

**The social and political dimensions of global detoxification:
Towards a mercury-free world in the artisanal and small scale gold mining sector in Colombia**

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Like many gold miners in Nariño (Colombia), Alberto has used mercury for many decades. His white, swollen gums and his trembling hands reveal the long-term effects of the metal upon his body. Hidden in the canyon of the Verde River in the Colombian Andes, Alberto's mining operation has been active for 40 years. His wife, the only woman in the mine, cooks for the workers, oversees payments and takes care of the cattle, the poultry, and the coffee and corn crops in Alberto's agro-mining plot. Every two weeks, Alberto and his seven workers excavate about 20 tons of rock and crush them with an *Antioqueño* hydraulic stamp mill, a local adaptation of the Californian stamp mill that became massive in Colombian mining areas in the late XIX century –and one of the few remaining in the department. After crushing the rocks, Alberto and his crew collect the heavier ores with copper plates covered with mercury. Later, they use a pan to separate the amalgamated sands from the rest of the material that does not adhere to mercury in the copper plates. Although Alberto and his neighbors are aware of the mercury ban that will enter into force in 2018, they say they will continue using it because abandoning it would entail slowing their production and thus reducing their income. When I ask him where he gets his mercury, he smiles and asks me to turn off my recorder.

Despite international and governmental efforts to stop the illegal trade of mercury in Latin America, Alberto easily gets his mercury in the black market buying it from private sellers who bring the substance from China –where 85% of the world's mercury is produced– and then smuggle it to Southern Colombian departments via Peru and Ecuador. Even though Alberto recycles part of the mercury he uses with a retort given to him by a German aid-funded project in the 1990s, he acquires a 10 lb. bottle of mercury every 3 or 4 months. Unlike other 212 mining sites in Nariño's mountains and riverbeds, Alberto's mine is one of the 33 in the department that holds a mining permit, although he is about to lose it because he has not been able to acquire newer machinery and abandon mercury use. He says that unlike neighbor miners, he has been fortunate because in the last months none of the illegal armed groups operating in the region –such as the ELN guerilla and the *gaitanista* neo-paramilitary group– have come to extort him, as they used to do years ago. “But they can return anytime,” he says. In Nariño, Antioquia, Choco and other mining regions in Colombia, many miners feel caught between the armed groups' pressure and the government's crackdown on informal mining. “On the one hand, we have to pay extortions to the *muchachos*, and on the other hand, we struggle to comply with harsh legal requirements and the stigma of being considered *criminals*. I am not a criminal; I'm just trying to get ahead” The case of Alberto sums up the many complexities and sociopolitical challenges of the initiative that many countries and several international agencies have been pushing forward in the past four decades: a mercury-free world.

Due to its high toxicity and hazard to human health and the environment, mercury management has been a major global environmental concern over the last half century. Worldwide environmental alarm arose chiefly from the fact that mercury travels through atmospheric and oceanic flows and it is now found virtually everywhere on the globe. When in contact with organic matter, mercury methylates and bioaccumulates in trophic chains, ultimately reaching –and damaging– human bodies. In the past two decades, the ASGM sector has become one of largest areas of concern on global mercury use and emissions. The ASGM sector accounts for 35% of anthropogenic emissions and is the largest global intentional use source of the metal. The updated 2013 UNEP Mercury Assessment gives annual estimates of 727 tons of mercury emitted to air from ASGM operations worldwide, and 800 tons released to land and water. In 2010, the Latin American and Caribbean region accounted for about 15% of the global anthropogenic emissions of mercury to air, versus 48 % emitted in Asia, 17% in Africa, 11 % in Europe

and 3 % in North America. The largest source of emissions in Latin America is the use of mercury in ASGM, which represents 71% of total emissions. The United Nations Environmental Program (UNEP) estimates that up to 16 million people work in this sector in about 70 countries in Asia, Latin America, and Africa. Another 100 million people indirectly depend on ASGM for their livelihoods. ASGM takes place in at least a dozen countries in Latin America, mainly in the Andean-Amazonian countries and the Amazon basin, but also in Central America. At least 500,000 artisanal and small-scale miners work in this activity in Latin America.

The magnitude of the problem shows that phasing-down and phasing-out mercury from industrial processes, with a particular focus on the small-scale gold mining sector, is one of the most ambitious and challenging socio-ecological transitions taking place in present times. This effort crystallized in the Minamata Convention on Mercury signed by 128 countries in 2013, which entered into force in August 16th 2017 after 74 countries ratified the treaty. The Convention commits Parties to specific measures to control mercury pollution, covering the entire lifecycle of anthropogenic mercury pollution. Obligations include banning new mercury mines, phasing-out existing ones, regulating ASGM, and reducing emissions and mercury use. Since mercury cannot be destroyed, the Convention also lays out conditions for storage and disposal of mercury waste. Like many other grand socio-ecological transitions aimed at ameliorating global environmental health –such as the decarbonization of the energy sector or the adoption of environmental standards in agricultural production–, the detoxification of the gold mining sector is not homogenous nor neutral. It entails making decisions that have distributive effects for different social groups (like small-scale gold miners, exposed communities, and legal and illegal traders of gold and mercury) and diverse agrarian environments (mining areas and their surroundings, rivers and waterways, and national borders).

As critical geographers have pointed out, we have already moved away from asking worthy, if limited, questions about what society ‘does’ to nature (and vice versa), towards more fundamental issues such as “who constructs what kinds of nature(s) to what ends and with what social and ecological effects?” (Castree and Braun 2001, xi). In the case of global and local efforts to stop mercury pollution, it is then essential to ask: *What does this project look like in practice? Who has to do it, and how? What means, knowledge, and policies are being used to achieve it? Who benefits from it and who doesn’t? Upon what (or whom) is mercury use control work performed?* In other words, it is important to understand the social and political dimensions of the emergence of mercury as an environmental problem of global concern, and the consequences of its regulation for the actors involved in the mercury-supply chain, especially the agrarian and mining communities in Global South countries relying on its use for making a living. Interrogating the practice of this type of projects in favor of the environment and human health does not entail denying its importance and urgency; on the contrary, it helps understand its effects and contributes to improving its implementation.

In my recent summer field work, I tried to situate these questions in a country that plays a key role in the global political economy of gold extraction and mercury pollution, and that is domestically and internationally committed to detoxifying its environments in the name of peace-building and economic development. Nowhere is the problem of mercury contamination more urgent than in Colombia. Colombia is one of the largest producers of gold in Latin America, and 86% of its national gold production comes from ASGM. The country has 200,000 artisanal gold miners like Alberto scattered in 23 of the 32 departments –and at least in 500 of 1123 municipalities– producing about 30 to 40 tons of gold per year. This type of mining reportedly contributes to the livelihoods of at least 15,000 families. Parallel with this boost in production, there is a growing concern about the health of rivers and rural communities since many local mines discharge untreated waters and tailings directly to waterways. Government estimates that more than 60% of the country’s water sources are potentially affected by mercury pollution due to illegal extraction of minerals. Although it is the 14th gold producer, Colombia is the world’s third largest mercury polluter –only surpassed by China and Indonesia– and holds the first position as the world’s biggest mercury polluter per capita exclusively from ASGM. Colombia does not produce mercury but imported between 54 and 130 tons of mercury per year from 2006-2013. Around 95% of imports were illegally distributed and used in ASGM. Colombia’s National Mercury Inventory

reports 47 tons of mercury being released each year into the atmosphere—30 of them as a result of gold mining activities.

Colombia's current transition to a post-conflict era has profoundly shaped the detoxification initiative. Despite not being an explicit point of the recently signed peace accord signed in 2016 between the government and the FARC guerrilla, the resource-related dimensions of the conflict and post-conflict have increasingly become a central part of public debates in Colombia. Discourse in favor of the "environmental dividends" of the Colombian post-conflict has been promoted by the government and progressively taking hold. In repeated occasions, the President has said that "peace will give Colombia the greatest environmental dividends, slow down the ecocide and generate employment opportunities." As part of this discourse, the government has redefined mercury as a conflict resource fueling the remaining violence and limiting ongoing peace-building efforts. Thus, eradicating mercury use in all industries, but especially in the so-called illegal mining sector, has become a top national priority to cut off a lucrative source of income for armed groups and to curb mercury poisoning in the rivers. Accordingly, Colombia played a key role in the negotiations leading to the Minamata Convention signature in 2013 and is currently carrying out the proceedings for its ratification. In the same year, a National Mercury Law was approved by Congress mimicking the core provisions of the Convention and even with more stringent timelines for phasing out mercury of ASGM and other industries. According to this Law, mercury use in the ASGM should be eliminated in 2018. Despite governmental efforts, it will be impossible to meet this deadline.

Colombia produces about 5 per cent of the world's gold, but uses about 20 per cent of the world's mercury supply to do it. Even though the country has been one of the preferred laboratories of the UN's previous attempts to reduce mercury use in the past 20 years, most of these attempts have clearly failed due to a combination of factors: a technical lag in remote mining areas, sporadic and underfunded programs for adjusting mining operations, structural violence in rural landscapes, and lack of coordination between local and national authorities. In light of this scenario, while being in the field I wonder what would be the best way to promote an appropriate, socially just, and environmentally effective transition to a world without—or at least with much less—mercury in a country experimenting an ambitious political transition. What does it mean to declare a war against an unruly resource that is so hard to govern? How does this objective take form in practice and how does it affect different social groups? These questions illustrate technical, legal, and political challenges of high complexity, such as the role of science, technology, and power in advancing socio-ecological transitions in the Global South.

By following different sites of mercury governance in Colombia, I intended to seek preliminary answers to these questions. During six weeks, I visited two mining regions—the Andean area of Nariño and the Lower Cauca Basin River in Antioquia—and interviewed miners, gold traders, local government officers, and NGOs promoting sustainable commerce of gold. Besides visiting Alberto's mine, I visited other 13 mines in Nariño and Antioquia and witnessed the obvious impossibility of phasing-out mercury in 2018, as well as the difficulties of at least phasing-down its use in the short-term. I also saw the material results of a long-standing history of failed interventions that have relied too much on donating technology to miners for recycling mercury without much consideration for the structural obstacles and the everyday challenges that miners experience—such as extortions by armed groups, harsh regulations for selling their gold, an impossibility to legalize their operations, and more broadly, being the main targets of a national and global crusade against mercury.

My preliminary conclusion is that as long as policy and technoscientific interventions aimed at halting mercury pollution keep overseeing local, contextual conditions in which ASGM takes place on the ground, not only these initiatives will not achieve their stated purpose of protecting health and the environment, but will also exacerbate inequalities among miners and perpetuate rural poverty. Moreover, as long as global and local initiatives for detoxifying landscapes and bodies from mercury do not address the ongoing global cycles of mercury, national efforts to phase-out and phase-down mercury will be insufficient. It is not enough to focus on the weaker segments of the mercury-supply chain, namely, small-scale gold miners. The global networks and flows of the resource must also be cut, and alternatives for the ASGM should be promoted with more sensitivity of their contexts. It is yet uncertain what role

will Colombia play in future efforts to phase-down and, where feasible, phase-out mercury use in ASGM. The first Conference of the Parties to the Minamata Convention to be held in Geneva in September 2017 will provide hints of how countries like Colombia will move forward towards a world without mercury. What we should take into consideration is that detoxification does not entail perpetuating and criminalizing rural poverty in the name of environmental health and development.