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GUIDANCE NOTE ON COMBATING ENVIRONMENTAL CRIME



**Lessons from fighting
illegal gold mining in the
Amazon Basin**

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GUIDANCE NOTE ON COMBATING ENVIRONMENTAL CRIME

Lessons from fighting illegal gold mining in the Amazon Basin

Executive summary^{1,2}

Environmental crimes are soaring in the Amazon Basin. Illicit economic activities, including illegal mining, contribute to environmental degradation and fuel multiple forms of social conflict and political instability. Environmental crimes contribute to and are sustained by national and transnational organized crime networks involved in narcotics, arms and human trafficking, as well as other financial crimes, including money laundering. Illegal gold mining, particularly small-scale operations, are rising across the region and in the three largest countries of the Amazon Basin: Brazil, Colombia and Peru. As the twenty-first century gold rush expands deeper into forest areas — including inside protected conservation and indigenous

territories — it poses serious crime prevention, law enforcement and environmental protection challenges to national governments. Since illegal gold mining routinely spills across borders, regional cooperation is essential to deterring and disrupting small-scale mining prospectors and their pillage. Fighting illegal gold mining in the Amazon is also key for countries in the region to meet their global climate and sustainable development commitments under the Paris Agreement and the Agenda 2030.

1 This note was drafted by Laura Trajber Waisbich, Carolina Andrade and Lycia Brasil. The authors would like to thank Melina Risso, Robert Muggah, Mac Margolis and Peter Schmidt from Igarapé, the INTERPOL Environmental Security Programme and our generous external reviewers for their valuable contribution to this study. All errors remain our own.

2 The content of this publication does not necessarily reflect the views or policies of INTERPOL, its Member Countries, its governing bodies or contributory organisations. The boundaries and names shown and the designations used on any maps do not imply official endorsement or acceptance by INTERPOL. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of INTERPOL concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

This note offers practical guidance for law enforcement, criminal justice and environmental protection authorities to better understand the scope and scale of the challenge. It is designed for national and subnational environmental investigators, police officers and public prosecutors at the forefront of efforts to dismantle environmental crimes in the Amazon. It reviews policy and operational strategies meant to prevent, control and reduce illegal small-scale gold mining in the Amazon – with a focus on Brazil, Colombia and Peru. The note offers a catalogue of 12 measures already in place in the three countries that can be valuable for law enforcement, criminal justice and environmental protection authorities to learn from each other, cooperate and coordinate activities within and across countries.

MAJOR CROSS-CUTTING FINDINGS

National authorities are increasingly aware of the environmental, social and economic threats associated with illegal gold mining in the Amazon. There is also growing concern over its links to multiple forms of organized crime, including chemicals, drugs, arms and human trafficking, and money laundering. Illegal gold mining in the Amazon is increasingly an important funding source for national and transnational non-state armed groups and criminal organizations.

Environmental crimes in general, and gold mining in particular, are intrinsically connected to corruption and preexisting social and economic vulnerability in the Amazon Basin. Effective strategies to tackle the problem require a comprehensive diagnosis and an array of interventions to address the role of different actors and crimes. Brazil, Colombia and Peru have adopted varied approaches to combating small-scale illegal gold mining in the Amazon, based on how illegal mining is interwoven with local dynamics.

Over the past decade all three countries have adopted a combination of prevention, investigation, intelligence and enforcement measures as well as different types of sanctions (based on administrative provisions and civil or criminal law). The seizure and destruction of machinery used in illegal mining is common. An expansion of anti-mining efforts across Brazil, Colombia and Peru suggests a rising political importance attached to the issue. Yet there is still comparatively limited evidence of the overall impact of these interventions.

New technologies, especially high resolution remote sensing, are playing an increasingly central role in raising public awareness of the problem. The use of satellite-based imaging and visualization tools is also supporting law enforcement operations. Law enforcement authorities often report lack of resources at the national level to deploy the most innovative tools for field investigators carrying out enforcement operations. International cooperation — including bilateral and regional cooperation as well as partnerships with other countries outside the region and specialized international organizations — is key to strengthening national capacities to prevent and repress illegal gold mining, particularly in Peru and Colombia. Yet, there is still room for greater regional cooperation among the three countries, both at the political and operational levels.

OPPORTUNITIES

Greater awareness about the scope, scale and dynamics of illegal small-scale gold mining and the factors that drive it are critical. Law enforcement, criminal justice and environmental protection authorities should take stock of past interventions in order to upgrade their strategies and protocols for detecting, investigating, and sanctioning illegal actors higher in the chain, be they financial backers or public authorities.

Enact legal and policy reforms

Many existing national regulations are insufficient to effectively prevent and punish illegal gold mining in forested areas of the Amazon. This presents an opportunity for a strategic overhaul. Reforms should enhance existing socio environmental legislation and impact assessment tools for small-scale operations in the Amazon and improve regulation on gold supply chains, including on machinery and mercury used in alluvial gold mining. Reforms should also create and/or reinforce specialised governmental programs, institutions and arrangements to effectively respond to illegal gold mining, including through the formalization of small-scale miners and the promotion of sustainable gold mining.

Deploy new technologies to support law-enforcement

New technologies are central to detecting environment crime and enabling responses in the public, private and non-profit sectors. Priorities include information systems to trace crime across supply chains, predictive analytics and remote sensing systems to anticipate, detect and map shifting patterns of illegal gold mining and support operations, as well as new forensic technologies to help trace illegal gold from mine to market. Technology is also key to assist the private sector (the financial sector, refineries or other downstream buyers) to ensure compliance and a transition towards sustainable mining practices.

Strengthen regional cooperation

Strengthening regional cooperation and bridging the trust gap among agencies between and within countries is essential. This can be accelerated by forging networks of practitioners and establishing more frequent channels for intelligence sharing as well as new opportunities for joint operations. Regional exchanges are also key for countries to learn from one another and improve national and regional legal and policy frameworks to dismantle environmental crime, in general, and illegal gold mining in particular. Building regional cooperation is also vital to increase investment in the protection of the Amazon. International organizations such as INTERPOL have a role to play in creating the transnational momentum to combat illegal trade in minerals, and encourage police information sharing in a timely manner through secure communication channels.

Introduction

Environmental crimes are soaring in the Amazon Basin. Illicit economic activities, including illegal mining, not only drive deforestation, pollution and biodiversity loss but also fuel criminal violence and political instability.³ Environmental crimes contribute to and are sustained by national and transnational organized crime networks involved in narcotics, arms and human trafficking. Ecocrimes are also routinely accompanied by corruption, money laundering and other financial malfeasance.⁴

Illegal gold mining, particularly small-scale alluvial gold mining operations, is growing across the region, not least in the three largest countries in the Amazon Basin: Brazil, Colombia and Peru. The mining sector in **Brazil** represents approximately 3% of the country's GDP.⁵ Nowhere in Brazil is gold mining growing faster than in the Amazon basin.⁶ A 2021 study identified 2,576 illegal mining sites inside the Brazilian Amazon, most of them producing gold.⁷ Gold mining in the Amazon can take three major forms: a) Alluvial: extraction of ore by digging open pits, usually along riverbanks; b) Boat: extraction of ore by dredging river beds; c) Pit: mining through underground tunnels. The most common type of artisanal small-scale gold

mine in the Amazon is alluvial.⁸ Brazil exports around 100 tonnes of gold annually. Between 2019 and 2020 at least 49 tonnes of illegally extracted gold were laundered and introduced into the gold market.⁹ During this period, illegal mining was responsible for felling 21 thousand hectares of forest area in the Brazilian Amazon, leaving an estimated 9.8 billion Brazilian reais (approximately US\$ 1.9 billion) in environmental damages.¹⁰ In the Tapajos basin alone, an estimated 30 tonnes of ill-gotten gold change hands per year (roughly 4.5 billion Brazilian Reais in undeclared revenue), six times the volume of the legally mined precious metal. The Tapajos basin is also home to the Munduruku population, one of the basin's indigenous groups most affected by illegal mining activities. In the last two years, there has been a 363% increase in the area degraded by small-scale mining in Munduruku's territory.¹¹

In **Colombia**, the mining sector represents 2% of the national GDP and provides a livelihood for thousands of formal and informal workers countrywide. Gold mining in the Colombian Amazon remains low-scale when compared to other regions such as Antioquia, Chocó and Bolívar, which still account for over 88% of alluvial gold mining.¹² Nonetheless, small-scale alluvial gold mining has expanded in the Colombian Amazon in recent years (notably

3 Adriana Abdenur, Brodie Ferguson, Ilona Szabo de Carvalho, Melina Risso and Robert Muggah. [Crime Ambiental na Bacia Amazônica: uma Tipologia para Pesquisa, Política Pública e Ação](#). Instituto Igarapé, Strategic Paper 47, 2020.

4 The Global Initiative against Transnational Organized Crime. [Organized Crime and Illegally Mined Gold in Latin America](#). Geneva: The Global Initiative against Transnational Organized Crime, 2016. See also Katie Jones, 'Organized Crime and the Environment in Latin America: A Fatal Encounter', InSight Crime, 3 March 2021.

5 Rodrigo César de Vasconcelos dos Santos. 2021. 'Contribuição do setor mineral no produto interno bruto brasileiro'. Radar: tecnologia, produção e comércio exterior (65): 33-36.

6 MapBiomias. [A expansão da mineração no Brasil nos últimos 36 anos](#). Fact Sheet, August 2021.

7 Localities identified include active and inactive mining sites, whole mining areas with multiple active and inactive operations, and rivers where alluvial gold mining is taking place. See Red Amazônica de Información Socioambiental Georreferenciada – RAISG: (<https://mineria.amazoniasocioambiental.org>); also see Red Amazônica de Información Socioambiental Georreferenciada (RAISG). [Amazônia sob pressão 2020](#). São Paulo: ISA – Instituto Socioambiental, 2021, p. 39.

8 See Conservation Strategy Fund Brazil. [Mining Impact Calculator](#).

9 Brasil. Ministério Público Federal, 'Ações do MPF apontam provas do completo descontrole da cadeia econômica do ouro no Brasil', 29 July 2019. Also Larissa Rodrigues. [Brasil exporta ouro ilegal](#). Policy Brief, Instituto Escolhas, July 2021.

10 Brasil. Ministério Público. Procuradoria da República no Pará, 'MPF quer impedimento do comércio de ouro ilegal para proteger indígenas e consumidores no Brasil e no exterior', 8 June 2021.

11 O Globo. [Em dois anos, garimpo aumenta em 363% a degradação da Terra Indígena Munduruku](#), O Globo, May 30, 2021.

12 UNODC, Ministerio de Minas y Energía de Colombia. [Explotación de oro de aluvión. Evidencias a partir de percepción remota 2018](#). UNODC/MinMinas, 2019.

in the Caquetá, Putumayo, Cotuhé and Amazonas rivers), often illegally.¹³ In 2019, Colombia exported more than 52 tonnes of gold, mainly to the United States and Switzerland (an estimated US\$ 1.75 billion). Yet illegal mining reportedly represents over 80% of all mining activities in the country.¹⁴ Between 2010 and 2018 the Colombian state lost an estimated US\$ 5.6 billion due to the financial crimes related to illegal mining, including tax evasion and money laundering.¹⁵

In **Peru**, the region's largest gold exporter, the mining sector accounts for 10% of GDP and employs around 212,000 people. Amazon mining already represents a significant share of the Peruvian extractive industry.¹⁶ According to the Peruvian Ministry of Energy and Mines (MINEM) and to the National Customs Superintendency and Tax Administration (SUNAT), between 2015 and 2019, over 720 tonnes of gold were produced in Peru; yet the country has officially exported over 2.2 thousand tonnes.¹⁷ This means that about 68% of the total gold exported goes undeclared, and comes from informal or illegal mining. While the size of the illegal gold market is hard to estimate, recent studies suggest that over 40% of the country's gold is mined illegally.¹⁸

As the twenty-first century gold rush expands deeper into forest areas – and encroaches on protected conservation and indigenous territories – it poses a serious crime prevention and law enforcement challenge to national governments. Since illegal gold mining often spills across borders, deterrence and disruption efforts also require more regional cooperation.

The Amazon has grown in political importance in the regional agenda in recent years. The 2019 Leticia Pact is an example. Meanwhile, Brazil, Colombia and Peru have expanded border cooperation as well as regional security and technical cooperation initiatives. This has been largely supported by countries outside the region (major gold importers, among them) as well as international development and security organisations, including the United Nations Office on Drugs and Crime (UNODC) and INTERPOL.

This note offers practical guidance for law enforcement, criminal justice and environmental protection authorities to better understand the scope and scale of the challenge. It is designed for national and subnational environmental investigators, police officers and public prosecutors at the forefront of efforts to dismantle environmental crimes in the Amazon. It reviews policy and operational strategies meant to prevent, contain and repress illegal gold mining in the Amazon – with a focus on Brazil, Colombia and Peru. The note also lists a catalogue of measures already in place to dismantle crime in the gold supply chain in the three countries which national law enforcement and criminal justice authorities can share and build upon as they cooperate and coordinate activities within and across countries.

13 InSight Crime and Igarapé Institute. [The Roots of Environmental Crime in the Colombian Amazon](#). InSight Crime and Igarapé Institute, 2021.

14 Alexandra Urán, 'Small-Scale Gold-Mining: Opportunities and Risks in Post-Conflict Colombia', in *Between the Plough and the Pick: Informal, Artisanal and Small-Scale Mining in the Contemporary World*, ed. Kuntala Lahiri-Dutt, 1st ed. (ANU Press, 2018), 275-93; Colombia. Contraloría General de la República, '[Minería ilegal sigue arrasando regiones y la debilidad institucional del Estado colombiano se dejó ganar esta batalla, dice el Contralor](#)', 19 October 2017.

15 Global Financial Integrity, Alianza por la Minería Responsable, Cedetrabajo. [Hacia una minería de oro transparente en Colombia](#), 2021.

16 INDAGA. [La Minería Ilegal en la Amazonía Peruana](#). Lima: Ministerio de Justicia y Derechos Humanos, Observatorio Nacional de Política Criminal, 2021.

17 Fiorella Montaña Pastrana. '[Más de 1500 toneladas de oro se exportaron desde el Perú sin que se sepa quién las extrajo](#)'. *Convoca.pe*, 27 September 2020.

18 Andrew Greaves and Corey Scult. [Gold to Green: Financing Sustainable Mining in Peru](#). Yale Center for Business and the Environment, 2019.

The new and illegal gold rush in the Amazon

Small-scale gold mining in the Amazon Basin is one of the many extractive activities currently devastating the Amazonian forest, polluting rivers and generating severe social and environmental harm. Small-scale gold miners have witnessed an increase in gold prices over the past 20 years. This is driven by a range of factors, including changing global financial and investment dynamics since the 2008 global financial crisis and rising demand for gold in China and India, among other markets.¹⁹ A surge in gold prices throughout 2020 and 2021 is also a direct response to the COVID-19 pandemic, which encouraged investors to move their cash into precious metals such as gold.²⁰

While the precise definition of small-scale mining is not straightforward and varies from country to country, in the Amazon region it tends to occur informally, irregularly, if not illegally, given the numerous restrictions on mining activities inside environmentally protected areas and indigenous territories.²¹ Historically, *small-scale* and *artisanal* gold mining were seen as similar – if not synonyms – practices in the region in contrast with conventional large-scale industrial mining. However, despite the conventional idea of a rudimentary activity, a considerable share of non-industrial gold from the region relies on heavy machinery, including rafts (*balsas*), dredges, tractors, bulldozers and excavators.

This present guidance note focuses on *illegal small-scale gold mining*. As defined by the The Global Initiative Against Transnational Organized Crime, illegal gold mining refers to activities “carried out in blatant violation of the law.” That includes mines that operate in protected

areas or fail to comply with environmental, tax and labour law. Prospecting involving criminal groups can also be considered “criminal mining”.²² By focusing on measures to dismantle illegal small-scale gold mining in the Brazilian, Colombian and Peruvian Amazon, this note acknowledges the differences in legal treatment of mining in forest areas in each country and the blurred boundaries between informal and illegal small-scale mining in the region. It also recognises the importance of combining crime prevention, policing and judicial actions with enhanced socio-environmental and administrative regulations. Authorities should also tailor socio-economic policies to counter the factors that make small-scale gold mining in the Amazon attractive to the local communities and workforce. This is an important caveat given the fact that environmental crimes, and illegal gold mining in particular, are intrinsically related to corruption and preexisting social and economic vulnerability in the Amazon Basin. The problem is especially relevant for traditional and indigenous communities, where high levels of poverty and marginalisation persist. Effective strategies to tackle illegal gold mining require a comprehensive diagnosis and a variety of strategies for intervention to address the role of different actors and crimes.

Linkages with organized crime

The gold rush in Brazil, Colombia and Peru is also driven by important changes in the patterns of national and transnational organized crime across Latin America. Despite massive investments in counter-narcotics and the fumigation of coca crops, cocaine production in Colombia has soared. Between 2012 and

19 Camille Dezécache, Emmanuel Faure, Valéry Gond, Jean-Michel Salles, Ghislain Vieilledent and Bruno Héroult. [Gold-Rush in a Forested El Dorado: Deforestation Leakages and the Need for Regional Cooperation](#). Environmental Research Letters 12, no. 3 (1 March 2017): 034013.

20 BBC, [Gold price rises above \\$2,000 for first time](#), BBC News, 05 August 2020.

21 Melina Riso, Julia Sekula, Lycia Brasil, Peter Schmidt and Maria Eduarda Pessoa de Assis. [Illegal Gold that Undermines Forests and Lives in the Amazon: an overview of irregular mining and its impacts on Indigenous populations](#). Igarapé Institute, Strategic Paper 53, 2021. See also INDAGA. [La Minería Ilegal en la Amazonia Peruana](#). Lima: Ministerio de Justicia y Derechos Humanos, Observatorio Nacional de Política Criminal, 2021.

22 The Global Initiative against Transnational Organized Crime. [Organized Crime and Illegally Mined Gold in Latin America](#). Geneva: The Global Initiative against Transnational Organized Crime, 2016, p. 5-6.

2017, the cultivated area increased by more than 250 percent to a record 171,000 hectares, according to the UNODC.²³ Although Colombia still accounts for roughly 90 percent of cocaine seized by United States authorities,²⁴ Colombian drug traffickers are increasingly focusing on the European markets which offer a greater risk-reward ratio.²⁵ Moreover, they are diversifying their activities into other illicit economies, including illegal gold mining. In roughly 43 percent of the Colombian territories where illegal gold mining is presently occurring, illicit coca crops are also present.²⁶ There is also growing evidence of illegal gold mining production and transport costs being shared with drug traffickers in the three countries.²⁷ In 2011-2012, profits from illegal gold mining surpassed those from drug trafficking in both Colombia and Peru.²⁸ In addition, Amazonian gold is increasingly exploited by criminal networks from outside the region (including from China, Italy and Russia) for laundering the proceeds of other illicit economies.²⁹

Illegal gold mining is often less risky for criminal groups because it takes place in remote locations with limited state presence and less surveillance by security bodies. The fragmented nature of small-scale gold mining in the Amazon and the challenging forest landscapes hinder state presence and control, facilitating the entry and expansion of criminal groups in this market. While all three countries have taken note, they still lack sufficient interest, budget, and technical and technological capacities to act against illegal

gold mining. Curbing illegal mining to protect the Amazon forest and its peoples is not yet a priority for national governments despite the fact that illegal mining already is more profitable and provokes greater ecological damage than cocaine trafficking.

All these factors combined illustrate how existing criminal networks are diversifying their illicit activities and fueling the gold rush in the Amazon. Yet, linkages between different illicit economies are not always easy to establish and can vary from country to country. In Colombia, the linkages between illegal gold mining and drug trafficking through criminal networks and non-state armed groups – such as those formed by dissidents of FARC (Fuerzas Armadas Revolucionarias de Colombia), ELN (Ejército de Liberación Nacional) or Clan del Golfo – are well known.³⁰ These linkages are not as evident – though by no means absent – in Peru and Brazil. Recent investigations into the growing role of Brazil's criminal organization Primeiro Comando da Capital (PCC) in small-scale gold mining in the Brazilian state of Roraima and on clandestine airstrips serving both drug trafficking and illegal gold extraction are examples of the growing crime convergence.³¹ Despite the differences in scale, visibility and geography, the outlaw nexus is unquestionable and thwarts the Amazonian states striving to fulfill their national and global commitments to curb deforestation, fight climate change, and ensure regional security and stability. As flagless outlaw groups maneuver to meet rising international demand

23 UNODC. [Colombia. Monitoreo de territorios afectados por cultivos ilícitos 2017](#). September, 2018.

24 Financial Times. ['Cocaine: Colombia weighs a new aerial war on drugs'](#), ft.com, 20 February 2021.

25 InSightCrime and Global Initiative Against Transnational Organized Crime. [El itinerario de la cocaína hacia Europa](#). February 2021.

26 UNODC and Ministerio de Energía de Colombia. [Colombia. Explotación de oro de aluvión](#). October 2020.

27 See, for instance, in Brazil, Clara Britto. ['PCC se aproxima de garimpeiros para lavagem de recursos'](#). *Amazônia Real*, 24 June 2021. For Colombia, see InSight Crime and Igarapé Institute. [The Roots of Environmental Crime in the Colombian Amazon](#). InSight Crime and Igarapé Institute, 2021.

28 The Global Initiative against Transnational Organized Crime. [Organized Crime and Illegally Mined Gold in Latin America](#). Geneva: The Global Initiative against Transnational Organized Crime, 2016. Also Livia Wagner, ['El tráfico del oro ha superado el valor del tráfico de drogas'](#), *Mongabay*, 23 March 2020.

29 The Global Initiative against Transnational Organized Crime. [Organized Crime and Illegally Mined Gold in Latin America](#). Geneva: The Global Initiative against Transnational Organized Crime, 2016.

30 InSight Crime and Igarapé Institute. [The Roots of Environmental Crime in the Colombian Amazon](#). InSight Crime and Igarapé Institute, 2021.

31 Kátia Brasil e Emily Costa. [Como o PCC se infiltrou nos garimpos em Roraima](#). *Amazônia Real*. 11 May 2021.

for Amazon gold, it is important to highlight that most of the recognized illegal mining hotspots in the region are located at border intersections, facilitating transnational trade via remote areas by criminal networks.

Therefore, fighting illegal gold mining in the Brazilian, Colombian and Peruvian Amazon is crucial to curbing environmental degradation (including deforestation and pollution) and other illicit activities, confronting criminal networks, and protecting individual and collective rights. Safeguarding the rights of marginalised and socially vulnerable indigenous peoples is also critical.

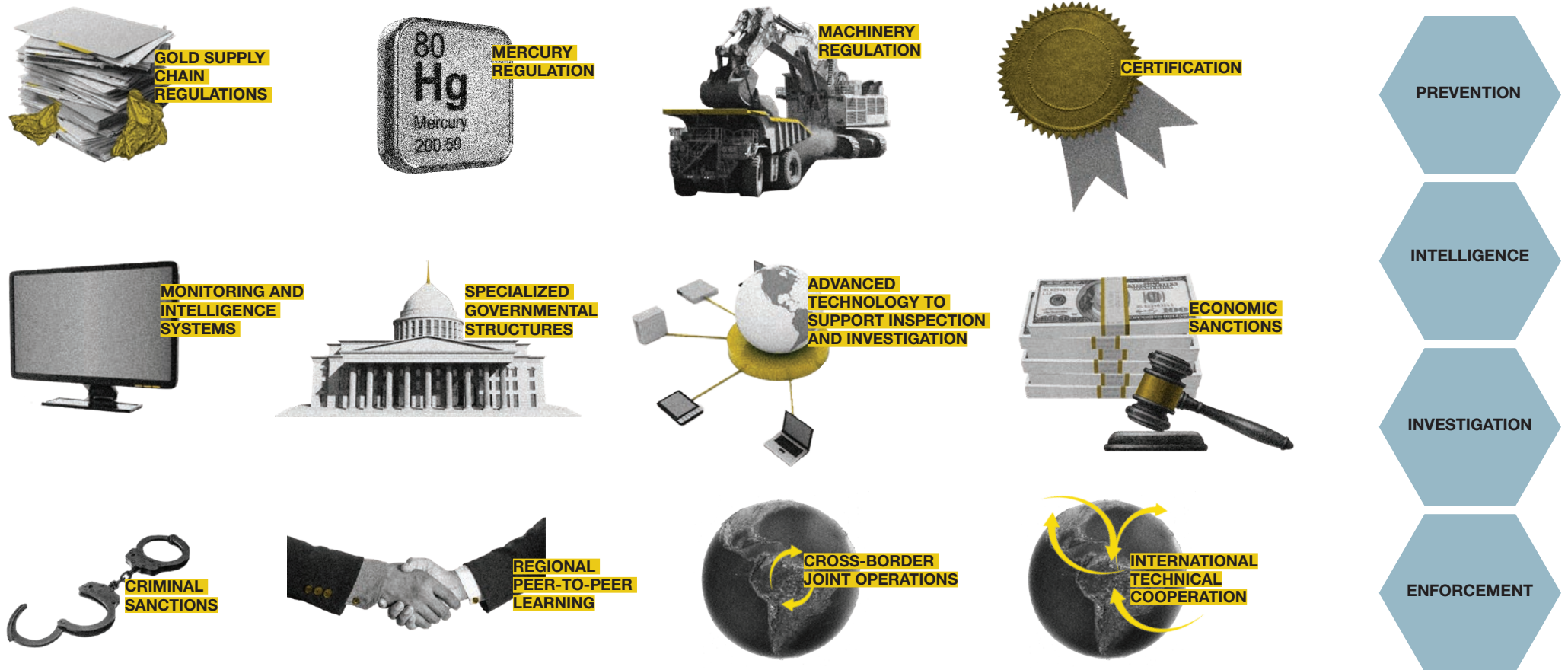
Methodological note

This guidance note adopted a two-track methodological strategy. The first track, a *scoping phase*, aimed at retrieving a series of measures for dismantling illegal mining in the Amazon. It focused on mapping a range of law enforcement and judicial interventions, as well as on complementary initiatives by other governmental bodies and non-state stakeholders including the private sector and civil society in Brazil, Colombia and Peru to fight illegal mining in the Amazon. This was done mainly through a desk review of academic studies, official documentation and news sources in addition to follow up interviews with key informants in the three countries.

The second track, a *consolidation phase*, consisted of selecting and cataloguing these measures. Each measure has been characterized in two different and complementary ways (see Figure 1, below). First, according to the type of the state response (or intervention) to dismantle illegal gold mining across different policy areas and throughout the supply chain³². Second, measures were also clustered according to their function in a larger spectrum of initiatives adopted to combat environmental crime (from prevention to enforcement).

32 WWF Brasil. [‘A cadeia do ouro’](#). Chagas do Garimpo podcast. July 6 2021.

FIGURE 1. ECOSYSTEM OF ANTI-ILLEGAL SMALL-SCALE GOLD MINING MEASURES IN BRAZIL, COLOMBIA AND PERU

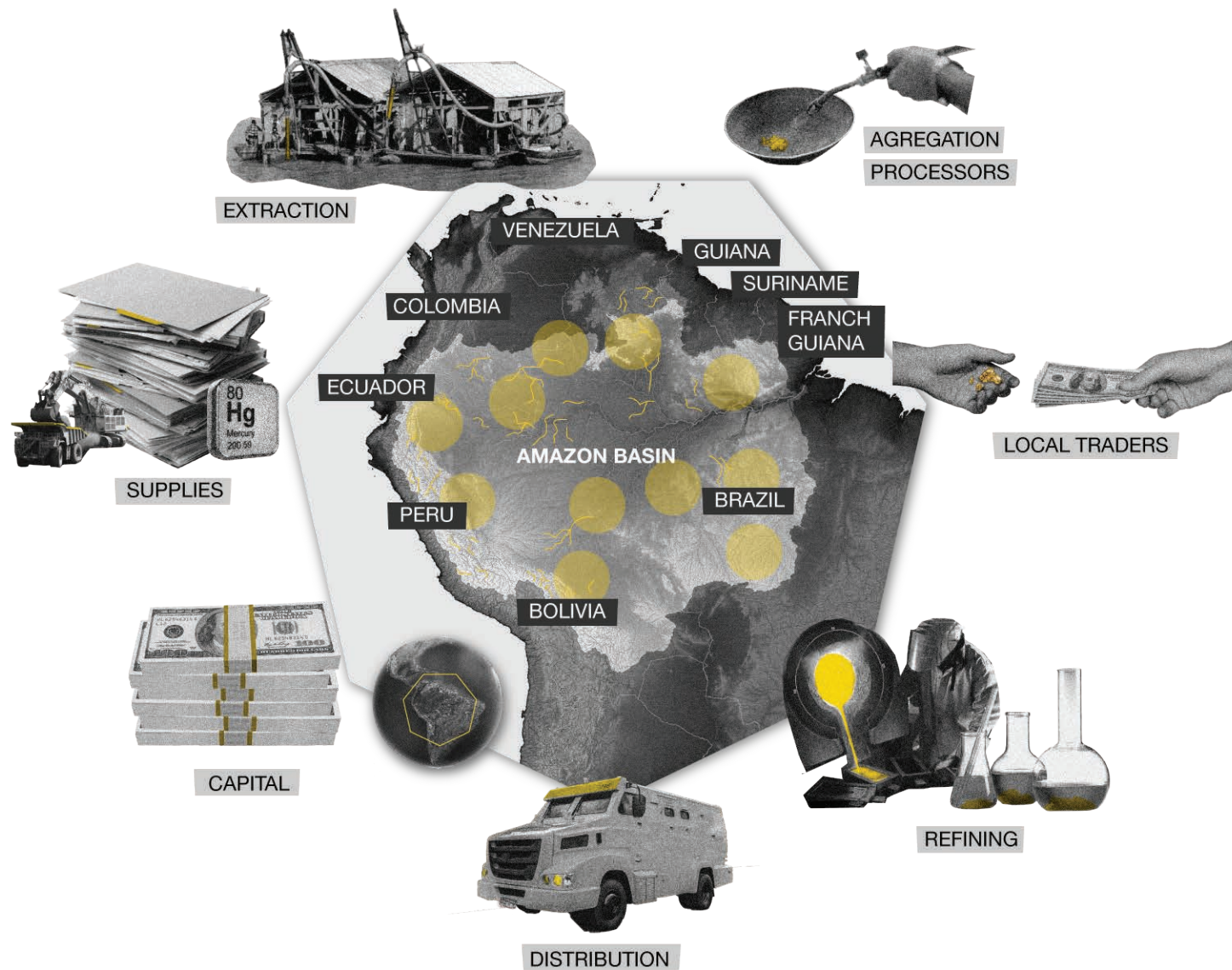


Source: Igarapé Institute

Figure 2, below, illustrates the ecosystem of measures mapped in the three countries according to these two clustering criteria. While useful as a qualitative mapping exercise, it is important to highlight that the numerous measures collated and described here are either still being discussed and negotiated within government or have been put in place only recently. Their effectiveness, therefore, requires further study and assessment in the years to come.

FIGURE 2. ANTI-ILLEGAL SMALL-SCALE MINING MEASURES ACROSS THE GOLD SUPPLY CHAIN

Source: Igarapé Institute



Measures to combat illegal gold mining in the Amazon: a mapping



#1 GOLD TRADE REGULATIONS AND SUPPLY CHAIN TRANSPARENCY

Adequate legal-administrative frameworks are a central piece in preventing and dismantling gold mining in forest areas. Experts in the region are acutely aware of the numerous insufficiencies of existing legal and regulatory frameworks for small-scale gold mining in all three countries. Mining regulations in the region are historically oriented toward promoting mining investment

with little concern for the specificities of small-scale gold mining activities in the Amazon and their socio-environmental impacts. Legal deficiencies result not only in failure to protect the environment and prevent deforestation, but also enable “gold laundering” – both the profits from illegal prospecting and the ill-gotten ore itself – as well as using mining to scrub the cash from other illicit economies.³³

Enhancing environmental protection and transparency along the supply chain – from extraction to commercialization – is paramount. Alongside legal reforms, technology can help curbing illegal gold mining by enhancing supply chain transparency and gold traceability. This is particularly important in the case of alluvial gold from the Amazon, where there is a fine line between legal and illegal extraction, a gray area that facilitates the laundering of “dirty gold”.³⁴ Digitalization is the most attainable technological advancement to allow for state authorities to enhance control over the gold trade and transparency across the supply chain.³⁵ While gold-related information systems remain weak across the region there have been important advancements in the past decade, notably in Colombia.

In the past decade, Colombia introduced a series of new frameworks to regulate the gold trade and restrict the purchase of gold extracted from unauthorised mining sites.³⁶ A major initiative in this regard is the National Registry for Mineral Traders (*Registro Único de Comercializadores de Minerales* – RUCOM), established in 2012, under Law No 1.450/2011. Registering with the RUCOM became mandatory in 2015 for those who extract, trade and buy minerals in the country.³⁷ The registry

33 Brasil. Ministério Público Federal. Câmara de Coordenação e Revisão, 4. [Mineração ilegal de ouro na Amazônia: marcos jurídicos e questões controversas](#). Brasília: MPF, 2020; Alexandra Urán, ‘Small-Scale Gold-Mining: Opportunities and Risks in Post-Conflict Colombia’, in *Between the Plough and the Pick: Informal, Artisanal and Small-Scale Mining in the Contemporary World*, ed. Kuntala Lahiri-Dutt, 1st ed. (ANU Press, 2018), 275-93; Lucia Bird and Nils Krauer; Colombia. Contraloría General de la República, [Minería ilegal sigue arrasando regiones y la debilidad institucional del Estado colombiano se dejó ganar esta batalla, dice el Contralor](#), 19 October 2017; Lucia Bird and Nils Krauer. [Case Study: Illegal Gold Mining in Peru](#). Geneva: The Global Initiative Against Transnational Organized Crime, November 2017; PROETICA National Council for Public Ethics (Peruvian chapter of Transparency International). [Corruption in the Mining Sector: Peru Report](#). Lima: Proetica, 2019.

34 Jay Weaver, Nicholas Nehamas, Jim Wyss and Kyra Gurne. [Dirty Gold. The Rise and Fall of an International Smuggling Ring](#). PublicAffairs, 2021.

35 Melina Risso, Julia Sekula, Lycia Brasil, Peter Schmidt and Maria Eduarda Pessoa de Assis. [Illegal Gold that Undermines Forests and Lives in the Amazon: an overview of irregular mining and its impacts on Indigenous populations](#). Igarapé Institute, Strategic Paper 53, 2021.

36 Organisation for Economic Co-operation and Development (OECD). [Due diligence in Colombia's gold supply chain. Where does Colombian gold go?](#). OECD, 19 April 2018.

37 Colombia. [Decreto 276 de 2015](#).

belongs to a broader and enhanced digital mining management system (*ANNA Minería*), which was created in 2019 to replace previous mining registries and information systems, such as the *Catastro Minero Colombiano* and the *Sistema Integral de Información Minera - SI Minero* (for more on technology, see #8). This comprehensive platform combines mining and environmental information to enhance transparency and accountability in mining activities and to ensure their compliance with environmental laws and standards.³⁸

Besides registries and information management systems, Colombia is also working to close an additional loophole, the Free Trade Zones of the Pacific and Palmaseca, which are seen as vulnerable to illegal gold and money laundering. Vulnerable, that is, to the laundering of ill-gotten ore itself and the money cycling through illegal mining operations. Free trade zones are indeed notoriously vulnerable to money laundering due to, among other things, loose oversight by competent domestic authorities; weak procedures to inspect goods and register legal entities, including inadequate data-management systems; and lack of adequate coordination and cooperation between the authorities in the zones and national customs authorities.³⁹ Colombian authorities have identified all of this in the Free Trade Zones of the Pacific and Palmaseca, as highlighted in criminal investigations like *Operación Solid Gold* in 2018.⁴⁰ Since then, Colombia has taken concrete steps to create and improve its national financial intelligence systems, such as the Financial Information and Analysis Unit (UIAF) and the Specialized Directorate for Money Laundering of the Office of the Attorney General of the Nation (see a more detailed discussion of these two units in section #7).

For its part, Brazil is currently working on a national registry for the financial institutions serving as the initial purchase point (known in Brazil as the “first buyers”) for rough gold extracted from the mines: the DTVMs (*Distribuidoras de Valores de Títulos Mobiliários*).⁴¹ This is important because Brazilian national regulations for selling and buying gold have failed to prevent illegally mined gold from slipping into the supply chain (“gold laundering”). Gold laundering happens through miners and/or informal middlemen either smuggling or falsifying the exact extraction area when selling to DTVMs.⁴² Besides allowing for illegally sourced gold to enter the market, weak national regulations create opportunities for criminal actors involved in narcotics or corruption to generate illicit profit in the gold industry, making gold a vehicle for money laundering.⁴³

The Brazilian Federal Prosecution Service (MPF) has been at the forefront in identifying and suggesting policy and legal reforms to increase gold traceability, thus reducing the vulnerabilities throughout the supply chain. Public prosecutors have also challenged the poor integration of different inspection and control information systems, with little data sharing between agencies, urging the National Mining Agency (ANM) to fully implement a comprehensive digital information system to prevent illegal small-scale miners from illegally extracting gold from indigenous territories and subsequently laundering it.⁴⁴ Greater traceability is also needed to enhance environmental compliance mechanisms throughout the supply chain. One important site of enhanced compliance enforcement is that of financial institutions, which in Brazil can be held accountable for indirectly contributing to environmental

38 Colombia. [Informe EITI Colombia](#), 4a edición.

39 The Financial Action Task Force (FATF). [Money Laundering vulnerabilities of Free Trade Zones](#), 2010.

40 Colombia. Fiscalía General de la Nación, '[Fiscalía y Policía Nacional desarticulan organización criminal que comercializó en Colombia y en el exterior oro extraído de manera ilegal](#)', 23 October 2018. See also The Global Initiative against Transnational Organized Crime. [Organized Crime and Illegally Mined Gold in Latin America](#). Geneva: The Global Initiative against Transnational Organized Crime, 2016.

41 Brasil. '[ANM vai instituir base de dados dos compradores de minerais de garimpeiros](#)', Agência Nacional de Mineração, 11 May 2021.

42 Instituto Escolhas. [A nova corrida do ouro na Amazônia: Onde garimpeiros, instituições financeiras e falta de controle se encontram e avançam sobre a floresta](#). Textos para Discussão 04, 2020.

43 Brasil. Ministério Público Federal. Câmara de Coordenação e Revisão, 4. [Mineração ilegal de ouro na Amazônia: marcos jurídicos e questões controversas](#). Brasília: MPF, 2020. See also FATF and APG. [Money laundering and terrorist financing risks and vulnerabilities associated with gold](#), FATF, Paris and APG, Sydney, 2015.

44 See, for example, Brasil. Ministério Público Federal. [Recomendação N°04, de 07 de junho de 2021 - GAB/PRM/ITB](#). Itaituba: MPF, 2021

crimes such as pollution under the National Environmental Policy (Law No 6.938/1981),⁴⁵ Bill No 836/2021 current under discussion in the Senate⁴⁶ seeks to address some of these traceability gaps by strengthening socio-environmental regulations across the supply chain: from extraction to commercialization, emphasising the role of financial institutions. Whether this piece of legislation will succeed remains to be seen (see also #8).



#2 TRACING AND REGULATING THE USE OF MERCURY

Another important set of measures relates to the use and commercialization of mercury. Mercury amalgamation remains the preferred method to extract gold employed in small-scale gold mining worldwide.⁴⁷ Enhanced legal-administrative frameworks to exert stricter controls of mercury are crucial to better diagnose its socio-environmental impacts in local populations and to phase out its use. The phasing-out of mercury is required by the 2013

Minamata Convention on Mercury; already signed and ratified by the three countries. Greater mercury traceability could also lead to a better understanding and policing of illegal gold mining hotspots in the Amazon.

While comprehensive in-country mercury regulation mandated by the Minamata Convention has yet to occur in any of the three countries, there are some promising examples, notably in Peru and Colombia. In the Peruvian Amazon, where mercury pollution is devastating (particularly in locations like Madre de Dios), the government adopted, in 2016, a cross-sectoral action plan to comply with the Minamata Convention. This was followed by a national implementation plan, drafted in 2019 by an interagency group and under discussion with key national stakeholders since. Efforts listed in the plan include a bill to prohibit mercury extraction in Peru (drafted but still pending), adopting a national action plan for small-scale and artisanal gold mining in Peru (drafted and under consultation phase), and defining procedures for importing and exporting mercury.⁴⁸

Meanwhile, the Peruvian government worked to enhance the traceability of mercury entering Peru illegally notably through Bolivia, the second largest mercury importer in the world in 2020 and a non-signatory to the Minamata Convention.⁴⁹ It did so by establishing tax routes, as well as a supplier and consumer registration system, and information exchange between importers and exporters, under the oversight of the Peruvian Customs (SUNAT).⁵⁰ Peru also adopted a special registry for small

45 Brasil. Ministério Público Federal. Câmara de Coordenação e Revisão, 4. [Mineração ilegal de ouro na Amazônia: marcos jurídicos e questões controversas](#). Brasília: MPF, 2020.

46 Brasil. Senado Federal. [Projeto de Lei nº 836, de 2021](#).

47 World Health Organization. [Developing public health strategies for artisanal and small-scale mining within the Minamata Convention on Mercury: findings and lessons learned from country workshops](#). Geneva: WHO, 2021.

48 Perú. Decreto Supremo N° 004-2019-MINAM. [Aprueban el Plan Nacional de Aplicación del Convenio de Minamata sobre el Mercurio](#). Lima: MINAM, 18 April 2019. See also Lucía León Pacheco. 'El Convenio de Minamata sobre el mercurio y su importancia para el Perú en relación con la minería aurífera artesanal y a pequeña escala', DAR- Derechos y Justicia Ambiental. 24 June 2020.

49 International Union for Conservation of Nature Netherlands. [Opening the black box: local insights into the formal and informal global mercury trade revealed](#). IUCN NL: 2020.

50 Perú. Ministerio del Ambiente. [Por la Ratificación del Convenio de Minamata: Por un uso responsable del mercurio](#). Lima: Ministerio del Ambiente, 2015.

and artisanal miners who are still undergoing formalization and thus using mercury and/or other chemicals.⁵¹ While it has effectively reduced mercury imports Peru is still battling not only to prevent legally imported mercury from reaching illegal miners in places like Madre de Dios, but also to curb illegal mercury imports from neighbouring countries like Bolivia or Ecuador.⁵²

Colombia has been a champion for more robust actions among all the signatories of the Minamata Convention and thus an important source of learning for others in the Amazon region. In 2013 the country adopted Law No 1658 on the use and commercialization of mercury in all industrial activities. Under this legislation Colombia set a goal to eradicate the use of mercury in mining operations in five years. Since it joined the Convention, Colombia also adopted a series of actions to phase out mercury and scale up the use of clean technologies many of which with the support of international cooperation partners in the region and beyond (see also #12). This includes the establishment of a national registry for authorised mercury traders and importers (instituted by the Decree No 723/2014).⁵³ In July 2018, the government formally prohibited the use of mercury in gold mining activities.⁵⁴ However, despite the government ban, the practice is still common in some regions.⁵⁵ A remaining challenge is, for instance, to expand police powers to seize mercury and thus prevent it from reaching illegal mining hotspots.

Brazil has taken fewer steps than its neighbors, Colombia and Peru. Brazil formally joined Minamata in 2017 but since 2015 it has had a resolution to regulate mercury production, imports and trade. The Brazilian Institute of Environment and Natural Renewable Resources (IBAMA) Resolution No 08/2015 established the federal technical registry for individuals and companies undertaking potentially polluting activities and for those employing environmental resources (known as CTF/APP). The Resolution also established the need for traders to fill specific reports on toxic mercury.⁵⁶ Brazil has also conducted a series of technical studies to map the use of mercury in small-scale mining and a commitment to dismantle factories inside its territory still importing mercury for other industrial purposes.⁵⁷ However, the country has made insufficient progress on the regulatory and policing front since. Particularly worrisome is the growing evidence of mercury contamination throughout the Amazon, notably in fishing communities and indigenous lands such as the Yanomami Indigenous Territory, in the state of Roraima. This contamination has devastating health effects, as illustrated in the Mercury Observatory, a multistakeholder initiative gathering georeferenced information on mercury impacts across the Amazon Basin.⁵⁸

51 See <https://www.gob.pe/institucion/sunat/informes-publicaciones/1295717-procedimiento-de-inscripcion-al-registro-de-insumos-quimicos>.

52 Henry Peyronnin. *Senderos venenosos: El comercio ilícito de mercurio en Perú*. Washington: C4ADS.

53 Colombia. *Decreto 723 de 2014*. 10 April 2014.

54 The full ban on the industrial use (production and sale) of mercury will come into effect in 2023. See Colombia. Ministerio de Ambiente y Desarrollo Sostenible. '[Entra en vigencia prohibición del mercurio en la minería de oro en Colombia](#)', 16 July 2018.

55 See <https://www.planetgold.org/colombia>.

56 See Ibama. *Instrução Normativa IBAMA Nº 08, de 08 de maio de 2015*. Brasília: 2015. For more on the CTF/APP, see <http://www.ibama.gov.br/cadastrros/ctf/ctf-app#legislacao>.

57 WWF Brasil. '[Convenção de Minamata sobre mercúrio: Os desafios da implementação](#)', WWF Brasil, 2018.

58 See [Mercury Observatory](#). See also Hutukara Associação Yanomami, and Associação Wanasseduume Ye'kwana. [Cicatriz Na Floresta: Evolução Do Garimpo Illegal Na TI Yanomami Em 2020](#). Boa Vista: Hutukara Associação Yanomami; Associação Wanasseduume Ye'kwana, 2021; Filipe Leonel. '[Contaminação por mercúrio se alastra na população Yanomami](#)', Informe ENSP – Fiocruz, 16 August 2019.



#3 REGISTERING AND TRACING HEAVY MACHINERY

As mentioned, heavy machinery became an integral part of small-scale gold mining extraction in the Amazon. In Brazil, machinery used in alluvial gold mining (including rafts, tractors, bulldozers, dredges and excavators) can cost from 60 thousand to two million Brazilian Reais (equivalent to over US\$ 370,000). Machinery sourced in Brazil is also being used in Peru and Colombia.⁵⁹ Countries in the region have developed specific measures to deal with machinery used in illegal gold mining. This includes instruments to control the machinery used in small-scale gold mining as a way to enhance the overall regulation of the mining activity in forest and/or protected areas.

Recognising the growing importance of heavy machinery in gold mining in forest areas, Colombia implemented a national registry for heavy machinery used for agricultural, industrial and construction purposes, as well as in small-scale gold mining operations. Resolution No 1068/2015, by the Ministry of Transport, requires heavy machinery to be registered with the national traffic registry (*Sistema RUNT*) and to have installed GPS devices for tracking

purposes. This measure follows a presidential decree from the previous year (Decree No 723/2014). The Decree explicitly sets a series of anti-illegal mining measures to be adopted by Colombia as part of a regional plan among Andean countries to dismantle this activity by enhancing control over imports and other measures (see also #11). Moreover, Colombia is using a range of technological tools (such as satellite imagery, remote sensors and GPS) to trace machinery operating illegally in areas with no legal mining concessions (see also #8).

Peru's law that regulates illegal mining in the country (Decree No 1100/2012) proscribes the use of heavy machinery in small-scale and artisanal mining, explicitly naming several types of heavy machines used in alluvial mining (Art. 5). Moreover, according to Art.12 of the Decree, in the cases when machinery is allowed, notably for large-scale operations, machinery has to be registered before the public registry authority (SUNARP).⁶⁰ However, the Peruvian Congress has in July 2021 tried to pass a bill to regulate small-scale and artisanal mining, which included a provision to lift the current ban on small-scale alluvial mining as well as on the use of certain types of machinery, such as dredges, in rivers, lakes and other water sources. The bill had neither enough support among lawmakers nor in government and among environmental experts in civil society. Importantly, this is not the first time that the Peruvian Congress has tried to approve a regulation that eases the existing restrictions on alluvial mining, including gold mining, showing a still unresolved domestic debate.⁶¹

Brazil has yet to install a machinery registry system. However, this measure is considered key by certain national law-enforcement authorities. The Federal Prosecution Service (MPF) has recently recommended the IBAMA to develop a separate machinery inventory under the CTF/APP, mentioned above and also used

59 Semana. 'Los brasileños detrás de la explotación ilegal de oro en Colombia', Semana, 3 March 2017. See also Organisation for Economic Co-operation and Development (OECD). 'Due diligence in Colombia's gold supply chain. Where does Colombian gold go?'. OECD, 19 April 2018. See also InSight Crime and Igarapé Institute. 'The Roots of Environmental Crime in the Colombian Amazon'. InSight Crime and Igarapé Institute, 2021.

60 Perú. 'Decreto Legislativo No 1100'. Lima: 18 de Febrero de 2012.

61 Ivette Sierra Praeli. 'Pleno del Congreso de Perú debatirá polémica ley que permitiría el uso de dragas y la minería en ríos', Mongabay, 07 July 2021. See also. "Proyectos de Ley sobre pequeña minería y minería artesanal ponen en peligro a la Amazonía peruana". 9 July 2021.

for registering mercury importers and traders.⁶² For the proponents of the machinery registry, this measure could enhance public control over the use of machinery by miners exploring gold in unauthorised or restricted areas as well as increase the control over miners using different – and potentially more environmentally damaging – equipment than the ones previously authorised. Registration could work through ordinary license parameters or through GPS technology thereby benefiting from live geospatial monitoring.

Meanwhile, Brazilian civil society groups and other conservation groups from outside the region have been investing in a pilot initiative along these lines called the Code of Conscience, which uses an open-source software to restrict the use of heavy machinery in protected areas. This kind of software automatically shuts machinery down when in a certain area. Their goal is to convince the major manufacturers to adopt it under a multi-stakeholder pact for sustainable mining in Brazil.⁶³ While not immune to spoofing or frauds this kind of solution offers additional entry points, notably with market actors, to tackle the issue. If successful, this civil society-led initiative could also be tested in other countries in the Amazon Basin.



#4 ENHANCED LEGAL FRAMEWORKS FOR SANCTIONING OFFENDERS

In all three countries, illegal gold mining is subject to a series of administrative, civil and criminal sanctions. An inter-agency effort by the Colombian government has in the last decade worked to enhance existing legal and regulatory frameworks to curb illegal mining. Instruments are geared towards strengthening mining concessions and license procedures, introducing new formalization measures for small-scale miners,⁶⁴ as well as enhancing sanctions against illegal mining offenders. Illegal mining is defined in Art. 159 from the Mining Code (Law No 685/2001) as the mining activity practiced without a valid mining license or authorisation, and again in Art. 338 from the Colombian Criminal Code (Law No 599/2000) as the unauthorised exploration or extraction of minerals with negative environmental consequences to the surrounding area. As a result, illegal mining in Colombia can be sanctioned through different and non-excluding

62 Brasil. Ministério Público Federal. Câmara de Coordenação e Revisão, 4. [Mineração ilegal de ouro na Amazônia: marcos jurídicos e questões controversas](#). Brasília: MPF, 2020.

63 See more about the Code of Conscience initiative at: <https://www.akqa.com/news/code-of-conscience/#:~:text=Code%20of%20Conscience%20has%20been,promotes%20social%20diversity%20throughout%20the>.

64 This includes Law No 1382/2010, Law 1658/2013 and the Resolution from MINMINAS 90719/2014.

procedures. Administratively, environmental authorities can sanction illegal miners under the Environmental Administrative Sanctioning Act (Law No 1333/2009). Local authorities can invoke civil law to sanction offenders for breaches in the Mining Code. Finally, under Art. 338 of the Criminal Code, illegal mining may be prosecuted as an environmental offense.⁶⁵

In 2019, the Colombian Congress started discussing reforms to its criminal law (including the Criminal Code and the Code of Criminal Procedure) to further enhance legal instruments and articulate specialized efforts to fight illegal mining. Among the changes, the recently approved Environmental Crimes Law (Law No 446/2021) amended the Criminal Code to target the entire chain of actors involved in criminal activities throughout the supply chain (including at the financing and logistical support realms) as well as to increase the penalties.⁶⁶ These changes allow for longer prison sentences (between 5 and 15 years) and fines up to 50 thousand times the current minimum wage for miners operating without licenses. The reform also seeks to streamline the efforts of security, environmental and judiciary agencies with the aim of not only penalising environmental offenders more rigorously but also preventing these crimes. Under a new Specialized Directorate of the Environment, prosecutors will be able to target criminal groups involved in financing deforestation and land grabbing in protected areas as well as wildlife trafficking, and more specifically to prosecute actors transporting or in possession of minerals produced illegally as well as those who transport, possess, trade or use mercury.⁶⁷ Parallel to this, the Directorate of Police and Rural Security (DICAR) is unifying currently scattered police operational efforts to fight against illegal mining and other environmental crimes.⁶⁸

Peru also has an increasingly robust legal and regulatory framework to deal with the issue, spanning from regulating small-scale and artisanal mining to dismantling illegal prospecting. Law No 29815/2011, in particular, allows for the Executive branch to legislate on illegal mining matters, notably when it comes to dismantling organized crime related to illegal mining. Accordingly, the Executive branch has issued Decree No 1100/2012 (mentioned in section #3), which regulates the prohibition and financing of illegal mining and defines the appropriate procedures and sanctions for violators in the civil and administrative spheres. Since 2017, the Peruvian Criminal Code also authorises prosecuting illegal mining offenses related to financing, preparatory acts, undermining inspection and beyond. Changes in the Code also included sanctioning authorities for illegal mining rights authorisation.⁶⁹ Importantly, there have been several attempts, some more successful than others, to ease restrictions on small-scale mining activities in Peru, including alluvial gold mining in the Amazon. While lawmakers have failed to introduce bills to suspend the interdiction of alluvial gold mining, as mentioned in section #3, the continuous blurred lines between informal and illegal mining in forest areas presents an ongoing challenge. Important changes in the national national miners' formalization process and in the 2017 national registry (*Registro Integral de Formalización Minera — REINFO*) have allowed for many miners to remain informal thus hindering efforts to fully circumscribe and thus combat illegal mining, while allowing for informal and environmentally damaging practices to continue in places like Madre de Dios and others in the vicinity.⁷⁰

65 Colombia. Procuraduría General de la Nación. [Minería ilegal en Colombia. Informe Preventivo](#). Bogotá: 2011.

66 Colombia. Congreso Nacional. [PL 059-20 Explotación Ilicita de Minerales](#). Bogotá: 2020.

67 Colombia. Secretaría del Senado de la República. [Texto Definitivo PL Número 446 de 2021 Senado y 283 de 2019 Cámara](#). Bogotá: 2021.

68 [Estefanny Pardo, Minería ilegal, una batalla de años](#), asuntoslegales.com.co, 12 September 2020.

69 Perú. Ministerio de Justicia. [Decreto Legislativo N° 1102. Exposición de motivos](#). Lima: 2017. See also [Yvette Sierra Praeli. 'Perú: por primera vez sentencian con cárcel a mineros ilegales en Camanti'](#), Mongabay, 14 February 2019.

70 NDAGA. [La Minería ilegal en la Amazonía Peruana](#). Lima: Ministerio de Justicia y Derechos Humanos, Observatorio Nacional de Política Criminal, 2021.

Compared to its neighbors, Brazil has invested proportionately less to update and enhance its sanction mechanisms. To start with, Brazilian legal frameworks for small-scale mining still privilege a traditional — but now outdated — image of the small-scale miner (*garimpeiro*), whose activity had to be promoted and protected. For long this traditional image has made effectively sanctioning illegal small-scale gold mining more difficult. Still, the Brazilian Environmental Crimes Law (Law 9.605/1998) does include mining without a valid and/or appropriate authorisation, concession or licence as an offense (Art.55), which can be punished with fines and up to a year of detention. A similar sanction can be applied to those who fail to recover areas used for mining. Furthermore, Art. 56 of the same law sanctions with fines and one to four years in reclusion for those found trading, transporting or using toxic substances (including, theoretically, toxic mercury used in small-scale gold mining) without appropriate authorisation. However, this law is considered by environmental experts and judicial authorities as too lax to dissuade environmental offenders and ill-suited to deal with evolving forms of environmental organized crime, including illegal gold mining, currently found in the Brazilian Amazon.⁷¹

Illegal mining can be also sanctioned in Brazil under Law 8176/1991, which defines a range of economic crimes related to natural resources. Art.2, for instance, characterizes the crime of unlawfully exploiting raw material belonging to the Union. Penalties for this crime are comparatively higher and can range up to five years of detention and fines. When charged with this kind of economic crime,

offenders can be sanctioned both criminally as well as administratively, by the National Mining Agency. As illegal gold mining in the Amazon is increasingly associated with other unlawful activities, including money laundering, Brazilian authorities are now charging some of the ultimate beneficiaries of illegal gold mining in Brazil using anti-money laundering legislation, notably Law 12623/2012.⁷²

Until very recently, Brazilian law-enforcement's main response to illegal gold mining relied on economic sanctions imposed by environmental inspection bodies (including fines and embargoes) against illegal miners caught in the act. Yet, administrative sanctions face challenges such as low implementation rate of environmental fines⁷³ and tightening fiscal and political pressures on environmental inspection, particularly since the mid-2010s.⁷⁴ To complicate matters, but also as a response to the problem, Brazilian justice authorities often end up challenging poor administrative decisions (concessions and other forms of mining authorisations) by state-level environment authorities and national environment inspection bodies. Public prosecutors have in the past decade filed a growing number of civil lawsuits against public bodies, public servants — including from the Brazilian national environmental authority (IBAMA), the National Mining Agency, and beyond — and political authorities for omission, non-compliance, and even corruption. In their lawsuits, prosecutors have also targeted public authorities for allowing illegally extracted gold to be bought and sold.⁷⁵ In parallel, federal public prosecutors have also initiated civil lawsuits against the private financial institutions serving as the initial purchase point

71 Antonio Henrique Graciano Suxberger and Rhuan Filipe Montenegro dos Reis. '[Criminalidade organizada em crimes ambientais: marcos normativos internacionais e possíveis respostas.](#)' Revista direito ambiental e sociedade 10.1, 2020.

72 Ministério da Fazenda, Conselho de Controle de Atividades Financeiras. [Casos & Casos – Coletânea Completa de Casos Brasileiros de Lavagem de Dinheiro.](#) Brasília: COAF, 2016

73 Brenda Brito Paulo Barreto and John Rothman. [Brazil 's New Environmental Crimes Law: An Analysis of Its Effectiveness in Protecting the Amazonian Forests.](#) Belem-PA, Brazil: Imazon, 2005. Jair Schmitt. [Crime sem castigo: a efetividade da fiscalização ambiental para o controle do desmatamento ilegal na Amazônia.](#) Tese de Doutorado. Centro de Desenvolvimento Sustentável. Universidade de Brasília. Brasília: 2015.

74 Rajão, Raoni, Jair Schmitt, Felipe Nunes, and Britaldo Soares-Filho. '[Dicotomia Da Impunidade Do Desmatamento Ilegal.](#)' Policy Brief. Belo Horizonte: CSR; LAGESA; UFMG, June 2021.

75 Brasil. Ministério Público Federal. [Parecer Técnico No 1495/2019 SPPEA.](#) Brasília: 2019.

for rough gold extracted from the mines (the DTVMs) for the environmental and socio-environmental damages associated with illegal gold acquired by these companies. In their lawsuits, MPF also recommended DTVMs to put in place stronger compliance mechanisms to prevent illegal gold from entering the legal market in the future.⁷⁶

Corruption of environmental law enforcement agents, security forces and local political authorities is also a major challenge in the two other countries. In Peru, corruption of governmental authorities makes it easier for miners to access licenses, permits and contracts in protected areas as well as undermines border and customs control. Corruption also threatens law-enforcement operations to disrupt illegal mining when, for instance, police alert miners ahead of inspections, thus giving them time to flee.⁷⁷ Similar challenges are present in Colombia, where security forces (both police and the military personnel) stationed in mining hotspots were found permitting the entry of machinery, supplies (such as fuel or mercury) and even of illegal miners in exchange for bribes. Surveys have also found out that Colombian security authorities avoid carrying out interventions targeting illicit mining when receiving pay-offs.⁷⁸ While still insufficient, measures to curb state corruption in the context of environmental crime include the recent changes in the Peruvian Criminal Code to penalize authorities undermining licensing procedures, mentioned above. They also include greater efforts by justice authorities in Colombia (including from the Office of

the Attorney General and the Comptroller General) to prosecute corruption cases related to environmental crimes, notably at the local level. Important breakthroughs have been made, for instance, in bringing cases against authorities working for the Autonomous Regional Corporations for Sustainable Development (CAR) in charge of administering the use of natural resources in their area of jurisdiction.⁷⁹



#5 SEIZING AND DESTROYING HEAVY MACHINERY

Seizing and destroying machinery used for illegal mining, as an administrative sanction mechanism or as preventive measure against future environmental crimes, is another critical measure in the three countries.⁸⁰ In both Peru and Colombia, the use of equipment and heavy machinery by small miners without proper mining licenses and mining titles automatically excludes them from the category of “subsistence miners” thus rendering their mining

76 Ministério Público. [‘MPF pede suspensão de instituições financeiras que compraram ouro ilegal no Pará’](#). Procuradoria da República no Pará. 30 August 2021.

77 Lucia Bird and Nils Krauer. [Case Study: Illegal Gold Mining in Peru](#). Geneva: The Global Initiative Against Transnational Organized Crime, 2017; PROETICA National Council for Public Ethics (Peruvian chapter of Transparency International). [Corruption in the Mining Sector: Peru Report](#). Lima: Proetica, 2019.

78 InSight Crime and Igarapé Institute. [The Roots of Environmental Crime in the Colombian Amazon](#). InSight Crime and Igarapé Institute, 2021.

79 Carolina Montes Cortés. [‘La corrupción en el sector ambiental: un detrimento contra el patrimonio natural’](#). In *Corrupción en Colombia*, edited by Henao Pérez, Juan Carlos. Bogotá: Universidad Externado de Colombia, 2018. See also InSight Crime and Igarapé Institute. [The Roots of Environmental Crime in the Colombian Amazon](#). InSight Crime and Igarapé Institute, 2021.

80 There are important differences, across the countries as to who is authorised to seize and destroy machinery. For instance, in Brazil, only environmental inspectors (from IBAMA) are authorized to destroy equipment, while in Colombia and Peru, law enforcement agents have the powers to do so.

activities illegal.⁸¹ In fact, over the years, seizing and destroying equipment became a central pillar for law enforcement authorities in Colombia and Peru to curb illegal gold mining not only in the Amazon but also in other mining sites.⁸² While in both countries seizure and destruction of heavy machinery has increased in the past decade, the extent to which these strategies constitute effective repressive measures remains to be determined. Their limited effectiveness stems from widely recognised forms of corruption among police and political authorities that undermined operations as well as to the fact that new machines and new miners would often reappear in adjacent sites.⁸³

In Brazil, destroying machines is also considered an important strategy for environmental inspectors and the Federal Police when faced with flagrantly illegal mining operations, such as the ones taking place inside indigenous territories or conservation units. The legal basis for seizing and destroying heavy machinery is found in the Executive Decree No 6514/2008 and IBAMA's Administrative Decree No 3/2018.⁸⁴ Destroying machinery is also deemed a cost-effective way to dismantle certain operations in remote areas, where the cost of removing the equipment from mining sites without adequate decentralised logistical support would in itself be prohibitive.⁸⁵ Between 2019 and 2020, Operation *Verde Brasil*, carried out by the Armed Forces, resulted in the seizure and destruction of more than 1,120 vehicles and heavy machinery, including machines used for illegal gold mining.⁸⁶ This law and order operation (defined in Brazilian law as an

Operação de Garantia da Lei e da Ordem – GLO) was mandated by the National Council of the Legal Amazon in support of environmental control and public security bodies, to act on both preventive and repressive measures against environmental crimes and illegal deforestation in the Brazilian Amazon.



Alongside the legal and regulatory frameworks, specialised governmental structures (including programs, institutions and/or arrangements) are key state responses to curb illegal gold mining in the Amazon. In 2007 Colombia created the *Programa Integral de Control a la Illegalidad*, an interagency program (between the Ministry of the Environment, the Ministry of Mines, the then Ingeominas and the Attorney General

81 PROETICA National Council for Public Ethics (Peruvian chapter of Transparency International). [Corruption in the Mining Sector: Peru Report](#). Lima: Proetica, 2019.

82 Colombia. Ministerio de Minas y Energía. [Política Nacional para la formalización de la minería en Colombia](#). Bogotá: MinMinas, 2014; Peru. Ministerio del Ambiente. [La Lucha por la Legalidad en la Actividad Minera](#). Lima: Ministerio del Ambiente, 2016.

83 Organisation for Economic Co-operation and Development (OECD). [Due diligence in Colombia's gold supply chain. Where does Colombian gold go?](#). OECD, 19 April 2018.

84 Brasil. IBAMA. [Instrução Normativa Nº 3, de 23 de janeiro de 2018](#).

85 Sociedad Peruana de Derecho Ambiental. [Las Rutas del Oro Ilegal. Estudio de caso en cinco países](#). Lima: SPDA, 2015.

86 The number presented is the total of phases 1 and 2 of Operation Verde Brasil, which took place in 2019 and 2020, respectively. See DefesaNet. ["Operação Verde Brasil 2 encerra com queda no desmatamento"](#), DefesaNet, 3 May 2021. Brasil. ["Operação Verde Brasil aplica cerca de R\\$ 142 milhões em multas e combate 1.835 focos de incêndio"](#). 29 October 2019.

of the Nation) to control illegal mining.⁸⁷ The importance of this Program relies on an explicit recognition of illegal mining as a problem and of its relation to environmental degradation. It contributed, therefore, to efforts to combat deforestation in areas where mining is the major driver of changes in land use.⁸⁸ The Program established, furthermore, a series of actions across different areas of government to deal with illegality in the mining sector, divided into three main pillars: suppressing illegal activities, prosecuting illegal miners, and confiscating machinery and other equipment used in mining activities.⁸⁹ In 2011, Resolution No 3438 of the Office of the Attorney General created the National Unit of Prosecutors of Crimes Against Natural Resources and the Environment with a geographical distribution in four macro-regions (Bucaramanga, Antioquia, Cali and Villavicencio) to promote specialized investigations against environmental crimes. The Units in Bucaramanga and Cali also cover some Amazonian departments, such as Putumayo, Guainía, Guaviare, and Vaupés.⁹⁰

More recently, the Office of the Attorney General of the Nation presented the *Estrategia Amazonas*, a strategy against deforestation in the Colombian Amazon, and the *Operación Artemisa*, launched in 2019, in which security forces coordinate intelligence and investigative operations against organized crime in the Amazon.⁹¹ Parallel to this, Colombia created specialized security forces to enhance intelligence, criminal investigation and on-

the-ground controls to prevent and dismantle illegal mining activities. This started with the creation of the *Unidad Nacional contra la Minería Ilegal y Antiterrorismo* (Unmi) inside the National Police, in 2014, and, in 2021, the Colombian President created the *Comando contra el Narcotráfico y Amenazas Transnacionales* (Conat), a new military unit to work on transnational crimes including illicit mining operations.⁹² While the efficacy of these more recent actions, notably the ones relying on the deployment of military personnel to gold mining hotspots, will be measured over time, important challenges remain. The main one being the fact that these measures have targeted mainly, or disproportionately, the so-called poorly-paid labor forces that extract gold from riverbeds rather than the individuals and organizations influencing and financing environmental crimes.⁹³

At the subnational level, the government of the department of Amazonas decided to host a multi-stakeholder committee to fight illegal mining locally. Active since 2020, the *Comité de Lucha contra la Explotación Ilícita de Yacimientos Mineros* (CLEIYM) gathers local and national-level governmental representatives (such as the Ministry of Environment, the Ombudsman Office but also and representatives from security agencies) as well as representatives from indigenous associations and other non-governmental organizations and research institutes. Two highlights of this initiative are, first, its focus on one particular (and

87 For more on the Institutional Agreement No 027/2007 and the initial steps taken by Colombia to implement an inter-institutional strategy to fight illegal mining, see Colombia. Contraloría General de la República. [Informe Especial. Minería Ilegal](#). Bogotá: 2013. See also Instituto de Hidrología, Meteorología y Estudios Ambientales – IDEAM, Ministerio de Ambiente y Desarrollo Sostenible – MADS, Programa ONU-REDD Colombia. [Caracterización de las principales causas y agentes de la deforestación a nivel nacional Período 2005-2015](#). Bogotá: IDEAM; MADS; REDD, 2018.

88 Instituto de Hidrología, Meteorología y Estudios Ambientales – IDEAM, Ministerio de Ambiente y Desarrollo Sostenible – MADS, Programa ONU-REDD Colombia. [Caracterización de las principales causas y agentes de la deforestación a nivel nacional Período 2005-2015](#). Bogotá: IDEAM; MADS; REDD, 2018.

89 Colombia. Ministerio de Minas y Energía. [Política Nacional para la formalización de la minería en Colombia](#). Bogotá: MinMinas, 2014. See also Colombia. Contraloría General de la República. [Informe Especial. Minería Ilegal](#). Bogotá: 2013.

90 Colombia. Fiscalía General de la Nación. [Resolución 3438 de 2011](#).

91 Fiscalía General de la Nación. [‘Fiscal General de la Nación prioriza acciones investigativas contra la delincuencia y la criminalidad organizada en la Amazonía’](#), 2021.

92 Colombia. Presidencia de la República. [‘Duque crea comando élite para golpear el narcotráfico’](#), 26 February 2021.

93 InSight Crime and Igarapé Institute. [The Roots of Environmental Crime in the Colombian Amazon](#). InSight Crime and Igarapé Institute, 2021.

fast growing) mining hotspot in the Colombian Amazon – the Department of Amazonas – and, second, its multi-sectoral and multi-stakeholder approach to the problem of illegal mining.⁹⁴

As for Peru, the country has not only launched robust repressive law enforcement operations, the most significant one being the *Operación Mercurio* in La Pampa (Madre de Dios) in 2019, but also established a National Strategy to Fight Against Illegal Mining in Protected Natural Areas (2017-2021), as well as specialized forensic, judiciary and monitoring units to combat illegal mining across the country. In 2008, the Resolution of the Board of Supreme Prosecutors created the *Fiscalía Especializada en Materia Ambiental (FEMA)*, a specialized environmental prosecution service currently operating in the departments of Loreto, Amazonas, San Martín, Ucayali and Madre de Dios. As of May 2020, FEMA in *Madre de Dios* had carried out more than 50 operations against illegal mining, many of which happened during the State of Emergency because of the COVID-19 pandemic. Further, intelligence and investigative operations have also strengthened through specialized units as *Brigada de Protección de la Amazonía* and Georeferenced Satellite Monitoring Units for Environmental Crimes to provide early warning on illegal mining or deforestation. Additionally, a multidisciplinary team of Specialized Experts in Environmental Crimes (through the Environmental Forensic Laboratory of the Institute of Legal Medicine and Forensic Sciences) now provides technical-scientific support to FEMA to carry out technical opinions to investigate, identify, quantify, assess and predict environmental crimes. Finally, a Specialized Court in Environmental Matters is currently acting in Puerto Maldonado, Judicial District of Madre de Dios

and a Functional Unit for Environmental Crimes was created to operate inside the Ministry of the Environment.⁹⁵

Overall, while raids like *Operación Mercurio* have had an immediate and significant impact in reducing rates of deforestation by illegal mining in La Pampa it has also produced side effects.⁹⁶ This includes the dispersion of miners and mining sites to other regions in the vicinity. New mining sites, driven by already established profitable criminal networks as well as by individual miners' limited alternative economic opportunities, result in continued environmental degradation.⁹⁷ Another attention point, and an important lesson from this and other similar operations in Peru and Colombia, is the recognition of the limitations of a combat strategy heavily dependent on enforcement and control measures on the ground. In the long run, effective environmental crime policing on the ground (including anti-illegal mining) will also require enhanced intelligence-gathering, strategic knowledge generation, and monitoring measures with strict protocols.

Brazilian law enforcement and justice authorities have also developed their own specialised units to combat environmental crimes other than illegal mining. Within the Federal Police this is done through a specialised Unit to Combat Crimes Against the Environment and Heritage Sites (DMAPH), created 20 years ago. More recent specialisation and rationalisation efforts also happened within the Federal Prosecution Service (MPF) with the establishment of the Amazonia Task Force, which ran between 2018 and 2021,⁹⁸ in an attempt to enhance intelligence and criminal investigation activities to dismantle mounting organized environmental crime in the Brazilian Amazon.

94 Gobernación del Amazonas. '[Comité de Lucha contra la Explotación Ilícita de Yacimientos Mineros](#)'. 26 February 2020.

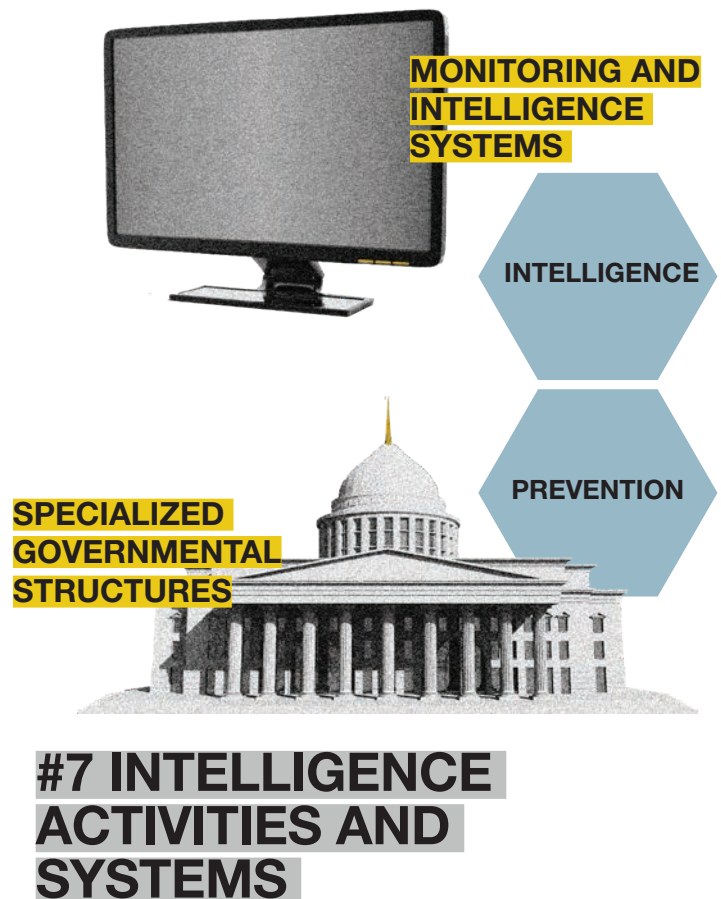
95 Ministerio de Justicia y Derechos Humanos. [Amazonía y Crimen. La Minería Ilegal en la Amazonía Peruana](#). Lima: 2021.

96 Lucio Villa and Matt Finer. [Major Reduction in Illegal Gold Mining from Peru's Operation Mercury](#). MAAP: 104, 2019; Matt Finer and Nadia Mamani. [Illegal Gold Mining Down 79% in Peruvian Amazon, But Still Threatens Key Areas](#). MAAP: 130, 2020.

97 John C. Cannon. '[Qualified success: What's next for Peru's Operation Mercury?](#)', Mongabay, 19 March 2020. See also Andrew Greaves and Corey Scult. [Gold to Green: Financing Sustainable Mining in Peru](#). Yale Center for Business and the Environment, 2019.

98 The Amazon Task Force closed its activities in February, 2021, with 19 operations, 743 judicial investigations and 208 indictments against individuals and companies involved in environmental crimes in the Amazon. Associação Nacional dos Procuradores da República. '[Força-Tarefa Amazônia: atuação concentrada contra o desmatamento](#)', 29 June 2021.

During its two years of existence, illegal gold mining ranked among the main priorities for the Task Force.⁹⁹ Illegal mining is also slowly but steadily drawing greater attention from the Federal Police (see section #9) and IBAMA's own Elite Specialized Inspection Unit (GEF). An example is the GEF-Federal Police joint operation, in 2017, to dismantle gold mining activities inside indigenous territories and conservation areas in the state of Pará.¹⁰⁰ A new round of anti-illegal mining operations took place in September 2021, this time conducted by an inter-agency task-force coordinated by the Ministry of Justice. The mega operation aimed at dismantling illegal mining operations taking place inside indigenous lands, like the Yanomami territory. Law-enforcement and environmental authorities managed to seize machinery, fuel, rough gold, and ammunition and more than 60 helicopters. 13 people were arrested in this operation.¹⁰¹



It is critical to strengthen the military, police and financial intelligence systems specialised capacities to exchange and produce strategic information, particularly on the axis of prevention. There is no more effective security strategy than the one that preemptively prevents crime. Because intelligence relies on anticipation, it is necessary to enhance – in addition to what was mentioned above – human, technical and operational intelligence capacities to prevent crimes. This strategy is much more important in the realm of environmental crimes that affect non-renewable natural resources, which are irreplaceable. Image intelligence, efficient human intelligence from local actors, and processing of big data through analytical predictive models of artificial intelligence are some of the strategies to be prioritized.

99 Ministério Público Federal. '[Força-tarefa do MPF vai atuar no combate à macrocriminalidade na Amazônia](#)', 22 August 2018.

100 Fabiano Maisonave and Avener Prado. '[Megagarimpo ilegal provoca "febre do ouro" e divide índios no Pará](#)', Folha de São Paulo, 11 June 2017.

101 Fausto Macedo. '[Força-Tarefa Força-tarefa prende 13 e confisca 64 aeronaves na Terra Yanomami em operação contra garimpo ilegal](#)'. Estado de São Paulo. 16 September 2021.

Additionally, intelligence has become increasingly central for environmental inspection, law-enforcement and security forces to prevent crimes, dismantle networks of environmental offenders engaged in a series of crimes (including financial crimes) across multiple jurisdictions, but also to plan repressive anti-mining operations on the ground. In Brazil this is considered of utmost importance due to the scarce resources available for this kind of logistically challenging operations and the need to be strategic about the targets and how to approach them on the ground.¹⁰² In Colombia and Peru, much of this intelligence effort has been carried out in collaboration with international partners (namely countries like the United States and Norway as well as international organizations such as UNODC), and through the use of technology and in particular satellites for monitoring illegal mining activities (see also # 12). An example in Colombia is the Illicit Cultivations Monitoring System (SIMCI): a partnership between the Colombian government and UNODC. Operating since 1999 as a major source of information on illicit crops in Colombia, the System has progressively become a major source of information on illegal mining, through its reports on alluvial gold mining (known in Colombia as EVOA) helping law-enforcement authorities to better understand and act on the problem.¹⁰³ As for INTERPOL, the organization is encouraging national level authorities from the three countries to share illegal mining related police data through the INTERPOL I-24/7 secured communication channel, in order to facilitate the exchange of information and the identification of transnational criminal syndicates. The countries are encouraged to issue INTERPOL notices with regard to

illegal mining.¹⁰⁴ INTERPOL is also facilitating law enforcement operations targeting environmental crime on a regular basis, encouraging INTERPOL member countries to collect and share police information with the INTERPOL General Secretariat.¹⁰⁵ The General Secretariat is then in charge of drafting and disseminating intelligence products to national authorities in support of cross border investigations. INTERPOL member countries are further encouraged to issue INTERPOL notices with regard to illegal mining incidents.

Along these lines, Colombia has also enhanced the workings of its Financial Information and Analysis Unit (UIAF) and the Specialized Directorate for Money Laundering of the Office of the Attorney General of the Nation to act on the financing dimension of the gold supply chain, tracking and sanctioning money laundering associated with illegal gold mining in the country. In 2019, *Operación Leyenda del Dorado* revealed illicit and fictitious activities that large trading companies have resorted to remove tonnes of illegally extracted gold from the country and launder the dividends from this activity. The Operation exposed transactions carried out in the last ten years amounting to about 2.4 trillion Colombian pesos (equivalent to US\$ 6.1 million).¹⁰⁶ Despite the growing connection between illicit gold mining and money laundering, for the time being Art. 323 of Colombia's Criminal Code on money laundering neither includes illegal mining nor other crimes against natural resources among the listed offenses (see also #4).

Brazil, in contrast, has money laundering legislation that is suitable to prosecute offenders whose proceeds are coming from environmental crimes, including illegal gold

102 Mauricio Angelo. [Ações de fiscalização vazam e ajudam criminosos em garimpos ilegais](#). UOL 15 July 2021.

103 Karen Julieth Garzón Bolaños. [La estrategia del Estado colombiano para combatir la minería ilegal](#). Universidad Católica de Colombia, Bogotá: 2018.

104 INTERPOL Notices are international requests for cooperation or alerts allowing police in member countries to share critical crime-related information. Notices are published by the General Secretariat at the request of a National Central Bureau and are made available to all our member countries.

105 See <https://www.interpol.int/Crimes/Environmental-crime/Pollution-crime>.

106 Fiscalía General de la Nación. [‘2.4 billones de pesos fueron blanqueados en operaciones ficticias de compra y venta de oro’](#). Colombia: 2019.

mining. Since 2019, the Brazilian financial intelligence unit (COAF) has made some important steps signaling the recognition of the linkages between money laundering and environmental crimes in Brazil, including conducting exploratory studies¹⁰⁷ and risk assessments on wildlife trafficking, illegal logging and illegal gold mining. In 2021, the multi-agency Brazilian National Strategy to Fight Corruption and Money Laundering (ENCCLA) also included, for the first time in its history, two action points related to environmental crimes and illegal gold mining.¹⁰⁸ While purely advisory in its role, the fact that these topics have now reached ENCCLA shows a greater awareness about the linkages between corruption, money laundering and illegal gold mining among national agencies.

As for Peru, the country has been investing in articulating operational control bodies with financial intelligence activities and international cooperation. Information gathering by the Financial Intelligence Unit (UIF), the National Superintendency of Customs and Tax Administration (SUNAT), and the Asset Laundering Office are increasingly allowing the identification of the modus operandi of criminal economies in Peru. Structural analysis of Peruvian export companies – receiving millions of transfers from India, the United Arab Emirates, Switzerland or the United States in exchange for large amounts of gold obtained through local suppliers – have evidenced criminal networks of money laundering through illegal gold mining and linked to international organized crime and drug trafficking.¹⁰⁹

For example, recent investigations exposed the workings since the late 1990s of a criminal network led by *Peter Ferrari* (Pedro David Pérez Miranda), one of the most emblematic cases led by a Peruvian entrepreneur accused of money laundering linked to the Valle del Norte Cartel in Colombia, as well as of exporting gold from illegal mining to the United States. Between 2012 and 2014, this criminal network exported more than 13 tonnes of gold (over US\$ 636 million) to the US through four local companies in Peru.¹¹⁰ In-depth investigations on money laundering linked to illegal gold mining conducted in Peru found echo on the findings of the cross-border massive journalist investigation known as “Panama Papers”. Released in 2016, the Papers evidenced commercial diversification of resources obtained through criminal economies to offshores in the Virgin Islands and how they operated with front companies in Lima. They also exposed the linkages between the Panama-based Mossack Fonseca clients and suspects of tax fraud and money laundering related to illegal gold mining in Peru.¹¹¹

107 Ministério da Fazenda, Conselho de Controle de Atividades Financeiras. [Casos & Casos – Coletânea Completa de Casos Brasileiros de Lavagem de Dinheiro](#). Brasília: COAF, 2016.

108 Estratégia Nacional de Combate à Corrupção e à Lavagem de Dinheiro. [Ações de 2021](#). ENCCLA: Brasília, 2020.

109 Henry Peyronnin. [Diligencia Debida En Las Cadenas de Suministro de Minerales: Rastreo del Oro Desde la Amazonía Peruana Hasta Los Compradores Intermedios](#). Washington: C4ADS.

110 Finally arrested in 2021, and with an extradition order approved in 2018, the so-called “king of the gold” was declared dead from COVID-19. Suspicions of alleged corruption and a lack of transparency led the US authorities to ask for DNA confirmation of his death. See El Comercio. [‘Peter Ferrari’: el caso del ‘capo de oro’ que inició en los 90 y sigue hasta hoy](#). El Comercio, 14 May 2019.

111 Óscar Castilla C. [Las Islas Virgenes de la Minería Ilegal. Mossack Fonseca operó offshore de financistas que enviaron toneladas de oro a EE.UU y Suiza](#). Lima: Ojo Público. 15 April 2016.



#8 #8 TRACEABILITY AND GOLD CERTIFICATION

Another important cluster of measures relate to creating or enhancing gold traceability and certification systems. Emerging certification practices in the region feed into broader Environmental, Social and Governance (ESG) standards and due-diligence mechanisms being adopted to trade gold globally. The last decade has seen a rise in due-diligence and compliance initiatives from major international buyers outside the region, as well as from big players in the large-scale gold mining industry. Examples include the technically rigorous Conflict-Free Gold Standard developed by the largest gold mining companies and the OECD Due Diligence Guidance for Responsible Mineral Supply Chains. While they set promising ESG metrics for gold, both initiatives have shortcomings. The conflict-free standard targets large scale mining and the technical studies it requires from companies are not publicly available. While the OECD Guidelines remain abstract and non-binding.¹¹² As for major buyers, new pieces of legislation

were introduced in the United States (the US Dodd Frank Act) and Europe (the EU Conflict Mineral Law, which includes gold). Another example is the Alliance for Responsible Mining, which is focused on artisanal and small-scale mining. The Alliance has high standards as it aims to transform the sector into a socially and environmentally responsible activity, working very closely with miners and miners formalization (see also #12). Both Colombia and Peru already have mines certified, but so far none in the Amazon.¹¹³

It is important to note, however, that these are non-binding and/or private sector-led initiatives, and should be viewed with caution due to their many overlaps and gaps. Despite the inherent limitations, so far, they have worked as important external pressure points to foster policy and policing changes in gold exporting countries in the region. In Colombia, global guidelines have had an impact on national policies. Even prior to becoming a member of the OECD, in 2020, Colombia has worked with the organization to enhance due diligence and strengthen responsible gold supply chains.¹¹⁴ The country has also committed to take stronger measures, including to perform better background checks in its mining registry, set up a mine monitoring mechanism for risk-assessment, and support capacity building initiatives for industry and the government.¹¹⁵ Part of the current efforts by the Colombian government is precisely to improve information systems and national registries, like RUCOM and *ANNA Minería* (see also #1), which remain in their infancy.

In Brazil, there have been debates but few attempts to implement a comprehensive digital oversight system for gold, which includes

112 Melina Rizzo, Julia Sekula, Lycia Brasil, Peter Schmidt and Maria Eduarda Pessoa de Assis. [Illegal Gold that Undermines Forests and Lives in the Amazon: an overview of irregular mining and its impacts on Indigenous populations](#). Igarapé Institute, Strategic Paper 53, 2021.

113 See <https://www.responsiblemines.org/en/>.

114 Organisation for Economic Co-operation and Development (OECD). [Due diligence in Colombia's gold supply chain. Where does Colombian gold go?](#). OECD, 19 April 2018.

115 Organisation for Economic Co-operation and Development (OECD). [Due diligence in Colombia's gold supply chain. Where does Colombian gold go?](#). OECD, 19 April 2018.

electronic certification. The Amazonia Task Force from the Federal Prosecution Service has worked on recommendations for a certification scheme to be put in place by the National Mining Agency (ANM) and the Federal Revenue of Brazil (RFB). A key component of this scheme is digitization of processes (see also #1), which includes the adoption of electronic fiscal receipt for gold. E-fiscal receipts enable gold origin to be tracked from the first official selling/buying point (the so-called DTVMs) onwards. Electronic receipts are also needed for the ANM to better control the activities of each small-scale mining concession (named *Lavra Garimpeira*, in Portuguese), cross-checking against other technical and geological surveys on the existing mineral reserves in each locality.¹¹⁶

While such a comprehensive system is currently not in place, there are important national and international initiatives to trace and certify forest commodities that could provide valuable insights and lessons-learned for building more sustainable gold supply chains in Brazil. Nationally, IBAMA's system to certify forest commodities through logging permits and log export authorisations (*Documento de Origem Florestal* – DOF and IBAMA's Administrative Decree No 15/2011, respectively) is perhaps the most accomplished initiative to inform a future “responsible gold pact”. Another national initiative is the Legal Meat Program (*Programa Carne Legal*), which emerged after a series of non-prosecution agreements – known in Brazil as Conduct Adjustment Agreements (TAC) – signed between the Federal Prosecution Service and the Public Labour Prosecution Service with slaughterhouses to promote social and environmental changes in meat supply chains. Both the DOF system and the incipient responsible business commitments in the meat industry have their own specific accomplishments and shortcomings, yet they indicate some venues for state and market actors

to work together towards more responsible production chains and reduce deforestation in the Brazilian Amazon.

Internationally, initiatives include the Kimberley Process Certification Scheme, established in 2003 and implemented through United Nations General Assembly Resolution 55/56 to prevent so-called “conflict diamonds” from entering the mainstream rough diamond market. On the other hand, and more specifically to gold, stands the 2014 Fairmined Standard for Gold from Artisanal and Small-Scale Mining. In a recent effort to move forward with establishing national certification schemes for gold, a bill was introduced to the Brazilian Senate in early 2021 to enhance gold commercialization regulations (see also #1).¹¹⁷

Peru and Colombia also have national certification schemes for certain forest commodities. The Colombian government has been improving the traceability of harvested timber and also launched, in 2009, the Legal Wood Pact (*Pacto Intersectorial por la Madera Legal*), a public-private agreement to ensure the legality of timber harvested, processed and marketed in Colombia. As part of this multi-sector pact, some technological tools were developed to improve the traceability of the wood supply chain, such as the *Cubimadera* and *Especies Maderables* applications. The first allows users to determine the volume of wood being used, transported and traded, while the second app identifies more than 100 wood species that are allowed for trade.¹¹⁸ Additionally, under the Pact, Colombian stakeholders also agreed to create a market platform to identify and recognize the country's forest companies producing, transforming and commercializing timber and non-timber forest products in compliance with the Colombian legislation. The platform also highlights forest companies that are certified by the Forest

116 Brasil. Ministério Público Federal. Câmara de Coordenação e Revisão, 4. [Mineração ilegal de ouro na Amazônia: marcos jurídicos e questões controversas](#). Brasília: MPF, 2020.

117 Brasil. Senado Federal. [Projeto de Lei nº 836, de 2021](#).

118 Colombia. [Pacto Intersectorial por la Madera Legal en Colombia](#). Bogotá: MADS, 2015.

Stewardship Council (FSC®) and thus can access international fair and legal trade markets.¹¹⁹ Another national experience that could inform future gold traceability schemes in Colombia is the online transit permit (SUNL) for logs, established under Resolution 1.909/2017. Despite its implementation challenges, the permit offers promising venues for national officials to improve the tracking of timber in transit¹²⁰

Peru also has its own National Pact for Legal Wood, signed in 2014 by a multistakeholder coalition and mostly targeting Peruvian timber going to the external market. In 2017, the Peruvian government launched an information system to combat illegal timber harvesting and strengthen forest governance. Known as the Control Module of the National Information System for Forestry and Wildlife (MC-SNIFFS), the tool is overseen by the National Forest and Wildlife Service of Peru (SERFOR) and is a set of procedures for integrating, systematizing, analyzing, and making available reliable national forestry and wildlife data and resources. It consists of several sub-systems or modules: Inventory, Forestry Registry, Knowledge Management, Trade Promotion, and Control.¹²¹ The system ensures proper timber traceability from the forest to production locations and markets in Peru. Similar to the Brazilian case, these certification schemes provide an important basis for Colombian and Peruvian stakeholders to draw on and advance in improving gold traceability in the years to come.



#9 TECHNOLOGY-ENABLED ENVIRONMENTAL MONITORING, INSPECTION AND INVESTIGATION

Besides helping to improve gold traceability, new technologies can also be useful in building artificial intelligence predictive models, and assist in inspection, intelligence and investigation operations.

In recent years, the Brazilian Federal Police has invested in acquiring technology that analyses atomic activity to assist investigators in tracing gold. The Federal Police in the state of Amazonas, for instance, has recently acquired equipment capable of conducting isotopic analysis to determine the geographic origin of forest goods, including animal species, timber, and minerals like gold. Federal Police authorities started with Isotope Ratio Mass Spectrometry (IRMS) to track wildlife and are now initiating with Total Reflection X-ray Fluorescence (TXRF) for gold.¹²² Using enhanced forensic techniques to dismantle

119 See <https://elijamaderalegal.com/nosotros/>

120 InSight Crime and Igarapé Institute. [The Roots of Environmental Crime in the Colombian Amazon](#). InSight Crime and Igarapé Institute, 2021.

121 Synergy International. [Peruvian government launches Timber Tracking System](#). 31 March 2017.

122 Dimas Marques, 'PF tem nova arma contra tráfico de fauna no Amazonas: análise de átomos', Fauna News, 7 May 2021.

illegal gold mining fits a larger strategy, carried out by the Federal Police since 2019, under its *Programa Ouro Alvo*,¹²³ to create a national database on gold profiles. Producing such a database can assist in investigations related to terrorism and financing of terrorism, money laundering, organized crime, and environmental crimes not only in Brazil but also across the Amazon Basin.

Similar attempts to use technology to help track the exact origin of gold already in circulation are found in other gold-rich regions in the world, like Australia and South Africa. There, the so-called “gold fingerprinting” has been used to enhance the identification of precious metals and secure convictions in cases of stolen gold. Gold fingerprinting techniques are, however, not a panacea. While promising in many ways, isotopic analysis-based technologies have their own limitations when applied to real-world problems of tracing the origin of illegally extracted gold across the different countries in the Amazon Basin. These include not only the inherent scientific and/or technological challenges but also the fact that these advanced investigation techniques constitute a resource- and time-consuming strategy, particularly if countries in the region want to successfully track gold in complex transnational supply chains.¹²⁴

Besides isotopic analysis, other tracing technologies include blockchain and cryptocurrencies. These technologies are no silver bullet for the traceability issue but they might be effective in preventing certain illegalities across the supply chain, notably when it comes to financial transactions, as they enhance transparency and avoid further intermediaries. An example here is the OYX

cryptocurrency created during the COVID-19 pandemic by indigenous peoples of Cinta Larga and Surui Paiter in Brazil to enable donations to reach remote communities in distress.¹²⁵ While this kind of technology has not been used by the Brazilian government to trade and trace gold, it remains, nonetheless, a possible tool for future market-driven gold traceability initiatives.

As for early alert systems, technology can improve the tracking of illegal mining sites as well as the tracking of heavy machinery (see also #5 and #7). A combination of high-quality daily satellite imagery with automated object identification can also guide companies’ down-stream operation compliance with ESG metrics.¹²⁶ Bioacoustic technology that uses artificial intelligence to detect sounds of industrialized human activity (chainsaws, excavators and boat engines) constitutes another possible tool to increase the visibility and alerting capabilities.

Brazil has the DETER deforestation alert system from the National Institute for Space Research (INPE) developed to support environmental inspection by IBAMA. DETER alerts capture mining-related forest loss (under its DETER/INPE-MINERAÇÃO dashboard), alongside other types of deforestation such as logging or forest degradation due to fires.¹²⁷ Still, DETER alerts are neither detailed nor fast enough to fully assist environmental inspectors and law-enforcement agents to carry on their operations on the ground. Hence, the combined use of satellite image with short helicopter-based monitoring missions to check on mining hotspots and, more importantly, plan on-the-ground command and control operations has been considered a successful

123 Perícia Federal. ‘*Átomos no rastro do Crime*’, Ano XVI, Revista 45, July 2020. See also <https://geoforense.com/projetos/>.

124 Melina Risso, Julia Sekula, Lycia Brasil, Peter Schmidt and Maria Eduarda Pessoa de Assis. *Illegal Gold that Undermines Forests and Lives in the Amazon: an overview of irregular mining and its impacts on Indigenous populations*. Igarapé Institute, Strategic Paper 53, 2021.

125 Murilo Basso, *Do escambo à criptomoeda: por que dois povos indígenas criaram a OYX*, Estado de São Paulo, E-investidor, 20 November 2020.

126 Melina Risso, Julia Sekula, Lycia Brasil, Peter Schmidt and Maria Eduarda Pessoa de Assis. *Illegal Gold that Undermines Forests and Lives in the Amazon: an overview of irregular mining and its impacts on Indigenous populations*. Igarapé Institute, Strategic Paper 53, 2021.

127 See <http://terrabrasilis.dpi.inpe.br/app/dashboard/alerts/legal/amazon/daily/>.

measure by IBAMA and Brazilian law-enforcement authorities in recent years.¹²⁸ Besides DETER alerts, the MapBiomass multi-stakeholder initiative has recently launched its own mining dashboard with geospatial data on industrial mining and small-scale mining since 1985. MapBiomass dashboard works through artificial intelligence to categorise the expansion of mining sites in Brazil using satellite data coming from INPE as well as other public sources. In the next phase of the project, MapBiomass intends to improve the accuracy of its visualization tools to assist environmental inspectors in more quickly locating illegal mining hotspots.¹²⁹ Besides GPS-based technologies, other technologies are already being piloted by conservation organizations, such as Audiomoth and Rainforest Connection, alongside Yanomami and Mundurucu indigenous communities in Brazil to track illegal human activity, including gold mining, in their territories.¹³⁰

In Peru, since the mid-2010s, state agencies, civil society and international partners have collaborated in the development and implementation of comprehensive national deforestation monitoring systems. This includes official satellite-based systems like *Geobosques* from the Ministry of Environment (MINAM), which generates early alerts in almost real-time for forest coverage loss, as well as other initiatives that link the information generated by satellites and drones with lawsuits. The NGO Conservación Amazónica, for instance, is leading on the MAAP project (*Monitoreo de los Andes Amazónicos*), which – among other things – has over the years built alliances with local governments and associations, citizens and with public prosecutors to generate information that could be used in courts. This

has been done in different ways. One way has been by connecting official alerts generated by *Geobosques* with local residents' field patrols with drones to check for alerts (or monitor threatened areas) and obtain high-resolution images. If evidence of illegality is found, local associations may file a criminal complaint with Peru's special environmental public prosecution units, FEMA, or with administrative authorities with competence in forestry matters. Under these complaints, images from satellites, and drones are used as supporting evidence in criminal prosecution. So far, FEMA prosecutors have found this kind of evidence problematic, due to the attribution challenges, but still useful to document criminal patterns.¹³¹

Another example are the Georeferenced Satellite Monitoring Units for Environmental Crimes (see also #6). These Units were set-up inside FEMA offices in deforestation hotspots such as Ucayali (in 2015), Loreto (in 2016) and Madre de Dios (in 2017) with the technical and financing support of Conservación Amazónica, Norway and the United States, among other partners. Lastly, Peruvian researchers from Conservación Amazónica also have time-up with NASA and the Peruvian government (under the US-funded SERVIR-Amazonia Programme) to develop a satellite-based tool that locates emerging mining hotspots in the Amazon. The Radar Mining Monitoring Tool is a pioneer effort not only because of its focus on mining but also for its capacity to identify early signs of mining activity and thus help public authorities to prioritize and focus their efforts.¹³²

128 On the use of helicopters for environmental inspection, see for instance, Fundo Amazônia. [Projetos: Fortalecimento do Controle e do Monitoramento Ambiental para o Combate ao Desmatamento Ilegal na Amazônia](#). Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (Ibama).

129 MapBiomass. [Brasil 1985-2020: A Expansão da Mineração e do Garimpo no Brasil nos últimos 36 anos](#). Webinar MapBiomass Brasil. 23 August 2021.

130 Melina Risso, Julia Sekula, Lycia Brasil, Peter Schmidt and Maria Eduarda Pessoa de Assis. [Illegal Gold that Undermines Forests and Lives in the Amazon: an overview of irregular mining and its impacts on Indigenous populations](#). Igarapé Institute, Strategic Paper 53, 2021.

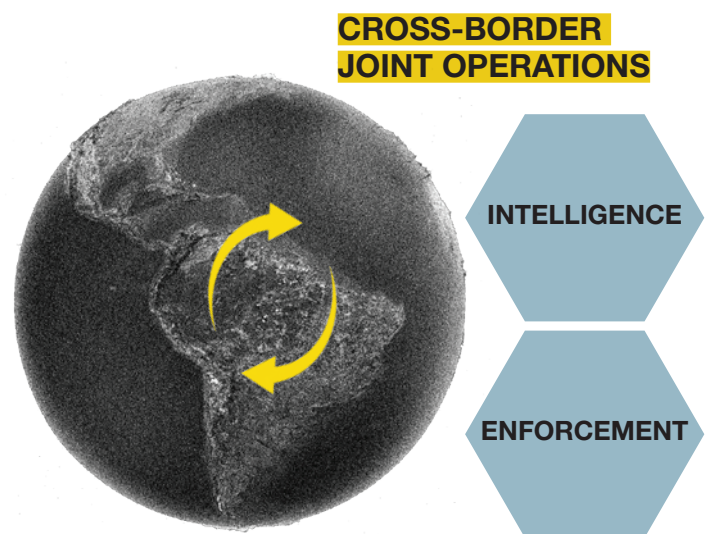
131 Natália Suarez, [Drones Are Limited Weapon Against Illegal Mining in Peru](#), InSight Crime, 17 September 2019. See also Alexa Vélez Zuazo. [Madre de Dios: drones y satélites combaten la minería y tala ilegales](#), El Comercio, 20 August 2019.

132 NASA, [Finding Gold Mining Hotspots in Peru](#) nasa.gov, 15 June 2021.

International cooperation is also assisting the Colombian government to create better early warning monitoring systems. A project between UNODC and the Colombian Ministry of Energy, supported by the United States, is helping local authorities to locate and monitor backhoes and dredges operating illegally in areas with no legal mining concessions with tools such as satellite imagery, remote sensors and GPS. These technologies are capable of monitoring both riverside mining and alluvial exploration, and allow for the production of annual reports on gold exploration in Colombia, which serves as an official basis and source for Colombia's governmental efforts and strategies to combat illegal mining.¹³³ Colombian scientists have also developed an artificial intelligence model to detect open-pit mines using images from NASA and predict where clandestine excavations are likely to exist. The predictive model then used a filter of mining titles, thus managing to identify new illegal mines. A civil society-led platform called Colombian Mining Monitoring (CoMiMo) is expected to soon allow national entities, local governments, civil society organizations, and citizens to access this information for free.¹³⁴

A last example of the role technology is playing in fighting illegal mining in the region is to assist in estimating the economic valuation of mining impacts and damages and thus support public authorities in prosecution cases. That is the case of the recently launched Mining Impacts Calculator developed by Conservation Strategy Fund (CSF-Brazil) and the Brazilian Public Prosecution Service (MPF). The Calculator is an innovative tool which accounts for impacts of illegal gold mining, their monetary value and offers the steps for measuring them.¹³⁵ This effort follows a previous technical study, done by MPF in 2019, to estimate the environmental damages of illegal gold mining.¹³⁶ While promising breakthroughs, technology-

based solutions are yet to become an integral part of official operational guidance in the three countries, excepting perhaps when it comes to satellite monitoring systems. However, as the range of Brazilian, Colombian and Peruvian examples show, technologies piloted by public entities, civil society, and in some cases as a result of partnerships between state and non-state actors and international cooperation partners (see more on #12), constitute important tools for future anti-illegal gold mining policing activities in the region.



#10 BILATERAL AND REGIONAL CROSS-BORDER COOPERATION

As regulatory frameworks and national traceability mechanisms gradually improve, there is wide recognition in all three countries of the value of enhanced international (bilateral, regional or cross-regional) cooperation. International cooperation, notably at the borders, is particularly valuable in preventing

133 Colombia, Ministerio de Minas y Energía, and Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC). [Colombia, explotación de oro de aluvión: evidencias a partir de percepción remota 2018](#), Informe, Noviembre 2019.

134 Semana. [Inteligencia Artificial para frenar la minería ilegal en Colombia](#). semana.com, 28 September 2020.

135 See <http://calculadora.conservation-strategy.org/#/>. See also Shanna Hanbury. [What's the cost of illegal mining in Brazil's Amazon? A new tool calculates it](#), Mongabay, June 11 2021.

136 Brasil. Ministério Público Federal. [Parecer Técnico No 1495/2019](#) SPPEA, Brasília: 2019.

both gold and mercury from being smuggled into mining zones in the Amazon, sharing intelligence around criminal actors and networks operating across borders, and building sound legal cases against offenders.

Border cooperation is particularly needed to deal with the evolving nature of transnational crime in the Amazon Basin. Many of the existing laws and policy instruments used to respond to illegal gold mining fail to effectively capture the ongoing and evolving nature of transnational organized environmental crime and to track its ramifications across border lines.¹³⁷ There is a clear need to expand human resources at the borders in order to enhance intelligence on criminal networks and their modus operandi.

Knowledge on border dynamics is still insufficient. Information is needed not only on the nature of cross-border gold flows but also grounded intelligence on how gold is inserted into other cross-border criminal activities like drug and arms trafficking. Border areas in the Amazon region are fragile and porous. They often lack military and police personnel for crime repression as well as qualified human resources with strong investigative and prosecution capacity. Intelligence sharing mechanisms to level the field among partners can be a first step since there is little understanding of flows and actors in remote border areas.

Frameworks for bilateral and regional cooperation do exist. Peru and Colombia have a more established bilateral dialogue through the Rounds of High Military Commands, Regional Border Commands Meetings, 2+2 Mechanisms and Binational Cabinets, Binational Border Commissions – COMBIFRON (which includes Brazil), among others. These political and

operational bilateral bodies facilitate dialogue and coordination on security and defense issues, environmental crime in general and illegal mining more specifically. Presidential bilateral meetings have occurred since 2014 and have contributed to setting – at the highest-level possible – commitments to fight illegal gold mining in border zones.¹³⁸

Since 2015, Brazil and Colombia have hosted a series of joint operations in the border region between both countries (closer to the regions of São Gabriel da Cachoeira and Tabatinga, on the Brazilian side, and Cerro Tigre, Cerro Naquen and Campo Alegre, in Colombia) to fight illegal mining and other environmental crimes. Joint military operations in 2015 and 2016 (under *Operação São Joaquim*, in Brazil, and *Operación Anostomus II*, in Colombia) and subsequent high-level meetings between Force Commanders and Defense Ministries responded to a common will to strengthen relations between both armies and to share intelligence around cross-border organized crime.¹³⁹

From a Colombian perspective, joint military operations contribute to ongoing efforts to dismantle criminal activities by non-state armed groups by squeezing its funding source, namely illegal mining. Operations also allow for both parties to try to better understand and dismantle the linkages between non-state armed groups on both sides of the border, namely Colombian groups comprised of FARC dissidents and Brazilian criminal groups like the PCC – *Primeiro Comando da Capital*, FDN – *Família do Norte*, and ADA – *Amigos dos Amigos*.¹⁴⁰ At the operational level, collaboration with the Brazilian forces is important not only to secure the borders during the operation but also because the Brazilian Army has police attributions in border regions and can potentially work to arrest criminals and

137 The Global Initiative against Transnational Organized Crime. [Organized Crime and Illegally Mined Gold in Latin America](#). Geneva: The Global Initiative against Transnational Organized Crime, 2016.

138 Peru. Presidencia del Consejo de Ministros. [Gobiernos de Perú y Colombia acuerdan cooperación en materia minero-energética](#), 30 September 2014. See also InSight Crime and Igarapé Institute. [The Roots of Environmental Crime in the Colombian Amazon](#). InSight Crime and Igarapé Institute, 2021.

139 Brasil. Exército Brasileiro. Comando Militar da Amazônia. [Operação São Joaquim fecha as fronteiras do Amazonas para combater facções criminosas](#), 2015.

140 Adriana Erthal Abdenur, Ana Paula Pellegrino, Carol Viviana Porto and Lycia Brasil. [Los Delitos Ambientales en la Cuenca del Amazonas: el rol del crimen organizado en la minería](#). Instituto Igarapé/EL PACCTO, 2019

seize machinery.¹⁴¹ Similar attempts to enhance regional cooperation to combat environmental cross-border criminality are also taking place in the tripartite border between Brazil, Colombia and Peru (corresponding to the area around Tabatinga/Brasil, Santa Rosa/Peru and Leticia/Colombia), particularly since 2017, with a focus on combating drug trafficking. From the Brazilian side, joint efforts reinforce existing national ones, namely the *Operação Ágata* on border security, an initiative first launched in 2011. In 2021, Brazil deployed *Operação Ágata Amazônia*, which led to the apprehension of drugs, arms, ammunition, and 1.3 kg of illegal gold in the municipality of Japurá, in the state of Amazonas.¹⁴²

Besides joint repressive operations there have been conversations between both countries to centralize gold purchases in an effort to curb illegal and informal extraction. This remains, nonetheless, a topic under discussion rather than a concrete measure.¹⁴³ Although less developed, Brazil and Colombia also have a Memorandum of Understanding on police cooperation, signed in 2005, to foster technical cooperation and intelligence sharing on a range of cross-border transnational organized crime issues, including environmental crimes. Illegal mining is listed among the issues covered by this agreement, together with numerous other areas of shared interest.¹⁴⁴

At the regional level, the Amazon Cooperation Treaty Organization (OTCA), the Leticia Pact, the Rio's Group at the Organization of American States, and the Andean Community are all important regional policy and multilateral political mechanisms to discuss regional security and environmental crimes. However, their contribution to tackling illegal mining challenges remains modest. On the one hand, most cooperation mechanisms have failed to make dismantling

environmental crime in general and illegal mining in particular a regional priority.¹⁴⁵ On the other hand, governments in the region so far have mostly aimed at framing political declarations rather than promoting operational collaboration. Examples of these important but mostly declaratory policy agreements are the 2012 *Política Andina de Lucha contra la Minería Ilegal* from the Andean Community and the 2012 *Declaración de Lima sobre la Minería Ilegal en la Cuenca Amazónica* from the OTCA.

To illustrate this point, consider the Leticia Pact. While extremely relevant to fostering joint work on the matter, the Leticia Pact is vague on the specific joint action plans, goals and indicators to measure progress. Additionally, and more specifically to mining, the Inter-American Development Bank-supported *Encuentro Latinoamericano de Minería* (ELAMI) is also an important venue for regional exchange on this particular sector and industry and could expand its own work plan on illegal gold mining. Overall, while these are promising venues for regional collaboration, existing high-level policy and political fora have delivered few concrete results. There is room for these political spaces to generate stronger regional agreements on the problem and ways to collectively tackle it. This also includes developing joint actions at other multilateral mechanisms to engage extra-regional actors involved in global gold supply chains and acting as buyers of illegally sourced gold coming from the Amazon. There is also room for existing spaces to generate more incentives and opportunities at the technical level for governmental experts to find common agendas to collaborate on and develop common tools and protocols.¹⁴⁶

141 Patrícia Comunello, [Forças Armadas do Brasil e da Colômbia cooperam no combate ao narcotráfico nas fronteiras](#), *DefesaNet*, 04 February 2016.

142 G1 AM. ['Operação apreende quase duas toneladas de drogas e 1,3 quilo de ouro no interior do AM'](#), *G1*, 15 May 2021.

143 Carlos Vargas, [Colombia, Peru may centralize purchase of gold to combat crime, environmental destruction](#), *Reuters*, 02 March 2021.

144 Brasil. [Decreto nº 8360 de 14 de Novembro de 2014](#).

145 Adriana Erthal Abdenur, Ana Paula Pellegrino, Carol Viviana Porto y Lycia Brasil. [Los Delitos Ambientales en la Cuenca del Amazonas: el rol del crimen organizado en la minería](#). Instituto Igarapé/EL PACCTO, Abril 2019; Sociedad Peruana de Derecho Ambiental. [Las Rutas del Oro Ilegal. Estudio de caso en cinco países](#). Lima: SPDA, 2015.

146 Paula Ribeiro Prist, Noam Levin, Jean Paul Metzger, Kaline de Mello, Micheli Duarte de Paula Costa, Romi Castagnino, Javier Cortes-Ramirez, et al. ['Collaboration across Boundaries in the Amazon'](#). Edited by Jennifer Sills. *Science* 366, no. 6466 (8 November 2019): 699.



#11 PEER-TO-PEER LEARNING

Hands-on exchanges on environmental inspection techniques as well as on investigative and judicial strategies are needed to generate more effective policing measures and more robust evidence linking illegal mining and environmental degradation or linking specific actors to the criminal activity in each site. The Ibero-American Association of Public Prosecutors (*Asociación Iberoamericana de Ministerios Públicos*) has expanded its work on illegal mining through a Working Group, and more recently through a Network on Illegal Mining (*Red contra la Minería Ilegal*). Under the leadership of Colombia, the Network has been working, since 2019, on a common protocol for financial investigations related to illegal mining.¹⁴⁷ Sharing intelligence, typologies and protocols on how best to disrupt illegal mining-related financial crimes is particularly important in order to dismantle and bring to justice the individuals and networks financing these mining operations, since most criminal justice operations (notably in Peru and Colombia) have been focused on those actors with the least

influence in the chain, particularly when policing forces are under pressure to increase the number of raids and show immediate results.¹⁴⁸ For Brazilian prosecutors, in order to secure more criminal convictions – particularly of those orchestrating and/or ultimately benefiting from illegal gold mining – as well as effect meaningful policy change, it is particularly important for investigators to generate sound evidence of the origin of illicit gold. Such a strategy will only benefit from greater dialogue and collaboration among policing and judicial authorities across the region.

Other examples of regional peer-to-peer exchanges, though not exclusively devoted to illegal mining, are the regional networks of environmental inspectors and exchanges among regional law-enforcement and other experts on environmental crimes. For the networks, in 2013, countries in South America created the *Red Sudamericana de Fiscalización y Cumplimiento Ambiental* (Redsufisca) to promote training and exchanges among environmental inspectors from Argentina, Brazil, Colombia, Chile, Ecuador, Paraguay and Peru. In 2017, the Network was expanded to other countries in Latin America and became the *Red Latinoamericana de Fiscalización y Cumplimiento Ambiental* (RedLafica).¹⁴⁹ As for the exchanges, in 2020, Peru hosted the first international congress on environmental crimes, which gathered regional experts from Peru and Brazil, as well as experts from other countries outside the region such as the United States, European Union, and from the United Nations Economic Commission for Latin America and the Caribbean (ECLAC).¹⁵⁰

147 Asociación Iberoamericana de Ministerios Públicos. [Protocolo de Delitos Financieros en Materia de Minería Ilegal](#), presentado en la XXVII Asamblea General Ordinaria, Paraguay 2019.

148 InSight Crime and Igarapé Institute. [The Roots of Environmental Crime in the Colombian Amazon](#). InSight Crime and Igarapé Institute, 2021.

149 See <http://www.redlafica.org/la-red>

150 Ministerio Público Fiscalía de la Nación. [“Ministerio Público organiza el I Congreso Internacional sobre Delitos Ambientales en Lima”](#). 2 March 2020



International actors outside the region have been valuable partners in strengthening national and local capacities to dismantle environmental crime and fight illegal mining in the Amazon. Major international partners for Brazil, Colombia and Peru in this matter range from countries outside the region (notably, Canada, Norway, Switzerland, the United Kingdom, the United States as well as the European Union), international organizations (such as OHCHR, UNEP, UNDP, UNIDO, UNITAR, UNODC, and INTERPOL) and environmental and conservation not-for-profit organizations (such as Conservation Strategy Fund, PlanetGOLD and WWF).

International partners contributed both to repressive and prevention measures, fostering technical and technological capacities by national actions in the region to use satellite data to monitor forest areas. This is the case of USAID-funded *Proyecto Prevenir: Combatiendo*

los Delitos Ambientales which has worked since 2019 with the Government of Peru and civil society to prevent and combat environmental crimes.¹⁵¹ International partnerships have also contributed to a range of interdisciplinary social-economic initiatives that aim at strengthening “green” and “responsible” mining practices to replace social and environmental damaging ones. Peru and Colombia, for instance, are partnering with Switzerland, UNDP, the Inter-American Development Bank and the Global Environmental Facility among others to improve formalization in the sector as well as to improve a range of processes, including reducing the use of mercury in small-scale artisanal gold mining.¹⁵² On this last issue, international partnerships support all three countries in the region, for instance, in conducting research on and also acquiring mercury-free or low-mercury gold mining technologies.¹⁵³ International law enforcement efforts are also supported by Police Organizations such as INTERPOL through ad-hoc financial support received from different governments.¹⁵⁴

151 See <https://www.usaid.gov/documents/usaid-prevent-project>.

152 Confédération Suisse. [Better Gold Initiative, Phase II](#), Switzerland and Peru. International cooperation.

153 PlanetGOLD. [Perú inicia proyecto para la reducción del uso de mercurio en la minería artesanal y de pequeña escala de oro](#), 16 January 2020. See also Bnamericas. [Colombia to focus on illegal mining, formalization of small miners in 2021](#), Bnamericas, 2 March 2021.

154 The Norwegian Ministry of Climate and Environment is supporting INTERPOL to conduct the Pilot Project “MNYA” aimed at strengthening INTERPOL member countries’ capabilities to tackle illegal mining in the region.

Final considerations

The aim of this guidance note is to offer a better understanding of policy and operational strategies to prevent, control and reduce illegal gold mining in the Amazon Basin, using the examples of measures adopted in Brazil, Colombia and Peru. This effort not only seeks to enhance the capability of environmental, law enforcement and justice authorities to deal with the organized environmental crime of illegal gold mining in the Amazon Basin, but also to offer useful documentation for regional partners to learn from each other and to cooperate and coordinate activities within and across countries.

An effective strategy to combat illegal mining includes a holistic approach: from legal-administrative reforms, use of technology to improve transparency and traceability throughout the gold supply chain, targeted approaches to deal with offenders as much as with the logistical supplies used in alluvial gold extraction in the Amazon, and enhanced judicial, police and technical international (bilateral, regional and cross-regional) cooperation. Such a holistic approach takes into consideration prevention as much as law enforcement responses to illegal gold mining in forest areas. It further emphasises the necessary strategic intelligence gathering and interdisciplinary social-economic preventive measures to be taken alongside more traditional crime control measures.

Governments in the region have shown increased awareness and political will to fight illegal mining as a cornerstone of their increasingly intertwined security and sustainable development agendas. This study shows a vast range of interventions adopted in Brazil, Colombia and Peru to disrupt illegal mining across the supply chain. There are important differences in approaches and in the

extent to which each country has developed a robust legal, policy and institutional framework to respond to the challenge. Still, across the three countries there is a clear concentration of interventions focusing on regulating, or even sanctioning offenders operating at, the capital and supply dimensions of the gold supply chains. Such an approach is crucial and must be strengthened if countries are to succeed in disrupting environmental crime ahead of the damages and also prevent rough gold illegally extracted in the Amazon from entering the legal gold market (what is commonly known as “gold laundering”). At the same time, regulation and compliance should be strengthened throughout the supply chain. The fact that refining in all three countries has been essentially left to industry self-regulation is an important indicator of the remaining gaps.

Important breakthroughs were found in terms of generating more accurate information about illegal mining hotspots and their impacts on deforestation and local populations, as well as on the financial flows from illegal gold proceeds and how these are being used to fuel other illicit economies. There is room, however, for more cooperation between governmental agencies and knowledge actors (in academia or in civil society) in-country to develop new technologies and information systems to monitor illegal mining in real time and generate solutions for greater gold traceability. There is also room for enhancing regional and international cooperation on investigating illicit finance flows from illegal gold mining and dismantling transnational networks that operate cross-borders and beyond the region.

There are also attempts, notably in Peru and to a lesser extent Colombia, to invest in the formalization of small-scale miners. Formalization, and other context-sensitive and locally-appropriate social policies can indeed act as preventive measures and provide alternatives for impoverished local communities currently engaging in illegal mining operations across the Amazon. Beyond small-scale miners’ formalization, however, it is important

for national authorities to take the socio-environmental and climate stakes of mining in the Amazon very seriously. More robust policy and market incentives are needed to steer the overall transformation of the small-scale mining sector towards more sustainable and responsible paradigms. This is of utmost importance in the Amazon context.

Much has been done in the past decade. Yet, several of the measures described here remain nascent. Their real effectiveness over time remains to be seen. More than ever, governments in the Amazon Basin will have to rely on regional and international partners as sources of expertise, technical and financial support, and as partners in joint investigation operations in order to tackle this and other increasingly transnational organised environmental crimes.



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