating countries prepared a contribution focusing on the geographical space in which they operate and where their expert opinion shows the principal effects of legal and illegal mining on the Amazonian environment. This information helps to gauge the undeniable effects that mining has on the socio-environmental balance in the region, helping to analyse current and future consequences and to come up with actions to avoid irreversible changes that will certainly damage the global balance (Figure 2).

In **Bolivia**, the main point of reference is the middle part of the Beni and the Madre de Dios river basins, in the north of the country. This is considered one of the most biodiverse areas on the continent. It is home to the Madidi-Pilón Lajas-Apolobamba-Cotapata conservation corridor, where 57 endemic species have been identified (12% reptiles, 7% mammals, 25% birds and 56% amphibians), as well as 13 "endangered" species (2 amphibians, 7 birds, 4 mammals) and 7 "critically endangered" species (5 amphibians and 2 birds) (WCS *et al.*, 2020). The area is also home to 26 Indigenous Originary Campesino Territories (IOCT), who either hold titles or have submitted applications for titles. Most of the territories belong to Indigenous peoples whose way of life is closely linked to the rivers, forest and biodiversity in these territories.

In the case of **Brazil**, the information and data provided focus on the Yanomami Indigenous Territory, in the states of Amazonas and Roraima, adjacent to the Venezuelan border, one of the richest and most complex ecosystems on the planet. The Yanomami Indigenous Territory is a vast area of Amazonian forest, covering more than 9 million hectares (90.000 km^2), which hosts a great diversity of species. Although exact figures on the total number are not available, it is estimated that the region is home to over 1.000 plant species and over 300 bird species. Around 150 mammal species have been recorded, as well as a high diversity of reptiles and amphibians (Albert, 1999). This territory also plays an essential role in regional climate regulation. It is mainly inhabited by the Yanomami people, made up of different groups, who maintain a deep relationship with this land, sustained by traditional practices that respect and preserve the environment.

Colombia focuses its report on the eastern Colombian Amazon, which includes the departments of Vaupés, Amazonas and Guainía, which border Venezuela, Brazil and Peru. These departments cover an area of approximately 22.603.000 hectares (226.030 km^2) and are home to dozens of Indigenous peoples. It is home to the best-preserved tropical rainforest cover in the country[1] and extraordinary

[1] It is estimated that the Indigenous territories of this Colombian Amazon sub-region have lost only 0,7% of their forest cover in the last 38

biocultural diversity, as it is a very heterogeneous territory. Guainía is a border territory between the Orinoco and the Amazon, with all the biological and cultural diversity that this entails. Cárdenas *et al.*, (2019) report that at least 1.133 species of flora have been recorded in the Apaporis River basin (Guaviare, Caquetá, Vaupés and Amazonas departments), 51 of which are endemic to the country. 10 new species have been discovered for science. There are also 256 species of arachnids, 160 species of diurnal butterflies, 101 species of fish (which represents 10% of the species in the Colombian Amazon biome), 40 species of amphibians, 34 species of reptiles, 273 species of birds (15% of the birds in the Colombian Amazon biome), 44 species of bats and 38 species of medium and large mammals, including some endangered species such as the jaguar, tapir, otter and water dog. In this region of Colombia there are approximately 51 Indigenous peoples with 41 different languages belonging to the Eastern Tukano, Arawak and Makú-Puinave language families. For example, the Indigenous territory of Yaigojé Apaporis is inhabited and managed by communities belonging to the Tanimuca, Letuama, Macuna, Yauna, Yujup, Cabillari, Gente de Día, Tuyuca, Majiña and Gente de Leña ethnic groups.

Meanwhile, **Ecuador** provides information on all its Amazonian Provinces: Sucumbíos, Orellana, Napo, Pastaza, Morona Santiago and Zamora Chinchipe, representing about 48% of the country, around 120.000 km^2. This region has been classified as one of the most diverse in the world, in terms of its flora and fauna. It has 7.000 species of vascular plants, 183 of mammals, 761 of birds, 219 of reptiles, 285 of amphibians and 655 of fish. The richness of the Amazonian rivers is so remarkable that 473 species and 225 genera are known to exist in the Napo basin, figures that exceed the number reported in any other hydrographic system of similar size in the world (STCTEA, 2021). The Ecuadorian Amazon is the ancestral territory of the Siona, Cofán, Secoya, Huaorani, Shuar, Achuar, Sapara, Andoa, Shiwiar, Quijos and Amazonian Kichwa peoples, who share a common land, history, language and traditions (Arias *et al.*, 2012).

In **Perú**, the Amazon covers a total area of 78.282.060 hectares (782.820,6 km^2), an area equivalent to 60,9% of the country's territory (IBC, 2009). This region includes the departments of Loreto, Ucayali and Madre de Dios in their entirety and part of the departments of Amazonas, Cajamarca, Huancavelica, La Libertad, Pasco, Piura, Puno, Ayacucho, Junín, Cusco, San Martín and Huánuco (IBC, 2009), or 15 of the 24 of the 24 departments that make up the country,[2] bordering Ecuador, Colombia, Brazil and Bolivia. According to Villacorta *et al.*, (2007), some 7.372 species of higher plants, 262 of amphibians, 180 of reptiles, 806 of birds and 293 of mammals have been recorded in this extensive region, corresponding to 43%, 65%, 46%, 44%, 44% and 63%, respectively, of the national total inventoried. These figures are increasing as new species are discovered. In addition, there are 14.701 samples of plant resources and 7.328 samples of animal DNA stored in the germplasm bank. Likewise, in 2011, the Peruvian Amazon was identified as home to more than 800 species of fish, equivalent to 82% of the total number of species recorded in the country's inland waters (Ortega *et al.*, 2010).

In **Venezuela**, the area being reported on belongs to the Guayana region, as defined by Huber

years, thanks to Indigenous peoples' management (MapBiomas and RAISG, 2023).

[2] Peru has a total of 24 departments and one constitutional province.

(1995). It is made up of the states of Amazonas, Bolivar and Delta Amacuro, without including the Essequibo Territory. This region represents 49,5% (453.915 km^2) of Venezuela's land area (916.445 km^2, excluding the Essequibo Territory) and borders Colombia, Brazil and Guyana. This vast region includes the Venezuelan part of the Amazon basin (about 41.956 km^2) (Rojas and Castaño, 1990), more than half (58%) of the Venezuelan Orinoco basin (Lasso *et al.*, 2010) and about 45% of the area of the Guiana Shield (Huber, 1995). The Guayana region of Venezuela is not just an area with a rich number of species, but also has one of the highest levels of endemicity in the country and in the whole of northern South America. Of the 9.411 known species of vascular flora, 2.136 (22,7%) are endemic to Venezuelan Guayana. With respect to the vertebrate fauna, more than 50% of the species reported in Venezuela are found in the Guayana region. For example, of the 360 species of known amphibians in Venezuela, 195 (54,2%) are present in the Guayana region, 65 of which are endemic. Special mention should be made of the Venezuelan continental ichthyofauna of the Guayana region, which contains 960 species. For example, in the Canaima National Park alone, 119 species (40%) of the known ichthyofauna in the entire Caroní basin have been recorded, 55 of which are considered endemic. In other words, 45% of the ichthyofauna of Canaima are endemic. Finally, Venezuelan Guayana is far from being ecologically homogeneous; on the contrary, it has a very wide variety of ecosystems, with different types of forests, savannahs, grasslands, shrublands and vegetation that support the great biodiversity found, some of which are unique to the country (Riina and Huber, 2003). From a socio-cultural and ethnic perspective, Venezuelan Guayana has the greatest diversity in the country, with a myriad of Creole, Afro-descendant and Indigenous populations, including more than 1.500 communities of 30 Indigenous peoples from the Caribbean, Arawak, Saliva, Yanomami, Guajibo, Tupi and independent linguistic families. The Indigenous peoples that inhabit the region are: Akawaio, Arawak, Arutani, Baniva, Baré, Eñepa, Inga, Jivi, Jodi, Kariña, Kubeo, Kurripako, Mako, Macushi, Mapoyo, Pemón, Piapoko, Puinave, Sáliva, Sanema, Sapé, Shiriana, Uwottüja (Piaroa), Wapishana, Warao, Warekena, Yanomami, Yabarana, Ye'kwana and Yeral (INE, 2015).

In addition, there are groups among the Uwottüja (Piaroa), Jodi and Yanomami, who are in voluntary isolation or initial contact, which makes them particularly vulnerable to external pressures on them, their territory and their resources (Poleo, 2022). The total population living in the three states is 1.725.120 people. The Indigenous population totals 172.543 people, which represents 10,3% of the total population of the three states and 24% of the national Indigenous population (INE, 2015).

Middle Putumayo Algodón, Loreto Department, Peru. Source: Diego Pérez, SPDA.

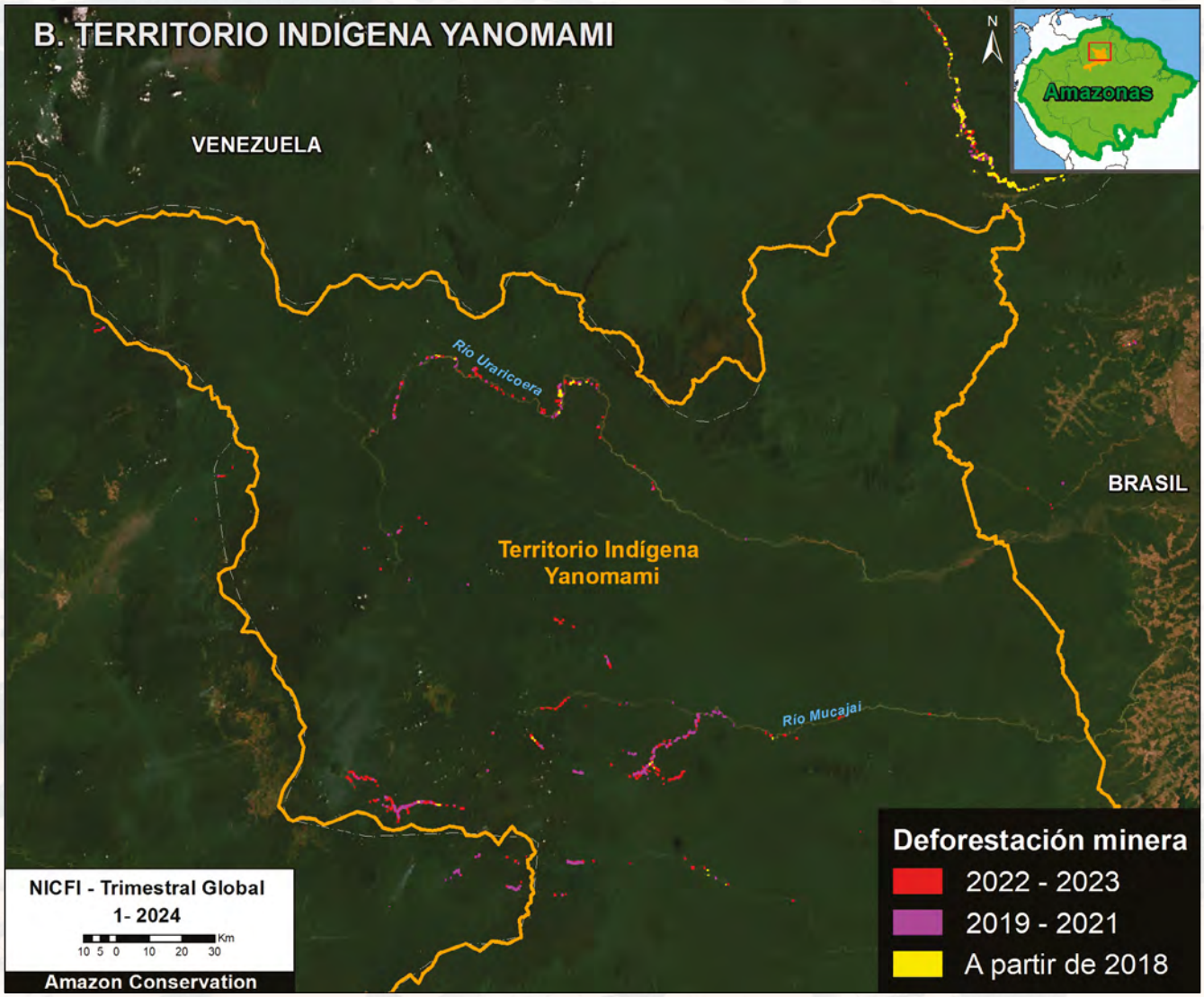

Figure 3. Mining expansion in the Yanomami Indigenous Territory. Source: MAAP, 2024.

Legal Status of the Geographical Areas Highlighted in this Report

In **Bolivia**, the Beni river basin overlaps with 6 national protected areas (Manuripi, Madidi, Apolobamba, Pilón Lajas, Cotapata, Tunari), 5 departmental protected areas and 7 municipal protected areas. Several of the national protected areas form part of one of the most biodiverse zones on the continent, such as the Madidi-Pilón Lajas-Apolobamba-Cotapata conservation corridor. Furthermore, in the Beni and Madre de Dios river basins there are 26 consolidated or requested IOCTs (Ministry of Development Planning, 2005). It should also be noted that the untouchable and fully protected area of the Madidi National Park is considered a special protection area for the uncontacted Indigenous Toromona people.

The area of **Brazil** considered in this report is the Yanomami Indigenous Territory, one of the largest territories in Brazil, encompassing approximately 96.650 km² of tropical rainforest.[3] This territory is officially recognised for its importance in the protection of biodiversity and Yanomami Indigenous culture, with more than 250 isolated communities and groups, totalling more than 27.000 inhabitants.[4] This territory is not only significant because of its size, which is approximately twice that of Switzerland, but also because it represents the largest Indigenous jungle territory in Brazil.[5] Legally, the recognition of this territory is fundamental for the protection of Yanomami rights. Despite its status as Indigenous land, the territory has recently been subject to neglect by the Bolsonaro government, leading to a humanitarian crisis in several of its communities[6] - particularly those located along the Uraricoera, Mucajaí, Couto de Magalhães and Catrimani rivers, which have long been exploited by illegal miners.

According to the Socio-Environmental Institute,[7] Brazil has 534 Indigenous lands approved or reserved by the President of the Republic. From 2019-2022, *garimpo* (illegal gold miners)on Indigenous lands increased dramatically (Figure 3). In 2020, the area being mined was 6 times larger than it was in 1985, growing from 31.000 to 206.000 hectares (MapBiomas, 2021).

Much of **Colombia**'s eastern Amazon is collectively titled to Indigenous peoples. There are also various types of protected areas such as national parks and nature reserves. There are also

[3] https://pib.socioambiental.org/es/Povo:Yanomami

[4] https://agenciabrasil.ebc.com.br/geral/noticia/2023-08/maior-terra-indigena-do-brasil-yanomami-contabiliza-27152-pessoas#:~:text=A%20Terra%20Ind%C3%ADgena%20Yanomami%20(AM,Geografia%20e%20Estat%C3%ADstica%20(IBGE); https://brazil.iom.int/es/news/en-el-corazon-de-la-amazonia-fortaleciendo-los-esfuerzos-para-la-prevencion-de-enfermedades-con-las-comunidades-indigenas-yanomami-en-brasil

[5] https://preview.survival.es/indigenas/yanomami

[6] https://coicamazonia.org/los-yanomamis-luchan-por-sus-vidas-y-territorios-en-la-amazonia-brasilera/

[7] Socio-Environmental Institute. Indigenous Lands in Brazil. Available at https://terrasindigenas.org.br/. Accessed on 13 Sep. 2024.

various types of protected areas such as national parks and nature reserves, some of which overlap with or have been established on land owned collectively by Indigenous peoples. Likewise, since 1959, a large part of this territory has been declared a Forest Reserve. According to the Amazon Network of Georeferenced Socio-Environmental Information (RAISG) (2024), of the 50.345.527,11 hectares in the Colombian Amazon. Of these, 27.413.940 are collectively titled to Indigenous peoples (equivalent to 54.45% of the territory). Protected areas across all sub-categories total 11.631.194,46 hectares, making up a total of 23,10% of the Amazon.

The case of the Yaigojé Apaporis Indigenous Reserve is emblematic of the overlap between Indigenous territories and protected areas. When they were faced with the authorization, without consultation, of mining titles for open-pit gold mining on part of their territory, including on sacred sites, the community decided to work with the National Natural Parks to create a protected area, shielded from titling without consultation. Following a legal dispute, the Colombian Constitutional Court (2014) declared the park legal and ordered an investigation into the mining company's behaviour. In recent years, the national government has identified illegal or illicit alluvial mining in the rivers that border or cross the Puinawai, Puré, Cahuinarí and Amacayacu National Parks (Ministry of Mines and Energy [MinMinas], 2022).

Currently, fourteen of the Indigenous territories are in the process of becoming Indigenous Territorial Entities in Vaupés, Amazonas and Guainía. In other words, they are in the legal process of becoming part of the Colombian state's functional and administrative structure, based on decree law 632 of 2018, which develops transitory article 56 of the 1991 Political Constitution, and is applicable to the non-municipalised areas of the three departments. In this sense, the Indigenous peoples of the eastern Colombian Amazon have a political interest in having their forms of government recognised on the basis of their own systems of knowledge and environmental and territorial management.

In the **Ecuadorian** Amazon, the areas allocated to artisanal and small-scale mining occupy approximately 225.262,4 hectares distributed across 1664 concessions in six Amazonian provinces, mainly concentrated in the provinces of Zamora Chinchipe, Morona Santiago and Napo. They are generally found near riverbanks that flow down from the Andes and in the Cordillera del Condor.[8] Many are close to protected natural areas and even go into Indigenous territories. These figures relate to "legal" mining, but it should be noted that the lack of state control facilitates the proliferation of illegal and informal mining activities, which coexist with legal mining.

Zamora Chinchipe is the Ecuadorian Amazonian province with the most concessions, with more than 63% of the mining concessions, followed by Morona Santiago with 20%, Napo with 9% and Sucumbíos with 6%. This is reflected in the level of gold extraction. According to data from the Ministry of Mining (2016: 292) from 2005-2014, the country's gold production increased elevenfold, with the most significant provinces being El Oro, Azuay and Zamora Chinchipe. Zamora Chinchipe produced 2.730.997,51 grams of gold, representing 92,53% of the gold production in the Ecuadorian Amazon.

[8] The most common form of gold extraction is alluvial mining, which is carried out with motor pumps, dredges and mini-dredges. In the provinces of Zamora Chinchipe and Napo, vein-type deposits are also mined with dynamite and hydraulic hammers.

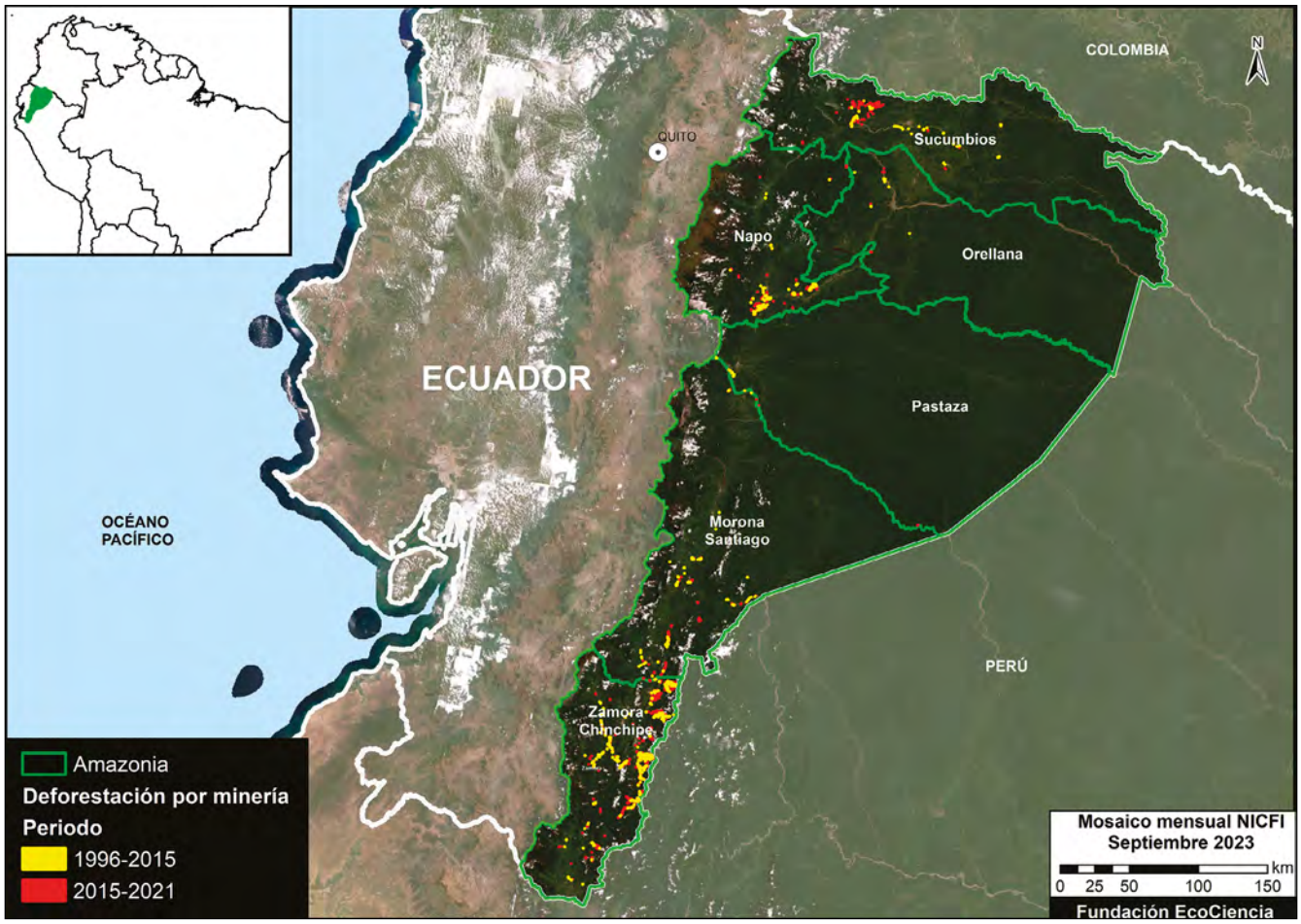

Figure 4. Mining expansion in the Ecuadorian Amazon. Source: MAAP, 2023.

The highest concentration of illegal mining sites is mainly concentrated in the provinces of Morona Santiago, Napo and Zamora Chinchipe. Illegal miners have developed alert and rapid mobilisation mechanisms to evade monitoring and continue their activities, which is why in many cases they are located close to international borders, which contributes to building this circle of impunity (Figure 4).

Many of the small-scale and artisanal mining concessions border the natural protected areas, occupying the part that should be set aside for the buffer zone, where land use is meant to be restricted in order to provide an additional swathe of protection for the protected area. In many protected areas it is clear that the borders were adapted in order to guarantee the mining concession, without taking the buffer zone into account. Navarro *et al.*, (2003:16) remind us that these border or buffer zones with protected areas should gradually decrease the intensity of use and the negative impact of anthropogenic activities, until reaching a zone of zero to almost zero intensity of use. These areas correspond to the core

zones of protected areas, in addition to promoting the economic development of local populations without this implying that the buffer zones become attractive focus points for the establishment of new uncontrolled human settlements, such as those promoted by mining.

There are nine natural areas that belong to the National System of Protected Areas of Ecuador (SNAP) and that are threatened by the proximity of the mining concessions mentioned above. These are Cayambe Coca, Sumaco Napo Galeras, Río Negro-Sopladora, Podocarpus and Yacuri National Parks; El Quimi and Cerro Plateado Biological Reserves; Cofán Bermejo Ecological Reserve; and El Zarza Wildlife Refuge. In areas such as El Quimi and La Sopladora, the border delimitations are so symmetrical that they appear to have been adapted specifically so that the land could be granted as a mining concession. El Zarza is a reserve threatened by small and large-scale mining, as it borders the Fruta del Norte mega-mining project. Finally, Yacuri National Park is the only case where there are concessions operating within the protected area.

With regard to Indigenous territories, there are currently 61.326,6 hectares of concessions within Indigenous territories, which represents 27,22% of the concessions granted in the Ecuadorian Amazon, meaning that a quarter of the small-scale and artisanal mining concessions are located within Indigenous territories. This undoubtedly negatively affects the communities' ways of life and hinders their processes of autonomy and self-determination. Additionally, whether those concessions are on or near Indigenous territories, there is widespread dissatisfaction among Indigenous organisations, who report that none of the concessions granted within their territories have involved the implementation of free, prior and informed consultation and consent.

In the **Peruvian** Amazon, protected natural areas cover an area of 16,2 million hectares; 2,16 million hectares belong to 10 community reserves managed jointly by Indigenous organisations or peoples and the state, which aim to protect wildlife for the benefit of neighbouring rural populations. This is because Peru is a country that must be recognised as Indigenous.

In Peru, approximately 200.000 people belong to an Indigenous people of the Amazon; approximately 7.500 of them belong to 25 Indigenous peoples in isolation and initial contact. Of the 55 Indigenous peoples in the country, 51 are from the Amazon (Ministry of Culture, 2024a; INEI, 2018). Likewise, territorial rights have been recognised for these peoples in the Amazon, and as of December 2022, there are 1.585 titled native communities (Ministry of Agriculture and Agrarian Development -MIDAGRI-, 2023) and 8 territorial and Indigenous reserves to protect Indigenous peoples in isolation and initial contact, which represents 3,6% of the national territory (Ministry of Culture, 2024b). In 2022, in the Madre de Dios department alone, approximately 1.088 illegal mining operations were identified, 45,8% of which occurred in native communities, 32,9% in bodies of water, 18% in buffer zones of protected natural areas and 0,03% outside the mining corridor (Figure 5), (Amazon Conservation/USAID PREVENT Project, 2022).

In **Venezuela**, the Guayana/Amazon region is covered by 41 "Areas under Special Administration Regime" (ABRAE) with different objectives. According to the Organic Law of Territorial Zoning, these areas are defined as spaces within the national territory that are subject to a special management regime. Of these, eight are national parks, 19 natural monuments, two biosphere reserves, three forest reserves,

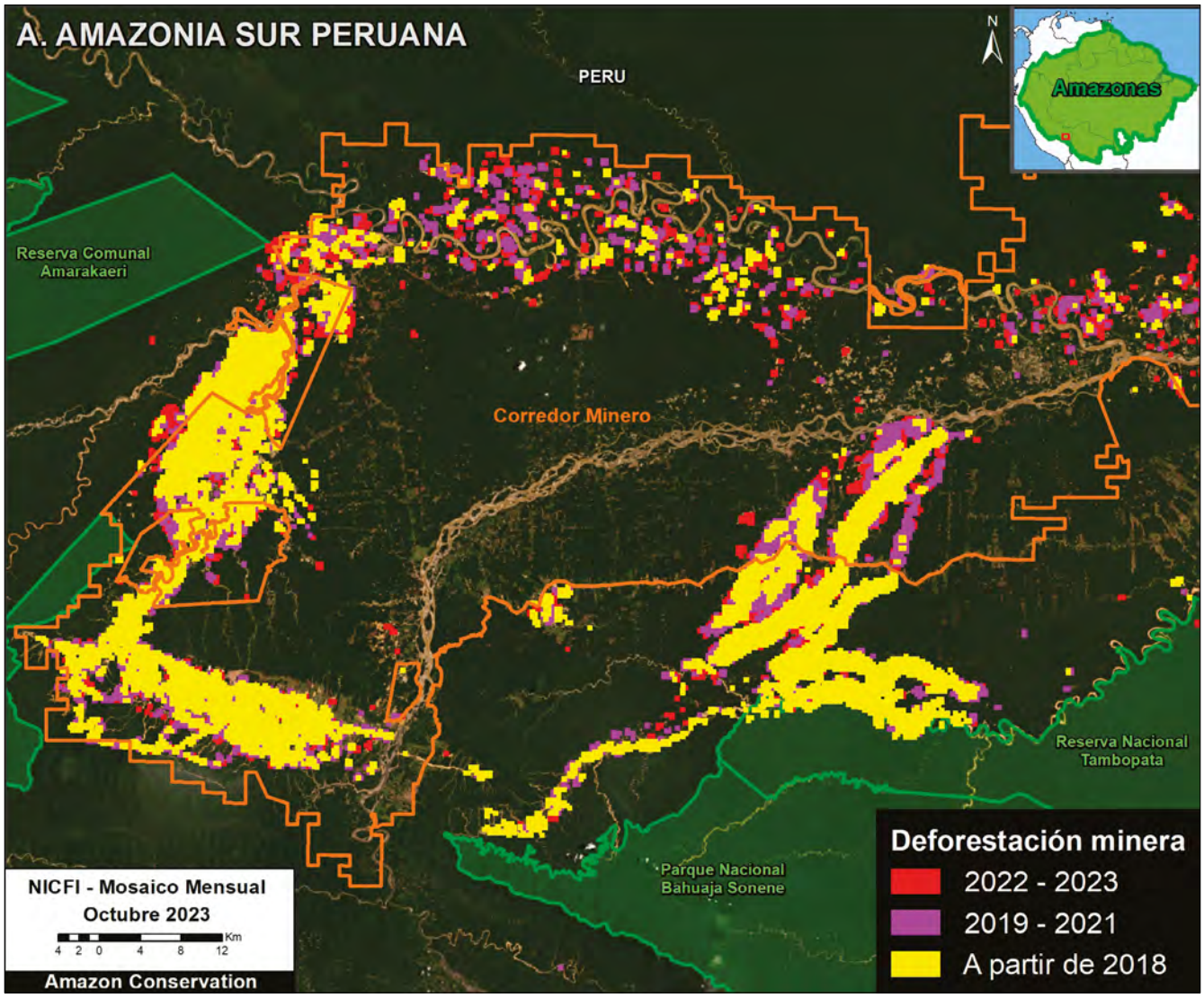

Figure 5. Mining expansion in the southern Peruvian Amazon. Source: MAAP, 2024.

five forested areas, one national water reserve, two protected areas and one wildlife reserve. Of these 41 areas, 30 are protected natural areas as defined by the Convention on Biological Diversity, and all but three of them are affected by illegal mining. However, mining is not permitted in any of them, Moreover, in every case mining is contrary to the objectives for which they were created and to the special laws by which they were created. Thus, most of Venezuelan Guayana should be a mining-free region. In addition, a specific ban on any type of mining activity has been in place for the state of Amazonas since 1989. In the case of Bolivar state, such mining activity would only be legally possible in those areas under an ordinary administration regime, which is circumscribed to a strip in the north of the state.

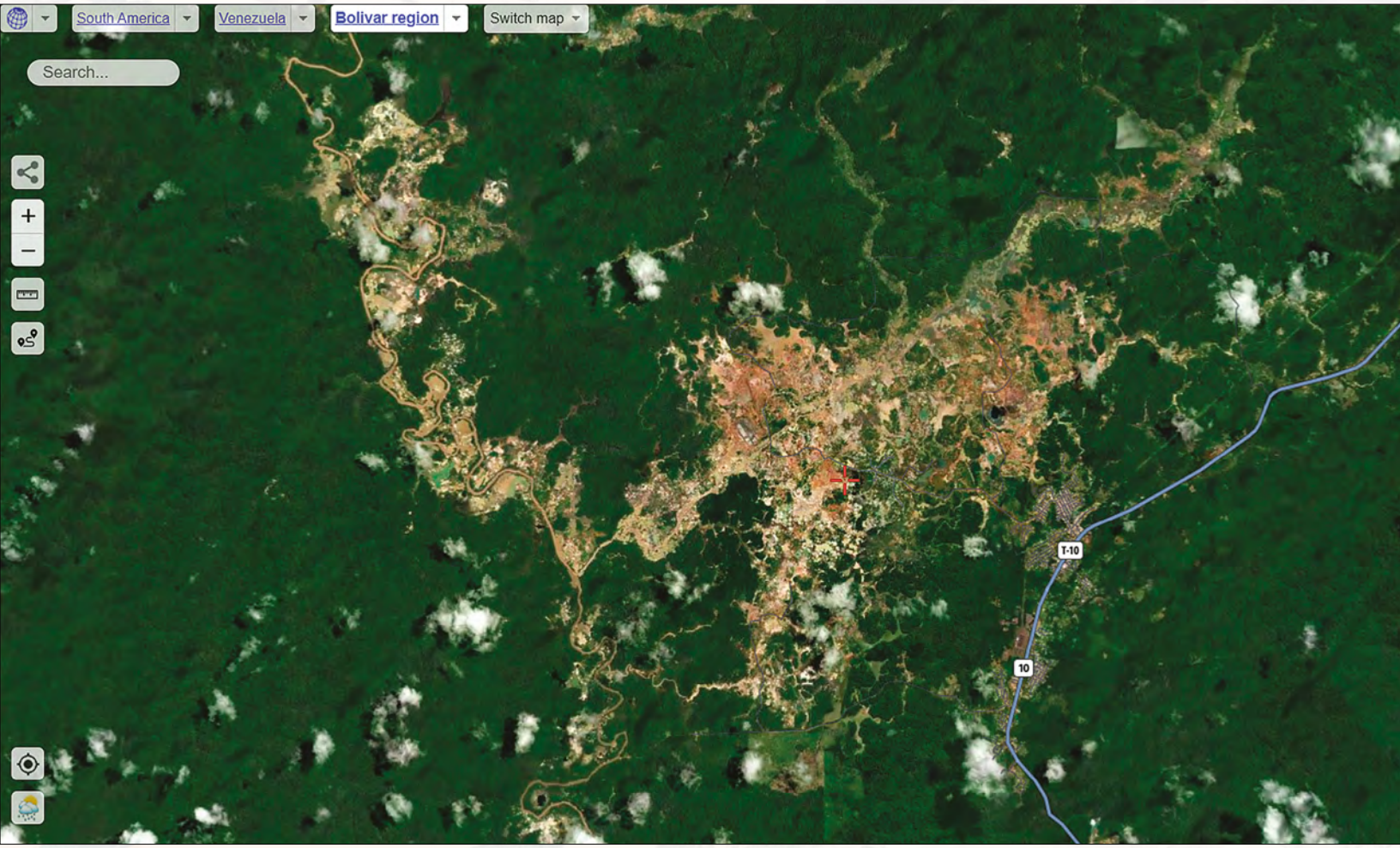

Figure 6. Mining in the Imataca Forest Reserve, Venezuela. Source: https://satellites.pro/

The region most heavily impacted by mining is the Imataca Forest Reserve (Figure 6). The reserve was invaded by mining, which was legalised through a strained interpretation of the law and sparked a major controversy in 1997. This activity was unlawfully re-legalised in the 2004 zoning plan (SOSOrinoco, 2023c). This same principle of evading legal provisions is what has allowed the imposition of an extractivist model south of the Orinoco, rendering efforts to enforce the provisions of the law ineffective.

The extractivist policy was completed with the declaration of the National Strategic Development Zone, "Orinoco Mining Arc" (OMA), which designates and privileges the development of mining activities in 111.843,70 km^2, in the northern part of the state of Bolivar (Venezuela, 2016). This designation formalised a policy in which mining is considered not only the main, but the only desirable economic activity, negating all other activities that were carried out there and denying the potential for developing other sustainable activities. This provided a framework of apparent legality to all the illegal mining that had been taking place but was now protected by the government. This scheme comprises the fundamental element of mining policy, which incorporates small and medium-scale mining, which have low investment and low levels of technology, as cheap and disposable partners who make the majority of their mining production available to the government. Furthermore, this scheme, with all its socio-environmental impacts, not only affects the area delimited by the OMA, but also the whole of southern Venezuela.

In the Guayana/Amazon region of Venezuela there are 30 different Indigenous communities living in more than 1.500 communities. All of them have property rights to their lands, but official recognition of ownership has only been granted in the form of eight titles to 61 communities, covering an area of 1.206.060,91 hectares. The majority of Indigenous peoples in the south of the country live within protected areas and, despite not having their territory recognised, enjoy legal protection. In many cases, some of the goals of creating protected areas had to do with the preservation of Indigenous peoples' culture and habitat, which has allowed them to develop their traditions and cultural components, except those aspects that could potentially infringe on national sovereignty (SOSOrinoco, 2023d).

Socio-Environmental Impacts of Mining in the Amazon

Gold mining in the Amazon is primarily carried out on bodies of water and in alluvial areas near to or associated with bodies of water: in other words, through alluvial gold mining. Alluvial gold mining sediments end up running downstream filled with highly toxic substances such as mercury, creating high levels of suspended sediment. Gold mining can also occur in gold outcrops far from waterways, especially in the Guiana Shield, though this still requires the use of water as a vehicle for processing the raw material, which always ends up having an impact on natural drainage, as well as on the areas surrounding the mining site.

In alluvial mining, coarse waste material is sorted out using static or vibrating screens and trommels, and then gold-bearing material is concentrated using gutters (washers). This pre-concentrate is "harvested," usually on a weekly basis, to be "enriched" by panning. The fine gold content is amalgamated with mercury, either by hand or, in some cases, using amalgamating drums, agitators and even mixers similar to small concrete mixers. It is common to burn the amalgam in the open air, a practice categorised as "bad" by the Minamata Convention. In the case of vein mining, ore is extracted from rock in the mines and subsequently crushed in ball mills. In this type of gold mining, it is very common to pour mercury directly into the milling equipment to simultaneously grind and amalgamate in the same machine. This practice is listed in the Minamata Convention as one of the "worst practices."

Illegal and informal mining in the Mapiri River, Bolivia. Source: CEDIB.

Mercury: Ecosystem Destruction and Health Effects

The ecological impact of the type of mining described above is reflected in the water, soils, vegetation and overall biodiversity. It involves deforestation, landscape destruction, habitat fragmentation, disruption of biogeochemical cycles, alteration of river courses, modification of river flows, increased sedimentation, riverbank landslides and mudslides, as well as impacts on the reproductive cycle of fish, the availability of fish and increased hunting. In addition, there are impacts on human health and availability of drinking water and soil is rendered unusable for agriculture (Vargas, 2011: 230). Methylmercury (MeHg) is the most toxic form of mercury; it is easily assimilated by organisms and constitutes at least 90% of the total mercury in fish muscle, one of the main sources of human ingestion of methylmercury (Bloom, 1992 in Pouilly *et al.*, 2012: 9).

In general, this type of mining is carried out without a technical environmental mine closure, so pollutants persist at the site for generations, while mining moves on to new locations to repeat the cycle.

Mining activity in the Amazon replaces the forest-dominated landscape with one filled with tailing ponds, where residual mercury can be converted by microbial activity into methylmercury at net rates five to seven times higher than in rivers, according to the Centre for Amazonian Scientific Innovation (2021), which cites a study in **Ecuador** estimating a 670% increase in the presence of tailing ponds since 1985.

The mercury used to extract gold is mixed with mineral sediments and then sublimated. As part of the process, it enters ecosystem compartments, where it remains in both soil and water for a long time. It is incorporated into food chains, especially by fish and other organisms, in which it bioaccumulates as methylmercury, eventually consumed by humans. Methylmercury enters aquatic organisms and eventually reaches a maximum concentration at the top of the food chain (Benefice *et al.*, 2010). Recent studies demonstrate physiological and neurological effects in Amazonian fish (Tanan *et al.*, 2006; Mela *et al.*, 2007; Neto *et al.*, 2008).

While amalgamation of gold with mercury is not the only technology used in the gold extraction process, it is the most widely used. In **Bolivia**, the importation, commercialisation and use of mercury is legal; there is no specific regulation (Campanini Gonzales, 2020) beyond the registration of importers and sellers (DS 4959) which has shortcomings (Campanini Gonzales, 2023) (Figure 7). Although it is classified as a hazardous substance and therefore should be subject to certain regulations on its importation, transport, use and disposal, these mechanisms are not enforced (Campanini Gonzales, 2020). Bolivia has become the hub for mercury trade in the region: between 2016 and 2023 it has imported 1.251 tonnes of mercury. Mercury is legally imported to be illegally exported to neighbouring countries that have established import restrictions.

Several reports in Peru, Brazil and Bolivia have exposed the role of Peruvian people and companies in Bolivia, some of whom have complaints or investigations open against them in that country (Campanini Gonzales, 2023; Los Tiempos, 2023; Ramírez, 2024; Castro & Garro, 2022).

Figure 7. Mercury use in Bolivia.
Source: CEDIB.

Figure 8. Mining on the Mapiri River, Bolivia. Source: CIPCA Pando.

Between 1952 and 2000, it has been estimated more than 330 tonnes of mercury have been released into the environment in Bolivia, either directly into rivers or indirectly through open burning of mercury amalgam (Maurice-Boirgoin *et al.*, 2003). Since 2015, Bolivia has become the largest legal importer of mercury in the world, averaging 180 tonnes/year. Bolivia's National Inventory of Mercury Emission Sources (Campanini, 2020) reports that gold mining is responsible for 82,3% of national mercury emissions.

Total mercury concentration in sediments has been estimated to vary between 8 ng/L during the country's dry season to 1.600 ng/L during the rainy season. Half of the Beni River's numerous tributaries have had gold mining since the 1960s,

including the Kaka, Tipuani and Mapiri rivers (Paz *et al.*, s. f.) (Figure 8). It is estimated that 4.5 tonnes/year of clay-associated mercury is deposited in the alluvial plain along the Beni River as it leaves the Andes; up to 47% of that amount (2,1 tonnes) may re-enter the river through erosion (Miller & Villarroel, 2011: 423) (Figure 9). Bodies of water that originate in the Andes and feed the Amazon see their mercury concentrations increase from 126 $kg/km^{-2}j^{-1}$ in a river with no mining to between 590 and 2.900 $kg/km^{-2}j^{-1}$ in rivers with recent human activities (Maurice-Bourgoin *et al.*, 2003).

While in some cases there may be low mercury transfer from soil to plants, it is known that plants may contain >0,1 mg Hg/kg near gold mining operations, contributing to mercury bioaccumulation in

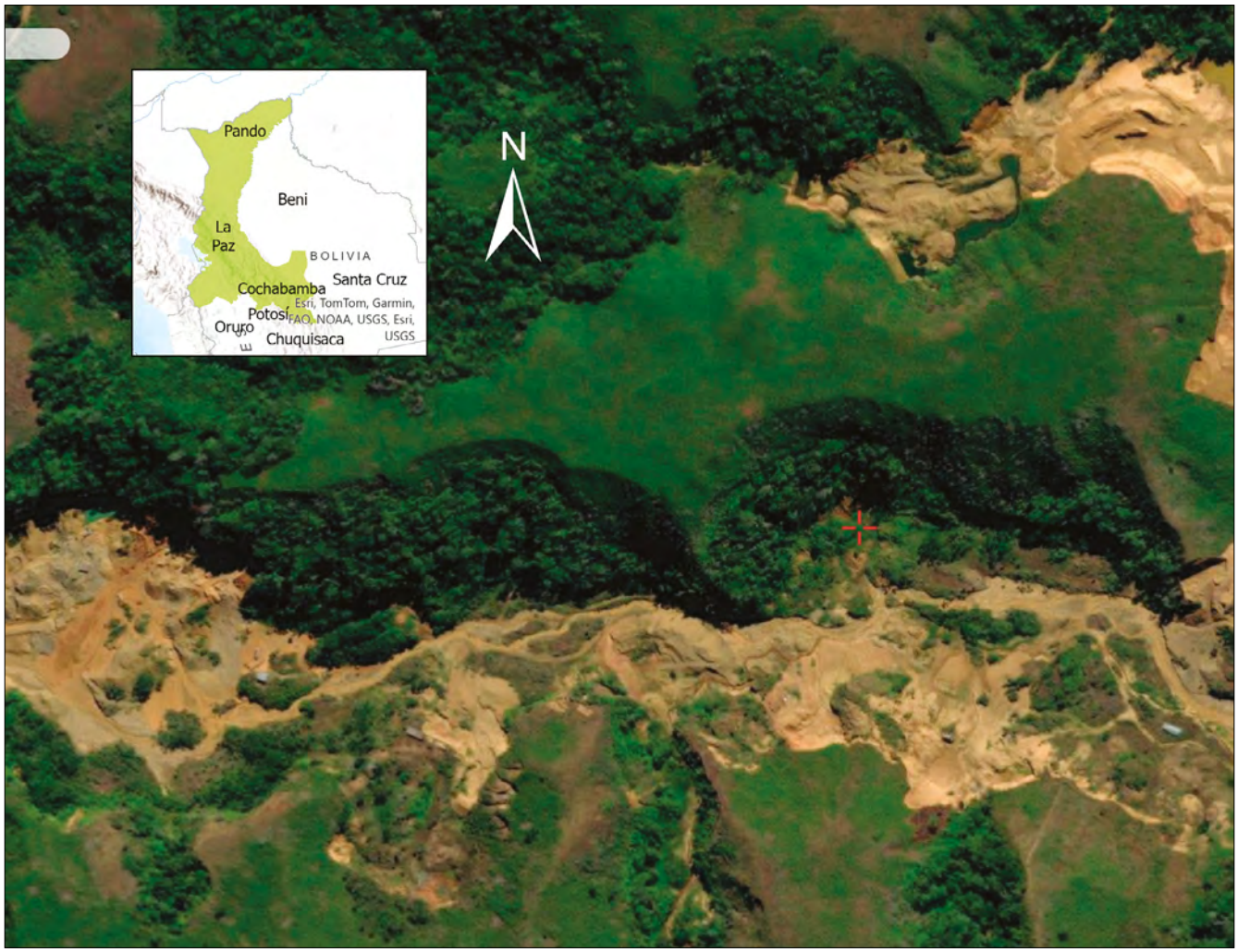

Figure 9. Mining footprint of open-pit activity near the Beni River, Bolivia. Source: Satellite Pro.

the food chain. For example, camelids are entirely dependent on high-mercury forage and their meat is an important source of protein for communities and miners in the upper watersheds in Bolivia. The mercury-related health risks may increase if miners ingest plant species for medicinal purposes (ex. *Alchemilla pinnata*). High mercury content in plants of the *Poaceae* and *Rosaceae* families may increase mercury accumulation in the food chain because camelids can only thrive on these plants as food. The mercury content in all plant samples exceeded the 0,1 mg/kg limit set by the European Union for plants used for animal feed (Directive 2002/32/EC, 2002; Terán-Mita *et al.*, 2013). Recent studies in a Bolivian watershed show very high levels of mercury in the muscles of five out of eight species of fish native to the area, which are consumed at high levels by the local population (Wilmer Peñates-Hernández *et al.*, 2023).

The United Nations Environment Programme (UNEP) attributes 37,1% of total mercury emissions in the global atmosphere to this type of mining (2014: 27). The release of mercury in gas

Figure 10. Tucunare (*Cichla monoculus*) captured during field sampling in Brazil. Source: The Institute for Indigenous Research and Training (Iepé) in Mongabay, 2020.

form is the fastest way to distribute the metal to the surrounding environment, as it is transported by wind, evapotranspiration and relative humidity. The UNEP also attributes 36,26% of mercury released into aquatic systems in the region to this type of mining (Santana *et al.*, 2014: 34).

In **Bolivia** the average level of mercury detected by Benefice *et al.*, (2010) in 173 women was 4,4 µg/g (median); 14,7% of the women showed mercury level above 10 µg/g. Most of the women affected were young, frequent fish eaters and part of the Indigenous Esse Ejja people. A non-fishing lifestyle had a protective effect. A study by Bell *et al.*, (2021) revealed significantly elevated mercury levels in hair samples from Indigenous Esse Ejja women of reproductive age, with levels higher than previously identified by the International Pollutant Elimination Network (IPEN), with a mean of 7,58 ppm ± 4,75 ppm, significantly exceeding critical limits (1 ppm according to the US Environmental Protection Agency).

In 2023, the Documentation and Information Centre Bolivia (CEDIB), the National Coordinator for the Defence of Native Indigenous Territories and Protected Areas (CONTIOCAP) and the PhD unit in Environmental Toxicology of the University of Cartagena published results from samples taken between 2021 and 2022 in the Beni, Madre de Dios and Mamoré river basins in the Bolivian Amazon. A total of 865 human hair samples were collected in different watersheds of the Beni (n=435), Madre de Dios (n=377) and Mamoré (n=53) rivers. The results show average mercury levels between 10 and 20 ppm, and in some cases, even higher than 20 ppm, reaching up to 30 ppm.

According to a study in **Brazil,** 81% of carnivorous fish had detectable levels of mercury above the WHO standard for fish (of 0,5 µg/g) (WWF, 2019: 77) (Figure 10). There is evidence showing mercury toxicity relationships with predatory aquatic mammals in warmer waters, such as pink dolphin and manatee populations. Pink dolphin densities are higher in locations with lower rates of degradation, especially with respect to water quality. Twenty-six percent of samples analysed from four river dolphin species in the Amazon and

Orinoco river basins have mercury levels above WHO standards (WWF, 2019: 77). Because of their long lifespan and potential to accumulate methylmercury, pink dolphins serve as bio-indicators of the state of freshwater degradation.

An alert in the Brazilian Amazon, highlighted by Larissa Schneider of the Australian National University, emphasises the urgency of protecting 16 turtle species that are endangered by mercury contamination. Schneider identified behavioural and endocrine disrupting effects associated with mercury, which could be fatal at high concentrations (Salisbury, 2016).

In Brazil, the Yanomami and Ye'kwana Indigenous Health Special District found that water consumed in 13 communities in 2021 was unfit for human consumption, according to applicable Brazilian standards, with high levels of faecal coliforms and *Escherichia coli*. More recently, a Federal Police survey conducted with residents of the Yanomami Indigenous Territory showed that water samples from the Uraricoera, Parima, Catrimani and Mucajaí rivers have mercury levels approximately 8.600% higher than those established by internal legal standards. Finally, another survey by the Oswaldo Cruz Foundation (Fiocruz) indicated that "fish collected in 3 of 4 points in the Rio Branco watershed - the main river in the state of Roraima - showed mercury concentrations greater than or equal to the limit established by the Food and Agriculture Organisation of the United Nations (FAO) and the World Health Organisation (WHO)." All this was the case despite the fact that the Brazilian state has been a member of the Minamata Convention since 2013.

Studies by the Fiocruz Foundation have demonstrated how members of Indigenous peoples are affected by mercury, with irreversible consequences for women's reproductive health and for the full development of their children, who are exposed to birth defects, cerebral palsy and other effects. A 2014 study carried out in the Yanomami Indigenous Territory (YIT) indicated that 92% of the members of the Aracaçá community, located in the Waikás region – an area heavily impacted by the "*garimpeira*" presence – had high rates of mercury poisoning. Unfortunately, the Brazilian state has so far failed to develop a strategy to monitor mercury contamination in Yanomami land.

In **Colombia**, this type of mining has been observed in several of the main rivers in the subregion, such as Amazonas, Putumayo, Cotuhé, Caquetá, Inírida, Yarí, Puré and Atabapo (Figure 11) (MinMinas, 2022). The aforementioned study by the Ministry of Mines and Energy (MinMinas, 2022) determined that the protected area (or area excluded from mining) most affected by alluvial mining on Amazonian land was the Puinawai National Reserve in Guainía. This protected area contains shields and plateaus that are part of one of the oldest geological structures on the planet, the Guiana Shield (Guarnizo and Tarazona, 2023). Large quantities of coltan and gold are illegally extracted from its soils and rivers without any state control.

Colombia is the country with the third highest level of mercury contamination, releasing between 50 and 100 tonnes of mercury annually as part of gold mining (MADS, 2023). Among Indigenous people in the Yaigojé Apaporis territory, mercury concentrations of 2,.98 µg/g (22,98 ppm) were found, which is extremely high compared to international standards for the protection of human health (with limits equivalent to 1 µg/g, i.e. one part per million) (ACIMA *et al.*, 2019).

In **Ecuador**, mercury is traded illegally in 100 gram plastic bags, 500 gram bottles or 34,5

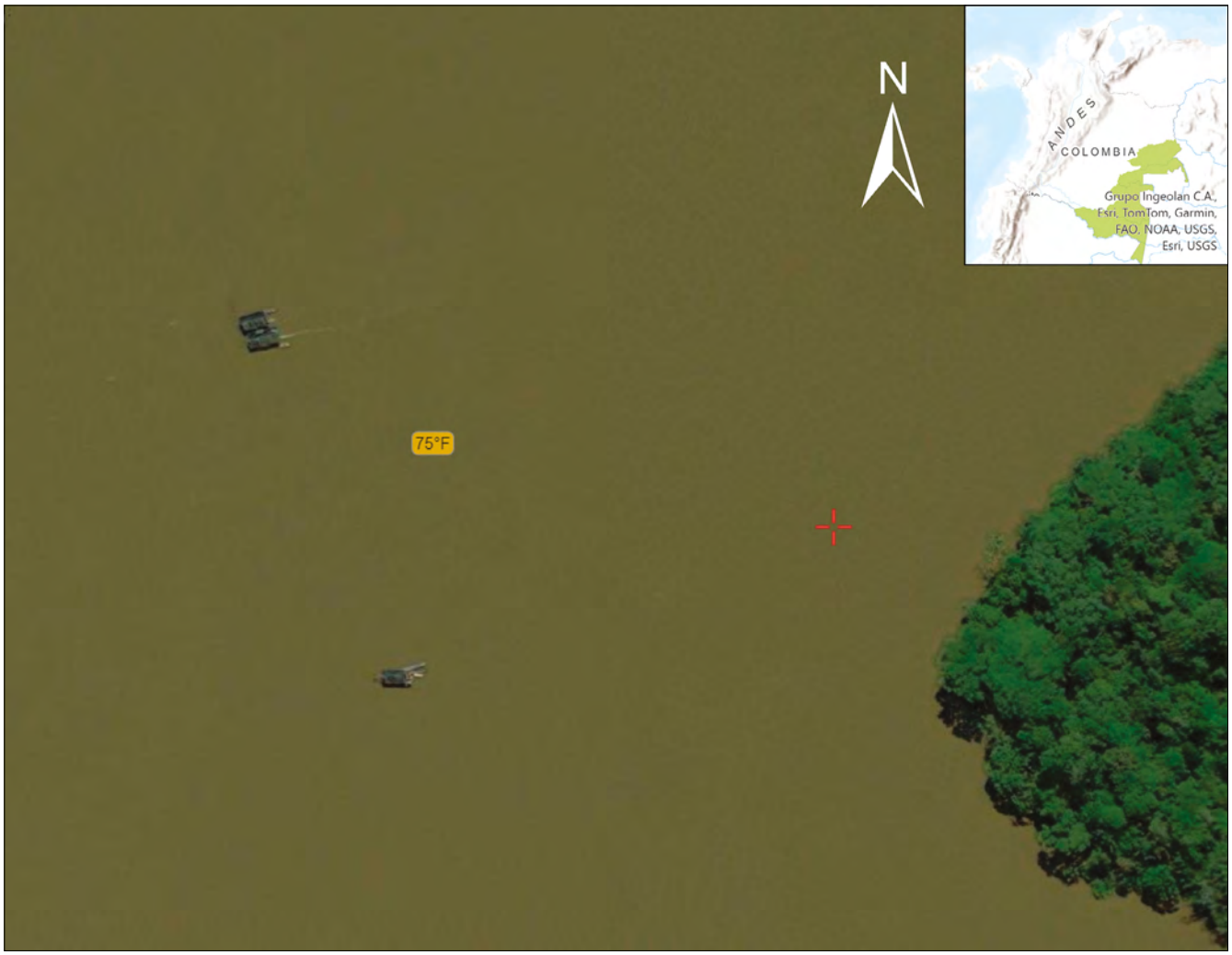

Figure 11. Mining in the Caquetá River, Colombia.
Source: Satellite Pro.

kg jars. The market price in 2018 ranged from USD 100-120 per kilogram. It is currently traded at USD 286-330 per pound. Most of the mercury enters the country illegally through the Amazonian border with Peru and Colombia.[9]

It is estimated that about 60% of the mercury released by mining operations is dispersed in the air (MAE 2011: 44). According to the World Wildlife Fund (WWF), at least 18 tonnes of mercury released from gold mining are reported in Ecuador's national emissions inventory (2019: 71). In fish, methylmercury may play a role in reducing fertility or causing slower growth. Depending on exposure levels, it could alter fish's endocrine system, leading to a negative impact on their

[9] Mercury is not the only contraband material smuggled in for artisanal and small-scale mining activities. The Zamora Chamber of Small-Scale Mining has reported that explosives are smuggled illegally across the border with Peru, a border where there is almost no military control (Interview with Ausberto Zúñiga, personal communication, April 14, 2020).

development and reproduction (IPEN, 2010: 20). A source cited in MAAE *et al.*, (2020) has reported quantities of up to 6,62 tonnes of mercury released into the environment (water, soil, air) per year in the Upper Nangaritza.

A study by Echevarría *et al.*, (2024) in the basins of the Napo, Pastaza, Aguarico, Cuyabeno and Bobonaza rivers recorded high concentrations of aluminium, arsenic, cadmium, chromium, copper, iron, mercury and lead. The results showed that 53 specimens of 15 fish species had concentrations of heavy metals that exceeded the standards recommended by the World Health Organisation (WHO). Perhaps even more worrying is the presence of mercury in the waters. Their research revealed worrying trends, such as the biomagnification of mercury within fish populations in the Pastaza basin. Fish such as the dourada (*Brachyplatystoma rousseauxxi*), the South American silver croaker (*Plagioscion squamosissimus*) and the gilded catfish (*Zungaro zungaro*) showed elevated levels of mercury in their tissues. The research explains that floodplain lakes have become sites of heavy metal accumulation and toxicity because they provide favourable conditions for anaerobic bacteria and have a higher concentration of naturally leached metals. This data is similar to that of other studies assessing bioaccumulation in turtle and caiman species within the Amazon biome.

In the **Ecuadorian** Amazon, a noteworthy study by the Arcoíris Foundation (2008) consisted of a specialised medical evaluation of 50 people from the Shuar ethnic group, between the ages of 21 and 50, who work in artisanal mining. They took samples to determine lead levels in their blood and mercury in their urine. Analyses concluded that 48% of the population sampled showed cognitive impairments (IQ, memory, attention, abstraction). It was also found that 30% had impaired motor functions and cognitive-motor disorders, and 40% were affected in their emotional-affective function (MAE, 2011). Another study looked at 350 artisanal miners in Portovelo who were exposed to mercury contamination and found that 62% had medium to high levels of respiratory disorders. Fifty per cent showed some degree of psychological and nervous system impairment due to exposure to chemicals like mercury (López-Bravo *et al.*, 2016: 96-98). Trasande *et al.*, (2016) report women of reproductive age with mercury levels up to six times higher than those recommended by the WHO (cited in IPEN, 2017: 3). Parkinson's disease, a disorder affecting the nervous system and associated with mercury use, is a new disease for the Shuar and has become increasingly common among the Indigenous population (Sorgato, 2022).

There are also serious irreversible neurological impacts on foetuses. Mercury's ability to move within the mother's body exposes the foetus. Cognitive thinking, memory, attention, language, fine motor skills and especially visual skills can be affected (WHO, 2017). Poulin and Gibbs (2008: 26) estimate the incidence rate of mild intellectual disability to be 17,37 per 1.000 infants born in a subsistence fishing population in the Amazon.

There are children known to be directly involved in gold mining activities (Soliz Torres *et al.*, 2012) and who develop nervous system and digestive system problems, as well as kidney damage, associated with mercury (IPEN, 2017). The presence of children in artisanal mining activities is decreasing, although it has not been eradicated, despite the fact that the Ecuadorian Constitution prohibits "work by children under the age of 15. Policies to eradicate child labour will be implemented over time" (2008 Constitution, Article 82).

Figure 12. Madre Dios.
Source: Diego Pérez SPDA.

In line with the discussion at the beginning of this chapter, the Foundation for Conservation and Sustainable Development (2023) states that in **Peru**, illegal mining often takes the form of alluvial mining in bodies of water (Figure 12). As a result, watersheds "are converted into gold washing sites, amalgamation residues are dumped into rivers, the mercury in its liquid state is deposited in bodies of water, transforming into methylmercury" (INDAGA, 2021: 67). Thus, approximately 3.000 tonnes of mercury have been dumped in the last 20 years (INDAGA, 2021: 68). Mercury contamination of rivers, fish and people particularly affects local and native communities, due to their type of diet (Figure 13). Illegal alluvial mining alters riverbeds and increases erosion and sedimentation, damaging water quality for the communities that directly and indirectly use these sources (Fernández *et al.*, 2022). On the other hand, according to a study by the Centre for Amazonian Scientific Innovation (Vega *et al.*, 2018), fish have elevated mercury levels in areas where mining operations are present (Madre de Dios). Specifically, they found that fish in tailings ponds exceed the permissible limits of mercury by 37%, and in other areas, like the Manú National Park, by 14%.

Figure 13. Medio Putumayo-Algodón, Loreto. Source: Diego Pérez, SPDA.

A recent study concluded that Madre de Dios is home to some of the most mercury-contaminated wild bird species in all of South America, with birds that eat fish having the highest mercury concentrations (Pisconte *et al.*, 2024). According to the study, the most contaminated species are the green kingfisher (*Chloroceryle americana*), the green-and-rufous kingfisher (*Chloroceryle inda*) and the Amazon kingfisher (*Chloroceryle amazona*). Likewise, illegal mining has been shown to have an impact on fish and giant otters (river otters). For the latter species, it is noted that "with reduced availability of fish, river otters need to work harder to find food, which could therefore affect these populations" reproduction." (Sierra, 2021).

In 2018, several cases of mercury poisoning were reported among Indigenous Nahua people in the **Peruvian** Amazon (Hill, 2018). A study conducted by the Royal Society of Chemistry on the Madre de Dios River in Peru reveals that mercury contamination has moved downstream and may be harming communities located 560 kilometres away from mining areas, in part due to the consumption of mercury-contaminated fish (Diringer *et al.*, 2015).

In **Venezuela**, mercury and cyanide are the main and most dangerous toxic substances associated with mining (Figure 14). However, the former is directly used in illegal mining, while the latter is used by industries run by the government

Figure 14. Former tailings pond with gasoline, oil and mercury residues. Campo Alegre Community, Source: SOSOrinoco.

sector (usually in partnership with private actors) to process gold sands, mostly from mill tailings, from which part of the gold has already been extracted with mercury.

It is worth noting that all the mercury used in Venezuela comes from outside its borders, as the country does not produce mercury. Records show that from 2000 to 2019 Venezuela acquired around 23 tonnes of the metal, mainly from Mexico, Spain, Germany, Italy, Argentina, Colombia, the United States, the Netherlands and the Dutch Antilles (Chatham House, 2021). Colombia also reports having exported more than 76 tonnes to Venezuela in the period from 2013-2017 (Colombia-MINCIT, 2018), which shows how difficult it is to estimate the actual amount of mercury legally entering the country.

The paradox is that the use of mercury has been legally banned in mining activities since 1991 (Venezuela, 1991) and was banned again in 2016 (Venezuela, 2016b). It is possible that some of the mercury "legally" imported by Venezuela is put to use in mining activities, but a large quantity must surely enter through smuggling (SOSOrinoco, 2021b). Estimates based on the quantities of mercury used by artisanal and small-scale mining in the country indicate that an average of 15 tonnes per year (between 7,5 and 22,5 tonnes) are being used (UN Environment, 2017).

Mercury contamination in Venezuelan Guayana has been a recognised public health problem for more than 25 years (ARA Network, 2013). The growth of mining and the intensive use of mercury in

recent years have aggravated one of the country's most invisible public health problems (SOSOrinoco, 2021c). A 2005 assessment in El Callao, Bolivar state, found that the level of mercury poisoning in gold miners and millers, as well as in the surrounding communities, is one of the worst in the world. The total concentration of mercury in urine was 104,59 µg Hg/g creatinine, reaching levels in some cases ranging between 1.221 and 3.260 µg Hg/g creatinine. More than 90% of the millers had urinary mercury levels above the alert level, with signs of severe intoxication and neurological damage observed in a large majority of those directly involved in the smelting process, as well as in people living near the mills (Veiga *et al.*, 2005). At the time of the study there were 28 mills in the region. Just six years later, this number had increased to 150 (Zerpa, 2011).

Zerpa (*op. cit.*) notes the high incidence of health problems caused by mercury poisoning among the inhabitants of El Callao, where chronic allergies, lung damage, renal, respiratory and cardiac failure, problematic pregnancies, children with Down Syndrome, autism and other forms of cognitive impairment, as well as children with motor disabilities, deafness and other physical disabilities are common.

In Caura National Park, hair samples from girls and women from five Indigenous Ye'kwana and Sanema communities showed mercury values between 5,82 µg/g and 45,41 µg/g in hair samples. These high values (the maximum concentration allowed according to the WHO is 2 µg/g) are associated with those found for methylmercury in fish, which reached up to 1,8 µg/g, well above the safe limit for occasional fish consumers (0,5 µg/g) according to the WHO. (Perez *et al.*, 2012).

Risk to local populations from fish consumption has been reported for the Ventuari-Orinoco and Orinoco-Apure confluences, where 13 out of 18 species analysed showed elevated mercury concentration values (Lasso *et al.*, 2010). A similar risk was found in the Cuyuní river watershed, where mercury levels in sediment, water and aquatic biota were found to be hazardous (Farina *et al.*, 2009).

In Gran Sabana, Bolivar state, hair samples from 49 Indigenous Pemón people recorded mercury concentrations exceeding the WHO limit of 2 µg/gr in hair. Most of the study participants worked in both mining and agriculture. The research highlights that the group of children under 18 "showed mercury concentrations above the WHO limits of biological tolerance" (Ramirez, 2021).

There is also evidence that mercury can accumulate in some edible plant species essential to the diet of local populations in Venezuelan Guayana, such as cassava and chilli peppers (Adjorlolo-Gasokpohn *et al.*, 2012; Pérez-Vargas *et al.*, 2014), increasing the risks of mercury poisoning over the long term.

While there has been no systematic measurement of this type of contamination – and in fact, such measurement is blocked by the government – the evidence suggests that all the watersheds where gold mining occurs are affected by mercury: namely, Ocamo, Padamo, Siapa, Ventuari, Atabapo, Autana, Cuao, Sipapo, Guayapo, Caura, Paragua, Caroní, Uey, Venamo, Yuruan and Yuruari (Farina *et al.*, 2009; Estraño, 2015; SOSOrinoco, 2019, 2021b).

Deforestation

Illegal mining in the Amazon region affects all countries, causes deforestation, pollution and loss of biodiversity and violates human rights. Recently, the Amazon Mining Watch platform, which brings together the efforts of researchers and journalists, determined that at least 13.100 km^2 in the region have been transformed to carry out mining and that this phenomenon of expansion has accelerated since 2018.[10] As this report has shown, the location of mining sites does not respect boundaries, but rather occurs within protected areas, invades Indigenous territories and undermines riverbeds through the use of dredges. Below are two figures (15 and 16) that show the main mining sites in the region and the protected areas affected by mining activity.

MapBiomas & RAISG (2023) have documented a net forest loss of 2.618.000 hectares for the **Colombian** Amazon between 1985 and 2022, corresponding to 5,9% of natural vegetation. In the same period, anthropogenic land uses such as mining increased by 2.938,6% while forestry areas rose by 1.900 hectares.

Illegal mining is one of the main causes of deforestation in **Brazil**'s Amazon region, with a particularly damaging impact on Indigenous territories. In Brazil, mining on Indigenous lands increased by 495% between 2010 and 2020; illegal mining on Indigenous lands increased from 7,45 km² in 1985 to 102,16 km², an increase of 1.217%. Almost all of this illegal activity (95%) is located in three Indigenous territories: Kayapó, Munduruku and Yanomami (Figure 17).

From 1985 to 2017, a total of 95.750 hectares were deforested in the department of Madre de Dios, **Peru**, due to mining activities alone. Just between 2009 and 2019, 64.586 hectares were deforested, an area that the Foundation for Conservation and Sustainable Development (2023) identified as equivalent to 90.456 football fields.

Since October 2023, there has been a loss of riparian forests, floodplains and beaches in the Nanay river basin in the Loreto region. In the Marañón river basin, deforestation has a peculiarity: 206 hectares have been deforested, of which 164,5 hectares belong to defunct mining concessions and 41,9 hectares to illegal mining sites (Novoa, 2024, slides 13, 31).

The department of Huánuco has also been affected by deforestation due to illegal mining. Between 2020 and 2023, 558 hectares have been deforested, of which 78,3 hectares belong to defunct mining concessions or other undesignated areas, which have been linked to illegal mining (Novoa, 2024, slides 16, 31).

Mining in Venezuela is one of the main causes of vegetation loss south of the Orinoco (Figure 18). SOSOrinoco (2021d) reports that between 2000 and 2020, there was a 520.900 hectare reduction in forest area in the Orinoco Mining Arc, equivalent to 677.000 football fields. More than 44% of this area (230.121 hectares) was lost over the last five years of that period. This assessment is supported by Finer and Mamani (2022) who describe

[10] See: https://pulitzercenter.org/blog/amazon-mining-watch-expands-use-ai-monitor-illegal-gold-mining

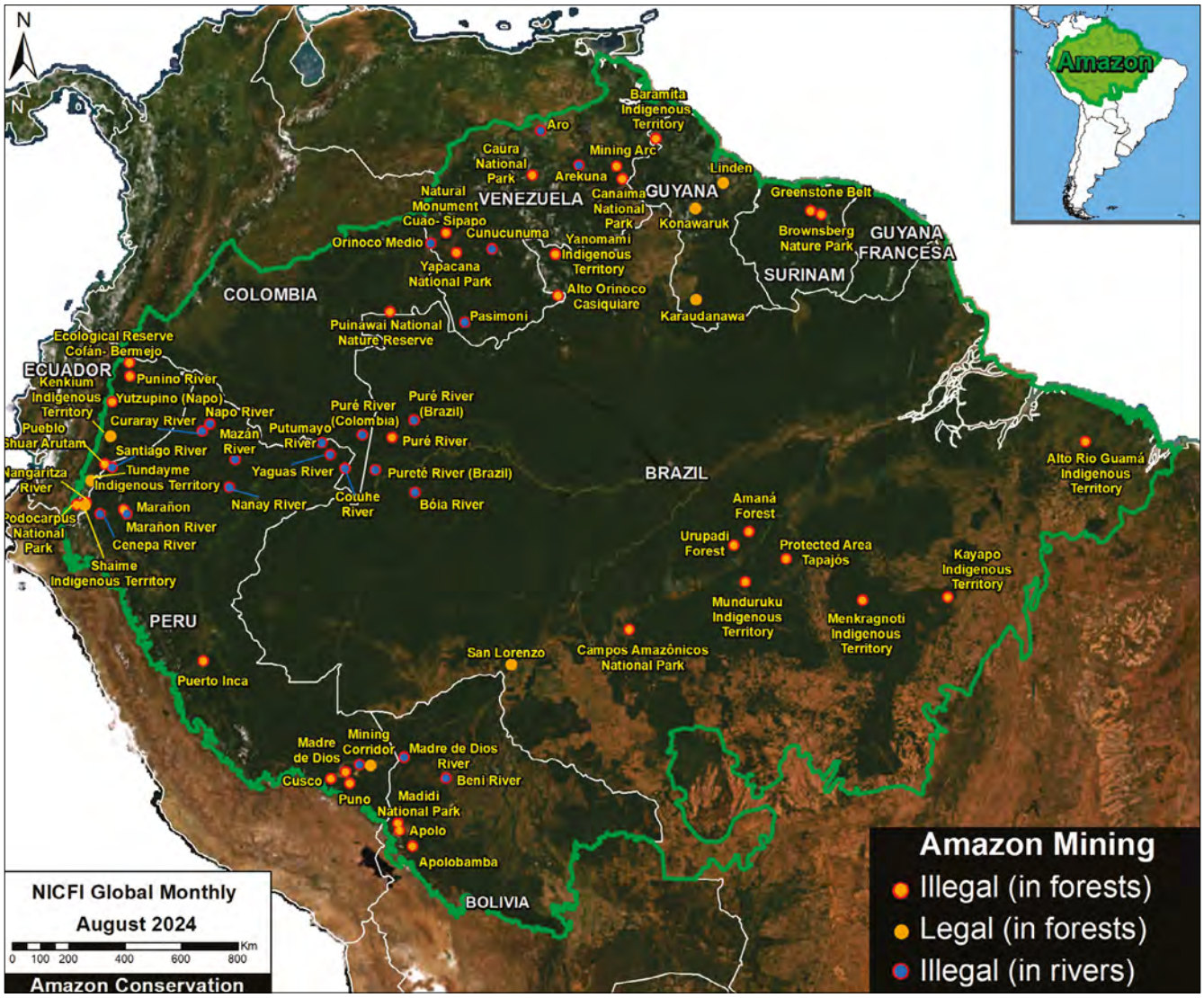

Figure 15. Legal and illegal mining hotspots in the Amazon. Source: MAAP, 2024.

accelerating deforestation as dramatic. According to SOSOrinoco (2021d), this deforestation is directly related to the expansion of illegal mining activity, which tripled its impact on vegetation between 2015 and 2020. SOSOrinoco's quantified these impacts by calculating the "mining footprint," showing that in April 2024 the surface area affected by open-pit mining reached 65.985 hectares in the states of Amazonas and Bolivar (SOSOrinoco, 2024b).

In Venezuela, mining causes the fragmentation and even loss of entire habitats, as in the case of moriche palms (the *Mauritia flexuosa* palm communities) in Canaima National Park (SOSOrinoco, 2023). Other effects include the displacement of

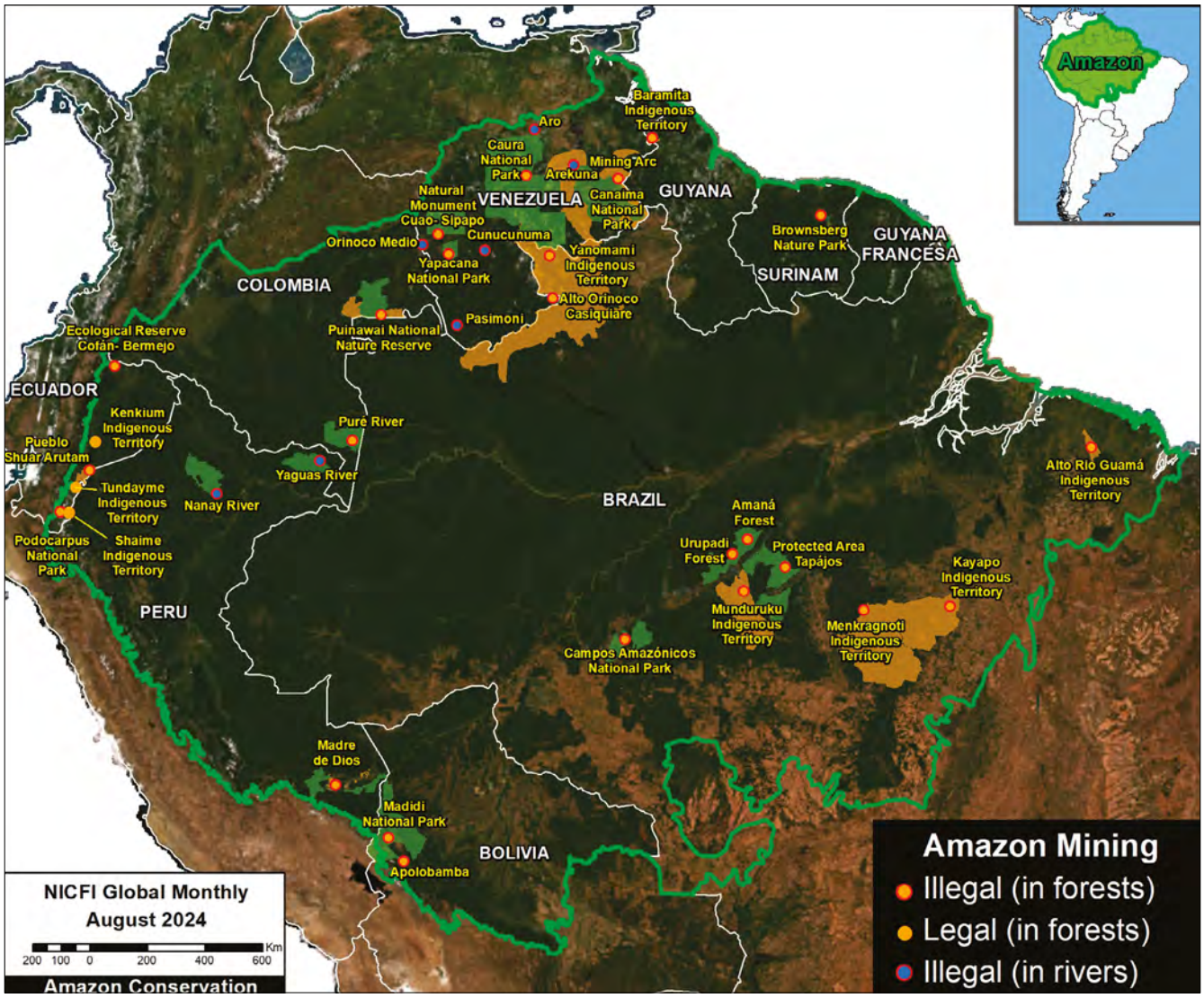

Figure 16. Illegal mining in protected areas of the Amazon. Source: MAAP, 2024.

fauna, which has been shown by an increase in the distance and time spent by Indigenous people hunting in areas close to the mines (Lugo-Morin, 2007; SOSOrinoco, 2021). An interesting example was reported in the Cuyuní River. It was observed that hydrological changes and changes to the substrate type, caused by mining, led to the replacement of an aquatic insect species. So not only was a change in species composition reported, but also a loss of diversity, largely as a result of disturbances caused by mining (Lasso *et al.*, 2009b).

Figure 17. Deforestation in Yanomami Territory, Mucajaí River.
Source: Chico Batata / Greenpeace in Mongabay, 2020.

Figure 18. Mining on the banks of the Caroni, Venezuela.
Source: SOSOrinoco.

Effects on the Social Fabric and Health Crises

Environmental destruction directly affects the way of life of the Yanomami in **Brazil**, who depend on natural resources for their subsistence and cultural practices. The loss of traditional territories and the pollution of rivers have had devastating consequences for Indigenous people's food and ritual practices (Martins, 2022). According to the Federal Public Prosecutor's Office of Roraima, mortality, malaria and malnutrition rates have worsened since 2020, with a disproportionate impact on Indigenous children. The National Prosecutor's Office reports that almost 6.000 Yanomami and Ye'kwana were denied healthcare for more than a year. On January 20, 2023, the Brazilian Ministry of Health declared a Public Health Emergency of National Importance in the Yanomami Indigenous Territory (YIT) - a mechanism that has only been triggered two other times by the Zika virus epidemic and the COVID-19 pandemic. This health emergency is undoubtedly correlated with the socio-environmental impacts of illegal mining, based on the number of health facilities established - six health units, responsible for 72 communities and more than 4.000 Indigenous people - in the regions most affected by the "*garimpo*."

In the Yanomami Indigenous Territory of Brazil, illegal mining continues in Kayanau, Paapiu, Alto Mucajaí, Apiaú, Palimiú, Homoxi, Xitei, Parafuri, Alto Catrimani and Waikás. The main factor impeding the work of health teams is a lack of security. In 2023, 215 deaths were recorded, according to the Yanomami Land Emergency Operations Centre. Illegal mining on Yanomami lands not only compromises the environment, but also seriously violates the human rights of Indigenous peoples.

The presence of miners creates violent conflicts, exposes communities to disease and causes living conditions to deteriorate. The Yanomami face physical threats, loss of territory and an increased incidence of infectious diseases due to the invasion of their lands (Pastoral Land Commission, 2023). Finally, mining's expansion into Indigenous territories in the Brazilian Amazon is directly linked to increased violence by "*garimpeiros*." As it grows and expands into new areas, mining uses heavily armed groups associated with criminal gangs to secure territorial control. This prevents the rightful owners of the land from being able to move freely within their territory. Illegal mining has been devastating for the Yanomami, Ye'kwana and Munduruku Indigenous peoples, leading the IACHR to issue precautionary measures and the Inter-American Court of Human Rights to subsequently grant provisional measures in July 2022, which were then upheld by a December 2023 ruling.

Mining is a major driver of social disintegration, by introducing alcohol, drugs and firearms into Indigenous communities, for example. Indigenous organisations report on how, in different areas of their territories, illegal miners use an engagement strategy focused on youth recruitment, based on promises of goods, weapons and alcohol. Without understanding the real consequences of this "alliance," the Indigenous people recruited by the invaders then go on to defend the invaders" interests, in opposition to their own community leaders, who are responsible for collective counselling and efforts to maintain social cohesion. These disagreements often lead to conflict and to episodes of individual or generalised violence. Once an armed

Figure 19. Community agents from the Amazonas department participating in a practical microscopy exercise at the second intercultural health meeting in Leticia, Colombia. Source: Mongabay, 2023.

conflict develops between communities, the situation can last for several years, generating a vicious cycle that causes not only the loss of human lives, but also a situation of permanent insecurity, as seen in certain parts of the Yanomami and Munduruku territories in Brazil.

For years, Indigenous Amazonian peoples in **Colombia** have called for the implementation of their own healthcare models, with differentiated approaches, for example through the Indigenous System of Intercultural Health (SISPI) (Figure 19). Nonetheless, the national government has not shown sufficient political will to support these models with adequate regulations, meaning that Indigenous knowledge and healing systems continue to be systematically ignored or invisibilised. This becomes all the more serious in situations like the COVID-19 pandemic or when miners are present in the untouchable zone of the Río Puré National Park; it prevents effective health cordons from being established to safeguard the health of Indigenous peoples in isolation or initial contact. This national park was created in large part to protect the Indigenous Yuri and Passe Peoples in isolation (PNN, 2004). However, mining has been proven to occur in the park's untouchable zone, which is defined as "a zone in which the environment must be kept free from even the slightest human disturbance so that natural conditions are preserved in perpetuity" and which is intended for the protection of the Yuri and Passe Peoples.

Illegal mining negatively impacts Amazonian Indigenous Food Systems, resulting in violations of cultural rights and Indigenous peoples" very identity and survival. Fish play a fundamental role in Amazonian Indigenous Food Systems, which

include knowledge, techniques and strategies for managing the elements that make up their diets, which are based on reciprocity and balance with all natural beings.

Furthermore, it is important to highlight the spiritual significance of gold ore for Indigenous peoples in **Colombia**. As Guío (2016) points out, for Indigenous communities, gold is usually found in aquatic sites that have spiritual owners or guardians and is mainly used to cure illnesses. For this reason, the healing powers of traditional Indigenous medicine have been affected by gold mining, riverbed clearing and the dumping of substances.

The proliferation of mining and the collapse of health care services in **Venezuela** are the main causes of increased incidence of infectious diseases. The populations of the Venezuelan Guayana/Amazon region are at higher risk of contracting preventable diseases, due to low vaccination rates in their territories. Furthermore, mining accidents are extremely frequent and often fatal, while mercury use is indiscriminate and widespread. Incomplete and biased records and the lack of epidemiological information render this situation invisible in Venezuela (Coalition for the Rights of the Amazon, 2023).

The collapse of the public health system, the lack of access to medicines, medical supplies and sufficient qualified personnel, increasing levels of poverty and malnutrition and the humanitarian emergency have further aggravated the deprivation faced by the inhabitants of Venezuela's Guayana region. The few health services operating in the region are particularly hard to access in a context where mobility has been affected by fuel shortages (Amazon Rights Coalition, 2023).

The spike in malaria cases over the last 12 years is associated with an unprecedented increase in mining activity. Mines in the states of Bolivar and Amazonas are transmission hotspots and a centre of spread to other regions of the country and to neighbouring countries. Antimalarial drug shortages and a weakened vector control programme have contributed to the malaria epidemic's explosion since 2015. Venezuela reported more than 500.000 cases and 456 deaths in 2017, accounting for 53% of malaria cases across the continent (WHO, 2018). Although the number of annual cases recorded in 2022 was reduced to 154.284 and 126 deaths (WHO, 2023), Venezuela is still the country with the highest percentage of cases in the Americas, accounting for 28% of the total.

Although in 2016 the Americas were declared the first continent free of measles in 2016 (Pan American Health Organisation and World Health Organisation [PAHO/WHO], 2016), a new outbreak began in Venezuela in June 2017, namely in mining areas south of the Orinoco River, from where it spread to the rest of the country, and then to Colombia, Brazil, Ecuador, Peru, Chile and Argentina, as a result of the migration flow of Venezuelans carrying the virus (Marcano and Valverde, 2020). The abandonment of prevention programmes and low immunisation rates have led to the resurgence of this disease (Lima Martínez, 2020). Venezuela recorded a total of 7.054 confirmed cases and 84 deaths between 2017 and 2019 (PAHO/WHO, 2020b). Of the total number of deaths, 62 were Indians from the Venezuelan Guayana (74% of deaths).

Diphtheria had been eradicated in Venezuela since 1990, but it resurfaced in 2016 in the municipality of Sifontes (Bolivar). The disease is associated with the epicentre of the country's largest hotspot for illegal mining and mainly affects Indigenous communities (SVSP-RDEN, 2016). Limited availability of medicines and almost zero vaccination coverage were key factors in the disease's resurgence

(SVSP-RDEN, 2016b). The intense mobility of the mining population facilitated the spread of the outbreak to the rest of the country. A total of 1.790 cases and 294 deaths were confirmed between 2016 and 2020 (PAHO/WHO, 2020).

Living conditions in mining areas are marked by a lack of access to clean water, sanitation, electricity or health care, with people living in makeshift camps in unsanitary conditions. Severe damage to ecosystems and biodiversity and the adoption of mining as an economic activity, particularly in Indigenous communities, have impacted food production and availability, leading to problems with nutrition. Indigenous populations have high rates of malnutrition and deaths from malnutrition and face food insecurity associated with mining. While the income that families earn from mining allows them to buy food and drinks, changes in traditional diets are leading to the emergence of chronic diseases such as diabetes. The contamination of rivers and fish also has an impact on people's food and health. Illegal mining seriously affects fishing, which is not only an economic alternative, but also a way of life culturally integrated with river flows and changes that respond to a holistic system of socio-productive, spatial and natural interaction (Martens-Ramírez, 2013).

The insufficient number of educational institutions, the deterioration of infrastructure, the reduction of school hours, low salaries for teachers and the massive impoverishment of the population are some of the factors that contribute to the lack of access to education. Teachers abandon their classes to work in the gold mines in order to make ends meet, as do thousands of children and teenagers who, together with their families, have taken up mining to escape the economic crisis, leaving them completely excluded from the education system. Mining promotes child labour and exploitation, prostitution, sexual exploitation, trafficking of women, children and adolescents and an increase in femicides and gender-based violence (Coalition for the Rights of the Amazon, 2023).

Among the social impacts caused by illegal mining on internal aspects of the social fabric are cultural changes Indigenous peoples face. These changes are due to replicating the *criollo* miners" lifestyle, family separation, school dropouts, internal migration and displacement, increased rates of intra-family and intra-community violence (often linked to alcohol consumption, drug use and teenage depression), increased cases of sexual abuse of girls and teenagers in Indigenous communities, prostitution of girls, teenagers and women, increased situations of violence and struggles for territorial control, population control by security forces and armed groups, forced recruitment of children and teenagers to work in mines or as part of armed groups, human trafficking and smuggling for labour exploitation, sexual slavery, etc. (SOSOrinoco, 2022b). The fact that many people leave their communities has resulted in broken families and households supported by single women, older adults or even abandoned children and teenagers, which has weakened the processes of cultural transmission, including languages. Cases of disappearances or deaths due to mining accidents or mining-related violence also cause irreparable damage to families and communities (SOSOrinoco, 2022b).

Direct Victims

According to the UN Office on Drugs and Crime (UNODC) figures, Indigenous populations in **Brazil** experienced a more than 20% increase in homicidal violence between 2009 and 2019. Furthermore, Indigenous peoples have suffered an accelerated increase in the exploitation of their protected lands, especially by squatters, unauthorised loggers and *garimpeiros*. Mining on Indigenous lands expanded by 625% between 2011 and 2021, with a significant increase since 2019 (UNODC, 2023). By 2020-2022, the Alto Alegre municipality in the state of Roraima, one of the gateways to Yanomami Land, ranked 18th in terms of the average rate of intentional violent deaths, with 77,5 per 100.000 inhabitants. From 2018 to 2021, this municipality also recorded the highest number of Indigenous people murdered, with a total of 80 victims during that period. The homicide rate among Indigenous people in the municipality was 141,7 per 100.000 people in 2021 (Brazilian Forum on Public Security, 2024).

In October 2023, the Inter-American Court of Human Rights held an oversight hearing and on-site visit to the Yanomami Indigenous Territory in Brazil (I/A Court H.R., 2022, 2023). In its decision in December of the same year, the Inter-American Court of Human Rights explained that:

> *[…] the Yanomami, Ye'kwana and Munduruku Indigenous Peoples are subject to a significant increase in so-called illegal mining activity on Indigenous lands, among others, carried out by third parties not authorised to enter their territory, which is causing: (i) homicides of Indigenous adults and children, as well as deaths resulting from mining operations; (ii) acts of sexual violence against Indigenous women and girls; (iii) threats to Indigenous leaders, some of whom play a very important role within the community; (iv) non-voluntary displacement of some Indigenous communities under threat from the increasing presence of* garimpeiros *and the results of their activities; (v) the spread of diseases, especially as a result of COVID-19 infection, in a population with particular immunological vulnerability and (vi) the pollution of rivers that serve for Indigenous peoples" subsistence, especially with mercury - a product of gold mining - and deforestation, seriously impacting the health and food security of the proposed beneficiaries [...]....[...] The Tribunal notes with great concern reports that* garimpeiros *are reportedly demanding sexual acts from Indigenous women and girls in exchange for food, acts that are particularly egregious given the reported levels of child malnutrition among the Indigenous population, as well as reports of acts of sexual violence, some of which are alleged to have occurred "constantly" in the same area [...].*

As previously mentioned, studies in **Bolivia** have identified hair mercury levels in the main Amazonian basins that far exceed the 1 ppm limit. There is concern for Indigenous peoples in a highly vulnerable situation. The Bolivian Ombudsman's Office (2022) warns that segments of the Leco, Esse Ejja, Tsimane and Cavineño Indigenous peoples along the Beni and Madre de Dios rivers, "present negative demographic trends and risks in their population growth; that they

are in a highly vulnerable situation; and that they are potentially at risk of suffering mercury and/or methylmercury poisoning" (p. 116). highlighting the case of the Esse Ejja Indigenous people who "are at risk of physical and cultural extinction due to evidence of mercury contamination in their population" (p. 124).

Another instance of violence and serious human rights violations is the trafficking and smuggling of girls and adolescents for commercial sexual exploitation in gold mining areas, just as in the case of Venezuela. According to Mercado (2022), in 2020, during the pandemic year, 1.335 cases of human trafficking and smuggling and related crimes were recorded. Underage victims accounted for 191 of those cases, a little more than 14 The department of La Paz, which accounts for 72% of Bolivia's gold production, tops the list with 169 of the 523 complaints related to human trafficking and smuggling and related crimes. In 2019, out of 338 cases, 13 involved human trafficking, six involved pornography, 107 involved pimping and 212 involved commercial sexual violence. The growth of gold mining activity has led to the naturalisation of sexual violence, multiplying cases of rape, teenage pregnancy, statutory rape, etc.

In **Colombia**, areas of illegal gold mining largely coincide with Indigenous and Afro-descendant communities' ancestral territories, both titled and untitled (MinMinas, 2023). In 2019, authorities from the Yaigojé Apaporis, Pira Paraná, Miritί Paraná and Tiquié Indigenous territories, which make up the core of the Jaguares de Yuruparí Macroterritory, filed a writ of protection in 2019 against numerous Colombian state institutions, which will soon be decided by the Constitutional Court (case file T-7. 983.171). The authorities raised the alarm about numerous social, cultural and environmental impacts, providing studies showing that they had extremely high mercury concentrations according to World Health Organisation criteria.

Indigenous peoples have achieved important victories in the exercise of autonomy and governance, including collective titling of Indigenous territories, regulatory advances throughout the national legal system's hierarchy, landmark rulings by the country's highest courts and influence in the management and administration of protected areas. Nonetheless, illegal mining of gold and other metals (in the hands of illegal armed actors) has continued to grow as likely the greatest threat to their human rights and those of other local communities, as well as to the biocultural diversity of this Amazonian sub-region.

The Colombian government (2023), citing Cordy *et al.*, (2011), has recognised that there are many health victims of mercury, including: "(1) women of reproductive age; (2) children; (3) older adults; (4) people who work, without proper personal protection, in gold mining or any of the activities in which mercury or its compounds are handled; (5) people who burn mercury amalgams or live near sites where these activities take place; (6) people who consume fish and food from contaminated sites; (7) people who consume water from contaminated sites; and (8) those who store mercury at home." In this sense, not only are Indigenous populations victims, but also those linked to gold mining or who live in surrounding areas: the floating population from the interior of the country and foreigners who irregularly cross the border with Brazil and Peru, who in some cases are also Indigenous people.

It is important to highlight the indissoluble relationship between Indigenous peoples and water. Not only do they practice rituals similar to

Figure 20. Protest over mining in Indigenous territory, Ecuador. Source: Pachamama Foundation.

"baptism," but they also assign spiritual caretakers or guardians to each culturally important aquatic site, where they strive to maintain a sense of balance in the territory and to protect the energies present there (Guío, 2016).

In March 2024, the Governing Body of the International Labour Organisation (ILO) ruled on a complaint brought by the Indigenous Shuar Arutam people of **Ecuador** (Figure 20) and found the Ecuadorian state in breach of Convention 169 due to: a lack of consultation with the Indigenous Shuar Arutam People (PSHA) concerning two large-scale mining projects, San Carlos - Panantza and Warintza, in their traditional territories in the province of Morona Santiago, which led several

communities" evictions in a climate of violence; the lack of spaces for PSHA participation in the development and adoption of the national mining policy; the lack of recognition and protection of PSHA territorial rights; and the failure to take measures to protect PSHA members" safety during the COVID-19 pandemic (ILO, 2024).

In **Perú**, according to reports by the *La República* newspaper (Chumpitaz, 2024), more than 35 Indigenous people and three community members have been assassinated for defending their right to their territory, a right which is indisputably connected to other rights such as the right to a healthy environment. Against this background, the executive branch and some autonomous constitutional bodies have issued regulatory decrees with the goal of preventing the risk faced by human rights defenders and protecting them. In spite of this, the murder rate and the risks they face continue to increase.

According to information provided by the Ministry of Justice, as of February 2024, more than 300 high-risk situations were documented, 80% of which were linked to the protection of the environment, territorial rights and/or Indigenous peoples" rights. Specifically, more than 60% of these situations occurred as a result of defending these rights against the expansion of illegal natural resource extraction activities, including illegal mining. According to the report *Killing of Environmental Defenders in the Peruvian Amazon* (Montoya *et al.*, 2024), since 2015, at least three human rights defenders have been murdered as a result of their opposition to illegal mining in the Madre de Dios region:

- **Alfredo Vracko.** Alfredo was president of the Madre de Dios Federation of Forestry and Reforestation Concessionaires and had a reforestation concession in La Pampa, an area with high rates of illegal mining. He was murdered in 2015 in the district of Inambari, Tambopata, Madre de Dios. It is worth noting that he had been speaking out against illegal miners" invasion and threats since 2007.
- **Roberto Pacheco.** Roberto was vice-president of the Management Committee of the Tambopata National Reserve and, like Alfredo Vracko, was also a forest concessionaire in the buffer zone of the Tambopata National Reserve. He had received death threats from invaders since 2012, including from illegal miners. In that context, he requested protection orders to protect his life in 2017, but they were denied. Roberto Pacheco was killed in 2020 outside the buffer zone of the Tambopata National Reserve.
- **Juan Julio Fernández.** Juan Julio had a forestry concession for forestation and reforestation in the buffer zone of the Tambopata National Reserve. He reported being targeted and threatened by illegal miners since 2011. In March 2022 he was murdered in La Pampa, Nueva Arequipa sector, Inambari, Tambopata.

Once again, this information shows that there is a direct relationship between the expansion of illegal mining and the increase in threats to environmental defenders in Peru. It is therefore necessary to stress that, as long as national protection measures focus exclusively on emergency situations without addressing structural causes, threats will continue to exist in the region.

Virtually all the Indigenous peoples in **Venezuela**'s Guayana/Amazon region have been affected by illegal mining, although the

type and intensity of impact varies considerably from place to place. The invasion of miners and armed groups violates Indigenous territorial rights, which are already fragile due to the lack of delimitation and protection by the state. In some areas, Indigenous people have been forced to form self-defence groups or Indigenous Territorial Guards. Between 2016 and 2023, at least 28 Indigenous people were killed or disappeared in the context of conflicts surrounding mining activity. In 2012, it was reported that Brazilian *garimpeiros* allegedly massacred the Yanomami community of Irotatheri, in the Upper Orinoco (Amazonas). However, the official investigation was inconclusive, and the report's veracity could not be proven.

Since 2017, the municipalities of El Callao, Sifontes and Roscio in Bolivar state have shown extremely high rates of violent deaths, associated with increased mining activity. The state of Amazonas has also recorded high homicide rates (Venezuelan Observatory of Violence, 2017 to 2023). Increased violence and alleged crimes against humanity are related to the establishment of parastate systems in mining areas which are controlled by irregular armed groups and guerrilla groups (ELN and ex-FARC), as well as the actions of police and military forces, carrying out operations and actions in violation of human rights. The irregular actors are in charge of territorial control and the imposition of order in the mines. To guarantee security, they establish a series of "rules" and macabre punishments, including beatings, shooting in the hands, amputations and death, usually carried out to make an example (Human Rights Watch, 2020).

Between 2012 and June 2020, at least 38 massacres occurred in mining areas in southern Venezuela. In 25 of these massacres, at least 217 people were killed (CERLAS *et al.*, 2020). According to the Commission for Human Rights and Citizenship (CODEHCIU), between 2019 and June 2020, a total of 345 extrajudicial executions were documented in Bolivar State (CERLAS *et al.*, 2020). 77 reports of missing persons in mining areas in Bolivar state were documented between 2012 and 2020 (CODEHCIU, 2020). Relatives of victims of forced disappearance report not having received support from state security forces and having been ordered to give up the search.

According to the Observatory for the Defence of Life, between 2013 and 2021, 80 environmental and territorial rights defenders, victims of violence and repression, were registered in Venezuela. Bolivar and Amazonas states together accounted for 54 cases, 64% of the total (Restrepo *et al.*, 2021). On June 30, 2022, the Indigenous rights defender and Uwottüja/Piaroa territorial guardian, Virgilio Trujillo Arana, was murdered, an act that remains in impunity. More than 30 Uwottüja/Piaroa leaders in Amazonas have received threats, forcing several of them to move to the state capital, other areas of Venezuela or even out of the country (Observatory for the Defence of Life, 2023). These events have been widely documented and internationally recognized in reports by the United Nations High Commissioner for Human Rights (United Nations, 2020), the Independent International Fact-Finding Mission on Venezuela (United Nations, 2022) and others.

The case of Lisa Henrito, a Pemón Indigenous leader from the Gran Sabana (Bolívar), stands out among the cases of harassment and stigmatization of environmental defenders. She was harassed and stigmatized for her work as an activist for Indigenous women's organisations that demand an end to militarization and mining exploitation in their ancestral territories (Amnesty International, 2018). Alejandro Lanz, environmental activist in Bolivar state and director of the Venezuelan Centre for Environmental Research, was the victim of

threats and attacks, which forced him to remain silent and give up his work.

Restrictions to freedom of expression and attacks against journalists, civil society and the media have been systematically promoted by the Venezuelan State, generating a climate of censorship, fear, intimidation and information silence. The government has approved a set of laws based on the notions of terrorism, fear and hate, which further limit the exercise of freedom of expression, the right to information and the right of access to public information (IPYS, 2022; OAS, 2022; OHCHR, 2023; IACHR, 2024; Espacio Público, 2024). The recent approval of the Law for the Control, Regularization, Performance and Financing of Non-Governmental Organisations and Non-Profit Social Organisations, known as the "anti-NGO law," represents a new tool to limit civic space, putting community, humanitarian and human rights organisations at risk in Venezuela (Piquer, 2024).

Several journalists have been victims of harassment and threats for publishing information on illegal mining, corruption schemes and irregular armed groups. Clavel Rangel had to leave the country for his safety, while Marcos Valverde was subject to harassment, in both cases due to judicial persecution against him (IPYS, n.d.). In 2016, David Natera Febres, director of Correo del Caroní, was sentenced to four years in prison for defamation and libel (IPYS, n.d). Bram Ebus, a Dutch journalist, was detained by the GNB in 2017, when he was investigating the Orinoco Mining Arc (IPYS, 2017). Luis Alejandro Acosta was detained in 2023, for disseminating reports on security forces" actions in the eviction of illegal miners from Yapacana National Park (Amazonas). Acosta received probation orders, including a ban on publishing content about Yapacana, which amounts to judicial precensorship (IPYS, 2023). Alleged ELN members made death threats against Magno Barros and members of his family via a live phone call during his morning show (IPYS, 2021).

There is also an increase in femicides, gender-based violence, sexual violence, early pregnancies and an increase in sexually transmitted infections. Mining contexts are deeply hostile to Indigenous women, whose situation is made even more complex by the lack of access to justice, the language gap and reporting mechanisms (Pacheco, 2019).

According to reports from several organisations, Indigenous women are abused, raped and face labour and sexual exploitation. Cases have even been reported where virgin girls are auctioned off in exchange for payment in gold (OEP, 2022). Indigenous girls and women have been reported to be present in brothels located near the mines, known as *currutelas* (Moya *et al.*, 2022). In the gold mines of the state of Amazonas, there is evidence of trafficking of Indigenous girls, adolescents and women in slavery-like conditions. Sieges by armed groups and poverty have forced Indigenous women and their families to leave their territories. Forced displacement also entails a greater risk of falling victim to different types of violence, including being subjected to sex trafficking (OEP, 2022).

A survey of 36 Indigenous women in the states of Amazonas, Bolivar and Delta Amacuro found that 97% had been victims of violence. They also reported having been victims of institutional, obstetric and sexual violence. Seventy percent of the women participating in the study reported being subjected to more than one type of violence (ACCSI *et al.*, 2023).

Accidents occur frequently in illegal mines, leaving a tragic toll of dead, injured and disabled people. Work in the mines is extremely dangerous and unsafe, since it does not comply with any

Delta 1, a mining town six hours from Puerto Maldonado, where gold is traded and where fuel, food and clothing are supplied for illegal mining activities, Madre de Dios, Peru. Source: Diego Pérez, SPDA.

safety measures. According to information gathered by SOSOrinoco, between 2017 and February 2024, 57 mining accidents occurred in the states of Bolivar and Amazonas, leaving 131 people dead, one missing and an undetermined number injured (SOSOrinoco, 2023b, 2024). However, many events do not even come to light publicly, so there is significant underreporting. On the other hand, the Venezuelan State has not taken any kind of measures to prevent this from continuing to happen.

Actors: Organised Crime, Companies and the State

Organised Crime

In **Bolivia**, the presence of organised crime linked to gold mining is not significant, although this does not mean that it does not exist. However, there are persistent and frequent conflicts between illegal cooperative miners, involving weapons, resulting in violence and deaths. For more than a decade, there has been recurrent violence over the control of deposits (Gandarillas *et al.*, 2014). The deregulation achieved by the cooperative mining sector has meant that there is no public authority capable of resolving the many mining conflicts; force is the main mechanism for resolving disputes over mining deposits.

In **Brazil**, there is growing concern about what is called the "*narcogarimpo*." Drug trafficking, mainly from São Paulo and Rio de Janeiro, is already a reality in the Amazon, according to the "Brazilian Forum on Biodiversity."[11] In October 2023, the study Cartographies of Violence in the Amazon, published by the same Forum, mapped the presence of criminal factions in at least 178 of the 772 municipalities in the Brazilian Amazon (23% of the municipalities), covering 57,9% of the region's population. Furthermore, in 80 of these municipalities, territorial disputes between two or more factions were identified.

Regions where minerals are extracted are particularly favourable for criminal organisations. They offer the opportunity not only to launder drug money, but also to dominate strategic drug trafficking territories through the establishment of a suitable logistical structure for gold extraction and transport. This has turned the Amazonian *garimpo* network into a logistical attraction for drug trafficking. In Roraima (one of the states where the Yanomami territory is located), members of criminal factions work in areas ranging from security for the *garimpos* to management of sexual exploitation, and even the administration of gold mining itself.

The Forum also notes the increase in various conflicts, saying: *"One of the effects of criminal drug trafficking organisations" presence in the* garimpos*, according to reports from the regions investigated, is an increase in the flow and calibre of firearms, making the region more dangerous and monitoring activities riskier. The growth in the number of firearms recorded from 2018 to 2022 in the Amazon region was significantly higher than the national growth (91% versus 47,5%, respectively), indicating an increased flow of weaponry."* Data indicate that arms seizures in Roraima increased by 593,4% from 2018 to 2022.

Members of the criminal gang known as the First Capital Command (PCC) are increasingly involved in mining operations in the Yanomami region, which is the largest Indigenous territory in the world, home to approximately 30.000

[11] Brazilian Public Security Forum. The new gold rush in the Amazon: illegal mining and violence in the forest. Available at https://publicacoes.forumseguranca.org.br/items/5fd55da7-e834-4a38-810e-1bbe9a651c8e. Accessed on 18 Sep. 2024.

Indigenous people. Drug trafficking and sexual exploitation are also increasingly common, with the PCC being a key player in the region. The PCC is suspected of providing security, financing gold mining and using illegal mining to launder drug proceeds. According to the UN,[12] "*The Urariocera River is a key corridor on Yanomami lands that facilitates illegal mining, where organised criminal groups illegally "tax" miners, shop owners and local residents. The expansion of illegal gold mining in Yanomami territory has had devastating consequences for the communities' health.*"

In Ecuador, drug trafficking is the main form of organised crime. It is also reportedly linked to illegal mining activities. According to National Police reports, organised crime groups have focused their interests on gold mining, with operations in the provinces of Esmeraldas, Carchi, Sucumbíos, Morona Santiago, Zamora Chinchipe, Napo and Azuay. For them, it is important to control the provinces bordering Colombia and Peru in order to be able to traffic gold and illegal mining materials such as mercury. In addition, organised crime groups obtain weapons and explosives across the borders (Novik, 2023). In addition, they profit from 10 per cent of the material that is extracted, thereby financing their illicit activities and laundering assets. They have taken control of almost all stages of the gold supply chain. According to reports by the National Police, members of the organised crime group, Choneros, earned up to one million dollars a month from crimes related to illegal mining (Diario Universo, 2024).

In June 2024, the website Mongabay reported on the activities of the organised crime group Los Lobos inside the Podocarpus National Park. To work its illegal operations, the organised crime group has arranged for the entry of about 2.200 Ecuadorian, Peruvian, Colombian and Venezuelan nationals, who work illegally in a dozen mining sites in the interior. To supply materials and ensure the exit of the product, corridors have been developed through which food, petrol, drugs and even sex workers (Torres and Collyns, 2024) are provided. There, money is useless, because everything is paid for in gold, leading the camp's inhabitants to call it "Little Dubai."

According to Rivera-Rhon and Bravo (2023), the state provides ineffective law enforcement and a limited guarantee of rights. Thus, organised crime groups can easily infiltrate, supplying services that should be guaranteed by the state. Mutual benefits exist for the actors involved. This is why these economies thrive in environments with low levels of development and high unemployment (Rivera-Rhon and Bravo, 2023).

Another effect of the presence of organised crime groups in **Ecuador**'s Indigenous territories is the persecution of community leaders opposed to mining activities. The Mongabay report (2024) mentions self-censorship, extortion, intimidation and even possible assassination. Journalists face a similar situation. For the organisation "*Periodistas Sin Cadenas*" (Journalists Without Chains), anyone who tries to report on the realities of this field may face threats and censorship. They can report on the pollution caused by mining, but they cannot directly name those responsible (Periodistas Sin Cadenas, 2023).

The State Security Council (COSEPE) declared illegal mining a threat to national security and

[12] UNODC. The Nexus Between Drugs and Crimes that Affect the Environment and Convergent Crime In the Amazon Basin. Available at https://www.unodc.org/res/WDR-2023/WDR23_B3_CH4_Amazon.pdf. Accessed on 18 Sep. 2024.

described it as a criminal structure," because it is linked to arms trafficking, explosives and money laundering (Novik, 2023). The Council expressed support for legal mining concessions and announced that it will use security forces in strategic areas to support the industry.

There is also a Colombian guerrilla presence in the Punino area. The guerrillas intimidate the communities and protect the miners. In February 2024 there was reportedly a confrontation between Ecuadorian military and guerrillas guarding the mining camps in Punino (cited in Tarazona, 2024).

A journalistic investigation affirms that Brazilian organised crime groups operate the illegal mining business in Peru, in Loreto, Ucayali and Madre de Dios (Pedroso, 2024). Likewise, in Putumayo, on the border with Colombia, splinter groups of the Colombian guerrillas allegedly operate the drug trafficking and mining business (Pedroso, 2024).

Mining in southern **Venezuela** has become imbued within a large organised criminal network that reaches all levels of political and military power. One of the key actors in this complex web are the Organised Armed Groups (GAO). Mining areas are mainly under the control of or disputed by these GAOs, which include the so-called "mining unions," "systems," criminal gangs or "*pranatos*," mega-gangs and Colombian guerrilla groups like the ELN and FARC dissidents. One of the common characteristics of the GAOs is their high firepower, which surpasses state security forces" capacities (SOSOrinoco, 2022). Nonetheless, state security forces are the armed actors involved in the majority of massacres and extrajudicial executions, particularly the army, the Scientific, Penal and Criminalistic Investigation Service Corps (CICPC) and the Special Action Forces (FAES) of the Bolivarian National Police (PNB) (Cerlas *et al.*, 2020).

SOSOrinoco (2022) identified a total of 13 GAOs in Amazonas and Bolivar between 2008 and 2022, although only a fraction are still active today. GAOs serve as operators in charge of territorial control and law enforcement; they regulate access and supervise and monitor everyone entering or leaving the mines. They establish a set of rules, as well as macabre punishments for non-compliance. In other cases, transgressors simply "disappear," or are found mutilated or dismembered (Human Rights Watch, 2020). The proliferation of armed groups has led to violent clashes between criminal gangs, Colombian guerrilla groups, state security forces and the National Bolivarian Armed Forces of Venezuela, all of whom are in conflict over the control of mining areas (SOSOrinoco, 2022).

The GAOs derive economic benefits from all the activity within the mining areas. One of their main sources of income is the practice of extortion in exchange for protection, known as ""vaccination." The GAOs also engage in other illicit businesses that may or may not be linked to the mining economy, such as drug trafficking, trafficking of minerals and mercury, smuggling of arms, fuel and food, timber extraction, trafficking for labour and sexual exploitation, etc. (SOSOrinoco, 2022).

Mining Companies and Cooperatives

There are currently no transnational companies involved in **Bolivian** gold mining. Orvana Mineral Corp, the last one to exist, ceased its activities in 2019. The main (legal and illegal) mining actors across the country are what are known as "mining cooperatives" (Villegas Nava, 2024). There are more than 2.000 of them, of which more than 1.300 are gold mining cooperatives. Although they are legally designated "cooperatives," in most cases they do not operate according to the technical definition, but rather as single-person companies with large amounts of capital. However, they are well organised as a sector with strong structures and mobilisation capacities, as a result of the legacy of the mining unions, which were historical actors in Bolivia. Their organisation allows them to operate with very high political and social effectiveness and power. This has allowed them to create a system of exceptions for mining cooperatives over the past two decades, allowing them to operate free of many regulations and without being labelled as "illegal." They do not have consolidated mining contracts, operate only on the basis of applications, do not comply with labour regulations and receive tax breaks (which allow them to avoid paying royalties and taxes). In addition, they are granted environmental exceptions and exemptions. However, most of the cooperatives do not have environmental permits, and if they do have them, they do not meet their conditions.

In **Ecuador**, Rafael Correa's government created a regulatory framework to favour investment by transnational mining companies, facilitating concessions for tens of thousands of hectares. This new institutional framework for mining allowed companies to take control of territories using different mechanisms, including through the use of force, criminalisation of social protest, processes of pre-censorship, evictions and the closure of schools and churches, among others. One example of this type of company would be the one that operates the Fruta del Norte mine, the first large-scale underground mine in Ecuador, which would usher in the "golden era" of large-scale mining in Ecuador. In November 2019, it inaugurated gold exports, mainly to Europe. The mine, operated by Lundin Gold, has sparked a lot of controversy.

Soliz, Yépez and Sacher (2018) provide a description of the main impacts identified in their research, emphasising the human and natural rights violations within the communities found in the Fruta del Norte Project's area of influence. It is clear that Fruta del Norte's mega-mining funders did not need to use physical violence to dispossess and control the territories, as had happened in other mega-projects in the Cordillera del Condor mountain range.[13] Instead, Soliz points out that in the case of Lundin Gold it was, "through a kind of subtle dispossession."[14]

Before the arrival of mining companies, these communities were able to guarantee their social reproduction, based on sovereign and autonomous productive processes. Now they are subject to the unilateral control of the mining company, which

[13] As was the case in the Mirador Project in Tundayme, where communities opposed to the project were violently repressed. The justice system defended the interests of the mega-miners.

[14] Interview with Professor Fernanda Soliz of the Simon Bolivar Andean University, 22 April 2020.

controls mobility and monopolises road, river and air space use, replacing the state in regulation, provision of services and definition of the possibility of movement. The mining company also controls productive activities, restricting the use of the forest and the river, which limits the communities" ability to survive. They cannot fish, they cannot hunt, they cannot use firewood, they cannot raise animals and they cannot pan for gold; in other words, they live under a barrage of prohibitions and limitations.

Report DNA6-0017-2020, issued by the Comptroller General's Office (2020) for the period 2015-2018, found several irregularities in Fruta del Norte. According to the report, the Ministry of Environment approved the environmental impact study and management plan without complete information on water and sediment sampling. In the special review, the Comptroller concluded that the copper and iron concentration values in the Machinaza River, one of the tributaries passing through the concession, exceeded 230% and 805%, respectively, compared to the values determined in the baseline environmental study of the mining project. This is just one of several irregularities or violations identified.

In Ecuador, the small-scale and artisanal mining sector has not been included in public policy design for 14 years, most notably about artisanal and subsistence mining. A process of targeting of artisanal and subsistence miners began, together with the creation of a legal framework to control their sector. The government seems to use a political strategy to discredit this sector in order to build a favourable opinion towards large-scale mining.

Both legal and illegal, formal and informal mining in Ecuador have been shown to cause significant damage to the environment and Indigenous communities. Mining activities, carried out by national and transnational companies, are devastating natural areas, polluting rivers and dispossessing communities of their ancestral territories and livelihoods.

The involvement of national and foreign companies in mining activity in **Venezuela** was defined by what is known as the Gold Nationalisation Law (Venezuela, 2011), which abolished the concept of mining concessions. Before then, concessions existed and mining companies were active, although by that time almost all transnational mining companies had left the country. Since then, extractivism has been predominantly carried out by "small-scale miners" or "informal miners" (SOSOrinoco, 2021c). In 2015, a new law was passed that introduced some changes, the most significant of which was the incorporation of what are known as strategic minerals (diamonds, copper, silver, niobium-tantalum or coltan, etc.), the benefit of which also came under state control (Venezuela, 2015). According to this legal framework, primary, related and ancillary activities for the exploitation of gold and other strategic minerals can only be carried out by: 1) the Republic, directly or through its public institutions, or companies owned by it, or subsidiaries thereof; 2) joint ventures, in which the Republic, or any of the aforementioned public bodies, has control over its decisions and holds more than fifty-five percent (55%) of its shares (Venezuela, 2011); 3) strategic alliances formed in which the Republic, or any of the aforementioned public bodies, has control over its decisions and holds more than fifty-five percent (55%) of its shares (Venezuela, 2011); or 4) strategic alliances formed between the Republic and production entities, socio-productive organisations, companies and other forms of production permitted by law, which are oriented towards small-scale mining (Venezuela, 2015).

Barranquilleros going in to look for gold while machinery stands idle, Mapiri River, Bolivia. Source: CEDIB.

In 2016 the government created the "Orinoco Mining Arc Special Economic Development Zone" to promote, expand and facilitate mining, especially gold, diamonds, coltan and "rare earth" mining, in a 111.843,70 km^2 area located south of the right bank of the Orinoco River (Venezuela, 2016). This decree was a milestone in the explosion of the "gold rush" that has spread to areas beyond the polygon defined by the mining arc, affecting national parks, Indigenous lands and other protected areas (SOSOrinoco, 2021c).

The Venezuelan state agencies operating in the mining sector are the Venezuelan Mining Corporation (CVM), the *Compañía General de Minería de Venezuela, C.A.* (Minerven) and the Military Limited Company of Mining, Oil and Gas Industries (CAMIMPEG). By 2019, there were 17 projects operating in the mining arc through joint ventures and strategic alliances with the private sector in Venezuela and countries such as Turkey, Canada, Palestine, China and Congo. Other cases that have been made public since the mining arc was announced are two Chinese and one Congolese company that were part of joint ventures with the Venezuelan state: CAMC Engineering Co. Ltd., Yankuang Group Company Ltd. and the Congolese Afridian. There is little information on these companies" mining activity due to official secrecy, but according to government sources, the nation's gold suppliers are small-scale miners, which demonstrates little if any activity by the mining companies involved (SOSOrinoco, 2021c).

According to statements made by the then Minister of Ecological Mining, by May 2019, 946 strategic alliances had been signed between the ministry and small-scale miners. In addition, there are a number of gold processing plants in the mining arc that the government has established directly or in partnership with private companies. By 2020, at least 13 cyanide leaching hydrometallurgical plants had been established, which the government considers the central driving force of the mining arc strategy, as they capture and centrally process gold-bearing material, which previously went to other regions (SOSOrinoco, 2021c).

The State

In the early 1970s (20th century), the "Indian Statute" in **Brazil** granted Indigenous Peoples exclusive rights over extractive and other activities on their territories (Law 6001/73, Art. 44). Subsequently, the Federal Constitution reinforced this prohibition by stipulating that third parties could not explore mineral resources on Indigenous lands (Art. 231, § 7). Nevertheless, in 2004, because of conflicts arising from illegal *garimpo* on Roosevelt Indigenous Territory in Rondônia, President Lula signed a decree establishing a Working Group to examine the situation and combat illegal *garimpo*, both by non-Indigenous and Indigenous people, until a law regulating it was passed (Socio-environmental Institute, 2012).

The lack of effective federal oversight allowed serious illegal mining situations to take hold. The *garimpo's* expansion in the Yanomami Indigenous Territory was undoubtedly the biggest gold rush in Roraima's history and one of the most significant in Brazil's recent history. In the late 1980s, when the garimpo was at its peak, approximately 45.000 people were involved in gold mining in the Yanomami Indigenous Territory, and the high level of air activity made Boa Vista airport the second busiest in Brazil. It is estimated that more than 400 tons of gold were extracted and smuggled abroad, contributing no revenue to Roraima, which only faced environmental and social impacts on its Indigenous communities.

According to the National Department of Mineral Production (DNPM, in the Ministry of Mines and Energy), hundreds of applications have been filed for mineral extraction or research on Indigenous Territories, 778 of which are in Roraima. In 2011, the Federal Prosecutor's Office in Roraima recommended that the DNPM cancel the mining titles that had previously been granted and reject pending applications for research or extraction in Indigenous territories throughout the country. Only through legal regulation determining how mining should be carried out in Indigenous territories will the DNPM be able to authorise new applications for research and extraction on Indian lands under the new regulations. One third of Roraima's surface area (7,2 million hectares) is covered by different types of mining claims. The majority of these areas (4,8 million hectares) and of these applications (778) are located in 26 Indigenous Territories, mainly in the Yanomami Indigenous Territory and in the Raposa Serra do Sol Indigenous Territory. The resource with the highest number of applications is gold, followed by cassiterite, lead, tantalum and tantalite, tin, platinum, titanium, copper, manganese, niobium and tungsten, etc. Alto Alegre, Amajari, Iracema, Mucajaí and Caracaraí are home to most of the areas (73%) in high demand for mining. In addition to precious, industrial or strategic minerals, a large number of applications relate to the extraction of raw materials for construction, such as sand, gravel and clay, mainly in Boa Vista.

In **Bolivia**, in the field of gold mining in general, there is an almost total absence of regulatory enforcement. In general "there are no regular inspections, environmental monitoring or fiscal audits, nor an effective sanctioning framework, while in many areas tacit tolerance of non-compliance with legal standards has become the norm" (Joschka J, *et al.*, 2022, p.6). On the trading side the situation

is comparable or even more critical, as "basically all mid-level gold traders operate in violation of the existing legal framework [...] these actors do not run a high risk of criminal prosecution and are (at least tacitly) tolerated by the state." While the final dealers or exporters of gold operate formally, the total illegality of intermediate dealers "encourages exporters to misrepresent the origin and provenance of gold sales."

The state's actions in response to this fact are minimal and insufficient, or non-existent. For example, the Ombudsman's Office report (2022b) on the case of mining activity in the Leco Charopampa Indigenous community, in the vicinity of the Madidi protected area, shows that mining sector authorities (the Ministry of Mining and the Mining Administrative Jurisdictional Authority) argue that the lack of legality of the mining operations is the reason why they fail to control and monitor mining activity; in other words, authorities use illegality as an argument for their failure to enforce the law. Municipal and departmental authorities have filed several complaints about illegal mining (Opinion, 2023) and courts have ruled for intervention to control illegal mining (ANF 2023), yet the Bolivian government does not carry out sufficient enforcement

It is of even greater concern that, in order to face the economic crisis, which has resulted in low international reserves, the government has decided to become a domestic gold buyer without taking any measures to improve gold traceability, while instead contributing to illegal trade in Bolivia (Campanini, 2023).

In **Colombia**, 65% of mining operations are illegal (Ministry of Mines and Energy, 2022), meaning that they do not have any plan or strategy to mitigate their negative impacts; operations are carried out without any state control whatsoever. In this country mining is classified according to the degree of exploitation (Decree 1666 of 2016): subsistence, small, medium and large-scale mining. The classification of mining as illegal or not causes controversy and is usually referred to as exploitation that does not meet the legal requirements for exploitation, that is, mining without a concession contract (according to constitutional provision, the subsoil is the property of the state) and without the required environmental permits or licences. By issuing Law 1658 of 2013, Colombia adopted a specific legal framework to control and prevent the effects of amalgamated mercury, prohibiting its use throughout the national territory in "all industrial and productive processes."

In recent years, the national government has deployed several strategies to tackle or curb illegal mining, largely based on military and police operations. One example was "Operation Artemisa," implemented during the government of Iván Duque (2018-2022). This brought with it a substantial increase in the army's footprint in the Amazon (Paz, 2019). Militarised approaches to environmental conservation result, on the one hand, in the elimination of the possibility for local environmental management initiatives to flourish or develop (placing citizens at risk from illegal armed actors), and on the other hand, in the highly probable violation of the human rights of those weakest in illegal economies, namely the Indigenous or campesino people who are either logging or providing their labour to extract gold (Gudynas, 2019).

An example of the deterrent effect of an active state presence in the region (other than the military) is the case of the National Natural Parks (PNN) post built in Puerto Franco in 2016 to control access to the Puré and Bernardo-Hilo rivers, protecting the intangible zone of isolated Indigenous peoples. As

Puentes (2022) reports, from its construction until it was burnt down in 2020, this post not only served scientific and biodiversity monitoring purposes, but also managed to contain the movement of illegal actors. After the post was burnt down and 15 park rangers were threatened, the National Natural Parks have not returned and illegal mining has proliferated, as was reported in the Socio-environmental Impacts section.

Likewise, the monitoring instrument known as the Single Registry of Minerals Traders,[15] implemented by the national government in 2015, has proven to have serious shortcomings.

For example, the Socio-Legal Centre for Territorial Defence (SIEMBRA, 2024) has raised the alarm about the registry's flawed design, showing how people who are not even involved in mining are on the registry and legalise gold that they have not mined, in exchange for payments from those who do mine gold and from buyers that falsify paperwork.

Furthermore, the ratification of the Minamata Convention on Mercury enabled Colombia to take appropriate cross-sectoral measures to address the impacts of artisanal and small-scale mining. Based on these commitments, the Colombian national government issued the Single National Mercury Plan in 2018, with a five-year timeline, with the hope that by 2023 the Ministries would have implemented initiatives like mercury-related studies or the identification, classification and monitoring of each stage of the mercury cycle. However, none of the planned activities were fully implemented by 2023 as envisaged.

Last year, the national government issued the "National Action Plan on Mercury in Artisanal and Small-Scale Mining," which sought to implement Article 7 and Annex C of the Minamata Convention, organising strategies and actions that require a high degree of complex inter-institutional coordination, with specific programming for the period 2024-2026. Nonetheless, this plan is largely focused on mining formalisation and does not address in a broadly participatory manner how to manage affected sites, nor all the impacts and effects that illegal mining continues to cause in territories like the Amazon.

On the other hand, the Colombian government included gold and its derivatives in the list of "Minerals of Strategic Interest" for energy transition, which suggests a high probability that socio-environmental conflicts associated with gold mining will worsen. For example, there is a correlation between the granting of mining concessions (and applications for mining concessions) and the increase in informal mining in the sub-region. In the case of the Yaigojé Apaporis Indigenous Territory, speculation and expectations about a multinational company's presence in the adjacent town of Taraira has led to an increase in the arrival of informal miners from different parts of the country and from abroad. Furthermore, the consequences are extremely serious, as the idea is beginning to take root (even within Indigenous communities, especially among young people) that the only opportunities for employment or economic gain are through mining.

While the Colombian state has implemented different strategies to deal with or contain mining expansion, its efforts have been unsuccessful when evaluated in terms of decreasing the number of dams or *dragons* in Amazonian rivers or reducing the number of new extraction points, which do not distinguish between Indigenous territories or protected areas.

[15] Regulated by Resolution 171 of 19 June 2018 of the Ministry of Mines and Energy.

Illegal gold mining near the native Boca Pariamanu community of the Indigenous Amahuaca people, Madre de Dios, Peru. Source: Diego Perez/SPDA.

In the case of **Ecuador**, 2008 saw a change in the way mining activity was conceived. Through the new Constitution and what is known as the "Mining Mandate (2008), a process to modernise the sector was proposed, with its products regarded as "strategic resources,"[16] leading to new forms of state presence in mining areas as well as mechanisms for granting mining concessions to public and private transnational companies, in order to promote the industrial exploitation of metallic minerals on a medium and large scale.

In Ecuador, the Organic Law Reforming the Mining Law defines and regulates both "small-scale" and "artisanal" mining. By 2020, about 11.500 to 20.000 miners were working legally, directly and indirectly, in these two types of mining (MAAE, 2020:13); 10% of them were women. By 2014, 78% of gold extraction came from small-scale mining and 22% from artisanal mining (Ministry of Mining, 2016: 40). The state's intention is to control and modernise this type of mining so that, through miners" associations, they can move towards "medium-scale mining." The state's presence as an agent for the control and regulation of this type of mining has been insufficient, leading to the proliferation of illegal mining activities where inhabitants face exploitation and precarious labour conditions (including child labour), without regard for the fact that there are no plans to remediate the environmental damage.

[16] Article 313 of the Constitution, in accordance with Art. 1 of the Mining Law, provides that: "The state reserves the right to administer, regulate, control and manage strategic sectors, in accordance with the principles of environmental sustainability, caution, prevention and efficiency (...)";

Online media outlet Plan V (2016) reported that illegal gold was being exported from Peru, as though it were produced by small-scale and artisanal mining in Ecuador, since they do not pay royalties or taxes and are exempt from environmental requirements. The report indicates that, according to the Mining Charter, between 2010 and 2014, 30,6 tonnes of gold were produced but 62,4 tonnes were exported, demonstrating the importance of creating gold traceability mechanisms.

Ecuador made a global commitment to reduce mercury emissions released into the environment as part of the Minamata Convention,[17] which is a binding legal tool that went into effect on 16 August 2017. Led by the United Nations Environment Programme (UNEP), the Convention sets forth as its central goal: "to protect human health and the global environment from the anthropogenic emissions and release of mercury and mercury compounds." (UNEP, 2019:10)

The Convention includes provisions on public health information, environmental education, field identification of contaminated sites, engagement and capacity building and promotion of policies aimed at mercury reduction. It calls on Party States to develop policies regarding the full mercury cycle, from extraction to final waste management,[18] knowing that the largest percentage of mercury release comes from artisanal and small-scale gold mining. However, the Convention does not adopt national quotas to quantify mercury reduction, nor does it set deadlines for mercury elimination, either in primary mercury extraction or mercury's use in mining, allowing each country to adopt its own measures for mercury reduction and elimination. This sets it apart from other conventions which establish clear objectives regarding the goal they seek to achieve.

In 2020, the Ecuadorian government presented the "National Action Plan on the Use of Mercury in Artisanal and Small-Scale Gold Mining in Ecuador, in accordance with the Minamata Convention on Mercury" (PAN). This document focuses on strategies and courses of action, responsible parties and institutional coordination to reduce the use of mercury.[19] This National Action Plan is less ambitious in its outcomes than the previously existing National Action Plans. While in 2013 the aim was to eliminate mercury from small and artisanal mining activities, the National Action Plan seeks to "reduce and, as far as possible, eliminate the use of mercury [...]" by 2030. This conveys the impression that this is not an urgent issue and implies tacit approval of its continuation, contradicting Ecuadorian legislation that dictates an express ban on mercury.

In parallel, Ecuador activated the Global Opportunities for Long-term Development of artisanal and small-scale gold mining (GEF GOLD) programme. This programme, aligned with the Minamata Convention objectives and the SDGs, aims to facilitate small-scale mining operations' access to new gold extraction methods that allow artisanal miners to dispense with mercury, promoting miners' rights, safety and access to markets.[20]

On the other hand, it is important to consider the right of Indigenous peoples and nationalities to free, prior and informed consultation. In Ecuador,

[17] Ecuador signed the Minamata Convention on 10 October 2013 and ratified its decision on 29 July 2016 (MAE, 2013).

[18] It covers mercury's life cycle: supply, use, emission, release, trade, handling and disposal.

[19] E This document replaces other action plans such as the "zero mere cury" strategy.

[20] Interview with Luis Tapia from the Global Opportunities for Long-term Development of artisanal and small-scale gold mining sector (GEF GOLD). 17 April 2020.

several Indigenous organisations have criticised the information sharing and citizen participation mechanisms, which allow mining companies' presence in their territories, and which do not comply with the peoples' demands nor with international conventions, such as ILO Convention 169 on Indigenous and Tribal Peoples in Independent Countries. The Convention is based on respect for Indigenous peoples' cultures and ways of life and recognises their rights over lands and natural resources, as well as their right to decide their own development priorities.

For example, these processes have been manipulated and, in many cases, ignored by the mining companies, as in the case of the Federation of Indigenous Organisations of Napo (FOIN). They argue that the participatory mechanism is flawed in form and substance, since prior to its implementation, the companies, supported by the state, promoted community conflicts, causing a rupture in the social fabric. Likewise, they promote the persecution of social leaders[21] and community division and displacement, which is far from good faith and the goal of reaching an agreement. FOIN reports that local authorities play an important role in facilitating the expansion and exploitation of mining in the territories.

Illegal mining has been on the rise in **Peru** for two decades. Faced with this problem, measures initially focused on two regions: Madre de Dios - through Emergency Decree 010-2012, which sought to regulate gold mining - and Puno - by approving measures to prohibit illegal mining in Puno through Legislative Decree 1099. However, it was not until 2012 that the fight against illegal mining began at the national level, through Legislative Decree 1100 and a package of six laws.

Subsequently, the Executive Branch issued more regulations that sought to define a common approach to eradicating this problem. However, at the national level we only have a more than 10 year old strategy that has been in the process of being updated since the beginning of 2023. Furthermore, it must be noted that a national strategy, such as the current one on illegal mining, is limited in scope in terms of its implementation and aim, the actors and levels of government involved, its mainstreaming, its goals and even its budget.

On the other hand, since 2012, Peru has adopted measures to control and oversee the distribution, transport and trade of chemical inputs that may be used in illegal mining. Thus, in March 2012, Legislative Decree 1103 was issued. This new regulatory framework has been developed since then, based on the signing and ratification of the Minamata Convention. To this end, two national implementation plans were approved through Executive Power regulations (Supreme Decree 010-2016-MINAM and Supreme Decree 004-2019-MINAM). The latter national plan aimed to ban mercury production from primary extraction and to establish a procedure for authorising the export and import of mercury in Peru, among other objectives.

With respect to progress in implementing this Convention, by 2024 the Ministry of Environment reported that it had completed 42% of the activities established in the National Implementation Plan for the Minamata Convention on Mercury (MINAM, 2024b). In addition, it created a registry of authorised users for mercury trade (Mamani Dávila,

[21] For example, the case of Shuar leader José Esach, who has been persecuted since 2016 because of his opposition to mining in southern Ecuador.

2022). According to the International Trade Centre (ITC), since the Minamata Convention went into effect, legal imports of mercury into Peru have decreased considerably, from 111 tonnes in 2012 to 8 tonnes in 2019 (Merino Natorce, 2021; MINAM, 2020).

However, the reality is that this input is essential to illegal mining for gold amalgamation (Actualidad Ambiental, 2023). Mercury smuggling routes have been identified from Bolivia to Peru, along which between 410 to 795 tonnes of mercury smuggled illegally per year, according to the Artisanal Gold Council of Canada (Castro, 2022). Such figures are in line with the amount of gold produced illegally - using only exports reported to the state between 2014 and 2023 as a parameter (Berríos *et al.*, 2024).

There have also been reports of the sale of sodium cyanide, a substance also used for illegal mining, without the appropriate permits. Thus, for example, in 2017 the National Superintendence of Customs and Tax Administration identified a total of 330 tonnes of cyanide linked to illicit trafficking of chemical inputs destined for illegal mining. These were linked to around five companies incorporated in Lima and were intended for illegal mining activities in the department of La Libertad (Luna Amancio and Castro, 2022).

Another way of controlling this activity is through legal classification of the crime. Thus, in the Peruvian criminal legal framework, illegal mining has been classified as a criminal offence under article 307-A of the Peruvian Criminal Code since 2012. This class of crimes is punishable as a pollution offence. Therefore, the offence is punishable as long as it is proven that damage, alterations or harm to the environment, environmental quality or environmental health has occurred or may occur as a consequence of carrying out mining activities without the appropriate permits. This implies that the crime is an offence based on results; there can be no attempted offence (the execution of the activity and its adverse results must be proven).

The legal classification of the crime, as well as the crime's preparation, requires rigorous measures to overcome the presumption of innocence of the accused. Proving that the act was committed and that it produced an adverse result is a difficult task for which no official information is available. To date, there has been no transparent reporting of how illegal mining cases are handled by prosecutors or law enforcement.

Other sources reveal that the prosecution's evidence-gathering and investigation are often incomplete,[22] and do not include adequate proof of all the elements involved in the crime. On the other hand, members of the Public Prosecutor's Office report a possible lack of prosecutorial staff and confirm they have not participated in operations carried out (Malaver Mendoza, 2024) about crimes that may be common at the national level, with the relevant consequences.[23] Likewise, it has been reported that there were approximately 7.200 investigations for this crime across the country from 2019 to 2023, of which about 60% were still in the preliminary stage (IIMP, 2024a). In other words, more than half of the prosecution's cases show no major progress, while a considerable part of the rest of the cases are stalled in the judiciary.

With regard to the few known illegal mining convictions, there are some common denominators:

[22] As is evident, for example, in the ruling on the case of Appeal 464-2016, Pasco, which was taken under review by the Supreme Court because the Prosecutor's Office did not prove the environmental damage caused by the illegal mining activities, which is required for the crime to be established.

[23] Consequences such as the inability to carry out interdiction processes, the inability to oversee police activities, or the facilitation of possible acts of corruption.

- The prosecutor's office and the police directly apprehended the convicted persons during the raids and operations they carried out.
- The circumstances under which they were arrested coincide with the fact that they were operating mining-related machinery.
- Civil reparations are set at sums ranging from USD 300 to a maximum of USD 6.000 in cases of joint responsibility, i.e. serious cases that must be borne by more than one person.

In this respect, it should be noted that in the cases analysed, the people convicted were engaged in mining activities as direct operators of machinery, rafts and dredges. In other words, they were the smallest players. None of them has been identified or accused of being the leader or person responsible for the mining activities identified, much less has it been demonstrated that their income could support the financing of such activities.[24]

However, there is much less effectiveness in terms of sanctioning those who finance and run mining activities. Those actors are identified during police and prosecutorial operations, but those operations either yield zero results from the identification (no one is apprehended) or they only apprehend those who were hired by the mining financiers and managers to carry out their criminal activities.

Increasingly, illegal mining operations have been found to have strong links to national and international organised crime. In Peru, a criminal organisation is defined as one that, due to its broad "*operational capacity and organisational complexity*," activates "*illegal economies or processes of production of illegal goods and services typical of organised crime,*" determining its operational continuity over time (Plenary Agreement No. 08-2019/CIJ-116).

This category led to the creation of Specialised Prosecutor's Offices against Organised Crime. Since 2016, as a result of Legislative Decree 1244, these offices have been responsible for investigating criminal organisations linked to illegal mining. This involves the application of new investigative techniques commensurate with the complexity of criminal organisations, including interception of communications, undercover operations, undercover agents and special agents, telephone interceptions, video-surveillance and tracking, and surveillance operations and controlled delivery of goods.[25]

However, both journalistic and prosecutorial reports have confirmed the presence of national criminal organisations in mining activities, whether by leading, integrating or complementing mining through extraction, trade or related activities. Public officials and civil servants are even involved (IIMP, 2024b). It has also been found that criminal organisations involved in drug trafficking reinvest the money they make in illegal mining, as it is highly profitable and facilitates money laundering (Pedroso, 2024).

Given the obvious involvement of organised crime in illegal mining activities, the criminal justice system has failed to offer a commensurate response in terms of prosecution, let alone punishment. An analysis of the cases published by government agencies shows that to date, only in La Libertad, in the district of Pataz, have police and prosecutors made a preliminary start on

[24] Which can be inferred from the fines set based on day wages, which in many cases were calculated on the basis of minimum wages or low incomes.

[25] It must be noted that in July 2024, the Congress of the Republic approved Bill 5981, which weakened the organised crime definition, specifying that it only applies to felonies with sentences of more than six years. Although this modification does not have an impact on the prosecution of illegal mining, it does have an impact on the related crime of illegal logging.

identifying alleged criminal organisations (Public Prosecutor's Office, 2024 b).

However, according to the information released, these investigations have not been replicated in Amazonian departments that have a high rate of illegal mining such as Madre de Dios, Amazonas, San Martín, Ucayali, Puno, and Cusco (FCDS, 2023; IIMP, 2024a), regions where the rate of corruption is alarmingly high.

Indeed, regions such as Madre de Dios, Amazonas, San Martín, Ucayali, Puno and Cusco have 74%, 72%, 66%, 79%, 70% and 79% of corruption, respectively, according to the Corruption Risk and Professional Misconduct of Public Officials Index (INCO).[26] This situation forced the legal system to classify these behaviours as crimes. Nevertheless, corruption rates have not decreased and, on the contrary, public officials have been documented participating in illegal activities, such as illegal mining, illegal logging and drug trafficking.[27]

According to information provided by the Public Prosecutor's Office (2024a), from January to October 2022, 1.540 people were convicted of corruption, of which 69% were civil servants and public officials - including police officers (112), regional governors (17) and mayors (84) - convicted for the crimes of bribery, conflict of interest, abuse of office and embezzlement. In addition to the above, the *National Corruption Observatory* of the Office of the Comptroller General of the Republic (2024b) reports that the level of corruption in public bodies related to the mining sector is as follows: 83% in the Ministry of Energy and Mines and 58% in the Geological, Mining and Metallurgical Institute.

Thus, in **Peru**, there are disparate measures that mimic a strategy to eradicate this activity. The current regulations do not present a solid public policy that links all sectors and levels of government, and there are budgetary shortcomings that affect the effectiveness of any applicable measures. Secondly, regulations are in place to prosecute the crime of illegal mining and link it to organised crime charges; however, findings reveal that these measures are inadequately implemented, targeting the bottom link in the criminal chain, the operator, thereby maintaining impunity. These measures prove even weaker when faced with another distorting structural element: corruption. Indeed, there is evidence of linkages between authorities and illegal mining. These actions facilitate access to inputs and the transfer of extracted minerals.

In **Venezuela**, following the collapse of the oil industry, the government stepped up mineral exploitation in the south of the country by creating the mining arc in 2016 (SOSOrinoco, 2021c). The mining arc was not approved by the National Assembly, which declared it unconstitutional, and did not comply with environmental and sociocultural impact studies and prior consultation with Indigenous peoples (Provea, 2016). Different sectors in the country have strongly contested the declaration

[26] The Office of the Comptroller General of the Republic (2024a) defines INCO as "a metric developed by the Deputy Manager's Office of the Anti-Corruption Observatory (OBANT) of the Office of the Comptroller General of the Republic of Peru (CGR), with the goal of contributing to the research and understanding of the phenomenon of corruption and professional misconduct in the Peruvian public sector. It is based on official and objective data collected, mainly through direct observation, and prioritises the findings of governmental oversight through its oversight and related services."

[27] See: INDAGA. National Observatory of Criminal Policy (2022). *Illegal Logging in the Peruvian Amazon*. Lima: MINJUS/USAID, p. 182. https://cdn.www.gob.pe/uploads/document/file/3095185/Documento%20-%20La%20tala%20ilegal%20en%20la%20Amazonía%20peruana.pdf.pdf. Also: Solis, E. & Fabián, G. (2024). *Dynamics of organised crime and corruption. Approaches to a Depiction based on the Supreme Court's Pronouncements from 2018 to 2022.* IDEHPUCP. https://idehpucp.pucp.edu.pe/publicaciones/dinamicas-del-crimen-organizado-y-la-corrupcion-aproximaciones-a-una-caracterizacion-a-partir-de-los-pronunciamientos-de-la-corte-suprema-del-2018-al-2022/

Total transformation of the banks and course of the Mapiri River, Mapiri Municipality, Bolivia.
Source: Alessandro Cinque/Alianza de Oro/WeWorld.

of the mining arc, challenging its legal validity, as different legal precepts and procedures regarding land management, protection of Indigenous peoples, the environment, labour rights and taxation principles were ignored (García Viloria, 2016).

The Maduro government's intention was to attract investment to develop the mining industry, but when expectations were not met, it turned into a free-for-all for informal mining without any environmental or fiscal control, throughout the south of the country. There is minimal formal mining activity in the mining arc and the rest of the mining areas are dominated by informal, small and medium-scale mining, mostly illegal or of dubious legality, particularly for gold (SOSOrinoco, 2022d).

Much of the informal mining, both inside and outside the mining arc, takes place in protected areas like national parks, natural monuments, etc. All of this mining is illegal and incompatible with the management goals of these areas, contravening constitutional, environmental, Indigenous and land-use planning law. Likewise, all mining in the state of Amazonas is illegal.

In terms of efforts to mitigate mining impacts, all signs suggest that environmental and biodiversity protection issues are not on the Venezuelan public agenda or that the Venezuelan environmental authority is negligent. A report prepared by the Office of the Comptroller General of the Republic puts it in the following terms: "The presence of unchecked mining activities in the Areas Under Special Administration, causing irreversible damage to the environment, is due to the fact that the bodies in charge of their conservation and preservation are not complying with the provisions of Article 47 of the Organic Law on the Environment, which states that the National Environmental Authority, upon the presumption or imminence of negative impacts on the environment, must prohibit or, as the case may be, totally or partially restrict ongoing activities that

involve ecosystems, natural resources or biological diversity, without this giving rise to rights to compensation (Venezuela, 2010)."

There have been a series of belated and piecemeal military operations to counteract illegal mining in protected areas. In 2018, the General Directorate of Military Counterintelligence (DGCIM) implemented the Tepuy Protection Plan in Canaima National Park (SOSOrinoco, 2020). Afterwards, operations Roraima 2022, Autana 2023 and Neblina 2024 in Amazonas and Bolívar states were carried out by the National Bolivarian Armed Forces' Strategic Operational Command, with the participation of the Amazonas and Bolívar Integrated Defence Operational Zones (ZODI).

These and other operations to evict illegal mines in the south of the country have led to violent clashes against miners and Indigenous communities, resulting in more deaths, human rights violations and environmental impacts. Most of the operations have been carried out exclusively by the military, without the participation of environmental authorities, the Public Prosecutor's Office or other entities (SOSOrinoco, 2023e). The NGO FundaRedes points out that "Far from acting appropriately to eradicate illegal mining and other criminal activities committed on these lands, without causing collateral damage to humans or the environment, the state orders operations that have a negative impact, [and] leave irreversible consequences [...]" (FundaRedes, 2023).

Military operations appear to mainly serve as a propaganda exercise to clean up the government's image, as they are not part of any coherent state policy, plan or programme to eradicate illegal mining or mitigate its impacts. Nor have there been any efforts to determine who is responsible for the lucrative business of illegal mining and mineral smuggling.

The Venezuelan government turned to mining, especially gold mining, because of its profitability and relatively low investment, immediate marketability and low traceability. This source of resources is managed by a corrupt network that contributes revenue not to the national treasury, but to the actors who control the scheme. This obvious illegality is the product of a de facto political decision. Therefore, we can assert that the apparent chaos and illegality define the fundamental nature of the mining arc as a "policy," which responds to a factual need that cannot be recognised in the realm of legal formality (SOSOrinoco, 2021c). The regime's real mining policy has at least three fundamental components: a) the control of production by organised crime groups who ensure that resources reach political agents; b) the disregard and violation of previous mining concessions in order to promote informality; c) the general oversight and command of the system in the hands of the active military, making use of the Armed Forces' institutional means (SOSOrinoco, 2021c).

Therefore, the mining arc is based on informalisation at all levels: it has no formal structure or geographic boundaries, no environmental regulations, no legal permits, no official oversight, and no ethical consideration of its impacts (SOSOrinoco, 2021c). It is estimated that between 70% and 90% of gold leaves the country illegally, in operations involving high-level government officials and family members close to the president's entourage (Transparencia Venezuela, 2019).

States' Human Rights and Environmental Protection Obligations with Respect to Mining

The previous chapters have outlined the socio-environmental impacts of gold mining in various areas of the Amazon in Bolivia, Brazil, Colombia, Ecuador, Peru and Venezuela. This chapter brings together some of the international human rights and environmental protection standards that have been breached by state authorities in the countries discussed. This section addresses the standards on the right to a clean, healthy and sustainable environment, and their interconnection with other human rights. It also outlines the key obligations that the state must respect and ensure in the face of gold mining, particularly illegal gold mining.

Illegal mining in the Paragua River. Bolívar State, Venezuela. Source: Rodolfo Gerstl.

The Right to a Clean, Healthy and Sustainable Environment

a. On environmental protection in international law

In 1972, the Stockholm Declaration on the Human Environment made environmental issues one of the international community's concerns. Among other fundamental aspects, principle 6 of this declaration includes the need to put an end to the release of toxic substances, so that they do not cause serious or irreparable damage to ecosystems.[28]

In 1987, the United Nations (UN) Commission on Environment and Development presented the report 'Our Common Future' to the General Assembly. In this report, it recognised "[...]**environmental trends that threaten to radically alter the planet, that threaten the lives of many species upon it**, including the human species[...]"[29] (emphasis added)[30].

The 1992 Rio Declaration on Environment and Development recognises in its Principle 4 that "[i]n order to achieve sustainable development, environmental protection must be an integral part of the development process and cannot be considered in isolation." Also in 1992, the Convention on Biological Diversity expressed concern about "the significant **reduction of biological diversity as a result of certain human activities**." (emphasis added)

Among the international legal instruments on the environment, the Johannesburg Declaration of 2002 also stands out. In its paragraph 13, it recognises the deterioration of the environment and the loss of biodiversity, the pollution of air, water and seas, as factors that affect the dignity of human life.

On 18 October 2021, the UN Human Rights Council recognised the right to a clean, healthy and sustainable environment as a human right[31] and, in July 2022, the General Assembly issued a resolution recognising this right in the same terms.[32]

In 2018, the UN Special Rapporteur on the human right to a clean, healthy and sustainable environment developed guidelines on human rights and the environment, called "Framework Principles on Human Rights and Environment." The document recognises that '[...] Environmental harm interferes with the full enjoyment of human rights [...]."[33]

In the regional sphere of the Americas, the Inter-American Democratic Charter of 2001 establishes in its preamble that "a safe environment is essential to the integral development of the human being, which contributes to democracy and political stability."[34] In turn, its Article 15 upholds

[28] United Nations Conference on the Human Environment. Stockholm Declaration on the Human Environment. 16 June 1972, principle 6.

[29] World Commission on Environment and Development. Report of the World Commission on Environment and Development, August 1987. A/42/427. para. 7.

[30] Ibid.

[31] Human Rights Council, Resolution adopted by the Human Rights Council on 8 October 2021. 48/13 The human right to a clean, healthy and sustainable environment. A/HRC/RES/48/13.

[32] UN General Assembly. The human right to a clean, healthy and sustainable environment. 26 July 2022. A/76/L.75.

[33] Special Rapporteur on the human right to a safe, clean, healthy and sustainable environment. Framework Principles on Human Rights and the Environment. 24 January 2018. A/HRC/37/59

[34] IACHR, Basic Documents on Human Rights in the Inter-American System, Inter-American Democratic Charter, 11 September 2001. See: http://www.oas.org/OASpage/esp/Documentos/Carta_Democratica.htm

the need to implement "implement policies and strategies to protect the environment, including application of various treaties and conventions, to achieve sustainable development for the benefit of future generations."

The American Declaration on the Rights of Indigenous Peoples establishes in its Article 19 that Indigenous peoples "have the right to live in harmony with nature and to a healthy, safe, and sustainable environment, essential conditions for the full enjoyment of the rights to life and to their spirituality, cosmovision, and collective well-being."[35] Despite this, this report shows illegal mining's devastating effects on Indigenous peoples and their territories.

In the Inter-American Human Rights System (IAHRS), the Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights (Protocol of San Salvador) recognises the right of all people to live in a healthy environment.[36] The OAS General Assembly has established some parameters for evaluating progress towards this right, based on the following elements: the quality and sufficiency of water sources; soil quality; biodiversity; production of pollutant waste and their management; and the status of forest resources.[37]

The Inter-American Commission on Human Rights (IACHR) has stressed that a healthy environment is a fundamental right **for ensuring the existence not only of humanity but of all forms of life on earth.**[38] The IACHR has systematised the state's obligations to prevent, mitigate and guarantee rights impacted by the inadequate management of natural resources, especially in relation to Indigenous and tribal peoples. From among the various declarations on the matter, we highlight the following thematic reports:

- Indigenous Peoples, Afro-Descendent Communities and Natural Resources: Human Rights Protection in the Context of Extraction, Exploitation, and Development Activities;[39]
- "Human Rights Situation of Indigenous and Tribal Peoples of the Pan-Amazon Region;"[40]

[35] OAS General Assembly, American Declaration on the Rights of Indigenous Peoples, adopted at the second plenary session, 14 June 2016, AG/RES. 2888 (XLVI-O/16).

[36] OAS General Assembly. Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights "Protocol of San Salvador." Signed in San Salvador, El Salvador on 17 November 1988, Article 11.

[37] OAS Assembly, "Adoption of the Follow-up Mechanism for the Implementation of the Protocol of San Salvador," Resolution AG/RES. 2823 (XLIV-O/14), 4 June 2014. The OAS Working Group in charge of defining indicators of progress for implementation of the Protocol of San Salvador has referred to states' obligations under article 11 of the Protocol, which can be summarised as: to guarantee without discrimination a healthy environment and basic public services to all persons and to promote the protection, preservation and improvement of the environment. See, Working Group on the Protocol of San Salvador, "Indicators of Progress: Second Grupo of Rights," OEA/Ser.L/XXV.2.1, GT/PSS/doc.9/13, 5 November 2013. para. 26.

[38] IACHR. Environmental defenders in Northern Central America. 16 December 2022. para. 25.

[39] This report summarises Inter-American standards in relation to Indigenous territorial rights, such as reasonable benefit-sharing; the requirements that must be met when conducting a socio-environmental impact assessment; and the assumptions of consent, that is, the right to veto large-scale investment projects. It also explains the obligation to adapt the domestic regulations and public policies of extractive companies' states of origin in order to prevent, mitigate and redress human rights violations committed by their subsidiaries in third party countries. See IACHR, "Indigenous Peoples, Afro-Descendent Communities and Natural Resources: Human Rights Protection in the Context of Extraction, Exploitation, and Development Activities," OEA/Ser.L/V/II, Doc. 47/15, 31 December 2015. For an explanation of the report's content, see Due Process of Law Foundation (DPLF), Infographic Summary of the IACHR Report "Indigenous Peoples, Afro-Descendent Communities and Natural Resources: Human Rights Protection in the Context of Extraction, Exploitation, and Development Activities," 30 March 2017, available at: http://www.dplf.org/ sites/default/files/informe_cidhddhh_extractivas_digital.pdf.

[40] This report states that "most of the major impacts on the environment in the Amazon region stem from extractive and development activities, as well as from livestock farming, drug trafficking, and illegal logging" and stresses that "those hardest hit are the Indigenous and tribal peoples, who are highly dependent on the ecosystems they inhabit, due to the decline in the availability of natural resources." See, IACHR, "Human Rights Situation of Indigenous and Tribal Peoples of the Pan-Amazon Region," OEA/Ser.L/V/II. Doc.176/19, 29 September 2019, paras. 272-276.

- "Business and Human Rights: Inter-American Standards."[41]

In its Advisory Opinion 23/17 on environment and human rights, the Inter-American Court of Human Rights explained that:

> *[...] In its collective dimension, the right to a healthy environment constitutes a universal value that is owed to both present and future generations. That said, the right to a healthy environment also has an individual dimension insofar as its violation may have a direct and an indirect impact on the individual owing to its connectivity to other rights, such as the rights to health, personal integrity, and life. Environmental degradation may cause irreparable harm to human beings; thus, a healthy environment is a fundamental right for the existence of humankind.42*

This advisory opinion analyses the special vulnerability of certain population groups to environmental damage, namely: children, women, people living in poverty, Indigenous peoples, people with disabilities and "communities that depend on natural resources" for their survival.

OC-23/17 adheres to two cardinal principles of international environmental law - the precautionary principle and the principle of prevention of environmental harm. Under the former, states must act when there are plausible indicators that a given activity may result in irreversible damage to the environment, even in the absence of scientific certainty. In turn, the principle of prevention implies the duty to regulate, supervise and monitor potentially environmentally damaging activities, to prepare a contingency plan and to mitigate the effects of environmental degradation.

b. A non-toxic environment as an integral part of the human right to a clean, healthy and sustainable environment and its relationship to biodiversity.

In 2022, the Special Rapporteur on the human right to a safe, clean, healthy and sustainable environment noted that low- and middle-income countries are the most affected by diseases caused by pollution.[43] The report highlights mining as one of the industries that produce "prodigious volumes of pollution and toxic chemicals."[44] It further stresses that: "**pollution and toxic substances are [...] one of the five main drivers of the catastrophic decline in biodiversity**, with particularly negative impacts on pollinators, insects, freshwater and marine ecosystems (including coral reefs) and bird populations"[45] (emphasis added).

With regard to pollution arising from the use of toxic waste, the I/A Court H.R. has warned that:

> *[...] air and water pollution can have adverse effects on the existence of a healthy and sustainable*

[41] One of the most innovative points in this latest report is the mention of "ratifying and applying the provisions of the Regional Agreement on Access to Information, Public Participation and Access to Justice in Environmental Matters in Latin America and the Caribbean, adopted in 2018, known as the Escazú Agreement." See, IACHR, "Report on Business and Human Rights: Inter-American Standards," OEA/Ser.L/V/II, 1 November 2019.

[42] I/A Court H.R. The Environment and Human Rights (State Obligations in Relation to the Environment in the Context of the Protection and Guarantee of the Rights to Life and to Personal Integrity: Interpretation and Scope of Articles 4(1) and 5(1) in Relation to Articles 1(1) and 2 of the American Convention on Human Rights). Advisory Opinion OC-23/17 of 15 November 2017. Series A No. 23. para. 50.

[43] Human Rights Council. See The right to a clean, healthy and sustainable environment: non-toxic environment - Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment. 12 January 2022. A/HRC/49/53. para. 5.

[44] Ibid. para. 9.

[45] Ibid. para. 13.

> *environment, as the deposit of pollutants can affect aquatic ecosystems, flora, fauna and soil and alter their composition, as well as have consequences for people's health and living conditions. In this sense, air and water pollution can affect rights such as to a healthy environment, life, health, food, and a dignified life when it causes significant damage to the basic goods protected by these rights [...].*[46]

This report explains the effects of the release of heavy metals from illegal mining on water, soil, plants and animals and on human health. A clear example of these effects is the case of the Ecuadorian Amazon, where lead and mercury were found in the urine of people involved in artisanal mining, resulting in impaired motor functions and cognitive-motor alterations.

Despite the existence of international agreements to control, regulate and eliminate toxic substances, such as those used in gold mining (including illegal mining), their effectiveness is reduced by low levels of monitoring and insufficient environmental safeguards on the part of several states.[47] In this regard, the Special Rapporteur has stressed that the "application and interpretation of the right to a safe, clean, healthy and sustainable environment in the context of pollution and toxic substances should be guided by the principles of prevention, precaution, non-discrimination and non-regression [...]."[48]

As the Special Rapporteur highlighted, states must **prevent exposure to toxic substances; stop their use, discharge or release; eliminate pollution; rehabilitate contaminated areas; and detoxify affected people's bodies**.[49] Illegal mining's indiscriminate use of toxic substances such as mercury and cyanide invariably leads to extremely high levels of pollution beyond the area where the extraction takes place. The pollution caused by these metals persists for generations and has serious consequences for fauna and flora in general, but particularly for aquatic species, amphibians and birds, which are part of the food chain of local communities and, often, other localities and urban centres.

[46] I/A Court H.R. Case of Inhabitants of La Oroya v. Peru. Preliminary Objections, Merits, Reparations and Costs. Judgment of November 27, 2023. Series C No. 511. para. 119.

[47] Human Rights Council. Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment. The right to a clean, healthy and sustainable environment: non-toxic environment. 12 January 2022. A/HRC/49/53. para. 18.

[48] Ibid. para. 54.

[49] Ibid. para. 86.

Human Rights Obligations in the Context of Gold Mining

From the standards of "international human rights law" (IHRL), several state obligations arise in relation to extractive activities, in order to prevent environmental damage and to protect and guarantee human rights. Among these obligations, we highlight the following:

1. adopt a regulatory framework for the protection of human rights, regulate high-risk activities, sanction environmentally harmful activities and create private liability regimes, etc.[50] This obligation also entails the duty to enforce their domestic law.[51]
2. prevent, mitigate and halt negative impacts on human rights, including establishing alert or emergency mechanisms for hazardous activities, informing the local population of risks and taking preventive action.[52]
3. supervise and oversee natural resource exploration and exploitation activities with due diligence.
4. prevent, investigate and sanction illegal activities, especially where they involve risks of pollution and violence.
5. guarantee access to justice and full reparation for human rights violations that may occur in the context of extractive activities.[53]

Under IHRL in general, and ISHR standards in particular, criteria have been developed for indirect attribution of responsibility to states for the acts of private parties based on the following assumptions: i) support, acquiescence[54] or tolerance[55] and ii) the link between the international violation and the state's authority.[56] While direct attribution of responsibility occurs when the acts or omissions of state agents per se constitute an international wrong, indirect attribution occurs when the acts or omissions of the state favour the violation perpetrated by private parties.

One of the main constraints to the fulfilment of state obligations described in this section is the intersection of criminal groups and corruption networks with ramifications in activities that go beyond

[50] IACHR, "Indigenous Peoples, Afro-Descendent Communities and Natural Resources: Human Rights Protection in the Context of Extraction, Exploitation, and Development Activities," OEA/Ser.L/V/II, Doc. 47/15, 31 December 2015. Para. 65.

[51] Ibid., Para. 69.

[52] The IACHR has indicated that the obligation of prevention is enforceable prior to the authorisation of the activity or the granting of the corresponding permits, as well as during the implementation and life cycle of the project through monitoring and oversight measures. To identify risks, they must implement assessments, in which an environmental approach is not sufficient, as extractive activities' impacts must be assessed by states bearing in mind how the activity will affect human rights. The IACHR has further highlighted that the "[...] specific obligation to adopt measures of prevention becomes relevant in cases where a plan or project poses a real and imminent danger for a specific individual or group of individuals. It may be a matter of rights to life or personal integrity resulting inter alia from environmental contamination [...]."Cit., Ibid., Para. 65, 76, 89, 93 and 94.

[53] Ibid., Paras. 64-70

[54] I/A Court H.R. *Case of Hacienda Brasil Verde v. Brazil*. Preliminary Objections, Merits, Reparations and Costs. Judgement of 20 October 2016. Series C No. 318, para. 320; *Ríos et al., v. Venezuela.* Preliminary Objections, Merits, Reparations and Costs. Judgement of 28 January 2009. Series C No. 194.

[55] I/A Court H.R. *Case of the Pueblo Bello Massacre v. Colombia.* Merits, Reparations and Costs. Judgement of 31 January 2006. Series C No. 140, Para. 126.

[56] IACHR, Extrajudicial Executions. Guatemala. Provisional Measures Report 39/00 of 13 April 2000, para. 227. ("The judiciary demonstrated its inability and lack of cooperation in fulfilling its role in the identification, prosecution and punishment of those responsible. When such a practice, attributable to the state or with respect to which the state acquiesced, can be established, and the particular case can be linked to that practice, that link defines the nature and scope of the claims, and helps to establish the veracity of the alleged facts.").

illegal mining to include drug trafficking, human trafficking, illegal logging and illegal fishing.[57] This report shows how complex criminal structures are acting in concert with or with the permissiveness of judicial, military and police officials, who benefit from these activities through acts of corruption, as part of these systemic structures of impunity.[58] In Brazil and Peru, for example, the co-optation of authorities across all spheres of local and national government by criminal structures linked to illegal mining has been documented.

These corruption networks and transnational organised crime constitute real operational systems in which authorities, politicians and, often, business elites interact, with very sophisticated rules of operation and division of labour, making it a titanic task to control and eradicate them. States must take all necessary measures to dismantle corruption structures that favour illegal mining, focusing on the rights of the victims of this phenomenon. In this regard, it is worth mentioning a recent UN Human Rights Council resolution which stresses "that the promotion and protection of human rights and the prevention of and fight against corruption are mutually reinforcing, and that human rights developments at the national level play a key role in the fight against corruption at all levels."[59]

Another element that hampers compliance with the state obligations described in this section is the transnational nature that often underlies illegal mining. The report describes how this phenomenon has expanded dramatically in cross-border regions where there is little state presence and where organised crime exercises a more pronounced territorial control. In addition, in areas with higher levels of poverty, the immediate profits made from illegal gold mining make it difficult to regularise artisanal mining programmes and to replace illegal mining with socially and environmentally sustainable alternatives.

One of the most important components of the analysis of the ISHR bodies on states' obligations with respect to private parties' actions has to do with the duty of prevention, enforceable under certain circumstances, such as whether the state had or should have had knowledge of a situation of real and imminent risk, or whether reasonable measures were adopted to avoid the occurrence of the verified risk.[60] Such an obligation must be fulfilled with particular diligence with regard to activities that involve risks to people's lives, integrity and health, whether they are workers involved in the activity or third parties who are also exposed to risks.[61]

In its OC 23/17, on environment and human rights, the IACHR held that states must adopt measures to prevent significant environmental damage, both within and outside their territories, where "significant" is defined as any damage that could lead to a violation of the right to life and personal integrity. In turn, the IACHR has established the obligation to adapt the internal laws and public policies of extractive companies' states of origin

[57] See https://globalinitiative.net/wp-content/uploads/2023/09/I%C-C%81ndice-global-de-crimen-organizado-2023.pdf

[58] See https://globalinitiative.net/wp-content/uploads/2016/03/El-Crimen-Organizado-y-la-Miner%C3%ADa-Ilegal-de-Oro-en-Am%C3%A9rica-Latina.pdf

[59] UN Human Rights Council, The negative impact of corruption on the enjoyment of human rights, A/HRC/53/L.29, 6 July 2023.

[60] See, for example, I/A Court H.R. *Case of González et al., ("Cotton Field") vs. Mexico*. Preliminary Objections, Merits, Reparations and Costs. Judgement of 16 November 2009. Series C No. 205, para. 284; and *Case of the Hacienda Brasil Verde Workers v. Brazil.* Preliminary Objections, Merits, Reparations and Costs. Judgement of 20 October 2016. Series C No. 318, para. 323.

[61] See, for example, I/A Court H.R., *Case of the Workers of the Fireworks Factory in Santo Antônio de Jesus*, *op. cit.* paras. 283 and 288, in which the Court ordered the Brazilian State to report on developments in the deliberation of a bill pending before the Federal Senate, concerning the regulation of fireworks production and trade.

in order to prevent, mitigate and redress human rights violations committed by their subsidiaries in third party countries.[62] It should be stressed that most of the illegally mined gold in the countries covered in this report is destined for developed countries, where it is used as a raw material for the manufacture of different products like jewellery and, in some cases, is transformed into a financial instrument.

As Fact Coalition highlighted in its report 'Dirty Money and the Destruction of the Amazon,' environmental crimes are the third most significant criminal activity worldwide, in terms of annual value.[63] As such, destination countries for illegal gold have responsibilities under international law to prevent, oversee and sanction companies registered or domiciled under their jurisdiction whose actions in third party countries contribute to human rights violation.[64]

In this regard, several European states have adopted corporate due diligence laws for companies to identify risks and prevent human rights violations resulting from the activities of groups or individuals in their supply chain.[65] According to the OECD, in this context, the due diligence obligation includes identifying actual or potential negative impacts in supply chains and business relationships.[66]

According to the Fact Coalition report cited above, activities such as illegal mining "cleared swaths of the Amazon forest, poisoned local communities and Indigenous groups with mercury, and made these countries less safe: fuelling narcotrafficking, violence, and corruption."[67]

[62] IACHR, "Indigenous Peoples, Afro-Descendent Communities and Natural Resources: Human Rights Protection in the Context of Extraction, Exploitation, and Development Activities," OEA/Ser.L/V/II, Doc. 47/15, 31 December 2015. For an explanation of the report's content, see Due Process of Law Foundation (DPLF), Infographic Summary of the IACHR Report "Indigenous Peoples, Afro-Descendent Communities and Natural Resources: Human Rights Protection in the Context of Extraction, Exploitation, and Development Activities," 30 March 2017, available at: http://www.dplf.org/ sites/default/files/informe_cidhddhh_extractivas_digital.pdf.

[63] Fact Coalition (2023). Dirty Money and the Destruction of the Amazon. Available online at: https://thefactcoalition.org/wp-content/uploads/2023/10/Feb-08_Spanish-Full_FACT-Report.pdf

[64] The Environment and Human Rights (State Obligations in Relation to the Environment in the Context of the Protection and Guarantee of the Rights to Life and to Personal Integrity: Interpretation and Scope of Articles 4(1) and 5(1) in Relation to Articles 1(1) and 2 of the American Convention on Human Rights). Advisory Opinion OC-23/17 of 15 November 2017. Series A No. 23. Para. 77

[65] Guiding Principles on Business and Human Rights, Principle 11 and Sherpa, Vigilance Plans Reference Guidance, first edition, page 23.

[66] OECD. OECD Due Diligence Guidance for Responsible Business Conduct, page 25.

[67] Fact Coalition (2023). Dirty Money and the Destruction of the Amazon, page 9. Available online at: https://thefactcoalition.org/wp-content/uploads/2023/10/Feb-08_Spanish-Full_FACT-Report.pdf

State Obligations with Respect to the Use, Regulation, Monitoring and Control of Mercury and Other Toxic Substances Used in Illegal Mining

International law contains several conventions that address the pollution, production, use and trade of toxic substances, such as mercury and arsenic, and the obligations of states with respect to these substances. The Minamata Convention on Mercury (2013), in force since September 2017, stands out among these instruments. This Convention seeks to "[...] protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds [...]."[68]

To achieve this goal, the Convention establishes a number of obligations for the prohibition, regulation and control of exports and imports of mercury and mercury-added products, as well as the control and reduction of mercury and mercury compound emissions, releases, interim storage and wastes, including imposing measures to restrict the use of mercury or mercury compounds. In addition, the Convention requires States Parties to discourage the establishment of facilities that intentionally use mercury or mercury compounds, unless the State Party can satisfactorily demonstrate that the manufacturing process provides environmental and health benefits and there are no mercury-free alternatives available that would achieve the same effect.[69]

The Minamata Convention establishes states' obligations to develop strategies to identify and assess sites contaminated with mercury or mercury compounds, incorporating an assessment of the risks to human health and the environment and ensuring public participation and validation of the results.[70] Furthermore, it encourages States Parties to develop and implement strategies and programmes to identify and protect at-risk populations that are particularly vulnerable to exposure to mercury and mercury compounds, develop and implement educational and preventive programmes on occupational exposure to mercury and mercury compounds, promote health care services for the prevention and care of populations affected by exposure to mercury and mercury compounds, and strengthen institutional capacity to achieve these objectives.[71]

Among its obligations, the Minamata Convention highlights the obligation to provide information and raise awareness of the health and environmental effects of mercury and mercury compounds.[72] It also says that states shall endeavour to cooperate in the "[...] modelling and geographically representative monitoring of levels of mercury and mercury compounds in vulnerable populations and in environmental media, including biotic media such as fish, marine mammals, sea turtles and birds [...]."[73]

Article 8 of the Convention imposes measures to control emissions from activities, including smelting and calcination processes used in the production of metals such as industrial gold. To this end, the regulation establishes

[68] Minamata Convention on Mercury, text and annexes. Article 1. Available online at: https://minamataconvention.org/sites/default/files/2021-06/Minamata-Convention-booklet-Sep2019-SP.pdf
[69] Ibid. Article 5. Para. 7.
[70] Ibid. Article 12
[71] Ibid. Article 16
[72] Ibid. Article 18.
[73] Ibid. Article 19.

that States Parties shall adopt a national plan, with measures aimed at controlling emissions, as well as expected targets, goals and outcomes.[74] For new sources of mercury emissions, States Parties shall require the use of best available techniques and best environmental practices to reduce emissions.[75]

In addition to the reduction of emissions, the Convention provides for obligations to control, and where possible, reduce releases of mercury and mercury compounds to land and water, requiring States Parties to include measures to control releases, as well as goals, objectives and expected outcomes in their national plan.

Article 7 of the Convention places an obligation on States Parties that have artisanal and small-scale gold mining and processing within their territories to take measures to *"[...] reduce, and where feasible eliminate, the use of mercury and mercury compounds in, and the emissions and releases to the environment of mercury from, such mining and processing [...]."* This Article imposes an obligation to report to the Convention Secretariat if artisanal gold mining and processing in its territory are more than insignificant and, if so, to develop and implement a national action plan and to submit a review every three years of the progress made in meeting these obligations.

Every country included in this report, with the exception of Venezuela, has ratified or acceded to the Minamata Convention. Nonetheless, this report reveals the indiscriminate use of mercury for illegal mining in all the countries analysed. It highlights the special case of Bolivia, which despite being a State Party to the Convention, has become one of the largest mercury trading hubs in the world, including illegal exports of mercury to neighbouring countries that have established import controls.

It is important to note, as indicated in this report, that despite the importance of the Minamata Convention, it does not require the adoption of national quotas for mercury reduction, nor does it set deadlines for its elimination.

Other international conventions establish obligations regarding pollution caused by toxic substances. In this regard, principle 7 of the Stockholm Declaration includes the obligation of states to take measures to prevent pollution of the seas by substances which endanger human health, damage living resources and marine life, or which may impair or interfere with legitimate uses of the sea.

The Framework Principles on Human Rights and the Environment address states' substantive obligations regarding pollution and toxic substances. With respect to these obligations, the Special Rapporteur on the human right to a safe, clean, healthy and sustainable environment emphasised that states "[...] must not cause pollution or exposure to toxic substances that violates the right to a clean, healthy and sustainable environment; protect this right from being violated by third parties, [...]; and take positive actions to fulfil this right."[76]

The same Rapporteur has stated that "[f]rom a human rights perspective, achieving a non-toxic environment is a legally binding obligation rather than a policy option."[77] In this regard, the Special Rapporteur has highlighted that

[74] Ibid. Article 8, para. 3
[75] Ibid. para. 4

[76] Human Rights Council. See The right to a clean, healthy and sustainable environment: non-toxic environment - Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment. 12 January 2022. A/HRC/49/53. Para. 50.
[77] Ibid, Para. 47.

Tuyuca community on the Tiquié River, Vaupés, Colombia.
Source: Juan Gabriel Soler, Gaia Amazonas Foundation.

States should apply a human rights-based approach to all laws, regulations, policies and actions governing the production, import, sale, use, release and disposal of substances that may harm human health or the environment, in order to eliminate negative impacts on human rights. A rights-based approach should also govern clean-up, remediation, restoration and, where necessary, relocation of affected communities. [...][78]

In summary, the international legal framework sets out unequivocal obligations for states to regulate and control the production, use and marketing of toxic substances used in illegal mining. These obligations include the duty to diligently prevent, monitor and control any polluting activity, from a human rights-based approach.[79]

[78] Ibid, Para. 48

[79] IACHR, Thematic Report on "Indigenous Peoples, Afro-Descendent Communities and Natural Resources: Human Rights Protection in the Context of Extraction, Exploitation, and Development Activities," OEA/Ser.L/V/II, Doc. 47/15, 2015, pp. 48 and ss.

Procedural Obligations of States in the Context of Activities that Have an Environmental Impact, Including Extractive Activities

Special Rapporteur on the human right to a safe, clean, healthy and sustainable environment refers to the Framework Principles on Human Rights and the Environment, which enumerate the states' procedural obligations that stem from international treaties or binding judgments issued by human rights courts. In this regard, the Rapporteur emphasised procedural obligations to ensure effective, informed and equal participation of the public in decision-making and to ensure prompt and affordable access to justice and effective remedies for all people.[80]

The above-mentioned procedural obligations have been further developed by the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, known as the Escazú Agreement, which includes most of these procedural obligations in the context of the countries in our region.

The aim of the Escazú Agreement is to guarantee the full and effective implementation of the rights of access to environmental information, public participation in environmental decision-making processes and access to justice in environmental matters in the region, contributing to the protection of the right of every person of present and future generations to live in a healthy environment and to sustainable development.[81]

The Escazú Agreement establishes the obligation of States Parties to guarantee the right of every person to live in a healthy environment[82] and procedural rights that facilitate that guarantee. This report will refer to the procedural obligation of the state to guarantee access to environmental justice in the context of illegal mining activities, as well as the obligations of the state with respect to environmental defenders.

Regarding the right of access to justice in environmental matters, Article 8 of the Escazú Agreement establishes the obligation of the States Parties to guarantee access to justice in environmental matters pursuant to the guarantees of due process, ensuring access to judicial and administrative bodies to challenge and appeal decisions, actions and omissions related to access to environmental information, participation in environmental matters and any action, decision or omission that could affect the environment. Among the guarantees of access to justice, Article 8 sets out the obligation to implement reparation mechanisms, remove barriers to access to justice and address the needs of vulnerable groups and people.

The UN Special Rapporteur has stressed that one of the main procedural obligations in this area is to investigate cases of serious pollution or discharge or emission of toxic substances and to impose sanctions when violations occur.[83]

[80] Ibid, Para. 49.

[81] Regional Agreement on Access to Information, Public Participation and Justice, Article 1.

[82] Ibid. Para. 4.

[83] Human Rights Council. Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment. The right to a clean, healthy and sustainable environment: non-toxic environment. 12 January 2022. A/HRC/49/53. Para. 52.

Deforestation caused by mining ponds on the banks of the Madre de Dios River, Bolivia. Source: Mattes Tempelmann.

The Special Rapporteur has also indicated that:

[...] it is indispensable that the state monitor compliance with environmental norms and, if necessary, sanction or limit the actions of private individuals; otherwise, the human right to a healthy environment [...].[84]

In addition to the Escazú Agreement, access to justice in environmental matters has been developed through various international agreements and international jurisprudence. Principle 10 of the Rio Declaration states that: "[...] Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided." Similarly, the 1982 World Charter for Nature, in its paragraph 23, recognises the right of any person affected by environmental damage or degradation to access means of redress.

In its Advisory Opinion 23/17, the I/A Court H.R. indicated that "[i]n the context of environmental protection, access to justice allows the individual to ensure that environmental standards are enforced and constitutes a means to remedy any human rights violations that have been caused by non-compliance with environmental standards, including redress and reparation."[85]

On the other hand, Article 9 of the Escazú Agreement establishes the obligation for States Parties to guarantee a safe and enabling environment for individuals, groups and organisations that promote and defend human rights in environmental matters, so that they are able to act free from threat, restriction and insecurity. To achieve this, states must take measures for the recognition, protection and promotion of the rights of environmental defenders, including the right to life and personal integrity, as well as for the prevention, investigation and punishment of attacks, threats or intimidation against environmental defenders. Of the six countries analysed in this report, only Bolivia, Colombia and Ecuador have ratified the Escazú Agreement.

The obligation contained in Article 9 of the Escazú Agreement is particularly relevant in the Amazonian context, where at least 296 environmental defenders have been killed between 2014 and 2022.[86]

[84] Ibid.

[85] Ibid. Para. 234.

[86] Global Witness (2023). Standing firm: the land and environmental defenders on the frontlines of the climate crisis. Page 18.

Differential Impacts of Illegal Mining on Indigenous Peoples and Other Groups Particularly Vulnerable to Illegal Mining

The information contained in this report demonstrates the impact of illegal mining on historically disadvantaged groups or individuals, such as Indigenous peoples and Afro-descendant communities.[87] Similarly, illegal mining has a disproportionate impact on people who are exposed to greater risk because of their gender, age,[88] or because of their activity or profession, such as environmental defenders and journalists.[89]

This report describes concrete impacts on Indigenous peoples' habitat and enjoyment of their human rights, who depend on natural resources for their physical and cultural subsistence. In addition, it shows how indiscriminate gold mining often destroys the social fabric of the community, generating internal conflicts, displacement, threats, assassinations and other serious human rights violations.

Environmental defenders, especially journalists and social communicators, are particularly exposed to reprisals by illegal mining groups and state agents involved in mining. In this

[87] I/A Court H.R., Case of the Indigenous Community Yakye Axa v. Paraguay. Merits, Reparations and Costs. Judgment of 17 June 2005. Series C No. 125; I/A Court H.R. Case of the Miskito Divers (Lemoth Morris *et al.*) v. Honduras. Judgment of 31 August 2021 Series C No. 432, among other decisions.

[88] IACHR, Thematic Report on "Indigenous Peoples, Afro-Descendent Communities and Natural Resources: Human Rights Protection in the Context of Extraction, Exploitation, and Development Activities," OEA/Ser.L/V/II, Doc. 47/15, 2015, pp. 133 and ss.

[89] IACHR, *Report on the Situation of Human Rights Defenders in the Americas*, para. 42; I/A Court H.R., Case of Luna López v. Honduras. Merits, Reparations and Costs. Judgment of 10 October 2013. Series C No. 269. I/A Court H.R. Case of Yarce *et al.*, v. Colombia. Preliminary Objection, Merits, Reparations and Costs. Judgment of 22 November 2016. Series C No. 325.

Ecuadorian Amazon Rainforest. Source: Pachamama Foundation.

regard, the joint statement on the climate crisis and freedom of expression issued by the freedom of expression mandate holders of the UN, the IACHR, the African Commission on Human Rights and the OSCE notes that "[s]tates should protect journalists and environmental and other human rights defenders from threats, harassment, stigmatization and violence, including by establishing effective protection mechanisms, condemning attacks on them, and fostering a culture of respect for the rights to freedom of expression, association and peaceful assembly."[90]

[90] The United Nations (UN) Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression, the Organisation for Security and Co-operation in Europe (OSCE) Representative on Freedom of the Media, the Organisation of American States (OAS) Special Rapporteur on Freedom of Expression, and the African Commission on Human and Peoples' Rights (ACHPR) Special Rapporteur on Freedom of Expression and Access to Information in Africa (2024). Joint Declaration on the Climate Crisis and Freedom of Expression. Para. 2, subparagraph b. Available online at: https://www.ohchr.org/sites/default/files/documents/issues/expression/statements/20240503-statement-freedom-expression-climate-change-EN.pdf

The report also exposes the impact on social rights, such as the right to health, due to the spread of epidemic diseases and high concentrations of mercury, not only among gold miners and millers, but also among the people living near gold mining activities, with special impact on women of reproductive age, children and the elderly. In several of the regions examined in this report, there are high levels of chronic diseases, high-risk pregnancies, congenital malformations, cerebral palsy and cognitive and physical disabilities, all of which are aggravated by the collapse of health services, drug shortages and the lack of a comprehensive policy to care for people contaminated by mercury and other heavy metals.

Violations of the right to health intersect with violations of the right to access to drinking water and the right to food security, due to food shortages directly related to the environmental impacts of gold mining, including instances of malnutrition and food contaminated by mercury, as previously mentioned.

Indigenous Yanomami of Alto Ocamo, Amazonas state, Venezuela.
Source: Cristina Vollmer.

In some countries, illegal mining is carried out in a context of abuse and sexual and labour exploitation, human trafficking, situations of semi-slavery at the expense of these groups, exacerbating the situation of vulnerability when different intersectional factors converge. In the case of children and adolescents, the right to education is also affected, as insufficient educational institutions, deteriorating infrastructure, shortened school hours, and a shortage of teachers due to low salaries and massive impoverishment of the population have been reported in mining areas of the Amazon. As a result, school dropout rates can reach alarming levels, forcing underage students to work in the mines in order to survive, which makes them targets for child exploitation, prostitution and trafficking of children and adolescents, contrary to the basic international principles for the protection of children's rights.

Conclusions

- Illegal gold mining has a devastating impact on biodiversity and human rights in the Amazon. Illegal gold mining even takes place in protected natural areas, reserves and Indigenous territories.

- Corruption, impunity and lack of environmental oversight encourage illegal mining, especially in cross-border areas and where organised crime exerts or disputes territorial control with the state.

- It is essential to create more effective mechanisms for regulation, transparency and social monitoring of the trade in mercury, an essential input for illegal mining. This includes stronger enforcement of compliance with the Minamata Convention on Mercury.

- Every country included in this report, with the exception of Venezuela, has ratified the Minamata Convention. However, in all of these countries, there is evidence of a rapid expansion of mercury contamination and a lack of adequate socio-environmental safeguards to address this phenomenon.

- Illegal mining has led to increased violence against Indigenous peoples, environmental and territorial defenders and journalists who denounce this phenomenon. This report documents several examples of threats, stigmatisation, assassinations and even disappearances in the context of illegal mining.

- Several Indigenous leaders have been persecuted and assassinated in the Amazon. Proper delimitation and titling of Indigenous territories and state support for the monitoring of their natural environment are essential to prevent violence against peoples and communities exposed to the scourge of illegal mining.

- The degradation of the Amazon biome caused by illegal mining compromises compliance with the objectives of the Convention on Biological Diversity (CBD), which seek to ensure the conservation and sustainable use of biological diversity, and the fair and equitable sharing of the benefits derived from its use.

- There are serious information gaps on environmental contamination, bioaccumulation of mercury and impacts on social and cultural rights in the Amazon.

- Unlike other minerals, gold has a monetary value and a liquidity that is easily converted

Illegal mining in the Paragua River. Bolívar State, Venezuela.
Source: Rodolfo Gerstl.

into a financial asset. Because of these characteristics, illegal gold has become one of the main alternatives for laundering the proceeds of illicit activities, such as illegal logging and drug trafficking.

- Given the difficulties in tracing gold's origin, there is a need to strengthen due diligence processes on companies that trade in gold, as well as on the inputs and equipment used in illegal gold mining. The home countries of companies in the supply chain for these inputs or whose activities facilitate illegal gold laundering must exercise their extraterritorial human rights obligations.

- In areas with higher levels of poverty, the immediate-term profits generated by illegal gold mining make it difficult to regularise artisanal mining programmes and to replace illegal mining with socially and environmentally sustainable alternatives. This complexity demands a human rights-based approach to any policy and programme to combat and prevent illegal mining.

Recommendations

To the six countries reviewed:

- Implement effective measures to prevent illegal mining and other associated activities that cause significant environmental damage and endanger the life, health and integrity of people, Indigenous peoples and local communities.

- Initiate investigations with due diligence, in order to prosecute and punish those responsible for socio-environmental damage resulting from illegal mining and create or strengthen contingency and mitigation plans for such damage.

- Strengthen transnational cooperation for the protection of the Amazon, by integrating local and governmental actors in strategies that combine environmental monitoring with the enforcement of sanctions for illegal extractive activities.

- Strengthen the institutional capacities of environmental protection agencies and improve the presence of the state in hard-to-reach areas by improving and/or creating specialised units for monitoring and enforcement in Indigenous territories and protected areas. This should be accompanied by measures to combat corruption, ensuring transparency and accountability in environmental monitoring and protection efforts.

- Develop and promote environmental conservation policies that include mechanisms for the effective participation of Indigenous communities in decision-making and management of their territories.

- Prioritise the delimitation and collective titling of Indigenous territories exposed to illegal mining, and support communities' own monitoring and conservation of their lands and natural resources.

- Strengthen cross-border cooperation, through comprehensive strategies that address the economic, social and environmental aspects of illegal gold mining, promoting sustainable development alternatives for local communities and strengthening environmental governance systems.

- Implement a regional system to identify illicit trafficking routes and points of entry of mercury into mining activities and apply a human rights-based approach to laws, regulations, policies and actions governing the import, sale, use, discharge and disposal of mercury.

- Strengthen cooperation between Amazonian countries to improve the implementation of

the Minamata Convention, developing campaigns for mercury substitution and phasing mercury out of extractive activities.

- Develop and implement environmental monitoring and remediation programmes focused on mercury-affected areas, prioritising Indigenous peoples' territories, with due consent. These programmes should include actions to restore degraded ecosystems and protect the rights of communities, as well as strengthen local health systems to address conditions related to mercury exposure.

- Establish effective protection and security mechanisms for environmental defenders in the Amazonian territory, including the direct participation of communities in defining protection measures. Furthermore, a regional early warning system should be created to register and respond to cases of violence and attacks against defenders, facilitating coordination between governments and civil society organisations.

- Promote intercultural dialogue with the Indigenous governments of the Amazon to address illegal mining, based on greater recognition of their autonomy and proposals for territorial planning and environmental management.

- Establish more efficient mechanisms for regulation, transparency and social control over the trade in mercury, a key input for illegal mining. This includes stricter monitoring of compliance with the Minamata Convention on Mercury, to which several countries reviewed in this report are States Parties.

- Promote the informed participation of people and communities affected by illegal mining in the planning and implementation of measures to mitigate and repair the damage caused by illegal mining, ensuring that such measures have a human rights-based and culturally relevant approach when Indigenous peoples are concerned.

- Create, strengthen and implement plans for clean-up, remediation and restoration of areas contaminated as a result of illegal mining, based on a human rights-based approach and cultural relevance.

- Strengthen existing cooperation forums such as the Amazon Cooperation Treaty Organisation and the Andean Community of Nations, as well as comply with the decisions of these bodies regarding initiatives on mercury monitoring, illegal mining, Indigenous peoples' rights and gender mainstreaming.

To consumer countries and the home countries of companies that profit from illegal mining

- Implement measures such as due diligence laws, which oblige companies to carry out corporate due diligence to verify that socio-environmental damage and human rights violations are not taking place in their production and supply chains.

- Countries whose financial systems can be used to shelter or launder the proceeds of illegal mining should issue and enforce laws to prevent, control and sanction the laundering of the proceeds of illegal mining.

To international human rights bodies:

- Prioritise addressing human rights violations caused by illegal mining and incorporate this issue into each of its monitoring, promotion and protection activities.

- Call on governments in the region, in particular Bolivia, Brazil, Colombia, Ecuador, Peru and Venezuela, to develop and implement specific regulations and sound public and security policies with a human rights perspective to monitor, sanction and eradicate illegal mining.

- Demand destination countries for illegal gold or countries whose companies are part of the supply chain for this illicit activity comply with extraterritorial human rights obligations of.

- Coordinate efforts with other organisations and technical secretariats, such as the OAS Secretariat for Multidimensional Security, the United Nations Office on Drugs and Crime and the United Nations Environment Programme, to implement multilateral commitments to combat illegal mining, mercury trafficking and other related criminal activities in the region.

- Promote culturally relevant approaches and initiatives by governments in the region that guarantee the effective participation of Indigenous peoples and local communities, in accordance with human rights standards.

For the Conference of the Parties (COP) to the Convention on Biological Diversity:

We urge the Conference of the Parties to develop a specific action plan to address the threats of illegal mining in the Amazon, with an approach that prioritises the protection of biodiversity and the rights of Indigenous communities. This plan should include:

1. Strengthening regional cooperation.
2. Development of specific guidelines on the protection of environmental defenders in territories with high biodiversity, ensuring that States Parties adopt effective prevention and protection policies, and promote a safe environment for those who defend biodiversity and community rights.
3. Inclusion of illegal mining as a priority threat.

With these actions, the COP can make a significant contribution to the protection of one of the most important and diverse ecosystems on the planet, ensuring that the Convention's objectives are met and that the rights of the communities that depend on these environments for their cultural and material survival are protected.

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Interviews

William Sacher. Universidad Andina Simón Bolívar. Entrevista realizada el 27 de febrero 2020

Trabajadores de MOAPE Paquisha. Entrevista realizada el 1 de marzo 2020

Nathalia Bonilla. Presidenta Acción Ecológica Entrevista realizada el 16 de marzo 2020

Paul Palacios. Ex delegado ambiental del GAD Zamora Chinchipe. Entrevista realizada el 13 de abril 2020

Ausberto Zúñiga. Presidente de la Cámara de Pequeña Minería de Zamora Chinchipe. Entrevista realizada el 14 de abril 2020

Luis Tapia. Programa Oportunidades Globales para el desarrollo a largo plazo del sector de minería de oro artesanal y en pequeña escala (GEF GOLD). Entrevista realizada el 17 de abril 2020

Arturo Jiménez. Fundación Arcoíris. Entrevista realizada el 20 de abril 2020

José López vocero caso minería en Napo- FOIN. Entrevista realizada el 21 de abril 2020

Oscar Betancourt. Catedrático- Investigador Entrevista realizada el 21 de abril 2020

Fernanda Soliz. Universidad Andina Simón Bolívar. Entrevista realizada el 22 de abril 2020

Andrés Tapia. Dirigente de comunicación de CONFENIAE. Entrevista realizada el 23 de abril 2020.

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