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# **ILLEGAL GOLD THAT UNDERMINES FORESTS AND LIVES IN THE AMAZON:**

an overview of irregular mining and its impacts  
on Indigenous populations

Melina Risso, Julia Sekula, Lycia Brasil, Peter Schmidt and Maria Eduarda Pessoa de Assis

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# ILLEGAL GOLD THAT UNDERMINES FORESTS AND LIVES IN THE AMAZON:

an overview of irregular mining and its impacts on Indigenous populations

Melina Risso, Julia Sekula, Lycia Brasil, Peter Schmidt and Maria Eduarda Pessoa de Assis<sup>1</sup>

## Executive Summary

In the past 20 years, the price of gold has increased from US\$400 to US\$1861.50 per ounce, driven by rising demand in China and India. Gold is time and capital-intensive to produce, which is why this rise in demand has driven an attendant demand for illegal gold mining – an industry that is estimated to yield globally between US\$12 and US\$28 billion annually.<sup>2</sup>

The Brazilian Amazon is rife with illegal gold mining operations, with 321 identified points of illegal, active and inactive mines arranged in the 9 states that comprise the Brazilian Amazon Basin.<sup>3</sup> This has had a direct impact on deforestation rates and health hazards of local indigenous populations. Deforestation

across the Amazon grew 25% in the first half of 2020 according to INPE (Brazil's National Institute for Space Research). The contribution of mining activity to deforestation rates as a whole has increased from 4% in 2017 to 23% in indigenous territories in data recorded up to June 10, 2020.<sup>4</sup> Deforestation has been concentrated in indigenous territories where, between 2018 and 2019, environmental degradation by mining increased 107%. This devastation has a price – according to Brazil's Federal Public Prosecutors Office, 1kg of gold represents roughly R\$1.7m in environmental damages, culminating in an environmental cost roughly 10 times greater than the current price of gold.

<sup>1</sup> Special Thanks to Sam Cowie; Paulo de Tarso Moreira Oliveira, Public Prosecutor; and to the Rainforest Foundation.

<sup>2</sup> May, Channing. "Transnational Crime and the Developing World". *Global Financial Integrity* (2017). 9 Dec 2020. <[www.gfintegrity.org](http://www.gfintegrity.org)>.

<sup>3</sup> "Estudo denuncia epidemia de garimpos na Amazônia brasileira". *Deutsche Welle*. 10 Dec 2018. <<https://www.dw.com/pt-br/estudo-denuncia-epidemia-de-garimpos-na-amaz%C3%B4nia-brasileira/a-46664874>>.

<sup>4</sup> Oviedo, Antonio; Araújo, Elis; Batista, Juliana; Santos, Tiago. "Relatório Técnico sobre o Risco Iminente de Contaminação de Populações Indígenas pelo Novo Coronavírus em Razão da Ação de Invasores Ilegais". Instituto Socioambiental - ISA (2020): 3-4. 28 Oct 2020. <[https://www.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/versao\\_final\\_relatorio\\_tecnico\\_sobre\\_o\\_risco\\_iminente\\_de\\_contaminacao\\_de\\_populacoes\\_indigenas\\_pelo\\_novo\\_coronavirus\\_3.pdf](https://www.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/versao_final_relatorio_tecnico_sobre_o_risco_iminente_de_contaminacao_de_populacoes_indigenas_pelo_novo_coronavirus_3.pdf)>.



The Amazon is nearing its critical ‘tipping point’, beyond which both the Amazon biome and our global climate will suffer irreversible damages. As such, discussions on illegal mining in the Brazilian Amazon present two interrelated challenges: combating deforestation and protecting the distinct cultures of indigenous populations, who constitute the forests’ principal environmental defenders.

While Brazil has been celebrated for the relatively high level of protection that its Constitution and more recent international treaties promise to indigenous communities, these protections are rarely implemented in practice. Appeals processes for demarcated territory have stalled or reversed previously demarcated land, creating space for changing definitions of legality, irregularity and illegality of gold mining in indigenous territories.

These trends have been exacerbated by the rise in *garimpagem* invasions on indigenous lands, a phenomenon that has been increasingly accommodated by the shifting legal definitions of *garimpagem* itself.<sup>5</sup>

From a procedural standpoint, a manual, analog and poorly detailed permissions and licensing process facilitates, rather than inhibits, the ‘washing’ or laundering of gold. Mining permit requests do not require estimates of the volumes of gold a given plot can feasibly produce. This allows illegal miners to co-opt or enlist owners of legal permits to ‘wash’ gold for a fee, and certain DTVMs (buyers of gold as financial assets) have been revealed by public prosecutors as providing documentation to ‘wash’ gold at the point of sale. The division of gold into financial assets and commodities drives the underlying dynamics of the gold supply chain.

At the municipal, state and federal level, the state participates in economies of gold through tax collection and royalties on exported gold — of which the latter is more relevant and more instructive. In the municipality of Itaituba (PA), taxes and royalties on gold and gold minerals collected by September 2020 were already 89% higher than those in all of 2019 combined.<sup>6</sup> Some of these same municipalities, including Itaituba, one of the illegal gold mining capitals of Brazil, have received local ANM (National Mining Agency) outposts with more direct links to the federal ANM office (in Brasilia) — and therefore greater access to the regulating agency — to issue permits and licenses. The potential conflicts of interest within small municipalities and dimensions of this new internal hierarchy are cause for further study.

Meanwhile, global supply chain traceability and ESG (Environmental, Social and Governance) frameworks suffer from many of the same drawbacks of other deforestation and conflict-area frameworks. “While an increasing number of companies are publicly reporting on commitments and progress, they lack a standardized approach in terms of their types of commitments, clarity, timelines, measuring, and monitoring”.<sup>7</sup>

The impacts of these factors in the Yanomami and Mundurucu territories have severely threatened ecosystems and the health of indigenous populations. The two groups, given their respective histories of isolation (in varying degrees) have suffered from and addressed these conflicts in differing ways.

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5 In accordance with the legislation (article 10 of Law 7.805) *garimpagem* is the activity of harnessing mineral substances that can be mined, executed inside areas established for this purpose, carried out by a Brazilian cooperative of *garimpeiros*, authorized to operate as a mining company, under the mining permit regime (PLG - *Permissão de Lavra Garimpeira*).

6 Considering CEFM numbers for gold and gold minerals.

7 Ferguson, Brodie; Sekula Júlia; Szabó, Ilona. “Technology Solutions for Supply Chain Traceability in the Brazilian Amazon: Opportunities for the Financial Sector”. Instituto Igarapé (2020). <[https://igarape.org.br/wp-content/uploads/2020/07/2020-07-29-AE-48\\_Amazonia-Technology-Solutions.pdf](https://igarape.org.br/wp-content/uploads/2020/07/2020-07-29-AE-48_Amazonia-Technology-Solutions.pdf)>.

Between 2017 and 2019 alone, 1,174 hectares of forest were lost due to gold mining in the Yanomami Territory and 2019 saw the territory's highest deforestation rates of the last ten years, at 418 hectares.<sup>8,9</sup> Meanwhile, the Munduruku Territory has seen the greatest increase in deforestation in 2020, with satellite imagery revealing a 58% increase in deforestation related to mining in the first four months of 2020, compared to the same period the year before.<sup>10</sup>

In addition to driving the deforestation of the Yanomami's and the Munduruku's home, the invasion of illegal miners has brought health hazards such as mercury poisoning, malaria and, since 2020, Covid-19. A study found that in some Yanomami villages, 92% of residents suffered from mercury poisoning, which is known to harm vital organs and cause developmental problems in children.<sup>11</sup> Accordingly, the Yanomami have stopped eating fish from certain rivers deemed 'lifeless', a radical break from their traditional diet and fishing lifestyle.

The Munduruku have borne the harms of deforestation and illegal mining in a similar fashion. Recent studies carried out by Fiocruz (Oswaldo Cruz Foundation) and WWF indicated that about 60% of the indigenous population assessed in the Tapajos region had mercury levels above 6µg.g-1, the maximum safety limit established by recognized international health agencies.<sup>12</sup>

The same conditions that incentivize illegal mining make the Yanomami and Munduruku Territories and the people who live there unusually vulnerable to the spread of Covid-19. Epidemiological forecasts predict that as many as 5,600 Yanomami, or 40% of the population in Brazil, are at risk of infection — and this considers only the villages close to the mining areas.<sup>13</sup> More than 689 indigenous Munduruku have already tested positive for Covid-19, although experts estimate that the infection rates are in reality at least three times higher.<sup>14,15</sup> The federal government deactivated critical Funai (National Indian Foundation) health posts and spent less on indigenous healthcare in the first half of 2020 than in the first half of 2019.<sup>16</sup>

8 Quijano Vallejos, Patricia et al. "Undermining Rights: Indigenous Lands and Mining in the Amazon". *World Resources Institute* (2020): 75-77. 3 Nov 2020. <[https://files.wri.org/s3fs-public/Report\\_Indigenous\\_Lands\\_and\\_Mining\\_in\\_the\\_Amazon\\_web\\_1.pdf](https://files.wri.org/s3fs-public/Report_Indigenous_Lands_and_Mining_in_the_Amazon_web_1.pdf)>.

9 Oviedo, Antonio; Araújo, Elis; Batista, Juliana; Santos, Tiago. "Relatório Técnico sobre o Risco Iminente de Contaminação de Populações Indígenas pelo Novo Coronavírus em Razão da Ação de Invasores Ilegais". Instituto Socioambiental - ISA (2020): 3-4. 28 Oct 2020. <[https://www.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/versao\\_final\\_relatorio\\_tecnico\\_sobre\\_o\\_risco\\_iminente\\_de\\_contaminacao\\_de\\_populacoes\\_indigenas\\_pelo\\_novo\\_coronavirus\\_3.pdf](https://www.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/versao_final_relatorio_tecnico_sobre_o_risco_iminente_de_contaminacao_de_populacoes_indigenas_pelo_novo_coronavirus_3.pdf)>.

10 "Em meio à Covid, 72% do garimpo na Amazônia foi em áreas 'protegidas'". *Greenpeace* (2020). 3 Nov 2020. <<https://www.greenpeace.org/brasil/blog/em-meio-a-covid-72-do-garimpo-na-amazonia-foi-em-areas-protegidas/>>.

11 Vega CM, Orellana JDY, Oliveira MW, Hacon SS, Basta PC. "Human Mercury Exposure in Yanomami Indigenous Villages from the Brazilian Amazon". *Int J Environ Res Public Health*. (2018):15(6):1051. 23 May 2018. <<https://www.arca.fiocruz.br/handle/icict/27618>>.

12 Basta, Paulo; Hacon, Sandra de Souza. "Impacto do Mercúrio Na Saúde do Povo Indígena Munduruku, na Bacia do Tapajós". *Fiocruz and WWF* (2020): 2-3. <[https://www.greenpeace.org/static/planet4-brasil-stateless/9ec86ba8-wwfbr\\_2020\\_nt\\_impacto-merc%C3%BArio-sa%C3%BAde-povo-ind%C3%ADgena-munduruku\\_v2.pdf](https://www.greenpeace.org/static/planet4-brasil-stateless/9ec86ba8-wwfbr_2020_nt_impacto-merc%C3%BArio-sa%C3%BAde-povo-ind%C3%ADgena-munduruku_v2.pdf)>.

13 Roman, Clara. "Covid-19 pode contaminar 40% dos Yanomami cercados pelo garimpo ilegal". *ISA*. 2 Jun 2020. <<https://www.socioambiental.org/pt-br/noticias-socioambientais/covid-19-pode-contaminar-40-dos-yanomami-cercados-pelo-garimpo-ilegal>>.

14 Vargas, Ana Paula; Martinez, Angela. "The Munduruku and Kayapo are fighting to protect their past and future". *Amazon Watch*. 14 Jul 2020. <<https://amazonwatch.org/news/2020/0714-the-munduruku-and-kayapo-are-fighting-to-protect-their-past-and-future>>.

15 Branford, Sue. "Every Time an Elder Dies, a Library is Burnt": Amazon Covid-19 toll grows". *Mongabay*. 9 Jun 2020. <<https://news.mongabay.com/2020/06/every-time-an-elder-dies-a-library-is-burnt-amazon-covid-19-toll-grows/>>.

16 Rocha, Bruna; Loures, Rosamaria. "In Amazon, libraries are being set alight". *Open Democracy*. 21 Jul 2020. <<https://www.opendemocracy.net/en/amazonia-libraries-are-being-set-alight/>>.

Given the challenges of geography and scale, new technologies can provide meaningful solutions to the challenges of illegal mining. Digitalization is the most attainable and most important technological advancement in the response to illegal mining.

From the perspective of early alert systems that signal impending infrastructure projects that threaten to make way for the illegal extraction of gold, simple GPS tracking technologies should be implemented at a larger scale, especially to monitor international heavy machinery providers in Amazonian states. A combination of high-quality daily satellite imagery with automated object identification can further provide information to guide companies' down-stream operation compliance with ESG metrics. Other early alert systems such as bioacoustic technology that use artificial intelligence to detect sounds of industrialized human activity constitute possible tools to increase the visibility and alerting capabilities in indigenous lands that are vulnerable to illegal mining, such as the Yanomami and Munduruku territories.

The pathway to remediating *some* of the complex challenges of illegal mining in the Amazon, and specifically in indigenous territories is, as demonstrated, comparatively simple. However, the necessary changes have been mired in a lack of political will to enact these changes.

### Critical and Urgent Recommendations

- **From a legislative perspective**, Bill 191/2020, which would open indigenous lands to mining, oil and gas extraction, electricity generation, and agriculture needs to be closely monitored and advocacy efforts directed towards ensuring that the Bill, in its current format, does not pass in Congress.
- **Funai must immediately recognize indigenous territories** (even those under an appeals process) in formal land registries. By authorizing the registration of indigenous territory in the process of being formally recognized as property, approval for mining requests in these lands becomes that much more likely. This must be halted.
- **From a regulatory mining perspective (and thereby, specifically the ANM)**, mining permits must be adapted to include volumes of gold that could be viably extracted from any given piece of land, in order to weaken attempts to wash illegal gold continuously with the same mining permits. Giving some context of feasible reserves provides a necessary constraint and oversight capacity.
- Additionally, gold invoices need to be digitalized and crosschecked with environmental licenses and PLG documentation to generate and improve data on the gold market. **Here, the Central Bank and the CVM (Comissão de Valores Mobiliários or Securities and Exchange Commission) , as regulator of DTVMs, can be instrumental** in making a digital invoice a requirement at DTVM (*Distribuidora de Títulos e Valores Mobiliários or Broker and Distributor of Securities*) posts. While this will not cover *all* gold (e.g., gold as a commodity would, in this first instance, remain undigitalized), it would go a significant way to providing data and minimal traceability mechanisms for the gold supply chain. Equally, **international and national investor dialogue** to reinforce these greater traceability and transparency demands of the Central Bank and CVM could be very effective.
- Indigenous populations need greater protection. As such, the **BAPES as well as Funai health posts must be reintroduced to the regions at once**, critically during Covid-19, but also considering the health and livelihood threats that outside contact brings on a systematic basis.

## Short-term Recommendations

- **Technology should be used by the private sector to monitor company ESG metrics**, as well as by **consumers and civil society to monitor heavy machinery use** and new infrastructure networks in indigenous and protected territories and thus improve prosecution capabilities, traceability, as well as communication and advocacy on the issues at hand. Equally, **initiatives of bioacoustic monitoring** that serve as effective early-alert systems to indigenous populations, **should be given more support to scale-up operations**.
- From a global perspective of gold supply chains ESG metrics, **OECD Guidelines**, which today present the most promising source of gold ESG metrics, **need to be made clearer and more objective, as well as binding for member companies**. The most technical guideline, the **Conflict-Free Gold Standard should be made public** for greater gold-supply chain transparency.
- **International and national civil society** must engage in greater and on-going communication and advocacy campaigns to educate on the illegalities along the gold supply-chain, from extraction to sale to end-financial banks or consumers.

## Long-term Recommendations

- **From a legislative perspective**, regulation and the respective mining code need to be brought to the fore of the political agenda, debated in Congress and implemented, respecting indigenous rights, (which should be implemented through a legislation that guarantees the protection of indigenous lands against mining). As long as ambiguity exists due to lack of supporting laws, illegal mining will persist and threaten the rights set out for indigenous populations in the Constitution. *Garimpagem* also needs to be defined more clearly to avoid the current lack of differentiation between industrial and small-scale mining.
- **Law enforcement should seek to further understand the dynamics of mercury and implement more regular seizures of mercury**, a controlled substance according to the Minamata Convention (promulgated by Decree 9.470 in 2018), due to the substance's long-term effects on indigenous populations.<sup>17,18</sup> From an **international cooperation perspective**, the Minamata Convention could be an important source of advocacy to further urge parties to reduce the use of mercury in *garimpo*.

The preservation of the Amazon rainforest is critical for preventing irreversible climate collapse. As such, the stakes for preventing illegal mining and protecting indigenous lands in the Amazon have never been higher.

17 Antunes, Paulo de Bessa. "Extração ilegal de ouro, mercúrio e povos indígenas: prejuízo certo para o Brasil". *Gen Jurídico*. 16 Sep 2020. <<http://genjuridico.com.br/2020/09/16/extracao-ilegal-ouro-mercúrio-indigenas/>>.

18 "Nota orienta sobre proibição de mercúrio em produtos". Agência Nacional de Vigilância Sanitária - Anvisa. 24 Jan 2019. <<https://www.gov.br/anvisa/pt-br/assuntos/noticias-anvisa/2019/nota-orienta-sobre-proibicao-de-mercúrio-em-produtos>>.



# Introduction

Gold mining has been a powerful economic force in the Amazon since the 1980's, when Brazil's developmental incursions on the Amazon and its external debt crisis combined to drive thousands of illegal miners into indigenous lands. Despite scattered legal victories and sustained indigenous activism, these invasions have steadily continued. Most recently, the convergence of the Covid-19 pandemic and the Jair Bolsonaro administration's pro-mining stance have exacerbated illegal mining activity.

This report seeks to provide a comprehensive overview of illegal gold mining in the Brazilian Amazon and its impacts on the Yanomami as well as the Mundurucu peoples.

In order to do so, one must first understand the global dynamics of gold that define demand and supply and thereby the international price of gold. A brief overview of traceability and ESG metrics on gold follows to define to which extent international markets have oversight over local gold production in places like the Amazon.

From this point forward the report outlines the mechanisms of the global gold market to then delve deeply into the current state of gold mining in the Brazilian Amazon, the legislative framework that underpins gold mining as well as the rights of indigenous populations, and the challenges of tracking illegal gold mining and possible points of intervention for solutions. In doing so, this report will attempt to explain the factors that have exacerbated illegal gold mining and deforestation in the region and will propose specific responses.

The urgency to protect these lands from deforestation and these populations from violence is evident: deforestation across the Amazon grew 25% in the first half of 2020, according to INPE, with much of this due to illegal mining. The participation of mining activity in deforestation rates as a whole has increased from 4% in 2017 to 23% in indigenous territories in data recorded up to June 10, 2020. Equally, according to a 2019 Cimi (Missionary Council for Indigenous Peoples) report on violence, 2019 saw a 150% increase in violence against indigenous people. Acts of violence related to *garimpagem* can include arson intended to clear land, altercations over land use, bodily injury and deaths due to 'negligence'.<sup>19</sup>

In February of 2020, President Bolsonaro presented Bill 191/2020, which would open indigenous lands to mining, oil and gas extraction, electricity generation, and agriculture. This bill is now in the Chamber of Deputies for discussion.

The preservation of the Amazon rainforest is critical for preventing irreversible climate collapse and cultural catastrophe. As such, the stakes for preventing illegal mining and protecting indigenous lands in the Amazon have never been higher.

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19 "Relatório Violência Contra os Povos Indígenas no Brasil: Dados de 2019". Conselho Indigenista Missionário - Cimi (2020): 104. Web. Access: 12 Jan 2021. <<https://cimi.org.br/wp-content/uploads/2020/10/relatorio-violencia-contra-os-povos-indigenas-brasil-2019-cimi.pdf>>.



# The Global Gold Market and its Dynamics

Gold has been exchanged for millennia, but more than half of the gold extracted in all of human history was mined in the past fifty years alone. Although statistics on annual production are unreliable as mines and refineries do not publish annual figures, there are currently believed to be 190,000 tons of gold stocks worldwide. Gold is generally refined for four end purposes: the jewelry industry, private investments, and use as a strategic asset for monetary policy in central banks or for technology companies. In 2018, the proportion of refined gold directed to each of these was 50.6% for jewelry, 26.7% for investments, 15% for central banks and 7.7% for technology companies.<sup>20</sup>

The mining industry itself can be roughly imagined as a spectrum with artisanal small-scale mining (ASM) on one end and industrial large-scale mining on the other. This is a gross simplification, and as we demonstrate in the case of Brazil, one with harmful consequences. On a global scale, these two categories follow the so-called “80-20” rule, whereby ASM is responsible for 20% of the gold industry’s production but 80% of its labor force, while large-scale mining produces 80% of the gold with 20% of the industry’s labor force. The rule implies an inverse relationship between size and laboriousness: the smaller the scale of mining, the more human-intensive (and human-rights abuse vulnerable) the situation

becomes.<sup>21</sup> The labor-intensive quality of ASM mining in Brazil (which we will henceforth refer to as *garimpagem*) has severe consequences for the livelihoods of Indigenous populations that are forcibly impacted by these activities.

Today, humanity has mined most of the planet’s easily accessible gold — that is to say, deposits close to the surface. What remains are deposits that would require enormous investment and perforations at least 1 km deep to extract.<sup>22</sup> While costly, however, such mining projects are not unheard of in the large-scale industrial mining sector, where \$2 billion is regularly spent over what is typically a fifteen-year preparation, investment and extraction period.<sup>23</sup> Still, such costly and time-consuming ventures cannot keep up with rising consumer demand, driven principally by China and India (that made up 33% and 29% of global consumption in 2017). This mismatch between demand and supply has increased the price of gold over the past 20 years from c.a. US\$400 per ounce to US\$1861 per ounce. The more remote and lawless a region, the more likely it is to be a safe haven for illegal miners. It is these dynamics that drive demand for alternative extractive measures — namely, illegal mining, an industry that is estimated to yield between US\$12 and US\$28 billion annually.<sup>24</sup>

Rising demand paired with the unique characteristics of gold and its supply chain make illegal mining a convenient conduit for criminal groups. Gold is a highly liquid asset and its prices are extremely volatile. Speed is therefore a key characteristic of the supply

20 Pieth, Mark. “Gold Laundering: The Dirty Secrets of the Gold Trade”. Salis Verlag. Web. (2019): 160. Access: 10 Nov 2020.

21 “Emergency Action Needed for Vulnerable Artisanal & Small-Scale Mining Communities & Supply Chains”. Human Rights Watch. 13 May 2020. <<https://www.hrw.org/news/2020/05/13/emergency-action-needed-vulnerable-artisanal-small-scale-mining-communities-supply>>.

22 London, Simon et al. “Gold in an Era of Drones, Deep Mines, and Dedollarization”. *McKinsey & Company Podcast*. 17 Jan 2020. <<https://www.mckinsey.com/industries/metals-and-mining/our-insights/gold-in-an-era-of-drones-deep-mines-and-dedollarization#>>.

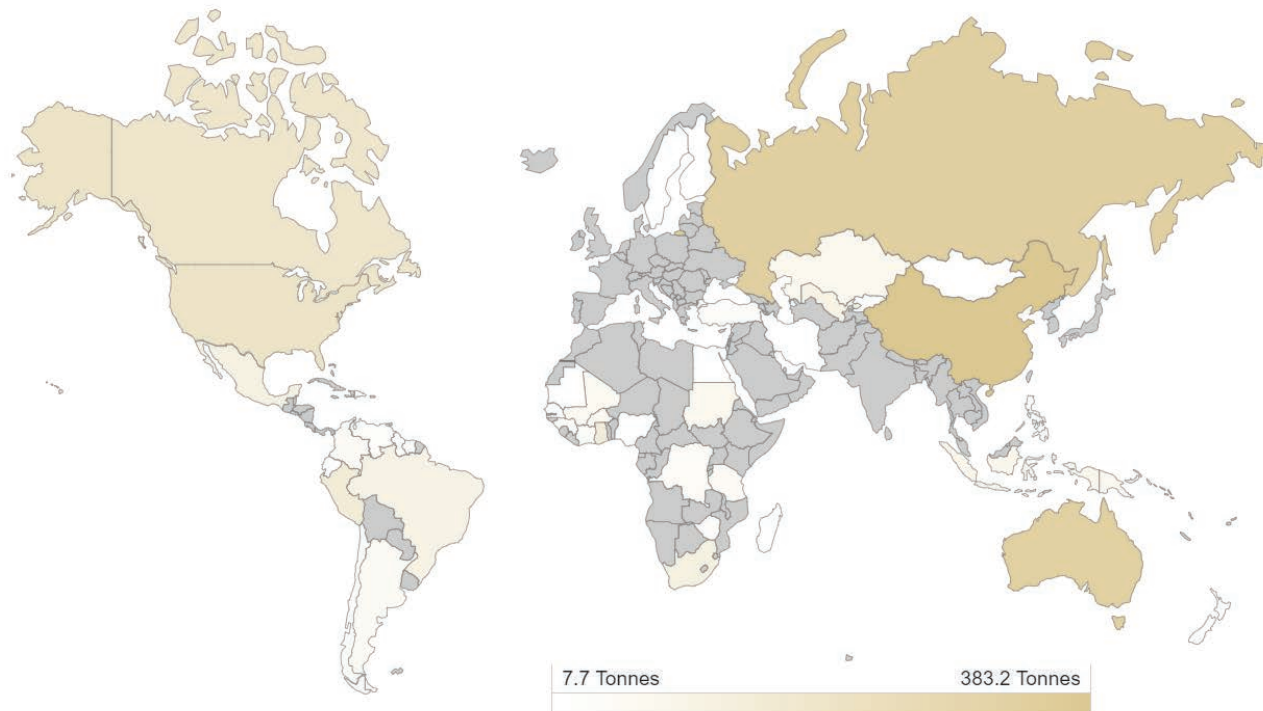
23 Ibid.

24 May, Channing. “Transnational Crime and the Developing World”. *Global Financial Integrity*. 27 Mar 2017. <<https://gfin.org/report/transnational-crime-and-the-developing-world/>>.

chain.<sup>25</sup> When gold prices rise, they bring the attendant promise of quick cash through local pawnshops that buy anything from crude gold bars to second-hand jewelry. Over a period of 6 years, for example, the FARC used an array of pawnshops to move 47 tons of illegally mined gold worth US\$ 1.4bn.<sup>26</sup> Once within the system, this gold is often labeled falsely as ‘recycled gold’, thus obscuring its illegal and un-documented origin.

When exported, gold and gemstones are particularly adept vehicles for trade misinvoicing, as the value of gold is based on its weight and purity (e.g., 24 karat vs. 14 karat). It is, however, difficult to determine purity with the naked eye. Criminals can therefore mis-invoice 24 karat gold as 14 karat gold in order to undervalue an export, thus allowing for capital flight.<sup>27</sup> More sophisticated criminal organizations have been found to turn gold in one continent into cryptocurrency on another in multimillion dollar transactions that leave no trace.<sup>28</sup>

**Figure 1.** Gold Production by Country as of June 2020<sup>29</sup>



**Source:** Metals Focus; World Gold Council  
Data as of 24 June, 2020

25 London, Simon et al. “Gold in an Era of Drones, Deep Mines, and Dedollarization”. *McKinsey & Company Podcast*. 17 Jan. 2020. <<https://www.mckinsey.com/industries/metals-and-mining/our-insights/gold-in-an-era-of-drones-deep-mines-and-dedollarization#>>.

26 May, Channing. “Transnational Crime and the Developing World.” *Global Financial Integrity*, 27 Mar. 2017. <<https://gfinetegrity.org/report/transnational-crime-and-the-developing-world/>>.

27 Ibid.

28 Ibid.

29 “Top 10 Gold Producing Countries”. *U.S. Global Investors*. 23 Sep 2020. <<http://www.usfunds.com/investor-library/frank-talk/top-10-gold-producing-countries/#.X9VPDNhKjcs>>.

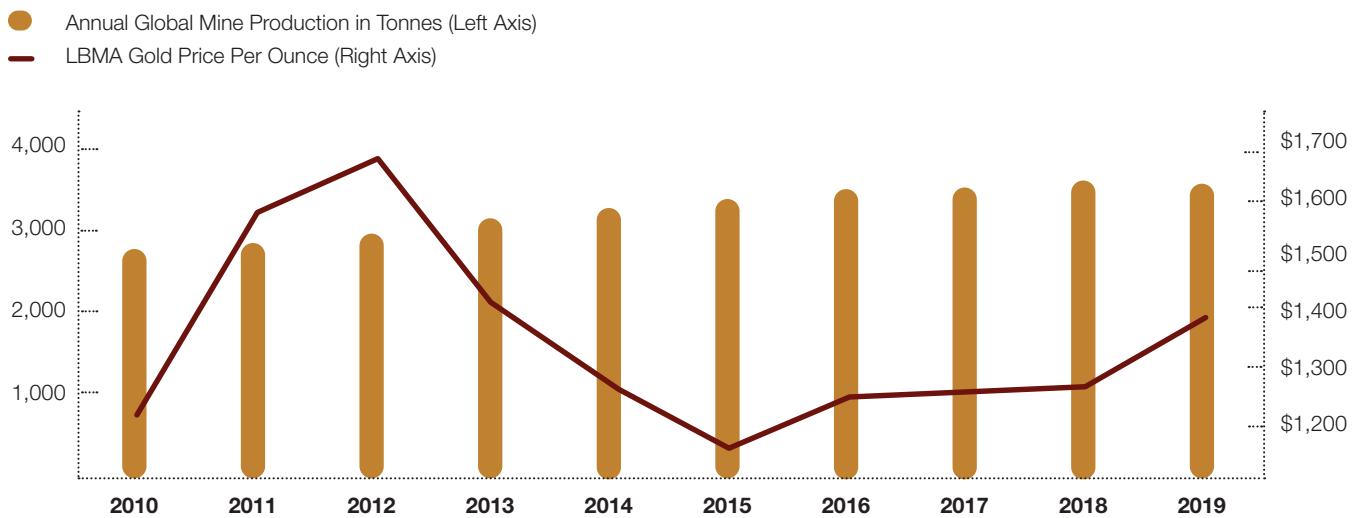
These few examples demonstrate how such methods are extremely difficult to track anywhere in the world, and that the commodity of gold is intimately related with other sophisticated networks of criminality.

The world’s largest gold producers today are China, Russia, Australia, the United States and Canada, with Brazil ranking 10th worldwide.<sup>30</sup> After leaving its country of origin, 70% of the world’s gold is refined and marketed by Swiss refineries in Switzerland, including gold from Brazil.<sup>31</sup> The unique concentration of the gold market constitutes a promising point of intervention to improve traceability and accountability for the global supply-chains.

Gold then makes its way to consumers. China, for example, is the world’s largest gold consumer and imports around ⅔ of its gold.<sup>32</sup> In Q4 of 2019, China accounted for nearly 37% of the global demand for gold for jewelry.<sup>33</sup> India, a close second, imports almost all of its gold for jewelry and ornamental uses. Three countries combined (United States, Germany and Thailand) import less than India, but are nonetheless relevant players. Additionally, gold in these three countries is more diversely allocated between industrial, investment and jewelry uses.

**Figure 2.** Global Gold Supply Since 2010<sup>34</sup>

**Gold Supply Relatively Unchanged Over Last Decade**



**Source:** ICE Benchmark Administration, Metals Focus, Refinitiv GFMS, World Gold Council, U.S. Global Investors

30 “Top 10 Gold Producing Countries”. *U.S. Global Investors*. 23 Sep 2020. <<http://www.usfunds.com/investor-library/frank-talk/top-10-gold-producing-countries/#.X9VPDNhKjcs>>.

31 Pieth, Mark. “Gold Laundering: The Dirty Secrets of the Gold Trade”. Salis Verlag. Web. (2019): 160. Access: 10 Nov 2020.

32 “The top 10 gold producing countries”. *Mining Technology*. 27 Jan 2020. <<https://www.mining-technology.com/features/feature-ten-largest-gold-producing-countries-china/>>.

33 “Top 10 countries with the highest demand for gold jewelry”. *Investopedia*. 28 Oct 2020. <<https://www.investopedia.com/news/top-10-countries-highest-demand-gold-jewelry/>>.

34 “Top 10 Gold Producing Countries”. *U.S. Global Investors*. 23 Sep 2020. <<http://www.usfunds.com/investor-library/frank-talk/top-10-gold-producing-countries/#.X9VPDNhKjcs>>.

# Challenges for Global Consumers (Companies and Individuals)

The ESG frameworks within the gold industry suffer from many of the same drawbacks as other deforestation and conflict-area frameworks do. “While an increasing number of companies are publicly reporting on commitments and progress, they lack a standardized approach in terms of their types of commitments, clarity, timelines, measuring, and monitoring. Companies have been slow to implement commitments due to lack of agreement on priority actions, limited understanding of risks, and hesitation to invest in sustainable activities without clear financial incentives”.<sup>35</sup>

The most recent edition of the “OECD Due Diligence Guidance for Responsible Mineral Supply Chains” was released in 2011 and is widely regarded as the most detailed and widely-adopted framework. It addresses the protection of human rights, labor conditions, corruption and recognizes the responsibilities in the supply chain. However, the guidelines have a high level of abstraction and are not binding. Others, like the “Gold Delivery List” and the “London Bullion Market Association’s Responsible Gold Guidance” demonstrate a willingness to consider supply-chain dynamics, but the level of detail beyond tier-1 suppliers (or direct suppliers) has been poor.<sup>36</sup>

The Responsible Jewelry Council (RJC), focused exclusively on the jewelry sector, requires its over 1,200 members to adhere to the Code of Practice, but gives them two years to comply with the standard after joining the RJC. One third of the membership failed to comply in 2017. The code itself mirrors some elements of the OECD Guidelines. More recently, the Council developed a voluntary ‘Chain of Custody’ guideline. Problems arise, however, as with the London Bullion Market Association, from the failure to verify ‘Chain of Custody’ along the full extent of the supply chain. While refineries are ‘Chain of Custody’ verified, for example, mines and traders are not. By 2018, only 6% of the Responsible Jewelry Council had adopted the new guidelines.

Perhaps one of the most technically rigorous frameworks is the Conflict-Free Gold Standard. Enacted in 2012 by the organization of the biggest large-scale gold mining companies, the Standard demands technical detail on specific dimensions such as conflict assessments, commodity assessments and externally sourced gold assessments. While rigorous, these reports are not required to be published and are therefore not available to the public. In the context of an inherently untraceable commodity, these metrics are insufficient on their own. Global ESG metrics and global supply chain transparency are merely one measure of a complex transformation that will require changes ranging from demand-side consumer behavior to the incentives that propel these activities on the ground.

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35 Ferguson, Brodie; Sekula Júlia; Szabó, Ilona. “Technology Solutions for Supply Chain Traceability in the Brazilian Amazon: Opportunities for the Financial Sector”. Instituto Igarapé (2020). <[https://igarape.org.br/wp-content/uploads/2020/07/2020-07-29-AE-48\\_Amazonia-Technology-Solutions.pdf](https://igarape.org.br/wp-content/uploads/2020/07/2020-07-29-AE-48_Amazonia-Technology-Solutions.pdf)>.

36 “Alignment Assessment of Industry Programmes with the OECD Minerals Guidance”. OECD (2018): 67-69. Access: 11 Nov 2020. <<https://mneguidelines.oecd.org/Highlights-Alignment-Assessment-of-industry-programmes-with-the-OECD-minerals-guidance.pdf>>.



# Gold & Illegal Mining in Brazil in Numbers

In Brazil, gold is the second-most exported mineral after iron.<sup>37</sup> In 2018, an estimated 95 tons of gold (US\$ 2.8Bn) were exported, according to IBRAM (Brazilian Mining Institute) data. This represents nearly all of the country's 2018 production — estimated at 97 tons — though due to illegal activity, these numbers are likely underestimates. Legal and illegal artisanal small-scale miners (henceforth referred to as garimpeiros) move anywhere between 30 and 40 tons of gold per year through the country, according to the National Mining Agency (ANM) and the National Gold Association (Anoro) — representing between one fourth and one third of total production — although, again, this counts only the gold that has been traced. As will be demonstrated, many factors contribute to imprecise data on (il)legal gold mining in Brazil. With the Covid-19 pandemic in 2020, and the commercial trade-war between China and the US resulting in even higher gold prices, these numbers rose sharply and gold mining (illegal and legal) rose with them. In the first 7 months of 2020, Brazil exported 55 tons of gold, 5.8% more than in 2019, and 31% higher than in 2018.

The Brazilian Legal Amazon contains 321 identified points of illegal, active and inactive mines, arranged in 132 areas throughout the 9 states that comprise the Amazon Basin.<sup>38</sup> Deforestation across the Amazon grew 25% in the first half of 2020, according to INPE. Much of this is due to illegal mining (the participation of mining activity in deforestation rates as a whole has increased from 4% in 2017 to 23% in indigenous territories in data recorded up to June 10, 2020) and concentrated in indigenous territories where between 2018 and 2019, degradation by mining increased two-fold (107%).<sup>39</sup>

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*“The Brazilian Legal Amazon contains 321 identified points of illegal, active and inactive mines, arranged in 132 areas throughout the 9 states that comprise the Amazon Basin.”*

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37 “Mineral Sector Bulletin”. Ministério de Minas e Energia. (2019). Access: 12 Nov 2020. <<http://www.mme.gov.br/documents/36108/1006289/Mineral+Sector+Bulletin+-+February+2020+-+English+Version/4c608433-6d7e-503a-27f3-e96d58b39565?version=1.2&previewFileIndex=>>>.

38 “Estudo Denuncia Epidemia de garimpo na Amazônia Brasileira”. *Deutsche Welle*. 10 Dec 2018. <<https://www.dw.com/pt-br/estudo-denuncia-epidemia-de-garimpos-na-amaz%C3%B4nia-brasileira/a-46664874>>.

39 Oviedo, Antonio; Araújo, Elis; Batista, Juliana; Santos, Tiago. “Relatório Técnico Sobre o Risco Iminente de Contaminação de Populações Indígenas pelo Novo Coronavírus em Razão da Ação de Invasores Ilegais”. Instituto Socioambiental - ISA (2020): 3-4. 28 Oct 2020. <[https://www.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/versao\\_final\\_relatorio\\_tecnico\\_sobre\\_o\\_risco\\_iminente\\_de\\_contaminacao\\_de\\_populacoes\\_indigenas\\_pelo\\_novo\\_coronavirus\\_3.pdf](https://www.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/versao_final_relatorio_tecnico_sobre_o_risco_iminente_de_contaminacao_de_populacoes_indigenas_pelo_novo_coronavirus_3.pdf)>.

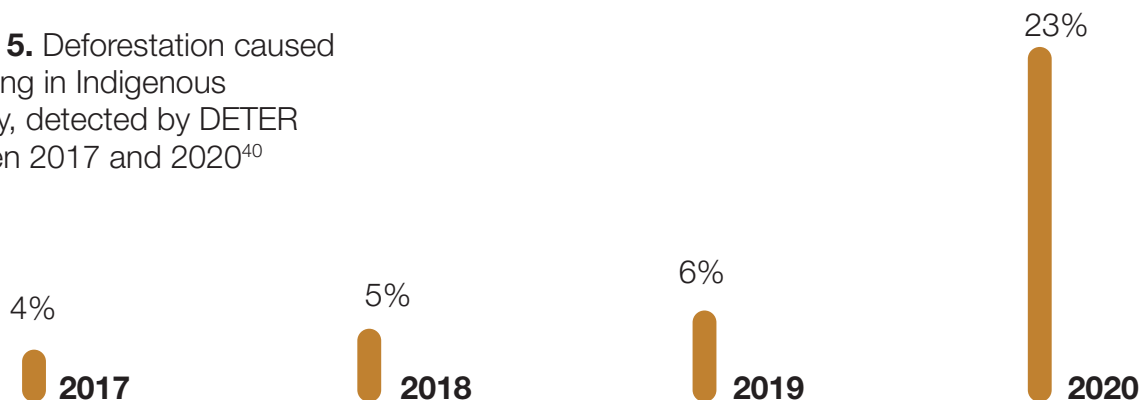


**Figure 3.** Illegal Mines Detected in Yanomami Indigenous Lands, 2010-2018 (ISA/RAISGA)



**Figure 4.** Illegal Mines Detected in the Tapajós River Basin, 2010-2018 (ISA/RAISG)

**Figure 5.** Deforestation caused by mining in Indigenous Territory, detected by DETER between 2017 and 2020<sup>40</sup>



<sup>40</sup> Oviedo, Antonio; Araújo, Elis; Batista, Juliana; Santos, Tiago. “Relatório técnico sobre o risco iminente de contaminação de populações indígenas pelo novo coronavírus em razão da ação de invasores ilegais”. Instituto Socioambiental - ISA (2020): 3-4. 28 Oct 2020. <[https://www.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/versao\\_final\\_relatorio\\_tecnico\\_sobre\\_o\\_risco\\_iminente\\_de\\_contaminacao\\_de\\_populacoes\\_indigenas\\_pelo\\_novo\\_coronavirus\\_3.pdf](https://www.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/versao_final_relatorio_tecnico_sobre_o_risco_iminente_de_contaminacao_de_populacoes_indigenas_pelo_novo_coronavirus_3.pdf)>.

In the Tapajos basin alone, which is also home to the Mundurucu population, up to an estimated 30 tons of gold are illegally commercialized per year (roughly R\$ 4.5 billion in undeclared revenue), six times more than the legal activity in the region.<sup>41</sup> This rough estimate forms a large portion of the total amount of gold produced by *garimpagem* in 2018. Meanwhile in the first half of 2019 in Roraima, home to the Yanomami, a total of 288 kg of gold was legally exported by the state, even though there is no authorized mine for the extraction of gold in Roraima.<sup>42</sup> This phenomenon exemplifies the challenges of irregularity and illegality in the gold supply chain (as elaborated further in this report). According to Brazil's Federal Public Prosecutors office, 1kg of gold represents roughly R\$1.7m in environmental damages, culminating in an environmental cost roughly 10 times greater than the current price of gold. The brunt of this cost is shouldered by indigenous populations, while the revenue remains with irregular and illegal actors.

The economics of illegal mining are complex and far removed from their artisanal origins and are supported by sophisticated and expensive logistical processes and structures of incentives that pervade all levels of government.

## Brazilian Legislation on Mining and Indigenous Lands Overview

Gold became a pressing economic subject in Brazil in the early 1980's, when the country's external debt and financial crisis increased the need to legalize and extract the country's gold resources. The legislation related to mining and the demarcation of indigenous territories is extensive, complex and marked by different disputes. The laws that inaugurate the regulation of these themes date from the 60s and 70s — namely, the Mining Code of 1967 and the Indian Statute of 1973. Although parts of both regulations remain in force, the Federal Constitution of 1988 established new parameters for these topics. Indeed, Brazil has been celebrated for the relatively high level of protection that its Constitution and more recent international treaties promise to indigenous communities. However, these protections are rarely implemented in practice.

The 1973 Indian Statute permits select exploitation of the subsoil under indigenous lands in cases of “great national interest”, defined as cases involving land that contains “subsoil wealth of relevant interest for security and national development”<sup>43</sup> — a definition that leaves tremendous room for interpretation and appropriation. Only ten years later, Decree

41 “Ações do MPF apontam provas do completo descontrolo da cadeia econômica do ouro no Brasil”. *Ministério Público Federal*. 29 Jul 2019. <<http://www.mpf.mp.br/pa/sala-de-imprensa/noticias-pa/acoes-do-mpf-no-para-apontam-provas-do-completo-descontrolo-da-cadeia-economica-do-ouro-no-brasil>>.

42 Fellet, João. “Roraima exporta 194kg de ouro à Índia sem ter nenhuma mina operando legalmente”. BBC. 12 Jun 2019. <<https://www.bbc.com/portuguese/internacional-48534473>>.

43 “Terras Indígenas & Unidades de Conservação da Natureza: o desafio das sobreposições”. Instituto Socioambiental - ISA (2004). Access: 20 Oct 2020. <[http://www.mpsp.mp.br/portal/page/portal/documentacao\\_e\\_divulgacao/doc\\_biblioteca/bibli\\_servicos\\_produtos/BibliotecaDigital/BibDigitalLivros/TodosOsLivros/Terras-Ind%C3%ADgenas-Unidades-de-Conservacao.pdf](http://www.mpsp.mp.br/portal/page/portal/documentacao_e_divulgacao/doc_biblioteca/bibli_servicos_produtos/BibliotecaDigital/BibDigitalLivros/TodosOsLivros/Terras-Ind%C3%ADgenas-Unidades-de-Conservacao.pdf)>.

88.985 established that the exploitation of the subsoil of these areas will only be carried out through mechanized mining in accordance with the requirements established by Funai to safeguard the interests of indigenous heritage.<sup>44</sup> This decree, as will be explored later, effectively opened up Yanomami land (among others) to mining.

From the point of view of mining, Brazil's 1988 Constitution notes that mining can only be carried out with "authorization or concession from the Union, in the national interest, by Brazilians or companies incorporated under Brazilian laws and which have its headquarters and administration in the country... which will establish the specific conditions when those activities take place along national borders or within indigenous territories".<sup>45</sup> The Federal Constitution does not prohibit mining on indigenous land, but does establish conditions requiring "authorization from the National Congress, after hearing from the affected communities, [and] ensuring participation in the mining results, in accordance with the law".<sup>46</sup>

As for indigenous peoples, the Federal Constitution recognizes collective rights and breaks with the principle of integration.<sup>47</sup> According to Article 231 of Brazil's 1988 Constitution, indigenous reserves are "lands traditionally occupied by Indigenous peoples... those on which they live on a permanent basis, those used for their productive activities, those indispensable to the preservation of the environmental resources necessary for their well-being and for their physical and cultural

reproduction".<sup>48</sup> It goes on to say that the mineral riches on indigenous lands can only be prospected and mined with the authorization of the National Congress following a consultation with the communities involved (as mentioned above). However, indigenous communities have no formal veto power, and this "consultation" process is often symbolic at best.<sup>49</sup> This right is also envisaged by the ILO Convention 169, ratified by Brazil, which establishes the State's obligation to consult indigenous peoples in advance, in a free and informed manner, before decisions are taken that may affect their assets or rights.<sup>50</sup>

Indeed, there exists little beyond the Federal Constitution regarding the regulation of mining on indigenous lands. According to Article 176, paragraph 1, and Article 231, paragraph 3, of the Federal Constitution, these activities should be regulated by law. In other words, these Articles have limited effectiveness because they require targeted legal regulation in order to be applicable. Regulation establishes clear definitions and processes by which to enforce these articles. Over the past few decades, numerous bills have tried to specify the characteristics of this regulation, but to this day, mining on indigenous lands remains unregulated due to conflicting interests and political friction.

Targeted regulations, however, are not the only legal strategy being discussed. Indigenous advocates argue that mining on their land should not be dealt with by specific legislation, but rather by a chapter of the proposed

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44 DECREE Nº 88.985. <[http://www.planalto.gov.br/ccivil\\_03/Atos/decretos/1983/D88985.html](http://www.planalto.gov.br/ccivil_03/Atos/decretos/1983/D88985.html)>.

45 Bragança, Ana Carolina et al. "Manual de Atuação Mineração Ilegal". Ministério Público Federal (2020): 148. <<http://www.mpf.mp.br/atuacao-tematica/ccr4/dados-da-atuacao/publicacoes/roteiros-da-4a-ccr/ManualMineraoIlegaldoOuronaAmazoniaVF.pdf>>.

46 FEDERAL CONSTITUTION. Article 231, Paragraph 3. <[http://www.planalto.gov.br/ccivil\\_03/constituicao/constituicao.htm](http://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm)>.

47 While the Indian Statute (Law 6.001/73), provided that the populations should be "integrated" with the rest of society, the Constitution started to guarantee the respect and protection of the culture of the original populations. The 1988 constituent believes that the indigenous population must be protected and have their culture, their way of life, production, reproduction of social life and their way of seeing the world recognized.

48 Plummer, Jasmine. "The Yanomami: Illegal Mining, Law, and Indigenous Rights in the Brazilian Amazon". Boston University (2015). Access: 21 Oct 2020. <[https://www.upr-info.org/sites/default/files/document/bresil/session\\_27\\_-\\_May\\_2017/hay\\_upr27\\_bra\\_e\\_annexe1.pdf](https://www.upr-info.org/sites/default/files/document/bresil/session_27_-_May_2017/hay_upr27_bra_e_annexe1.pdf)>.

49 Ibid.

50 "Consulta Livre, Prévia e Informada na Convenção 169 da OIT". Access: 11 Jan 2021. <[https://especiais.socioambiental.org/inst/esp/consulta\\_previa/](https://especiais.socioambiental.org/inst/esp/consulta_previa/)>.



Statute of Indigenous Peoples,<sup>51</sup> a Bill supported by the indigenous movement that has laid dormant at the National Congress for decades. The Statute for Indigenous Peoples was introduced in a post-1988 Constitutional review of the outdated and insufficient 1973 Indian Statute (Law 6.001/73), which remains in force.<sup>52</sup>

Specifically, Bill 2.057 was introduced in 1991 with the objective of replacing the 1973 Indian Statute, addressing the issue of mining on indigenous lands. In 1994, the bill was approved by the report of the Special Committee<sup>53</sup> of the Chamber of Deputies and moved forward to the Plenary. However, almost 30 years on, it remains under discussion. In parallel, Bill 1.610, which specifically dealt with mining on indigenous lands, was presented in 1996. The project sought to greatly facilitate mining and did not respect the opinion of the affected populations. It was approved in the Senate and went to the Chamber of Deputies, where it also awaits deliberation.

In 2006, enforcing the commitment to support and respect claims of indigenous leaders for political participation and with the objective of proposing subsidies and guidelines for the Brazilian indigenous policy, the Federal Government promoted the National Conference of Indigenous Peoples — Decree of the 16th of March 2006 — which took place in Brasília in April of the same year.<sup>54</sup> During the Conference, Bill 1.610 was criticized by the indigenous movement and its leaders claimed that the issue of mining should be treated as an “exception regime” which restricts the right to exclusive usufruct, and not as a “special

regime” that confers rights to third parties over indigenous territories. For this reason, the indigenous movement defends that the issue should be treated in a uniform, non-fragmented way, refuting the edition of a separate law. Among jurists, however, it is understood that the regulation should not be defined within the Mining Code, the Statute of Indigenous Peoples or any other general legislation. They argue that the issue of mining on indigenous lands should be adjudicated specifically, citing the Constitution’s language of “in accordance with the law,” which they interpret to mean a law that regulates only a specific subject, thereby precluding the issue of mining on indigenous lands from general laws or statutes.

Still at the National Conference of Indigenous Peoples, it was determined that the proposal for the new Indian Statute<sup>55</sup> under discussion in the National Congress should be disregarded, considering that Indigenous Peoples would discuss a substitute proposal to it, more appropriate to the current reality of the Indigenous Peoples of Brazil, respecting their form of organization and their uses, differentiated customs and traditions. Finally, they decided that indigenous peoples and organizations should promote local, state, regional and a National Conference, with financial support from Funai, through the General Coordination for the Defense of Indigenous Rights, to specifically address the reformulation of the Indian Statute, where leaders, indigenous organizations, academics and indigenous professionals, prosecutors and the Federal Prosecution Service (MPF) would participate to help to clarify the theme.

51 As a methodological option, it was decided to use, for the discussion of the new Statute, the Substitutive to the Bill 2057, of 1994, considering that this text is the one that has validity, because it was discussed in the Chamber of Deputies and approved by a Special Committee.

52 Law 6.001/73 instituted the existing Indian Statute, while Bill 2.057/91 intends to introduce a new Indian Statute, which will be called the Statute of Indigenous Peoples.

53 Special Committees are created to give an opinion on certain topics. They are formed by some deputies chosen by the President of the Chamber to deliberate on the Bill under analysis.

54 “Documento Final: Conferências dos Povos Indígenas”. Ministério da Justiça. Brasília. 2006. <[http://www.funai.gov.br/arquivos/conteudo/cogedi/pdf/Livros/Conferencia\\_Nacional\\_Povos%20Indigenas/Relatorio-Conferencia.pdf](http://www.funai.gov.br/arquivos/conteudo/cogedi/pdf/Livros/Conferencia_Nacional_Povos%20Indigenas/Relatorio-Conferencia.pdf)>.

55 They also determined the modification of the terminology “Statute of the Indian” to “Statute of Indigenous Peoples”.

The request was accepted and, in 2008, ten Regional Conferences were held across the national territory, dealing with the “new Indian Statute” (Statute of Indigenous Societies), and specifically with the question of mining. During this period, the rapporteur of the Special Commission, delivered a report on Bill 1.610 of 1996 to the Commission, the Chamber of Deputies, civil society and communities and Indigenous Peoples. This report was analyzed by indigenous leaders at regional conferences. It was defined by the indigenous people that the National Congress should only carry out the legislative process on indigenous populations, as well as subsequently authorize the exploitation of mineral resources, with clear indigenous participation in all phases, in compliance with the Constitution and ILO Convention 169.

Despite these discussions, both Bills — Bill 2.057/91 and Bill 1.610/96 — are currently in the Chamber of Deputies awaiting deliberation, leaving a legal gap that generates significant legal uncertainty.

## **Brazilian Mining Code from 1967 (Decree-Law 227/1967)**

As previously mentioned, the legislation related to mining was inaugurated by the Decree-Law 227 of 1967, the Mining Code, which remains in force until the present moment. Shortly thereafter, in 1968, the Decree 62.934 was issued, bringing about the regulation of the Mining Code, aiming to ensure the proper application of the law, through more specific and detailed rules. It is within this context that the norms were established that regulate all mining in Brazil — without specific mention of potential caveats to mining taking place in indigenous territories or not. As such, changes to this Law also impact mining on indigenous lands.

Almost 30 years later, due to the urgent need for updating, Law 9.314 of 1996 implemented the reform of the Mining Code, changing several of its provisions. The reform of 1996 also expressly provided for the updating of the Regulation instituted by Decree 62.934. Only in 2017, the Executive Branch published the new and updated Regulation of the Mining Code, the Provisional Measure 790 of 2017, which was promulgated as Law 13.575.

This updated Regulation replaced the National Department of Mineral Production (DNPM) with the National Mining Agency (ANM) but made no comment on the legality of mining on indigenous lands.<sup>56</sup> It determined that the ANM would have the functions of regulation and inspection of the sector. Competencies and functions were also described for the new agency, which should, among other things, conduct face-to-face inspections in mining projects with the objective of making rational use of the mining deposits and guaranteeing their operational and technical safety.

As demonstrated, the Mining Code has undergone several updates over the past 50 years, but it has never been completely revoked to give rise to a completely updated legislation, as required by the 1988 Constitution. However, in 2013, a new regulatory framework for the mining sector, which provided for a complete revision of the outdated Brazilian Mining Code from 1967, was proposed in the National Congress (Bill 5.807), providing for several innovations, guaranteeing a greater role for the State in the conduct of development policy through the intensification of the use of natural resources and greater participation and control of the government in the economic results generated.

According to the Socio-Environmental Institute (ISA), the Bill placed mining as an absolute priority, above all other uses of the territory. It

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<sup>56</sup> Bragança, Ana Carolina et al. “Manual de Atuação Mineração Illegal”. Ministério Público Federal (2020): 148. <<http://www.mpf.mp.br/atuacao-tematica/ccr4/dados-da-atuacao/publicacoes/roteiros-da-4a-ccr/ManualMineraoIllegaldoOuronaAmazniaVF.pdf>>.

proposed that the creation of an environmental Conservation Unit, the demarcation of indigenous land, rural settlements and the definition of *quilombola* communities should depend on prior consent from the ANM. In other words, it subordinated the protection of our biodiversity and the territories of traditional use of indigenous and *quilombola* peoples to the interests of mining companies.<sup>57</sup> The Bill 5.807/2013 is currently also awaiting deliberation by the Chamber of Deputies.

The consequence of these legal omissions is that regulation of mining on indigenous land remains an incomplete and contentious subject to this day.

## Changing Definitions of *Garimpagem*

During the course of these disagreements on the legality of mining on indigenous lands, *garimpo* invasions on indigenous lands have gone unimpeded, among others, amidst a number of consequential transformations in the legal definitions of *garimpagem* itself. The past fifty years have seen an expansion of the definitions of the practice and a growing ambiguity between small-scale and industrial mining. In the 1930's and 40's, *garimpagem* was defined as the extraction of “precious stones and high value metallic and non-metallic ores using rudimentary tools and portable machinery” (Brazil's Decrees 24.193/1934 and 1.985/1940.)<sup>58</sup> The economic activity was thus small-scale and artisanal by definition, without the use of sophisticated tools and machinery.

However, 1989's Law 7.805 created the mining permit regime (*Permissão de Lavra Garimpeira* - PLG)<sup>59</sup> and redefined the concept of *garimpagem* not in the prior terms that described the rudimentary tools and methods of the activity, but by what was being mined, and where — stripping *garimpagem* of its rudimentary attributes and situating it within a structure of legal legitimacy, no matter the sophistication of mining process. In other words, *garimpagem* no longer had the characteristics of ‘artisanal’ mining — individuals using basic tools — but industrial machinery being applied to small operations. It was at this time in the 1980's that the immense wealth of the Amazon had begun to be exploited, and Article 10 of the same law facilitated this exploitation by stating the right to mineral exploration with a mining permit (PLG).<sup>60</sup>

The legal boundaries of *garimpagem* were further loosened with Law 11.685 of 2008, which defined *garimpeiro* (individual who extracts minerals), *garimpo* (the location where the activity of extraction of mineral substances that are mined is carried out) and *minerais garimpáveis* (substances that are considered the object of this activity), but neglected to clearly define the activity itself (*garimpagem*). Thus, the rudimentary, traditional and historical characteristics are left aside in favor of a definition that is built around a legal construct. The economic activity is characterized by the administrative act that authorizes it, and not the other way around.

57 “Proposta do código de mineração do relator Leonardo Quintão é um enorme retrocesso”. Instituto Socioambiental - ISA. 13 Nov 2013. <<https://www.socioambiental.org/pt-br/blog/blog-do-ppds/proposta-de-codigo-da-mineracao-do-relator-leonardo-quintao-e-um-enorme-retrocesso>>.

58 Bragança, Ana Carolina et al. “Manual de Atuação Mineração Ilegal”. Ministério Público Federal (2020): 11-12. <<http://www.mpf.mp.br/atizacao-tematica/ccr4/dados-da-atuacao/publicacoes/roteiros-da-4a-ccr/ManualMineraoIlegaldoOuroNaAmazniaVF.pdf>>.

59 Throughout the text, we refer to mining authorization in general as “mining permit”. In order to differentiate this term from that used to refer to the mining permit regime (“*permissão de lavra garimpeira*”), which is specific to *garimpagem*, we will use the abbreviation “PLG” in brackets to indicate that the term does not refer to mining in a generic way.

60 Ibid.

In 2016, the defined dimensions of a permitted *garimpagem* parcel were set by Ordinance DNPM nº 155/2016 at 50 hectares for individuals and for cooperatives of *garimpeiros*, 10,000 hectares in the Legal Amazon and 1,000 for other regions. Suddenly, *garimpagem* was a stated right, and there were few legal statutes that distinguished it clearly from the ecologically disruptive techniques of industrial mining.<sup>61</sup>

## Developments under Bolsonaro's Government

More recent federal policies, as well as a decline in inspections, have enabled further invasion of artisanal and industrial-scale mining into indigenous territories. In January 2019, Brazil's Minister of Mines and Energy announced that the government was preparing to overhaul mining regulations that would include opening indigenous lands to extractive resource exploitation and infrastructure, long a mission of President Bolsonaro.<sup>62</sup> Only months later, on February 5, 2020, Bolsonaro approved and passed on to congress Bill 191/2020, which would open indigenous lands to mining, oil and gas extraction, electricity generation, and agriculture. The Bill was presented as a potential source of wealth for indigenous communities, promising them 0.7% of the value of electricity produced, 0.5-1% of the value of oil or natural gas production and 50% of the financial compensation traditionally owed by mining entities to the federal government for mineral exploitation (according to Law 227/1967, Article 11, paragraph 1).<sup>63</sup>

According to a recent study, the regulation in Bill 191/2020 of mining on indigenous lands is expected to increase the area affected by the activity by 20%.<sup>64</sup> Indigenous leaders and environmentalists argue that the original text signed by Bolsonaro does not contain environmental or social safeguards, nor does it foresee the need for comprehensive studies on the impacts of the implementation of new mines. They also say that the opening can cause the advance of illegal mining. The Bill is now in the Chamber of Deputies for discussion.

In April of 2020, Funai published Normative Instruction (IN) 9/2020, which changed how Funai issues its Declaration of the Recognition of Limits. The Declaration is a land title for rural landowners.<sup>65</sup> Previously, individuals seeking the title were rejected if their land claim contained any indigenous territory, even if that territory had not yet completed the bureaucratic process that recognizes land as "indigenous." Following IN 9/2020, however, pending indigenous land claims would not be listed as indigenous territory within the public land registry. Therefore, land claims containing indigenous land would likely be approved, so long as the indigenous land in question was not yet formally and completely recognized under law. Funai's own figures report that there are 9.8 million hectares of indigenous land which, due to the protracted nature of the demarcation process, have yet to be formally recognized. Much of that territory was opened to land-grabbers as a result of the policy change.<sup>66</sup> By authorizing the registration of indigenous territory in the process of being

61 Ibid.

62 Branford, Sue and Torres, Maurício. "Brazil to open indigenous reserves to mining without indigenous consent". *Mongabay*. 14 Mar 2019. <<https://news.mongabay.com/2019/03/brazil-to-open-indigenous-reserves-to-mining-without-indigenous-consent/>>.

63 PL 191/2020. Congresso Nacional do Brasil. <[https://www.camara.leg.br/proposicoesWeb/prop\\_mostrarintegra?codteor=1855498](https://www.camara.leg.br/proposicoesWeb/prop_mostrarintegra?codteor=1855498)>.

64 Gay, Juliana Siqueira; Filho, Britaldo Soares et al. Proposed Legislation Mine Brazil's Indigenous Land will Threaten Amazon Forest and Their Valuable Ecosystem Services. *One Earth*. 18 Sep 2020. <[https://www.cell.com/one-earth/fulltext/S2590-3322\(20\)30417-6](https://www.cell.com/one-earth/fulltext/S2590-3322(20)30417-6)>.

65 NORMATIVE INSTRUCTION (IN) 9/2020. Ministério da Justiça e Segurança Pública/ Fundação Nacional do Índio. <<https://www.in.gov.br/web/dou/-/instrucao-normativa-n-9-de-16-de-abril-de-2020-253343033>>.

66 Torres, Mauricio and Branford, Sue. "Brazil opens 38,000 square miles of indigenous lands to outsiders. *The New Learn*. 15 May 2020. <<https://www.thenewlearn.com/2020/05/brazil-opens-38000-square-miles-of-indigenous-lands-to-outsiders/>>.



formally recognized as private property, this regulatory change makes the approval for mining requests in these lands much more likely. This does not result in an automatic right to explore the subsoil, but there will be the possibility of requesting a license for this, with greater chances of authorization.<sup>67</sup>

These are some of the clear examples of government policies that are enabling increasingly loose protection and regulation, and thereby incentivizing illegal mining activity. The change was led by Funai's current president, Marcelo Augusto Xavier da Silva, and Luiz Nabhan García, head of the Agricultural Ministry's Land Affairs Department, former president of the farmer and agribusiness Democratic Union (*União Democrática Ruralista*) and self-avowed opponent of indigenous land production.<sup>68</sup>

The IN met swift backlash. Critics asserted that it violated Articles 176 and 231 of the Constitution, which prohibits private property claims from being prioritized over indigenous land claims even if the process of demarcation and legitimization of the indigenous land claims are incomplete.<sup>69</sup> Indeed, in October of 2020, the Federal Justice of Santarém ruled in a lawsuit filed by the MPF that the IN violated Article 231 of the Constitution. Of the 24 lawsuits filed across the country, 14 have already received preliminary decisions nullifying the policy change and returning the pending indigenous territories to the public registry.<sup>70</sup> While these decisions are positive, they are

preliminary and subject to change until the end of all legal processes.

Recent policy changes from the federal government have sent a clear message to *garimpeiros* across the country. Now-emboldened miners have moved onto indigenous territories in ever-greater numbers. Two of the most-affected indigenous groups have been the Yanomami and the Munduruku.

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*“Recent federal policies and a decline in inspections have enabled further invasion of artisanal and industrial-scale mining into indigenous territories.”*

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67 According to article 176 of the Federal Constitution, mineral resources “constitute a property distinct from the soil, for the purpose of exploration or exploitation, and belong to the Union”. This means that regardless of who owns a certain land, if there are mineral resources there, they will not belong to the owner of the land, since its only owner is the Union, whether on indigenous land or not, and its exploitation only can be done with authorization from the federal government.

68 Quadros, Vasconcelos. “Quem é Nabhan Garcia, o todo-poderoso secretário fundiário de Bolsonaro”. *Exame*. 10 Nov 2019. <<https://exame.com/brasil/quem-e-nabhan-garcia-o-todo-poderoso-secretario-fundiario-de-bolsonaro/>>.

69 Torres, Mauricio and Branford, Sue. “Brazil opens 38,000 square miles of indigenous lands to outsiders”. *The New Leam*. 15 May 2020. <<https://www.thenewleam.com/2020/05/brazil-opens-38000-square-miles-of-indigenous-lands-to-outsiders/>>.

70 “Sentença declara a nulidade da instrução normativa da Funai que favorecia grilagem de terras indígenas”. *Conselho Indigenista Missionário - Cimi*. 30 Oct 2020. <<https://cimi.org.br/2020/10/sentenca-declara-a-nulidade-da-instrucao-normativa-da-funai-que-favorecia-grilagem-de-terras-indigenas/>>.

# Procedural Limitations of Monitoring and Tracking the Illegal Mining Process in the Brazilian Amazon

## Permits and Licenses

The exploitation of mineral substances in Brazil is mainly ruled by the Mining Code which establishes different types of regimes (Annex 1). As provided for in Article 2 of the Mining Code, the regimes for the use of mineral substances<sup>71</sup> are: (i) Concession regime; (ii) Authorization regime; (iii) Licensing regime; (iv) Mining permit regime (PLG) and; (v) Monopolization regime. The objective in each of the regimes is to obtain a mining title, the document that authorizes the owner, or holder, to extract a mineral resource.

Securing the right to *garimpagem* in Brazil requires two key documents. The first is an environmental license, which evaluates the potential environmental impacts of a given mining project and outlines mitigating measures. The second is a mining permit (PLG), which signals the federal government's

cession of its Constitutional rights to the mineral subsoil on the parcel of land in question. In other words, environmental licenses demonstrate approval of a prospective mining project's environmental harm mitigation protocols, while the mining permits (PLG) demonstrate permission for a prospective mining project to commence.

The procedural standards for securing an environmental license from Brazil's National Mining Agency (ANM) are dictated by the National Environmental Council's (Conama) Resolution 09/1990, which requires that all mineral exploration projects be subject to a strict environmental impact study report, the parameters and standards of which are extensively detailed according to Conama's Resolution 01/1990.<sup>72</sup> However, Resolution 09/1990 lists one area of mining that is exempt from this requirement: *lavra garimpeira*.<sup>73</sup> The procedure for gold mining was clarified by the Complementary Law 91/2015 from the state of Amapá, which (counterfactually) asserts that *garimpagem* is by definition a low to medium-impact activity with respect to environmental degradation.<sup>74</sup> For this reason, requests for an environmental license can submit an environmental control report (RCA), which constitutes a much lower evidentiary standard than the EIA/RIMA required for other mining projects.<sup>75</sup> Thus, environmental licenses for *garimpagem* are uniquely easy to secure due to the misinformed statutory characterization of *garimpagem*'s potential environmental impacts.

Further problems with environmental licensing can be seen in the Bill of Law 3.729/2004, which proposes a new General Environmental

71 Mineral substances include gold, diamond, cassiterite, columbite, tantalite, wolframite, quartz, beryl, muscovite, spodumene, lepidolite, feldspar, mica and others, in types of occurrence that are indicated, at the discretion of DNPM.

72 Resolução nº 01/1990. Conselho Nacional do Meio Ambiente. <<http://www.palmares.gov.br/wp-content/uploads/2018/09/res-conama-01-1986.pdf>>.

73 Bragança, Ana Carolina et al. "Manual de Atuação Mineração Illegal". Ministério Público Federal (2020): 38-39. <<http://www.mpf.mp.br/atuacao-tematica/ccr4/dados-da-atuacao/publicacoes/roteiros-da-4a-ccr/ManualMineraoLegaldoOuronaAmazoniaVF.pdf>>.

74 Lei Complementar nº 91/2015. <<https://www.legisweb.com.br/legislacao/?id=304579>>.

75 Bragança, Ana Carolina et al. "Manual de Atuação Mineração Illegal". Ministério Público Federal (2020): 38-39. <<http://www.mpf.mp.br/atuacao-tematica/ccr4/dados-da-atuacao/publicacoes/roteiros-da-4a-ccr/ManualMineraoLegaldoOuronaAmazoniaVF.pdf>>.

Licensing Law, and which has been in the Chamber of Deputies. If it passes, responsible agencies will be able to accelerate the concession of environmental licenses of projects located in the same area of influence or in similar conditions to other projects that have already obtained the license. The MPF Office stated in a technical note that the General Law offers specific loopholes for mining companies. One of these is the possibility of conducting “mining tests,” which means that companies will be effectively able to mine without an environmental license.<sup>76</sup>

While the standards for approval of environmental licenses have historically shifted depending upon the federal administration, the process of securing these licenses has long been held back by lengthy bureaucratic lags. However, prospective miners were aided by the enactment of ANM’s Ordinance 22/2020 in January of 2020, which set a 120-day deadline for environmental license applications. If the ANM fails to respond after 120 days, the mining license is tacitly granted.<sup>77</sup> This has made the default approval of environmental licenses far more likely.

The second required document is the mining permit (PLG), the procedure for which was first outlined by Law 7.805/1989.<sup>78</sup> This law situated the PLG within the purview of the DNPM (which has since been replaced by the ANM). All minerals are owned by the Federal Union according to the Constitution, and any authorization by the federal government to undertake a mining project requires cession of the rights to those minerals.<sup>79</sup> The PLG signals this right.

PLGs require information on the type of mineral, as well as the size and location of the area to be mined, but they do not require any prior studies to be made on the intended extraction techniques or the expected productivity of the parcel of land. Since there is no way to measure whether any given land could feasibly produce the reported amount of gold, illegal miners can co-opt owners of legal permits to ‘wash’ gold for a fee — estimated by the public prosecutor’s office at 10% of the value of the gold transaction.<sup>80</sup>

The consequences of these imprecise standards can be seen in the Annual Gold Mining Reports, which must be submitted once a year by the owner of a PLG to the ANM. In this evaluation, production, stock and destination of the mined, raw or processed minerals must be indicated — consolidating a record or balance sheet of the effective performance of the *garimpagem* in that given area. However, without a clear study of what a given area could have been expected to produce at the time of the PLG, any information given is without clear comparisons and/or parameters. As such, even in cases where information is reported, analysis is weak. Rarely is the actual production of gold reported and little-to-no verification is undertaken to audit or confirm numbers presented.<sup>81</sup>

76 Nota Técnica nº 2/2017 - 4ª CCR. Ministério Público Federal. <<http://www.mpf.mp.br/atuacao-tematica/ccr4/dados-da-atuacao/publicacoes/notas-tecnicas/2NotaTcnican220174CCR.pdf>>.

77 Sion, Alexandre. “The Mining Law Review: Brazil”. Nov 2020. <<https://thelawreviews.co.uk/edition/the-mining-law-review-edition-9/1234651/brazil>>.

78 Lei nº 7805/1989. <[http://www.planalto.gov.br/ccivil\\_03/leis/l7805.htm](http://www.planalto.gov.br/ccivil_03/leis/l7805.htm)>.

79 Artigo 20, inciso IX. Constituição Federal do Brasil. <[http://www.planalto.gov.br/ccivil\\_03/constituicao/constituicao.htm](http://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm)>.

80 Bragança, Ana Carolina et al. “Manual de Atuação Mineração Illegal”. Ministério Público Federal (2020). <<http://www.mpf.mp.br/atuacao-tematica/ccr4/dados-da-atuacao/publicacoes/roteiros-da-4a-ccr/ManualMineraoIlegaldoOuronaAmazniaVF.pdf>>.

81 Ibid.

## Expensive and Sophisticated Systems of Logistics

The involvement of numerous large stakeholders is not surprising when one considers the expensive system of logistics underpinning illegal garimpo gold mining operations in the Amazon. Access to these remote regions is limited to riverboats and airplanes that can then transport machinery, fuel, provisions, and more. In the most remote regions, such as the Yanomami territory, the nearest city can be more than 250 km away.<sup>82</sup> Thus, landing strips deep in the Amazon serve as an indicator of mining activity, as well as barges that transport goods up and down rivers. The machinery required to excavate is large and costly — a new excavator can cost anywhere between R\$500,000 to R\$1,000,000 (and second-hand c.a. R\$200,000) and is sold by large-multinational companies such as Hyundai. Excavators are less common in Yanomami territory due to its remoteness, but are extremely common in the Munduruku territories. Additionally, these machines consume extraordinary amounts of fuel. According to a recently published series of interviews in Piauí magazine on the rise of illegal garimpo in the Amazon in the 1980s, one of the garimpo hotspots in the Brazilian Amazon, Tucumã, had one of the highest selling gas-station in all of Brazil in 1987 — with more than 40 planes transporting gas to garimpo locations, each plane with a 470 liter capacity.

The difficulty of tracking gold has meant that public prosecutors have increasingly looked to suppliers and organizers of heavy machinery

for leads. In 2012, the MPF, through Operation Xawara focused on suppliers of inputs for mining such as airplanes, fuel and groceries.<sup>83</sup> The purpose of the operation was to dismantle the economic actors facilitating illegal mining, meaning the financiers of planes used to invade Yanomami land. Several businessmen, jewelry companies, aviators and ferry owners who made this illegal activity possible in the Territory were denounced and temporarily arrested.

According to MPF, illegal mining in the region was supported by a complex criminal organization, which in addition to the core mining activity, engaged in the middle activity, providing all types of support necessary for the extraction and criminal commercialization of gold (transport, provision of supplies and weapons for gold mining, communication, alerts on the existence of an operation of the State and etc).<sup>84</sup> In 2018, Operation Tori once again targeted suppliers of inputs (owners of machinery and airplanes) and sponsors of illegal mining in the interior of the Yanomami Territory. During the operation, two clandestine airstrips were destroyed, the economic activity of three commercial establishments was suspended, the pilot's license and eighteen aircraft were seized and 17 preventive and 12 temporary arrest warrants were issued. The investigation found that a part of the gold mined illegally would be purchased by companies within the state of Roraima and another part would be sent to other Brazilian states.

These examples demonstrate how the Amazon Task Force (FTA)'s operations have furthered investigations about the financiers of this economic supply chain

82 Araújo, Fabricio. "Garimpeiros podem levar coronavírus à Terra Yanomami e causar genocídio, diz procurador de RR". *G1*. 4 Jun 2020. <<https://g1.globo.com/rr/roraima/noticia/2020/06/04/garimpeiros-podem-levar-coronavirus-a-terra-yanomami-e-causar-genocidio-diz-procurador-de-rr.ghtml>>.

83 "Operação Xawara combate extração ilegal de ouro em Roraima". Polícia Federal. 19 Jul 2012. <<http://www.pf.gov.br/agencia/noticias/2012/julho/operacao-xawara-combate-extracao-ilegal-de-ouro-em-leitos-de-rios>>.

84 "Operação da PF desmonta garimpo ilegal em reserva Yanomami". *G1*. 13 Jul 2012. <<http://g1.globo.com/mundo/noticia/2012/07/operacao-da-pf-desmonta-garimpo-ilegal-em-reserva-yanomami.html>>.



in the country; with two main conclusions. First, is that environmental crime has taken on characteristics of organized crime and is associated with several other crimes in the Amazon region, such as demonstrated in Operations Warari Koxi, Xawara and Tori in this paper. Second, criminals differ from the typical organized crime structure such as those of *Primeiro Comando da Capital (PCC)*, *Comando Vermelho (CV)* and others. Environmental crime is notably horizontal, which means that the criminal groups are not the same across the Amazon: they act as regional hubs with different operating strategies and adapting themselves to the different dynamics in each Amazonian city.<sup>85</sup>

## From Illegal Mine to Customer

Once gold has been extracted from the ground, it enters the domestic market as one of two categories: gold as a financial asset or; gold as a commodity — each with its distinct supply chain characteristics, strengths and drawbacks. Gold can be “washed” in both instances, although in different ways.

Gold as a financial asset is intimately related to *garimpagem*. Federal Law 7.766 / 1989 stipulates in its Article 1, paragraph 1, item I that “gold in any state of purity, raw or refined, when destined for the financial market or for the execution of the foreign exchange policy of the country, in operations carried out with the intervention of institutions that are part of the National Financial System, in the form and conditions authorized by the Central Bank of Brazil (BACEN), will be from the extraction, considered a financial asset (...) provided that a formal commitment is made to send it to the BACEN or to the institution authorized by it”. Furthermore, for gold to be a financial asset,

the first acquisition (purchase) must be made by BACEN or by institutions that are part of the national financial system, such as DTVMs that collect financial transaction tax (*Imposto sobre Operações Financeiras - IOF*) on this operation (first purchase). In the absence of the required collection of the IOF, gold is by default considered a commodity.

Law 12.844/2013 asserts that, in *garimpo* lands (defined by Law 11.685/2008 as the location where the activity of extraction of mining mineral substances is carried out), newly mined metal needs to be transported and commercialized through a legally authorized institution (in this case, DTVMs).<sup>86</sup> This is why DTVMs authorized by the Central Bank and the CVM (Securities and Exchange Commission) have operations close to *garimpo* territories. This means that, in theory, most gold from *garimpo* territories should be defined as a financial asset, and should thereby be taxed IOF (1% over the value of the gold). The DTVMs in these locations are only allowed to buy from areas where mining has been authorized. But the DTVMs have no way to confirm if the gold arriving at their counter (usually in the format of artisanal bars prepared by improvised furnaces) is from a legal area or not. In fact, Article 39, §3º, of Law 12.844/2013 states that “it is the responsibility of the seller to demonstrate the veracity of information” regarding the origin of the gold. That same article speaks to the “presumption of legality of the gold acquired, and good faith” of the acquiring entity. In practice, this means little due-diligence is required by law, therefore, little due-diligence (if any) is performed at the point of sale. This means that there is little to no control of the origin of the gold as it enters the market. Public Prosecutor Ana Carolina Bragança has also stated on repeated occasions the ‘commoditization’ of PLGs, where many DTVM’s have staple PLGs that are

85 Barbosa, Catarina. “Quem são os desmatadores da Amazônia?”. *Brasil de Fato*. 2 Jul 2020. <<https://www.brasildefato.com.br/2020/07/02/quem-sao-os-desmatadores-da-amazonia>>.

86 LAW nº 11.685. Estatuto do Garimpeiro. Presidência da República. <[http://www.planalto.gov.br/ccivil\\_03/ Ato2007-2010/2008/Lei/L11685.htm#art4](http://www.planalto.gov.br/ccivil_03/ Ato2007-2010/2008/Lei/L11685.htm#art4)>.

used to register gold that arrives at the shop with no permissions/licenses.<sup>87</sup> In January of 2021, the Escolhas Institute launched a public consultation on possible improvements to the Central Bank and CVM gold transparency and traceability process. The proposal seeks specifically to strengthen the cross-verification of environmental licenses and mining permissions by requiring these documents at the point of sale, as well as requiring the digitalization of said documents to improve data collection and verification.<sup>88</sup>

Meanwhile, the supply chain of gold as a commodity allows for even fewer points of control. With gold subject to an onerous 30% ICMS goods and services tax, it has been estimated that most of the black market activity has been driven by the high cost of legally processing gold as a commodity (i.e. gold pawning and jewelry market as highlighted in the beginning of this paper). In mining capitals such as Itaituba, gold is often seen as an alternative to cash and is used to pay salaries and for other transactions. In 2015, Operation Warari Koxi was launched. This operation focused on a criminal organization that acted in the illegal extraction of gold, diamonds and money laundering upon Yanomami land. Several entrepreneurs were denounced for illegal mining and money laundering. Also denounced was a Funai employee who (allegedly) intermediated the sale of gold. According to the MPF, the estimated economic loss of the State in tax evasion was approximately R\$ 17 million by month, as the illegal mineral extractions were around 160kg of gold per month.<sup>89</sup> Investigations also indicated that criminals used illegal gold as a financial asset to launder money from other illicit activities, which can reach an approximate value of R\$ 1 Billion.

It is worth noting that this bifurcation of gold as a commodity and gold as a financial asset directly harms the Brazilian State. The bulk of potential tax incomes from gold are from gold as a financial asset (IOF), which collects proportionately low taxes (1%), and in the cases gold is categorized a commodity, ICMS is required but often not collected as gold as a commodity exists largely in the black market. These starkly different categories (and tax implications) are an indication of some of the work that needs to be done to gain oversight and transparency of gold at the source.

This process is further aggravated by manual invoicing in the Brazilian gold-industry. The current requirements on invoices are limited to invoices written in pen. This inhibits efforts to collect accurate and timely data on the industry (be it legal or illegal), as well as efforts to cross data in meaningful ways with tax documentation, transport documentation, commercial documentation among many others. The necessity of digitalization of invoicing and fiscal processes is paramount.

This lack of transparency also ultimately means that fraud and “washing” of gold is consciously or unconsciously the order of business. According to FTA’s investigations, the company Ourominas (based in Santarém) was accused of forming a criminal organization that defrauded documentation and washed the clandestine origin of gold. It is estimated that between 2015 and 2018, the group defrauded the purchase of 610 kg of gold, causing a loss for the State of more than R\$ 70 million in tax revenues and representing an environmental monetary impact of over R\$ 1 Billion.

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87 “Expansão do garimpo da Amazônia em tempos de pandemia. Instituto Escolhas. Web. Access: 15 Nov 2020. <<https://www.youtube.com/watch?v=07rPGDp2gTA&feature=youtu.be>>.

88 Proposta de Minuta para Resolução. Bacen. <<https://www.escolhas.org/wp-content/uploads/2020/09/Minuta-Resolucao-BACEN-Conformidade-Legal-Ouro-Em-Consulta.pdf>>.

89 “PF combate extração ilegal de pedras preciosas em terra Yanomami”. Polícia Federal. 7 May 2015. <<http://www.pf.gov.br/agencia/noticias/2015/05/pf-combate-extração-ilegal-de-pedras-preciosas-em-roraima>>.

The ease with which gold can be consciously or unconsciously washed means that the efforts that have succeeded in tracing illegally mined gold on indigenous lands have easily reached institutions based in São Paulo and beyond including 14 institutions, including banks, brokers and six distributors of bonds and securities (DTVMs), authorized by the Central Bank to trade gold, all affiliated to the Anoro (National Gold Association).<sup>90</sup>

The same is true of exports. In the first half of 2019 alone, R\$48.7mm worth of gold was exported to India from the state of Roraima, which has no officially authorized mines. The pervasive washing of gold and lack of transparency mean that there is no way to prove that Brazilian gold received by other export partners such as Canada (25.5%), the UK (22.5%), Switzerland (19.4%), and India (16.1%) is not *also* a product of illegal activities.<sup>91</sup> This makes global consumer education and communication strategies even more critical to pressuring jewelers, exporters and gold traders to increase transparency and monitoring capabilities.

## Challenges at Governmental Entities

Gold production for exports are also sources of gold royalties (received in the form of Financial Compensation for Mineral Exploration - CFEM) for municipal, state and the federal government. In 2017, Law 13.540<sup>92</sup> raised the CFEM *minimum* royalty rate on gold extraction from 1% to 1.5% — where the exact rates depend on method of extraction. The law led to a dramatic increase in CFEM royalties in 2018.<sup>93</sup> Per the 1988 Constitution (Art 20 § 1º), the Federal Union, the States, the Federal District and the Municipalities are guaranteed participation in the result of the exploration of mineral resources in the respective territory. Law 13.540 establishes that royalties must be divided in the following manner: 10% to the federal state<sup>94</sup> (of which 7% goes to the national mining agency; 1.8% to the Center for Mining Technology; 1% for the FNDCT (National Fund for Scientific and Technological Development) and; 0.2% for Ibama); 15% to the state where the mineral was extracted; 60% to the municipality of its origin/production and; 15% to municipalities affected<sup>95</sup> (i.e. mining infrastructure or port facilities). In theory, these funds are intended to go toward affected communities, infrastructure or environmental rehabilitation.<sup>96</sup>

90 Quadros, Vasconcelos. “Enquanto Força- Tarefa investiga ouro ilegal, lobby do garimpo tem apoio do governo”. *Agência Pública*. 22 Jun 2020. <<https://apublica.org/2020/06/enquanto-forca-tarefa-investiga-ouro-ilegal-lobby-do-garimpo-tem-apoio-do-governo/>>.

91 “Exportação de ouro bate recorde no Brasil com temor de recessão global”. *Folha de São Paulo*. 18 Aug 2019. <<https://www1.folha.uol.com.br/mercado/2019/08/exportacao-de-ouro-bate-recorde-no-brasil-com-temor-de-recessao-global.shtml>>.

92 Lei nº 13.540. Presidência da República. <[http://www.planalto.gov.br/ccivil\\_03/\\_ato2015-2018/2017/Lei/L13540.htm](http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/Lei/L13540.htm)>.

93 “Royalties da mineração serão recorde este ano”. *Estado de Minas*. 22 Sep 2018. <[https://www.em.com.br/app/noticia/economia/2018/09/22/internas\\_economia,990871/royalties-da-mineracao-serao-recorde-este-ano.shtml](https://www.em.com.br/app/noticia/economia/2018/09/22/internas_economia,990871/royalties-da-mineracao-serao-recorde-este-ano.shtml)>.

94 “Compensação Financeira pela Exploração dos Recursos Minerais (CFEM): O que é, de onde veio, para onde vai?”. Inesc (2019): 7-9. <[https://www.inesc.org.br/wp-content/uploads/2019/05/CFEM\\_v02.pdf](https://www.inesc.org.br/wp-content/uploads/2019/05/CFEM_v02.pdf)>.

95 Ibid.

96 Ibid.

These collections have risen dramatically during the Covid-19 pandemic. Itaituba (PA), Godofredo Viana (MA) and Pedra Branca do Amapari (AP) are three municipalities in the legal Amazon that reached the list of top 10 collectors of CFEM in 2020. In the municipality of Itaituba (PA) collections from gold and gold minerals were already 89% higher by September 2020 than all of 2019 combined.<sup>97</sup> The value of CFEM collected for Itaituba reached over R\$ 36mm in September of this year. In the state of Pará this increase was 92% compared to 2019 or a total of R\$ 48mm in CFEM.<sup>98</sup> The most recent public accounts document available to the general public on Itaituba has the municipality generating revenue of R\$ 211mm in 2017 — a year in which CFEM was still calculated differently. In other words, assuming revenue collections have not exponentially increased in Itaituba in the past three years, gold royalties are a significant, if not, systemically important source of revenue for the municipality.<sup>99</sup>

Some of these same municipalities, including Itaituba, one of the illegal gold mining capitals of Brazil, have received local ANM outposts with more direct links to the federal ANM office (in Brasília) — and therefore greater access to the regulating agency — to issue permits and licenses. The potential conflicts of interest within small municipalities and dimensions of this new internal hierarchy are cause for further study.

Organizations lobbying to drive states away from oversight and prosecution and toward greater gold revenue are central actors in the contemporary gold supply chain. In June 2020, the president of the National Gold Association (Anoro) — one of the national leaders who lobby for the legalization of mining in indigenous lands — participated in a meeting with the vice president, Hamilton Mourão, who chairs the Amazon Council. In this meeting, the Anoro president delivered a document in which mining entrepreneurs and financial agents committed to fighting illegal mining provided that the federal government ensure the end of punitive actions such as the destruction of mining equipment as well as the promotion of the regularization of mining on indigenous lands. The president of Anoro, owner of three gold trading firms, has been the subject of a number of prosecutions over gold laundering and environmental damage. Additionally, eighteen parliamentarians, among deputies and senators, own properties in conflict areas in the Legal Amazon region.<sup>100</sup> Of these, fourteen have already declared themselves in favor of federal measures to weaken Ibama's influence on environmental licensing.

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97 Considering reported CFEM figures for gold and gold minerals.

98 “Sistema de Arrecadação”. Agência Nacional de Mineração. Webpage. Access: 14 Dec 2020. <[https://sistemas.anm.gov.br/arrecadacao/extra/relatorios/cfem/MayMayores\\_arrecadadores.aspx](https://sistemas.anm.gov.br/arrecadacao/extra/relatorios/cfem/MayMayores_arrecadadores.aspx)>.

99 “Relatório de controle interno referência - exercício financeiro de 2017”. Prefeitura de Itaituba/PA. Access: 14 Dec 2020. <<https://www.itaituba.pa.gov.br/conta-publica>>.

100 “Propriedades Rurais de Parlamentares por Município”. De olhos nos Ruralistas. 10 Sep 2019. <<https://maphub.net/deolhonosruralistas/bancadaruralista>>.



# Impacts on Yanomami and Munduruku Populations<sup>101</sup>

## Yanomami Population

The Yanomami are one of the most recently contacted peoples of the Amazon and one of the largest indigenous groups in South America.<sup>102</sup> According to the Funai registration system and the ISA information system, Brazil recorded the existence of 115 isolated indigenous tribes in 2019. Isolated tribes help broaden the diversity of local fauna and flora because they have unique ways of living and occupying a territory. Around the world, they are guardians of unique ecosystems, often of global importance, such as the Amazon.

Their territory, formal and informal, covers approximately 192,000 km<sup>2</sup> on both sides of the Brazil-Venezuela border and is home to a population that was estimated in 2011 at nearly 35,000 people.<sup>103</sup> Within Brazil, the Yanomami territory is distributed between the

states of Roraima and Amazonas, regions where illegal mining runs rampant. And while the territory has been nominally set aside for the protection of the Yanomami, more than 40% of the land area is covered by mining requests and titles registered at the ANM by public and private, national and multinational mining companies.<sup>104</sup>

The recent history of the Yanomami territory is deeply intertwined with the history of mining in the region. During the 1970s, the Brazilian government initiated Project RADAM, an initiative that used airborne radar imaging systems to detect mineral deposits in previously inaccessible regions of the Amazon rainforest. The maps they produced revealed vast mineral wealth below the Amazon, particularly in the Yanomami Territory. Simultaneously, the construction of the Perimetral Norte (currently highway BR 210), started in 1973 as part of the National Government's National Integration Plan (PIN), facilitated the invasion of thousands of *garimpeiros*, or illegal miners, into the Yanomami territory.<sup>105</sup>

This invasion escalated in the 1980's, when up to 45,000 gold miners entered the territory, aided in part by the government's 1983 passage of Decree 88.985,<sup>106</sup> which effectively opened indigenous lands to mining.<sup>107</sup> The miners brought with them

101 "Mineração na Amazônia Legal e Áreas Protegidas: situação dos direitos minerários e sobreposições". WWF (2018): 148. Access: 15 Nov 2020. <[https://d3nehc6yl9qzo4.cloudfront.net/downloads/mineracao\\_na\\_amazonia\\_legal\\_web.pdf](https://d3nehc6yl9qzo4.cloudfront.net/downloads/mineracao_na_amazonia_legal_web.pdf)>.

102 Isolated indigenous peoples are composed of indigenous groups with a voluntary absence of relations or with little contact with the national societies of the countries that locate their territories.

103 Quijano Vallejos, Patricia et al. "Undermining Rights: Indigenous Lands and Mining in the Amazon". World Resources Institute (2020). <<https://www.wri.org/publication/undermining-rights#:~:text=Undermining%20Rights%3A%20Indigenous%20Lands%20and%20Mining%20in%20the%20Amazon,-by%20Patricia%20Quijano&text=It%20finds%20that%2C%20together%2C%20legal.ecosystems%20across%20450%2C000%20square%20kilometers>>.

104 Roman, Clara. "Campeã de requerimentos minerários, Terra Indígena Yanomami sofre com explosão do garimpo". Instituto Socioambiental-ISA. 21 Mar 2020. <<https://www.socioambiental.org/pt-br/blog/blog-do-monitoramento-blog-do-rio-negro/campea-de-requerimentos-minerarios-terra-indigena-yanomami-sofre-com-explosao-do-garimpo>>.

105 "Mineração e Garimpo em Terras Tradicionalmente Ocupadas: Conflitos Sociais e Mobilizações Étnicas". Projeto Nova Cartografia Social da Amazônia (2019). Access: 13 Nov 2020. <[http://www.mpsp.mp.br/portal/page/portal/documentacao\\_e\\_divulgacao/doc\\_biblioteca/bibli\\_servicos\\_produtos/BibliotecaDigital/BibDigitalLivros/TodosOsLivros/Mineracao-garimpo-em-terras-tradicionalmente-ocupadas.pdf](http://www.mpsp.mp.br/portal/page/portal/documentacao_e_divulgacao/doc_biblioteca/bibli_servicos_produtos/BibliotecaDigital/BibDigitalLivros/TodosOsLivros/Mineracao-garimpo-em-terras-tradicionalmente-ocupadas.pdf)>.

106 Decreto nº 88.985. Presidência da República. 10 Nov 1983. <[http://www.planalto.gov.br/ccivil\\_03/Atos/decretos/1983/D88985.html](http://www.planalto.gov.br/ccivil_03/Atos/decretos/1983/D88985.html)>.

107 "The Yanomami: The Fragility of Their Culture and Conditions for Physical and Cultural Survival". Inter-American Commission on Human Rights/OEA. Access: 29 Oct 2020. <<http://www.cidh.org/countryrep/brazil-eng/Chaper%206-1.htm>>.

disease, and left the Yanomami decimated: 20% of the Yanomami population succumbed to disease in just seven years.<sup>108</sup>

Following the horror of the 1980's, the Yanomami won the approval by presidential decree of the Yanomami Indigenous Territory on May 25, 1992, the result of a 20 year battle.<sup>109</sup> The victory, however, was largely symbolic: while demarcation resulted in the expulsion of thousands of miners, an estimated eleven thousand *garimpeiros* were again working illegally in Yanomami territory by 1993. This same year saw the famous massacre of the Yanomami, when a group of Brazilian *garimpeiros* crossed into the Haximu territory of Venezuela and killed sixteen Yanomami, including men, women, and children. The Supreme Court's 2006 ruling that the so-called Haximu Massacre constituted a genocide was the first time that the Court had ruled an act of violence as genocide.<sup>110</sup> Gold mining has also brought an increase in slave labor, abuse of women, prostitution, and the extermination of villages.<sup>111,112,113</sup>

Irrespective of the social and environmental harms wrought by *garimpagem*, gold mining is fundamentally an assault on the Yanomami worldview. Specifically, they believe that the God Omama deposited gold and other ores underground to sustain the world.<sup>114</sup> The extraction of gold, according to this view,

releases a smoke called Xawara which will kill all the Yanomami, as well as the non-indigenous peoples of the world. Gold mining is therefore intimately related with visions of environmental catastrophe, a belief that has guided Yanomami advocacy efforts.<sup>115</sup>

Indeed, the Yanomami have advocated extensively for greater environmental protection on their land, particularly through their recent #ForaGarimpoForaCovid (#MiningOutCovidOut) campaign jointly carried out by a number of Yanomami groups with the support of allied NGO's. In July of 2020, the Yanomami leader Dário Yanomami met with Brazilian vice-president Hamilton Mourão to petition that the government take "concrete actions" to prevent illegal *garimpagem* and violence on Yanomami territory. Mourão subsequently pledged to reopen four environmental protection bases (BAPES) in the region to study the harms and mechanisms of *garimpagem* on the Yanomami, although he did not specify a hard deadline for the policy.<sup>116</sup> At the publishing of this report, no BAPES had been reopened yet. Maurício Ye'Kwana, director of the Hutukara Yanomami Association, also spoke on the harms wrought by *garimpagem* and Covid-19 before the UN's Human Rights Council in September of 2020.<sup>117</sup>

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108 "The Yanomami". Survival International. Web. Access: 16 Nov 2020. <<https://www.survivalinternational.org/tribes/yanomami>>.

109 The demarcation occurred after long advances and setbacks by previous governments in the 70s and 80s. In 1988, for example, during the period when the CF 88 was promulgated, the region where approximately 10,000 indigenous lived was divided into 19 "islands" and two national forests, through presidential decrees.

110 "Funai anuncia reabertura de bases de proteção na Terra Indígena Yanomami". Funai. 24 May 2019. <<http://www.funai.gov.br/index.php/comunicacao/noticias/5451-funai-anuncia-reabertura-de-bases-de-protecao-na-terra-indigena-yanomami?limitstart=0#>>.

111 "Maurício Ye'kwana assume campanha: pressão só acaba quando garimpeiros forem retirados". Instituto Socioambiental - ISA. 24 Jul 2020. <<https://www.socioambiental.org/pt-br/noticias-socioambientais/mauricio-yekwana-assume-campanha-pressao-so-acaba-quando-garimpeiros-forem-retirados>>.

112 "Garimpo ilegal de ouro afeta soberania do povo Yanomami em Roraima (RR)". Centro de Tecnologia Mineral. Web. 4 Dec 2012. <<http://verbetes.cetem.gov.br/verbetes/ExibeVerbetes.aspx?verid=43>>.

113 Amaral, Marina. "Dário Kopenawa: São 20 mil garimpeiros explorando a nossa casa". Agência Pública. 8 Aug 2019. <<https://apublica.org/2019/08/dario-kopenawa-sao-20-mil-garimpeiros-explorando-a-nossa-casa>>.

114 Kopenawa, Davi; Albert, Bruce. "A Queda do Céu: palavras de um xamã Yanomami". 1st edition. Companhia das Letras, 2015.

115 Ibid.

116 "Em encontro com o Dário Yanomami, Mourão promete combater o garimpo ilegal e promover a desintrusão da Terra Indígena". Instituto Socioambiental - ISA. 4 Jul 2020. <<https://www.socioambiental.org/pt-br/noticias-socioambientais/em-encontro-com-dario-yanomami-mourao-promete-combater-o-garimpo-ilegal-e-promover-a-desintrusao-da-terra-indigena>>.

117 "Maurício Ye'kwana leva à ONU apelo urgente pela desintrusão da Terra Indígena Yanomami". Instituto Socioambiental - ISA. 25 Sep 2020. <<https://www.socioambiental.org/pt-br/noticias-socioambientais/mauricio-yekwana-leva-a-onu-apelo-urgente-pela-desintrusao-da-terra-indigena-yanomami>>.

## Munduruku Population

Of all of Brazil's indigenous territories, the one under greatest attack in 2020 has been the Munduruku Territory along the Tapajós River in Pará. The Munduruku Territory is federally approved and covers 2,382 hectares that are home to more than 6,500 people, which comprise Munduruku as well as Apiaká and Kayabí people.<sup>118,119</sup>

In 1983, the federal government responded to the remarkable wealth of gold in the Tapajós region by creating the Tapajós Gold-Mining Reserve in Itaituba, nearly 89% of which overlapped with conservation units and the western edge of the homeland of the Munduruku. While created for the purposes of legal mining, the reserve has become a center of illegal *garimpagem*. In fact, illegal mining has reached such a state of emergency in the Munduruku Territory that Brazil's Federal Prosecution Service (MPF) has requested that all gold mining applications for indigenous or conservation land in the Tapajós Gold-Mining Reserve be denied by the National Mining Agency (ANM), and that the borders of the reserve, which are poorly demarcated, if at all, be reviewed.<sup>120</sup> Presently, it is estimated that more than 60,000 gold-miners work in the Tapajós region, with as many as 1,000 airstrips. At least 30% of this mining activity is believed to take place illegally within indigenous lands and protected areas.<sup>121</sup> It is unclear how much of the remaining 70% is legal.

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*“Presently, it is estimated that more than 60,000 gold-miners work in the Tapajós region, with as many as 1,000 airstrips. At least 30% of this mining activity is believed to take place illegally within indigenous lands and protected areas.”*

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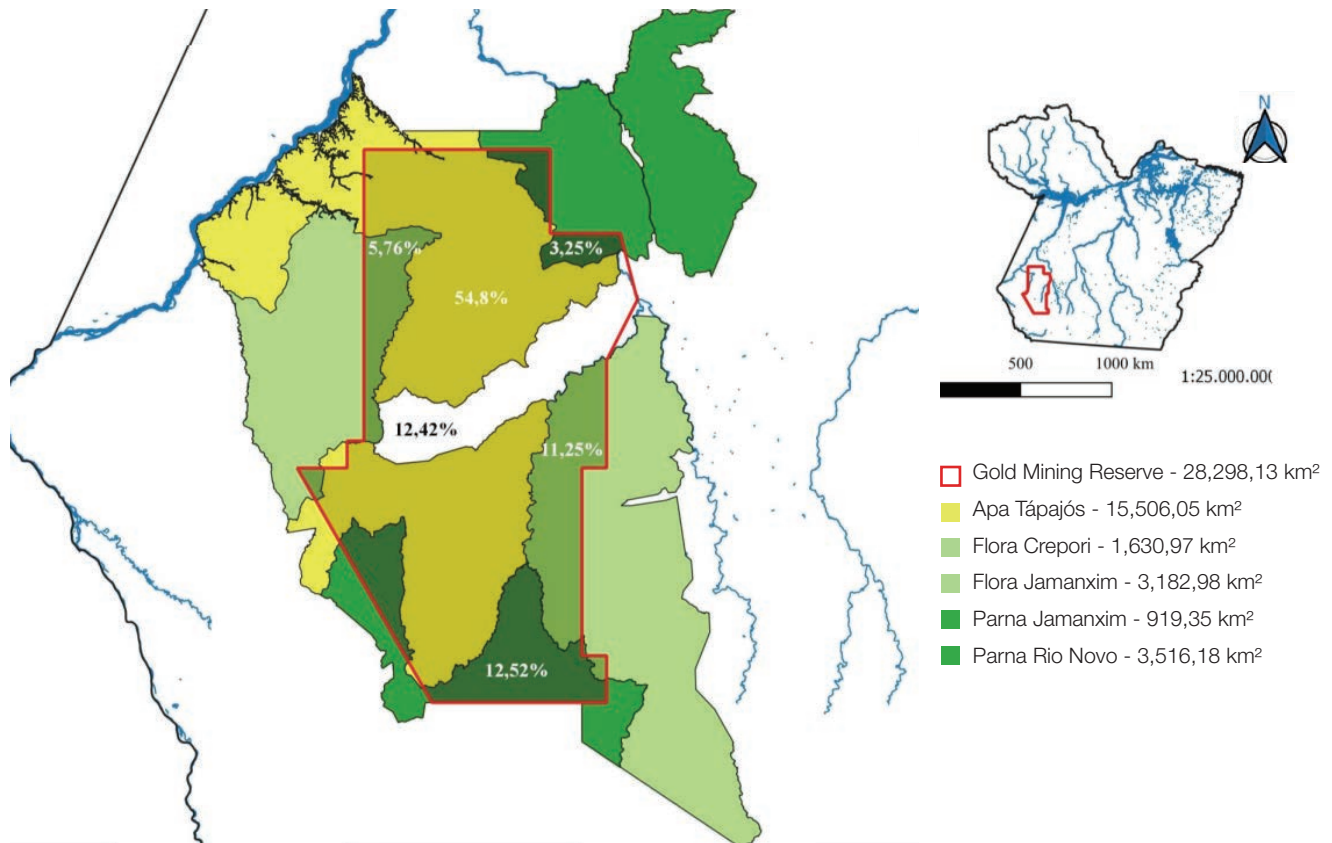
118 “Povo Munduruku”. Instituto Socioambiental - ISA. Web. Access: 29 Oct 2020. <<https://piib.socioambiental.org/pt/Povo:Munduruku>>.

119 Ibid.

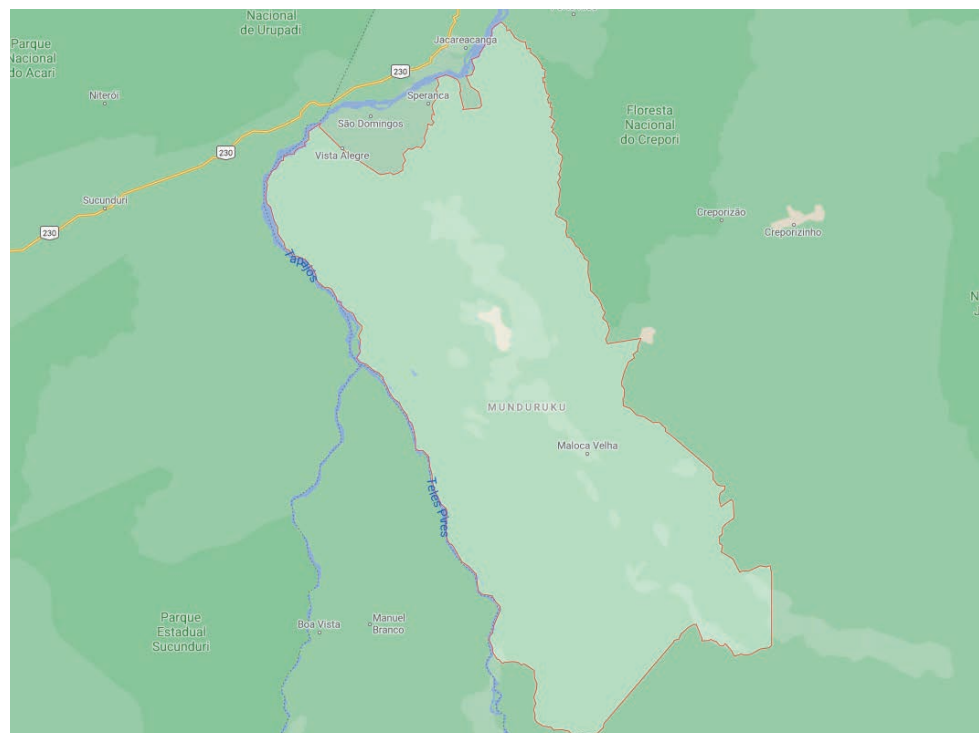
120 “MPF recomenda à ANM medidas contra a concentração ilegal de permissões de lavra garimpeira”. Ministério Público Federal. 20 Mar 2020. <<http://www.mpf.mp.br/pa/sala-de-imprensa/noticias-pa/mpf-recomenda-a-anm-medidas-contra-a-concentracao-ilegal-de-permissoes-de-lavra-garimpeira>>.

121 Angelo, Maurício. “Omissão, crime organizado e a ‘Febre do ouro’ durante a pandemia no maior polo de mineração ilegal do Brasil”. *Observatório da Mineração*. 15 Jul 2020. <<https://observatoriodamineracao.com.br/omissao-crime-organizado-e-a-febre-do-ouro-durante-a-pandemia-no-maior-polo-de-mineracao-ilegal-do-brasil/>>.

**Figure 8:** Map of the original Tapajós Gold-Mining Reserve along the Tapajós River<sup>121</sup>



**Figure 9:** Contemporary map of the Munduruku Reserve. The Tapajós Gold-Mining Reserve (not pictured) overlaps with the Munduruku's eastern edge<sup>122</sup>



122 Ibid.

123 Captured on Google Maps. Available at: <<https://www.google.com/maps/search/reserva+garimpeira+do+tapajos+munduruku/@-7.136923,-57.1747107,7.87z?hl=en>>.



The MPF has taken similar measures in Yanomami territory, including a request in June 2020 that Funai, Ibama and the federal government institute an emergency plan to expel *garimpeiros* from Yanomami land.<sup>124</sup> The request was approved by Brazil's first Federal Regional Tribunal. Within a week, President Bolsonaro renewed a presidential decree authorizing the Brazilian military to occupy the Amazon in order to prevent deforestation.<sup>125</sup> It is unclear if the MPF's Yanomami request had anything to do with Bolsonaro's subsequent decision.

## Impact on the Land

*"The earth's skin is beautiful and sweet-smelling, but if you burn its trees, it dries out. Then the soil breaks up in friable clumps and the earthworms disappear. Do the white people know this?"<sup>126</sup>*

Satellite imagery of the Yanomami territory shows a 20-fold increase in illegal mining activity in the last five years, mainly along the Uraricoera and the Mucajai rivers. Illegal mining in this region has intensified after the Brazilian Army deactivated the *Bases de Proteção Etnoambiental* (BAPes), which aimed to permanently monitor the Yanomami land as one of the strategies to combat mining and

to ensure the Yanomami tribes exclusive use of the territory traditionally occupied by them. With the dismantling of these BAPes, specific and one-off military operations have become the only effective strategy to combat illegal mining in the territory — that have been met with little success. In addition to illegal mining, the Yanomami Land is the region with the most mining requirements, with 534 research requests for exploration on their land, according to ISA:<sup>127</sup> it is the indigenous territory in Brazil which is most coveted by mining companies.

Together, the mining areas identified cover an area of roughly "8 square kilometers — the equivalent of more than 1,000 soccer fields".<sup>128</sup> Due to this scenario of increasing deforestation, public prosecutors proposed the creation of the Força Tarefa Amazonia (FTA) in 2018, which aims to strengthen the role of the MPF in combating organized and socio-environmental crimes (specifically deforestation, land-grabbing, rural violence and illegal gold mining).<sup>129</sup>

Despite these efforts — the trend has been accelerating: between 2017 and 2019 alone, 1,174 hectares of forest was lost due to gold mining in the Yanomami territory<sup>130</sup> and 2019 saw the territory's highest deforestation rates of the last ten years — at 418 ha.<sup>131</sup> In the first

124 "Covid-19: TRF1 determina retirada de garimpeiros da Terra Indígena Yanomami". Ministério Público Federal. 3 Jul 2020. <<http://www.mpf.mp.br/regiao1/sala-de-imprensa/noticias-r1/covid-19-trf1-determina-a-retirada-imediata-de-garimpeiros-da-terra-indigena-yanomami>>.

125 "Bolsonaro extends deployment of troops to curb Amazon deforestation". *Reuters*. 11 Jun 2020. <<https://www.reuters.com/article/us-brazil-environment/bolsonaro-extends-deployment-of-troops-to-curb-amazon-deforestation-idUSKBN23I25C>>.

126 Kopenawa, Davi and Albert, Bruce. "A Queda do Céu: palavras de um xamã Yanomami". 1st edition. Companhia das Letras, 2015.

127 Roman, Clara. "Campeã de requerimentos minerários, Terra Indígena Yanomami sofre com explosão do garimpo". Instituto Socioambiental - ISA. 21 Mar 2019. <<https://www.socioambiental.org/pt-br/blog/blog-do-monitoramento-blog-do-rio-negro/campea-de-requerimentos-minerarios-terra-indigena-yanomami-sofre-com-explosao-do-garimpo>>.

128 Scarr, Simon; Boadle, Anthony. "Amazon gold rush: illegal mining threatens Brazil's last major isolated tribe". *Reuters*. 25 Jun 2020. <<https://www.reuters.com/article/us-brazil-indigenous-mining-insight/amazon-gold-rush-illegal-mining-threatens-brazils-last-major-isolated-tribe-idINKBN23W2W0>>.

129 "PGR cria força-tarefa para atuar no projeto Amazônia Protege". Ministério Público Federal. 14 Jun 2018. <<http://www.mpf.mp.br/pgr/noticias-pgr/pgr-cria-forca-tarefa-para-atuar-no-projeto-amazonia-protege>>.

130 Quijano Vallejos, Patricia et al. "Undermining Rights: Indigenous Lands and Mining in the Amazon". World Resources Institute (2020). 3 Nov 2020. <[https://files.wri.org/s3fs-public/Report\\_Indigenous\\_Lands\\_and\\_Mining\\_in\\_the\\_Amazon\\_web\\_1.pdf](https://files.wri.org/s3fs-public/Report_Indigenous_Lands_and_Mining_in_the_Amazon_web_1.pdf)>.

131 Oviedo, Antonio; Araújo, Elis; Batista, Juliana; Santos, Tiago. "Relatório Técnico sobre o Risco Iminente de Contaminação de Populações Indígenas pelo novo Coronavírus em Razão da Ação de Invasores Ilegais". Instituto Socioambiental - ISA (2020): 3-4. 28 Oct 2020. <[https://www.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/versao\\_final\\_relatorio\\_tecnico\\_sobre\\_o\\_risco\\_iminente\\_de\\_contaminacao\\_de\\_populacoes\\_indigenas\\_pelo\\_novo\\_coronavirus\\_3.pdf](https://www.socioambiental.org/sites/blog.socioambiental.org/files/nsa/arquivos/versao_final_relatorio_tecnico_sobre_o_risco_iminente_de_contaminacao_de_populacoes_indigenas_pelo_novo_coronavirus_3.pdf)>.

four months of 2020, and with the onset of the Covid-19 pandemic, the area deforested by mining efforts in indigenous territories in the Legal Amazon region increased 13.44% compared to the same period the year before.<sup>132</sup> These numbers have been driven by the presence of 20,000 illegal miners believed to be working throughout the Yanomami Territory.<sup>133</sup>

Meanwhile, the Munduruku Territory has seen the greatest increase in deforestation in 2020, with satellite imagery revealing a 58% increase in deforestation related to mining in the first four months of 2020, compared to the same period last year.<sup>134</sup> In total, the Munduruku Territory and the nearby Terra Sai Cinza (also claimed by the Munduruku) accounted for 60% of deforestation alerts for mining in indigenous lands in the Amazon identified by INPE between January and April 2020.<sup>135</sup>

## Impact on the Health of Indigenous Populations

### Mercury

Mercury poisoning is one of the gravest harms inflicted by illegal mining and Amazon soils present the highest mercury concentrations in the world.<sup>136</sup> The importation and commerce of mercury, which does not occur naturally in Brazil, is regulated by the Minamata Convention, which was promulgated by Decree 9.470 in 2018 and which is one of numerous government efforts to restrict the use of mercury in industry and manufacturing.<sup>137,138</sup> In the context of mining, mercury is used to extract gold from other minerals because it binds to gold particles and forms a heavy amalgam that can be filtered out and then vaporized, leaving only gold.<sup>139</sup> Studies show that for every kilo of gold produced by illegal ASM mining, an average of 1.3 kilograms of mercury are released into waterways.<sup>140</sup> This is estimated to represent a mere 20% mercury released, with the rest (80%) released into the air as vapors, affecting the *garimpeiros* working in the illegal mines, as well as populations in surrounding regions.<sup>141</sup> Fish is the principal

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132 “Garimpo aumenta em terras indígenas e unidades de conservação durante a pandemia da Covid-19”. Greenpeace. 25 Jun 2020. <<https://www.greenpeace.org/brasil/press/garimpo-aumenta-em-terras-indigenas-e-unidades-de-conservacao-durante-a-pandemia-da-covid-19/>>.

133 “Aviões de garimpeiros ilegais são apreendidos em terras indígenas”. *Causa Operária*. 6 Sep 2020. <<https://www.causaoperaria.org.br/avioes-de-garimpeiros-ilegais-sao-apreendidos-em-terras-indigenas/>>.

134 “Em meio à Covid, 72% do garimpo na Amazônia foi em áreas ‘protegidas’”. Greenpeace. 25 Jun 2020. <<https://www.greenpeace.org/brasil/blog/em-meio-a-covid-72-do-garimpo-na-amazonia-foi-em-areas-protegidas/>>.

135 “Terras indígenas e UCs federais concentram 72% do desmatamento para garimpos na Amazônia em 2020”. *Folha de São Paulo*. 25 Jun 2020. <<https://acervo.socioambiental.org/acervo/noticias/terras-indigenas-e-ucs-federais-concentram-72-por-cento-do-desmatamento-para>>.

136 Wasserman, Julio Cesar; Hacon, Sandra and Wasserman, Maria Angélica. “Biogeochemistry of mercury in the Amazonian environment”. National Library of Medicine. Web. Access: 14 Dec 2020. <<https://pubmed.ncbi.nlm.nih.gov/14571962/>>.

137 Antunes, Paulo de Bessa. “Extração ilegal de ouro, mercúrio e povos indígenas: prejuízo certo para o Brasil”. *Gen Jurídico*. 16 Sep 2020. <<http://genjuridico.com.br/2020/09/16/extracao-ilegal-ouro-mercuro-indigenas/>>.

138 “Nota orienta sobre proibição de mercúrio em produtos”. Agência Nacional de Vigilância Sanitária - Anvisa. 24 Jan 2019. <<https://www.gov.br/anvisa/pt-br/assuntos/noticias-anvisa/2019/nota-orienta-sobre-proibicao-de-mercuro-em-produtos>>.

139 “Global Trends in Artisanal and Small-scale Mining (ASM): A Review of Key Numbers and Issues”. IGF (2007). Access: 10 Nov 2020. <<https://www.iisd.org/system/files/publications/igf-asm-global-trends.pdf>>.

140 “Impactos da Garimpagem de ouro na Amazônia” (nº2). *Imazon*. 02 Jul 2013. <<https://imazon.org.br/impactos-da-garimpagem-de-ouro-na-amazonia-n-2/>>.

141 Barbosa, Antonio C; Dórea, José G. “Indices of Mercury contamination during breast feeding in the Amazon Basin. Universidade de Brasília. Web. Access: 12 Dec 2020. <<https://pubmed.ncbi.nlm.nih.gov/21781883/#affiliation-1>>.

source of protein for indigenous populations and therefore this contamination has taken its toll. A study published in the *International Journal of Environmental Research and Public Health* in 2018 found that in some Yanomami villages, 92% of residents suffered from mercury poisoning, which is known to harm vital organs and cause developmental problems in children.<sup>142</sup>

Mercury has devastated nearby ecosystems such that the Yanomami consider the Uraricoera River to be effectively lifeless due to its high mercury concentration.<sup>143</sup> “The masters of the rivers are the stingray, electric eel, anaconda, caiman, and pink river dolphin beings...If the gold prospectors soil the rivers’ sources, these beings will all die and the rivers will disappear with them. The waters will escape to return to the depths of the earth. Then how will we be able to quench our thirst? We will all perish with our lips dried out!”<sup>144</sup>

The Munduruku population are also affected with the high mercury contamination due to the illegal mining activities in their territory. Recent studies carried out by FIOCRUZ and WWF, indicated that about 60% of the indigenous assessed had mercury levels above 6µg.g-1 — which is the maximum safety limit established by recognized international health agencies. Moreover, the research also indicated that the levels of contamination are higher in areas most

impacted by gold mining and over 15% of the children assessed had problems with neurodevelopmental tests.<sup>145</sup>

Volumes of mercury seized have been historically small. In 2017, 866 grams of mercury were seized in Roraima by Ibama, while ANM, during 2016, seized 36kg of mercury.<sup>146</sup> In 2018, Ibama intercepted and seized a historic 430kg in one operation.<sup>147</sup> Mercury is extremely dense and used in small quantities — it is therefore also very easy to traffic — this makes oversight and seizures that much more challenging. It is also easily available on online-platforms such as [www.olx.com.br](http://www.olx.com.br) and [www.mercadolivre.com.br](http://www.mercadolivre.com.br), and produced outside of Brazil.

Finally, the effects of mercury contamination are cultural. According to the Yanomami “the damage caused by... mercury affects their very existence and sustainability as traditional people, as well as the existence and sustainability of their earth-forest or “urihi”<sup>148</sup>. As such, shedding more light on the impacts of mercury, and better understanding global mercury supply chains is crucial to protecting the heritage of the Yanomami culture.

142 Vega, Claudia et al. “Human Mercury Exposure in Yanomami Indigenous Villages from the Brazilian Amazon”. *Int J Environ Res Public Health*. 2018;15(6):1051. 23 May 2018. <<https://www.arca.fiocruz.br/handle/icict/27618>>.

143 Ramos, Alan; Oliveira, Keyty; Rodrigues, Francilene. “Mercúrio nos Garimpos da Terra Indígena Yanomami e Responsabilidades”. *Revista Ambiente e Sociedade/SciELO* (2020). Web. Access: 13 Dec 2020. <[https://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1414-753X2020000100344&lng=pt&nrm=iso&tlng=pt](https://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-753X2020000100344&lng=pt&nrm=iso&tlng=pt)>.

144 Kopenawa, Davi; Albert, Bruce. “A Queda do Céu: palavras de um xamã Yanomami”. 1st edition. Companhia das Letras, 2015.

145 “Impacto do Mercúrio na Saúde do povo Indígena Munduruku, na Bacia do Tapajós”. *Fiocruz/WWF* (2020). Access: 20 Nov 2020. <[https://www.greenpeace.org/static/planet4-brasil-stateless/9ec86ba8-wwfbr\\_2020\\_nt\\_impacto-mercúrio-saúde-povo-ind%C3%ADgena-munduruku\\_v2.pdf](https://www.greenpeace.org/static/planet4-brasil-stateless/9ec86ba8-wwfbr_2020_nt_impacto-mercúrio-saúde-povo-ind%C3%ADgena-munduruku_v2.pdf)>.

146 Ramos, Alan; Oliveira, Keyty and Rodrigues, Francilene. “Mercúrio nos Garimpos da Terra Indígena Yanomami e Responsabilidades”. *Revista Ambiente e Sociedade/SciELO* (2020). Web. Access: 13 Dec 2020. <[https://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1414-753X2020000100344&lng=pt&nrm=iso&tlng=pt](https://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-753X2020000100344&lng=pt&nrm=iso&tlng=pt)>.

147 “Ibama apreende 430 kg de mercúrio destinado ao garimpo”. *Folha de São Paulo*. 6 Feb 2018. <<https://www1.folha.uol.com.br/cotidiano/2018/02/ibama-Apreende-430-kg-mercúrio-destinados-ao-garimpo.shtml>>.

148 Kopenawa, Davi; Albert, Bruce. “A Queda do Céu: palavras de um xamã Yanomami”. 1st edition. Companhia das Letras, 2015.

## Covid-19 & Malaria

The social and environmental costs of illegal gold mining have been further exacerbated by the Covid-19 pandemic. Illegal mining and disease have long gone hand-in-hand in Yanomami Territory. The Yanomami have seen two waves of “genocide” in the past sixty years: the first following a measles epidemic in 1968 that killed over 80% of the population and the second in the late 1980’s, when another invasion of gold miners brought an epidemic of malaria that killed 20% of the remaining population. Public health experts now warn that the Covid-19 epidemic threatens to reach a third wave of genocidal proportions.<sup>149</sup>

The same conditions that incentivize illegal mining make the Yanomami Territory and the people who live there unusually vulnerable to the spread of Covid-19. The territory is exceptionally remote, with the closest hospital, the Roraima General Hospital in Boa Vista, located nearly 250 km away.<sup>150</sup> The remoteness that allows illegal miners to operate with relative impunity means that the Yanomami have little to no access to urgent care. A recent report concluded that the Yanomami territory is the most vulnerable to Covid-19 of all indigenous lands in the Amazon, and the second-most vulnerable in the entire country, following only Barragem in São Paulo.<sup>151</sup> Epidemiological forecasts

predict that as many as 5,600 Yanomami, or 40% of the population in Brazil, are at risk of infection-and this considers only the villages close to the mining areas.<sup>152</sup> Past pandemics and the current spread of Covid-19 leave little doubt for the correlation: as Dario Yawarioma, vice president of the Hutukara Yanomami Association asserts: “The main form of transmission of this deadly virus into our communities are the illegal miners”.<sup>153</sup>

Courts have made moves to quell the spread of illegal mining and Covid-19, with as-yet-uncertain results. On June 17, 2020, a federal court ordered Funai to reopen three BAPes on the Yanomami reservation to help fight the coronavirus outbreak and halt the illegal gold mining. One of these posts is particularly vital, as it is meant to monitor an uncontacted group of Yanomami.<sup>154</sup> Furthermore, the federal court ordered on July 20th that the Brazilian government expel an estimated 20,000 illegal gold miners from the Yanomami indigenous reservation.<sup>155</sup>

However, the government’s stance remains mixed: in a Twitter post commenting on the court decision, Vice President Hamilton Mourão, a retired army general heading the government’s Amazon policies, disputed the number of illegal miners on the Yanomami reservation, estimating there were 3,500 and not 20,000 cited by the judge.<sup>156</sup> (The Vice President’s messaging has been

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149 Araújo, Fabrício. “Garimpeiros podem levar coronavírus à Terra Yanomami e causar genocídio, diz procurador de RR”. *G1*. 4 Jun 2020. <<https://g1.globo.com/rr/roraima/noticia/2020/06/04/garimpeiros-podem-levar-coronavirus-a-terra-yanomami-e-causar-genocidio-diz-procurador-de-rr.ghtml>>.

150 Ibid.

151 Ibid.

152 “Covid-19 pode contaminar 40% dos Yanomami cercados pelo garimpo ilegal”. Instituto Socioambiental - ISA. 2 Jun 2020. <<https://www.socioambiental.org/pt-br/noticias-socioambientais/covid-19-pode-contaminar-40-dos-yanomami-cercados-pelo-garimpo-ilegal>>.

153 Ibid.

154 “Funai anuncia reabertura de bases de proteção na Terra Indígena Yanomami”. FUNAI. 24 May 2019. <<http://www.funai.gov.br/index.php/comunicacao/noticias/5451-funai-anuncia-reabertura-de-bases-de-protecao-na-terra-indigena-yanomami>>.

155 Araújo, Fabrício and Oliveira, Valéria. “TRF-1 determina que governo federal retire garimpeiros da Terra Yanomami em Roraima”. *G1*. 3 Jul 2020. <<https://g1.globo.com/rr/roraima/noticia/2020/07/03/trf-1-determina-que-governo-federal- retire-garimpeiros-da-terra-yanomami-em-roraima.ghtml>>.

156 “Brazil court orders eviction of illegal gold miners from Yanomami reservation”. *Reuters*. 3 Jul 2020. <<https://www.reuters.com/article/us-brazil-indigenous-mining-idUSKBN2442LG>>.



inconsistent — in July of the same year he pledged to reopen the BAPes following an in-person meeting with Dário Yanomami.)<sup>157</sup> Such gestures reveal the lack of consensus regarding indigenous rights and conservation efforts within the federal government, and send clear signals of continued impunity to illegal mining groups in the region. And the numbers speak for themselves: the federal government spent less on indigenous healthcare in the first half of 2020 than in the first half of 2019.<sup>158</sup>

The Munduruku have also felt the effects of Covid-19. By July of 2020, more than 689 indigenous people from the Tapajos region had already tested positive for Covid-19 and fourteen Munduruku had died, although experts estimated that the infection rates were in reality at least three times higher.<sup>159,160</sup> Along the upper Tapajos, where roughly 13,000 Munduruku live, the closest hospital has no intensive care beds. As of July 2020, nobody who had entered the hospital with Covid-19 left the hospital alive.<sup>161</sup> Thus, the Munduruku suffer from a lack of access to medical care comparable to the Yanomami.

In addition to the effects of Covid-19, the Yanomami and Munduruku people are also facing an outbreak of malaria that is directly associated with the increased presence of *garimpeiros* in the region. In 2014, the Ministry of Health recorded nearly 2,900 cases of

malaria within the Yanomami indigenous land. In 2019, malaria cases had more than 16,600 records, registering an increase of 473% and totaling 45% of all cases of the disease registered in indigenous lands throughout the country in the same year (36,384).<sup>162</sup> In the first half of 2020, according to the District Council for Indigenous Health (Condisi), 13,733 cases of malaria were reported in the Yanomami territory and nine deaths.

In November 2020, the municipality of Jacareacanga, where the Munduruku indigenous land is based, sent a letter requesting help to the Evandro Chagas Institute (research body linked to the Ministry of Health) with a warning of a major outbreak of malaria in indigenous territories in the region. According to the State Secretary for Public Health of Pará (SESPA), of the 13 regional health centers in Pará, Santarém and Altamira are the only ones that presented an increase in cases of malaria between 2019 and 2020. In other areas there was a drop of more than 50%. By November 2020, the Santarém regional health office, which includes Jacareacanga, had already recorded 8,536 new cases of malaria.<sup>163</sup> The high rates of malaria in the Yanomami and Munduruku territory become even more alarming in the current context of the pandemic, since malaria is a comorbidity that can aggravate the Covid-19 condition.

157 “Em encontro com Dário Yanomami, Mourão promete combater o garimpo ilegal e promover a desintrusão da terra indígena Yanomami”. Instituto Socioambiental - ISA. 4 Jul 2020. <<https://www.socioambiental.org/pt-br/noticias-socioambientais/em-encontro-com-dario-yanomami-mourao-promete-combater-o-garimpo-ilegal-e-promover-a-desintrusao-da-terra-indigena>>.

158 Rocha, Bruna; Loures, Rosamaria. “In Amazon, libraries are being set alight”. *Open Democracy*. 21 Jul 2020. <<https://www.opendemocracy.net/en/amazonia-libraries-are-being-set-alight/>>.

159 Vargas, Ana Paula; Martinez, Angela. “The Munduruku and Kayapo are fighting to protect their past and future”. *Amazon Watch*. 14 Jul 2020. <<https://amazonwatch.org/news/2020/0714-the-munduruku-and-kayapo-are-fighting-to-protect-their-past-and-future>>.

160 Branford, Sue. “Every time an elder dies, a library is burnt’: Amazon Covid-19 toll grows”. *Mongabay*. 9 Jun 2020. <<https://news.mongabay.com/2020/06/every-time-an-elder-dies-a-library-is-burnt-amazon-covid-19-toll-grows/>>.

161 Rocha, Bruna; Loures, Rosamaria. “In Amazon, libraries are being set alight”. *Open Democracy*. 21 Jul 2020. <<https://www.opendemocracy.net/en/amazonia-libraries-are-being-set-alight/>>.

162 Santos, Isabel. “Malária potencializa risco de morte por Covid-19 entre os Yanomami”. *Amazônia Real*. 12 Jan 2021. <<https://amazoniareal.com.br/malaria-potencializa-riscos-da-covid-19-entre-os-yanomami-08-09-2020/>>.

163 Andrade, Eduardo; Bispo, Fábio; Potter, Hyury. “Mineração ilegal contribui para surto de malária em terras indígenas no Pará”. *Mongabay*. 25 Nov 2020. <<https://brasil.mongabay.com/2020/11/mineracao-ilegal-contribui-para-surto-de-malaria-em-terras-indigenas-no-para/>>.

## Activism and Resistance

According to indigenous communities in the region, gold mining activity and the attendant environmental and social harms has exacerbated dramatically following the deactivation of the Funai environmental protection bases (BAPES) and the departure of the army from the region.<sup>164</sup> The deactivation of BAPES occurred due to Funai's systematic budget cuts promoted by the Government between 2015 and 2016, which generated a scenario of insufficient human resources and deficiency in the security of civil and indigenous peoples who worked in the region.

Through the intensification of illegal gold mining and the Covid-19 pandemic, Yanomami leaders have escalated their community-wide mobilizations, establishing new strategies such as the creation of their Consultation Protocols, which detail the decision-making structure of the Yanomami and further outlines how the federal government should consult them on policy decisions regarding indigenous land, as well as their Environmental Territorial Management Plans - PGTA's, which detail their plans for economic participation, environmental protection and legal recognition.<sup>165</sup> The efficacy of these protocols remain to be seen, particularly since they rely on reciprocal action from the federal government, which has proven in opposition to recognition of indigenous constitutional rights.

The Munduruku people's response to gold-mining provides an instructive example for the Yanomami, who have historically had less exposure to Western civilization. The Yanomami have demonstrated their aptitude for advocacy and lobbying— including Dário Yanomami's meeting with Vice-President Hamilton Mourão and Mauricio Ye'Kwana's address before the UN Human Rights Council — but have not yet had the opportunity to experiment with new environmental protection technologies. Consider, for example, the Munduruku's defense strategy, which involves independently demarcating the borders of their territory using GPS and their own placards (with font and layout designed to resemble the Funai placards that should have been issued), taking into their own hands a task that is technically the responsibility of the federal government, as well as reporting illegal intrusions upon their land.<sup>166,167</sup> The Munduruku also conducted aggressive outreach and advocacy campaigns that led Brazil's Temer administration to suspend plans for a \$ 9 billion Sao Luiz de Tapajos dam that would have flooded nearly 400 square kilometers of their land.<sup>168</sup> Still, the government has neglected to formally recognize and demarcate Sawre Muybu, which the Munduruku claim as part of their traditional land, and there remain plans for forty more dams in the Tapajós basin.<sup>169</sup> In order to secure recognition for the Sawre Muybu and to ensure that the Sao Luiz de Tapajos suspension is not eventually reversed, Munduruku chief Arnaldo Kaba Munduruku traveled to London to meet with celebrities and to advocate for his people.<sup>170</sup>

164 "Relatório Violência Contra os Povos Indígenas no Brasil: Dados de 2019". Conselho Indigenista Missionário - Cimi (2020): 104. Web. Access: 29 Nov 2020. <<https://cimi.org.br/wp-content/uploads/2020/10/relatorio-violencia-contra-os-povos-indigenas-brasil-2019-cimi.pdf>>.

165 "Mineração e Garimpo em Terras Tradicionalmente Ocupadas: Conflitos Sociais e Mobilizações Étnicas". Projeto Nova Cartografia Social da Amazônia (2019). Access: 13 Nov 2020. <[http://www.mpsp.mp.br/portal/page/portal/documentacao\\_e\\_divulgacao/doc\\_biblioteca/bibli\\_servicos\\_produtos/BibliotecaDigital/BibDigitalLivros/TodosOsLivros/Mineracao-garimpo-em-terras-tradicionalmente-ocupadas.pdf](http://www.mpsp.mp.br/portal/page/portal/documentacao_e_divulgacao/doc_biblioteca/bibli_servicos_produtos/BibliotecaDigital/BibDigitalLivros/TodosOsLivros/Mineracao-garimpo-em-terras-tradicionalmente-ocupadas.pdf)>.

166 Higgins, Tiffany. "The Munduruku People Against Brazil". Granta. 10 Jul 2018. <<https://granta.com/munduruku/>>.

167 Angelo, Maurício. "Mineradora inglesa Anglo American quer explorar terras indígenas na Amazônia". *Mongabay*. 20 Mar 2020. <<https://brasil.mongabay.com/2020/03/mineradora-inglesa-anglo-american-quer-explorar-terras-indigenas-na-amazonia/>>.

168 Ponsford, Matthew. "After dam victory, Brazil's Munduruku chief appeals for global support over land". *Reuters*. 19 Aug 2016. <<https://www.reuters.com/article/us-brazil-dam-landrights/after-dam-victory-brazils-munduruku-chief-appeals-for-global-support-over-land-idUSKCN10U0W2>>.

169 Gonzaga, Diego. "The map of life: How one indigenous group is fighting for the right to protect its territory". Greenpeace. 27 Apr 2018. <<https://www.greenpeace.org/international/story/16189/the-map-of-life-how-one-indigenous-group-is-fighting-for-the-right-to-protect-its-territory/>>.

170 Ponsford, Matthew. "After dam victory, Brazil's Munduruku chief appeals for global support over land". *Reuters*. 19 Aug 2016. <<https://www.reuters.com/article/us-brazil-dam-landrights/after-dam-victory-brazils-munduruku-chief-appeals-for-global-support-over-land-idUSKCN10U0W2>>.

Amidst these efforts, Munduruku leaders have continued to denounce so-called “daydu”, meaning traitorous politicians who co-opt and manipulate indigenous populations as well as the Munduruku narrative to claim the Munduruku are in favor of opening indigenous lands for mining: “Some brothers and sisters, blind by the brightness of gold, are playing the dirty game of the “daydu” and publicly claim that the Munduruku people are in favor of *garimpo* and mining. We will repeat it: their words are full of “daxpim” — full of hate and lies.<sup>171</sup> In an October 2019 statement to these “daydu”, the Munduruku wrote: “We will not accept the law that you are negotiating. We have the right to self-determination, to say how we want to live and what we do not want to have done within our territory. In addition, any consultation with our people must be made in accordance with ILO Convention 169, and in accordance with our own consultation protocol. Remember, too, that we are entitled to veto any project that we are consulted about”.<sup>172</sup>

The Munduruku have also pioneered strategies of cultural resistance. The threats of Tapajós damming projects to the Munduruku people are also the subject of “The Map of Life”, a joint initiative between the Munduruku and Greenpeace. The hand-drawn map, which is available in both digital and printed formats, subverts governmental or corporate surveys of the region by incorporating information on the seasonal ecology of each section of river, as well as the rich diversity of flora and fauna and where they can be found. Furthermore, the map highlights the sacred spaces that are central to Munduruku existence, including the Home of the Mother of the

Tracajás (Amazonian turtle) and the mountain associated with Karosakaybo, the Munduruku ancestor credited with creating the world. These sacred spaces are threatened by the numerous damming projects proposed for the Tapajós basin, and The Map of Life is one of the Munduruku’s strategies for demonstrating the immense cultural and ecological costs of mining in the region.<sup>173</sup>

It remains to be seen what impact these advocacy efforts will have on federal policy. Such high profile, international advocacy work could serve the Yanomami in securing victories such as those of the Munduruku and the Sao Luiz de Tapajós dam. Still, tactical victories aside, both communities remain largely at the whim of the federal government.

171 “Indigenous Munduruku in Brazil say they are ready to resist the war of dispossession”. *Avispa Mídia*. Web. Access: 21 Jan 2021. <<https://avispa.org/indigenous-munduruku-in-brazil-say-they-are-ready-to-resist-the-war-of-dispossession/>>.

172 “Statement of the Munduruku People: We do not want mining in our Territory!”. Movimento Ipereg Ayu. Web. Access: 24 Jan 2021. <<https://movimentoiperegayu.wordpress.com/2019/10/10/statement-of-the-munduruku-people-we-do-not-want-mining-in-our-territory/>>.

173 “The map of Life - Tapajós and Sawre Muybu Land: The view of the Munduruku People about their river and their territory”. Greenpeace. Web. Access: 29 Nov 2020. <[https://www.greenpeace.org.br/hubfs/Campanhas/Tapajos/mapeamento/mapa\\_vr\\_en.pdf](https://www.greenpeace.org.br/hubfs/Campanhas/Tapajos/mapeamento/mapa_vr_en.pdf)>.

## New Technologies Exist but are not All-encompassing: Opportunities and Challenges

Considering the current system of manual invoicing as mentioned in the section of gold mining permits of this publication, discussions of new technologies must first and foremost prioritize the overdue digitalization of key processes. As long as invoicing remains analog, crosschecking of data (with PLG licenses, environmental licenses and tax filings, for example) will be impossible. This is the first, easiest and most important technological advancement that needs implementing.

Tracking physical gold on the other hand, presents significant challenges. While projects such as the IBM Initiative Trust Jain for Jewelry exist, that “will to track and authenticate diamonds, precious metals and jewelry at all stages of the global supply chain, from the mine to the retailer”<sup>174</sup> using blockchain technology, they are likely to only have adherence with large-scale industrial miners, and not local DTVM or rudimentary pawning shops in the regions herein discussed.

Gold fingerprinting on the other hand, a technology long believed unfeasible — could present new (albeit time-and-capital intensive) solutions. One of the key projects that the South African National Precious Metals Forum has been integrally involved in is gold fingerprinting. While gold fingerprinting is a known science — it has been around for 20

years — its application to the identification of precious metals is relatively new. Gold fingerprinting is essentially the elemental profiling of gold. The technique, developed in Australia and South Africa, identifies the source of gold. In the case of South Africa, it has been used to secure convictions in cases of stolen gold. “The process, whereby forensic analysts identify a piece of gold through its chemical composition, can be accurate enough to determine which area and mine the metal originated from, before it was mined”.<sup>175</sup>

The drawback from this methodology is that it requires scientific data collection of the chemical properties of all the potential regions and sub-regions where gold could be coming from. Data collection, systematization and analysis in the case of South African has taken 20 years for the process to have a high degree of accuracy. South Africa is also the only country that has introduced legislation requiring the creation and maintenance of such databases. In order for this type of technology to successfully track gold in global and complex supply chains, countries from all over the world would need to begin collecting data.<sup>176</sup>

The challenges relating to the tracking and fingerprinting of gold have led Brazilian prosecutors to start looking for answers within the industry of heavy machinery and infrastructure that enable gold mining operations (as mentioned earlier in this publication). In terms of technology, the same shift in focus could be valuable, especially when considering ESG metrics and frameworks that could be strengthened at multinational machinery companies that consciously or unconsciously provide equipment and parts to illegal *garimpo* operations. Simple GPS tracking technologies are already used extensively in the heavy machinery industry to facilitate time management, maintenance and reporting, these should be

174 “New Consortium Collaborates to Put Jewelry on Blockchain”. *Trust Chain*. Web. Access: 12 Dec 2020. <<https://www.trustchainjewelry.com>>.

175 “Gold Fingerprinting”. *Hi-tech Security Solutions (2020)*. Access: 9 Nov 2020. <<http://www.securitysa.com/article.aspx?pkarticleid=6124>>.

176 Ibid.



incentivized at a larger scale, especially for international heavy machinery providers in Amazonian states. These could create alerts for when large stocks are sold in key risk cities near *garimpo* territories. Clear challenges exist given sellers of the equipment are often tied up in *garimpo* interests themselves — as has been the case with the Hyundai representative in the region.<sup>177</sup> However, once sold, companies like Planet and Picterra that provide high quality daily satellite imagery, combined with automation of object identification can further provide information on equipment transfers to companies on their down-stream operation compliance with ESG metrics. Moreover, these same tools can be used by civil society, public prosecutors and regulators to monitor the building of airstrips, barges, road building, in indigenous territories. Faster and more accurate identification of heavy equipment and infrastructure in indigenous and protected territories, could go a long way to catching illegal mining activity before its most damaging aspects have commenced operations.

Cryptocurrency is also a promising tool for establishing new forms of indigenous economic autonomy and exchange. A recent cryptocurrency venture launched by the Cinta-Larga population claims that “it is not enough for the federal police to seize resources without these resources being immediately applied to the development of its owners, that is, the Suruí-Cinta-Larga community”.<sup>178</sup> The new cryptocurrency aims to give constitutional autonomy to the Suruí-Cinta-Larga people, by assigning power over their resources under

Article 231 of the Constitution of the Federative Republic of Brazil. This type of measure, with the incorporation of cryptocurrencies (to avoid further intermediaries) can be one measure to ensure that indigenous populations have access to the monetary means to support activism and demarcation campaigns as well as do not become vulnerable to the co-opting of illegal miners, as has been cited on occasion with the Munduruku.

Other early alert systems such as Audiomoth<sup>179</sup> and Rainforest Connection<sup>180</sup> that use bioacoustic technology and artificial intelligence to detect sounds of industrialized human activity (chainsaws, excavators and boat engines) should be seen as potential partners in increasing the visibility and alerting capabilities in indigenous lands that are vulnerable to illegal mining, such as the Yanomami and Munduruku territories. Both of these organizations already work in close operation with indigenous populations to help with early-alert responses to illegal human activity in their lands.

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177 Camargos, Daniel. “Em ofensiva contra indígenas no Pará, garimpeiros ilegais movimentam mercado bilionário”. *Repórter Brasil*. 24 Nov 2019. <<https://reporterbrasil.org.br/2019/11/em-ofensiva-contra-indigenas-no-para-garimpeiros-ilegais-movimentam-mercado-bilionario/>>.

178 “OYX: A moeda mundial indígena transcultural”. *Oyxabaten* (2020). <<https://oyxabaten.com/white-paper-oyxabaten.pdf>>.

179 “Open Acoustic devices”. *Open Conservation Technology*. UK. Wepage. Access: 14 Dec 2020. <<https://www.openacousticdevices.info/>>.

180 “Rainforest Connection”. *Rainforest Connection*. Webpage. Access: 14 Dec 2020. <<https://www.rfcx.org/>>.

# Conclusion

As demonstrated, the economics of illegal mining are complex, far removed from their artisanal origins and are supported by sophisticated and expensive logistical processes and structures of incentives that pervade all levels of government. From a legislative and procedural standpoint, the state consistently fails to provide mechanisms to protect forests and protect the rights of indigenous populations as they relate to gold mining. The pathway to remediating *some* of these aspects is comparatively simple, though mired in lack of political will to enact these changes, most clearly demonstrated by the existence of extensive mining lobbies and conflicts of interest at the municipal to the federal levels.

## Critical and Urgent Recommendations

- **From a legislative perspective**, Bill 191/2020, which would open indigenous lands to mining, oil and gas extraction, electricity generation, and agriculture needs to be closely monitored and advocacy efforts directed towards ensuring that the Bill, in its current format, does not pass in Congress.
- **Funai must immediately recognize indigenous territories** (even those under an appeals process) in formal land registries. By authorizing the registration of indigenous territory in the process of being formally recognized as private property, this regulatory change makes the approval for mining requests in these lands much more likely. This must be halted.
- **From a regulatory mining perspective (and thereby, specifically the ANM)**, Mining permits must be adapted to include volumes of gold that could be viably extracted from any given piece of land, in order to weaken attempts to wash illegal gold continuously with the same mining

permits. Giving some context of feasible reserves provides a necessary constraint and oversight capacity.

- Additionally, gold invoices need to be digitalized and crosschecked with environmental licenses and PLG documentation to generate and improve data on the gold market. **Here, the Central Bank and the CVM** (*Comissão de Valores Mobiliários*, or Securities and Exchange Commission) , **as regulator of DTVMs, can be instrumental** in making a digital invoice a requirement at DTVM (*Distribuidora de Títulos e Valores Mobiliários* or Broker and Distributor of Securities) posts. While this will not cover *all* gold (e.g. gold as a commodity would, in this first instance, remain undigitalized) it would go a significant way to providing data and minimal traceability mechanisms for the gold supply chain. Equally, **international and national investor dialogue** to reinforce these greater traceability and transparency demands of the Central Bank and CVM could be very effective.
- Indigenous populations need greater protection. As such, the **BAPES as well as Funai health posts must be reintroduced to the regions at once**, critically during Covid-19, but also considering the health and livelihood threats that outside contact brings on a systematic basis.

## Short-term Recommendations

- **Technology should be used by the private sector to monitor company ESG Metrics**, as well as by **consumers and civil society to monitor heavy machinery use** and new infrastructure networks in indigenous and protected territories and thus improve prosecution capabilities, traceability, as well as communication and advocacy on the issues at hand. Equally, **initiatives of bioacoustic monitoring** that serve

as effective early-alert systems to indigenous populations, **should be given more support to scale-up operations.**

- From a global perspective of gold supply chains ESG metrics, **OECD Guidelines**, which today present the most promising source of gold ESG metrics, **need to be made clearer and more objective, as well as binding for member companies.** The most technical guidelines, the **Conflict-Free Gold Standard should be made public** for greater gold-supply chain transparency.
- **International and National Civil Society** must engage in greater and on-going communication and advocacy campaigns to educate on the illegalities along the gold supply-chain, from extraction to sale to end-financial banks or consumers.

- **Law enforcement should seek to further understand the dynamics of Mercury and implement more regular seizures of mercury**, a controlled substance according to the Minamata Convention (promulgated by Decree 9.470 in 2018), due to the substance's long-term effects on indigenous populations.<sup>181182</sup> From an **international cooperation perspective**, the Minamata Convention could be an important source of advocacy to further urge parties to reduce the use of mercury in *garimpo*.

The urgency of the subject at hand is evident. The preservation of the Amazon rainforest is critical for preventing irreversible climate collapse. As such, the stakes for preventing illegal mining and protecting indigenous lands in the Amazon have never been higher.

### Long-term Recommendations

- **From a legislative perspective**, regulation and the respective mining code need to be brought to the fore of the political agenda, debated in congress and implemented, respecting indigenous rights, which should be implemented through a legislation that guarantees the protection of indigenous lands against mining. As long as ambiguity exists due to lack of supporting laws, illegal mining will persist and threaten the rights set out for indigenous populations in the Constitution. *Garimpagem* also needs to be defined more clearly to avoid the current lack of differentiation between industrial and small-scale mining.

181 Antunes, Paulo de Bessa. "Extração ilegal de ouro, mercúrio e povos indígenas: prejuízo certo para o Brasil". *Gen Jurídico*. 16 Sep 2020. <<http://genjuridico.com.br/2020/09/16/extracao-ilegal-ouro-mercúrio-indigenas/>>.

182 "Nota orienta sobre proibição de mercúrio em produtos". Agência Nacional de Vigilância Sanitária - Anvisa. 24 Jan 2019. <<https://www.gov.br/anvisa/pt-br/assuntos/noticias-anvisa/2019/nota-orienta-sobre-proibicao-de-mercúrio-em-produtos/>>.

# Annex 1

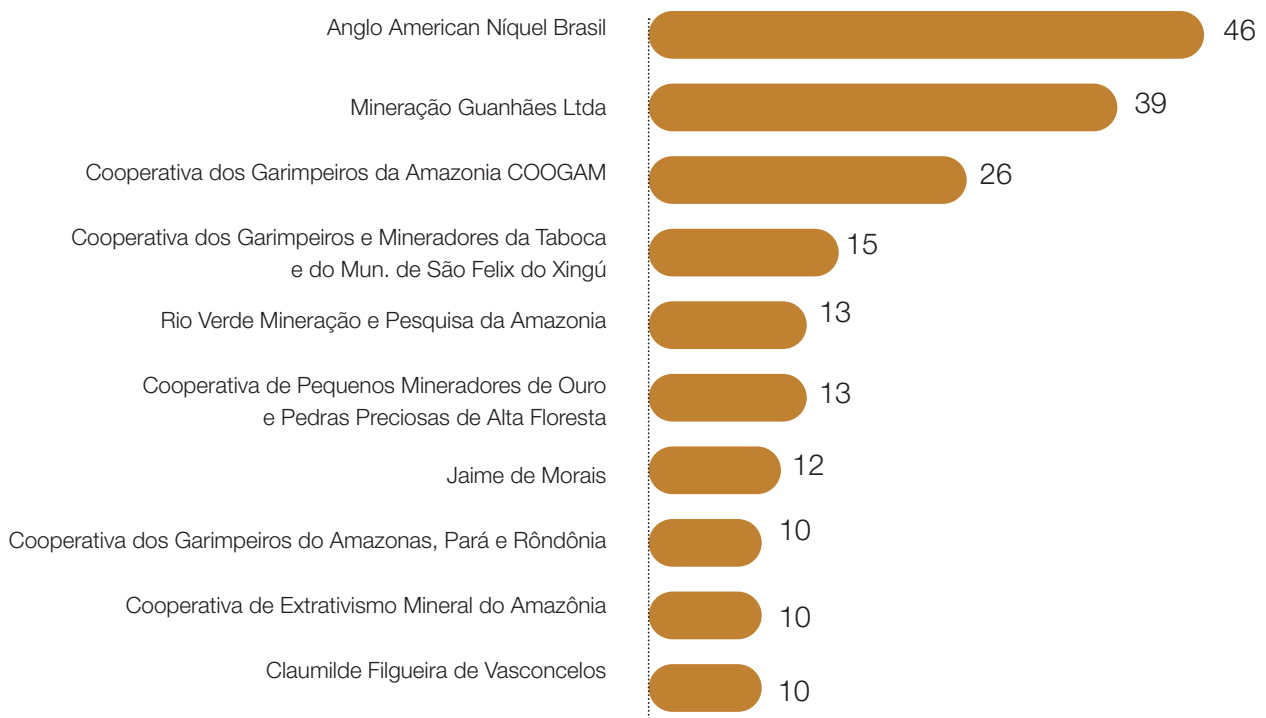
Regimes for the use of mineral substances		
<b>Concession regime</b>	Depends on a concession decree issued by the Minister of State for Mines and Energy.	<p>The purpose of these regimes is, first, the Research Permit (Article 15 of the Mining Code), granted by ANM; and subsequently, the Mining Ordinance (Article 43 of the Mining Code), granted by the Minister of Mines and Energy.</p> <p>The authorization and concession regimes apply to all mineral substances, with the exception of those protected by monopoly (oil, natural gas and radioactive mineral substances).</p>
<b>Authorization regime</b>	Depends on a license dispatched by ANM.	<p>The maximum areas that these regimes must observe are defined in Article 42 of Ordinance DNPM 155/16, ranging from 50 to 10,000 hectares, depending on the substance to be explored.</p>
<b>Licensing regime</b>	<p>It is the regime for the use of mineral substances in which it is registered, in the ANM, a license issued in compliance with local administrative regulations, and which allows the extraction of certain mineral goods (Federal Law 6,567/78 and Federal Decree 9,406/18). The concession of the license registration entitles its holder to use mineral substances intended for immediate use in civil construction, such as sand, gravel, rocks, clays, etc.</p> <p>This regime is restricted to the maximum area of 50 hectares and will be provided only to the owner of the soil where the extraction will take place or those who obtain express authorization.</p>	
<b>Mining permit regime (Permissão da Lavra Garimpeira - PLG)</b>	<p>Extraction regime for mineral substances with immediate use of the mineral deposit, which, due to its nature, especially its small volume and the irregular distribution of the mineral good, do not often justify investment in research work, thus making the “<i>lavra garimpeira</i>” the most suitable. Granted by the Director General of ANM, for a period of up to five years, always renewable for another five, at the discretion of ANM.</p> <p>The permissioned area cannot exceed 50 hectares, except when granted to the cooperative of <i>garimpeiros</i> (10,000 in the legal Amazon and 1,000 hectares in other regions).</p> <p>The title can be object of cession or transfer of rights, with the consent of the ANM, to those who satisfy the legal requirements.</p> <p>It applies to mineral substances that can be mined (“<i>minerais garimpáveis</i>”), as defined in paragraph 1 of Article 10 of Law 7.805/89.</p>	
<b>Monopolization regime</b>	<p>This regime provides for the exploitation that is exclusive for the execution, directly or indirectly, of the Federal Government. It applies to oil, natural gas and radioactive mineral substances. It is the regime to be adopted when, due to special law, it depends on direct or indirect execution by the federal Executive Power. All of these regimes have the objective of guaranteeing the holder the right to explore correctly and legally the mineral resources present in our soils and waters, regardless of the mineral substance that is intended to be extracted or even the quantity. It is a wealth belonging to all Brazilians and the domination by the Union seeks to ensure that there is a return to all, even if it grants third parties the right to explore.</p>	



## Annex 2

Mining on indigenous lands does not happen only through *garimpagem*. They are also subject to other exploring regimes. According to the Socio-Environmental Institute (ISA), mining requests (which include PLGs, research requests, etc.) cover approximately 28 million hectares, a third of the area of indigenous lands.<sup>183</sup> They cover 55 types of ores, 70% of which are for gold exploration. Currently, there are 534 requests to mine within Yanomami territory, representing over 40% of the territory.<sup>184</sup> Clearly, the demarcation of indigenous lands proves a weak barrier to the requesting of mining permits.

**Figure 6.** Companies and people with the most request for mining in Indigenous Land in the Amazon 2011 – 2020<sup>184</sup>



183 “Entenda a polêmica em torno da mineração em terras indígenas”. Instituto Socioambiental - ISA. 29 Nov 2019. <<https://terrasindigenas.org.br/pt-br/noticia/203848>>.

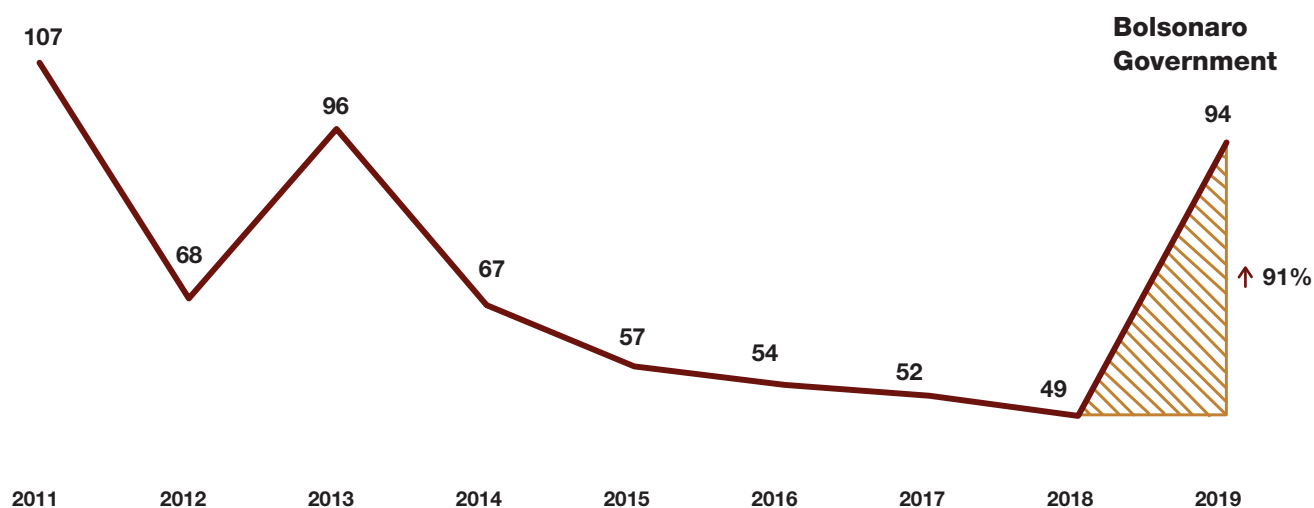
184 Roman, Clara. “Campeão de requerimentos minerários, Terra Indígena Yanomami sofre com explosão do garimpo”. Instituto Socioambiental - ISA. 21 Mar 2019. <<https://www.socioambiental.org/pt-br/blog/blog-do-monitoramento-blog-do-rio-negro/campea-de-requerimentos-minerarios-terra-indigena-yanomami-sofre-com-explosao-do-garimpo>>.

185 Anjos, Anna Beatriz et al. “A mineração em Terra Indígena com nome, sobrenome e CNPJ”. *Agência Pública*. 20 Feb 2020. <<https://apublica.org/2020/02/a-mineracao-em-terra-indigena-com-nome-sobrenome-e-cnpj/>>.

These legal loopholes and lacunae have encouraged mining applications from artisanal and industrial miners alike. The world’s largest platinum producer, Anglo American Mining (based out of England and South Africa) has approval to explore gold and other minerals in the Brazilian Amazon.<sup>186</sup> The company also uses two Brazilians subsidiaries, Itamaracá and Tanagra, for this purpose, as the Law 7.805/1989 requires that corporate recipients of PLGs be based in Brazil or Brazilian-owned. Together, these three companies have 296 active mining requests in indigenous lands in the Brazilian Amazon, including Yanomami and Munduruku territories. Data obtained through Brazilian Access to Information Law (LAI) shows that Vale has 236 orders registered with the ANM, the majority of which for gold in the Amazon, and involving more than 13 indigenous territories. More than 90% of the requests refer to requirements and authorization for research and requirements and mining concessions to explore for gold.<sup>187</sup>

This trend is increasing. Data indicates that mining exploration processes in indigenous territories in the Amazon have grown 91% since the beginning of the Bolsonaro government. This is the first time since 2013 that requests have increased. Analysis suggests that among the potential beneficiaries of mining on indigenous land are large political figures from the state of Amazonas, gold mining cooperatives with partners that have been accused or involved in cases of environmental crime, global mining giants and even an artist from São Paulo.<sup>188</sup>

**Figure 7.** Mining prospecting processes in Amazonian indigenous territories, 2011-2019<sup>189</sup>



186 Angelo, Maurício. “Mineradora inglesa Anglo American quer explorar terras indígenas na Amazônia”. Mongabay. 20 Mar 2020. <<https://brasil.mongabay.com/2020/03/mineradora-inglesa-anglo-american-quer-explorar-terras-indigenas-na-amazonia/>>.

187 Angelo, Maurício. “Vale tem centenas de requerimentos para explorar terras indígenas na Amazônia”. Observatório da Mineração. 27 Nov 2019. <<https://observatoriodamineracao.com.br/vale-tem-centenas-de-requerimentos-para-explorar-terras-indigenas-na-amazonia/>>.

188 Fonseca, Bruno. “A mineração em terra indígena com nome sobrenome e CNPJ”. Agência Pública. 20 Feb 2020. <<https://apublica.org/2020/02/a-mineracao-em-terra-indigena-com-nome-sobrenome-e-cnpj/>>.

189 Fonseca, Bruno. “A mineração em terra indígena com nome, sobrenome e CNPJ”. Agência Pública. 20 Feb 2020. <<https://apublica.org/2020/02/a-mineracao-em-terra-indigena-com-nome-sobrenome-e-cnpj/>>.

The increase of requirements also raises another legal issue that has been explored by a large part of the potential beneficiaries of mining on indigenous land. It is the right of preference for the promotion of research and subsequent mining of an area.<sup>190</sup> Presently, it is enough that the interested party files an application requesting for a permit at ANM, regardless of any requirement, a low bar that has contributed to expanding the exploitation of minerals on indigenous lands, since all existing procedures were designed for cases of research and mining outside protected areas, with no mention of its application to indigenous lands.

As mentioned previously, Articles 176, paragraph 1, and 231, paragraph 3, of the Constitution are norms of limited effectiveness — that is, they depend on statutory law to produce effects.

Despite these peculiarities, while this subject has not been regulated, ANM is applying the Mining Code procedure to requirements in indigenous territories regardless, allowing these requests to be protocolled, instead of being rejected. These protocols generate the already mentioned right of preference to the applicant for a given area, thereby preventing new requirements on the same space, as provided for in Article 11 of the Decree-Law 227. The fact that the ANM does not reject the requirements immediately causes a backlog of hundreds of administrative procedures of research and mining requests in protected areas. These are called “snow white processes,” which remain ‘asleep’ until the arrival of adequate regulatory legislation.

The MPF has been more incisive and has brought a lawsuit seeking the full rejection (as opposed to only suspension) of all requirements for authorization of mineral research or concession of mining in indigenous

lands, citing the lack of legal regulation. Unfortunately, this is not ANM’s stance. In a statement to the MPF of Pará, the agency asserted that the lack of a regulatory law is not sufficient grounds to immediately reject a request, opting instead to suspend mining processes, which functions as a temporary hold (but not a rejection).

This dispute reached the courts. In August 2019, the Federal Court of Amazonas ruled that the ANM should clear from its base all research or mining requirements that relate to indigenous territories in the State and refuse all future claims due to the legal impossibility of the request, since the suspension of Administrative procedures are not provided for by law. They ruled that the ANM’s prior policy was unconstitutional, as it violated the clause asserting the indigenous peoples’ right to be heard and consulted in a free, prior and informed manner on the research and mining of mineral resources in their territories. Therefore, these suspended authorization requests are merely expectations of rights. In the MPF’s view, these interests must all be annulled with the advent of the new law, which must start to operate from scratch, under the new system.

Bill 191 of 2020, which aims to regulate the issue of mining in indigenous territories, appoints that “the requests for titles attributable to mining rights in indigenous lands filed after the act of homologation of the process of demarcation of the indigenous land and before the publication of this Law” should be rejected. On the subject of mining titles, the Bill determines in its Article 36 that “titles attributable to mining rights in indigenous lands that have been granted after the act of ratifying the process of demarcating the indigenous land and before the publication of this Law” are null and void.

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190 The right of preference is only applicable to the Authorization, Licensing and Concession regimes.

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