

Project Completion Report

Mercury-Free Miner Training and Amazon Rainforest Restoration in Madre de Dios, Peru: 2019–2022



Project Details

Funder: Tiffany and Co. Foundation

Location: Madre de Dios, Peru

Contaminant: Mercury (Hg)

Project Goal: To train miners of the AMATAF artisanal and small-scale gold mining (ASGM) association on 1) mercury-free ASGM techniques and technologies and 2) reforestation and restoration of Amazonian land degraded by ASGM.

Total budget: \$200,000

Start date: 7/1/2019

End date: 6/30/2021

Population affected (who, #): Approximately 50 miners from 4 formalized (legal) mining concessions that are members of the Tauro Fátima Artisanal Mining Association (AMATAF), a formalized mining association located in the Buffer Zone of the Tambopata National Reserve (RNT) in Madre de Dios, Peru. The Association is made up of 26 partners distributed over 11 mining concessions over approximately 1,500 ha, with an average of 12 miners working in each concession.

Implementation partner/s: CINCIA (the Amazonian Center for Scientific Innovation), CITE Mining and Environment (The Mining Center for Productive Innovation and Technology Transfer), DREMH (Regional Directorate for Energy and Mines and Hydrocarbons)

Background and Scope

During this 2019–2022 grant, Pure Earth continued to work directly with formalized miners from Madre de Dios to implement sustainable environmental solutions for ASGM that restore degraded areas in the rainforest and provide health benefits to the local and global population.

Project Activities

- Remediated and restored 5 hectares (ha) of rainforest degraded by the ASGM sector in Madre de Dios, including maintenance and planting, with an additional 1 ha planned and planted independently by AMTAF miners.
- Selected one mining community (AMATAF) to train in mercury-free mining including:
 - Fostering community awareness of the human health and environmental impacts of mercury through educational workshops,
 - Training miners in profitable, mercury-free mining practices,
 - Monitoring miners to ensure the sustainability of the activities.
- Expanded the capacity of the Peruvian government to replicate similar restoration projects and training processes.

Key Outcomes and Accomplishments

- Pure Earth restored 5 ha of degraded rainforest in the Linda II and Rosita II concessions of AMATAF, planting over 5,000 seedlings from 19 different species. Restoration efforts included a team of miners from the Linda II Concession and field experts, including local ecology students.
- AMATAF miners expressed more enthusiasm for reforestation than Pure Earth has previously encountered. The miners initiated, planned, funded, and led an additional reforestation of 1 ha in the Linda II concession without prompting from Pure Earth.

- The survival rates as of April 2022 in the Linda II and Rosita II concession were 71% and 75%, respectively, which are considered “excellent” survival rates after the second growing season for tree species in field.
- According to tests conducted by CITE within the framework of this project, gold recovery efficiency was 48.3% for the mercury amalgamation method, 68.4% for the shaking table before repairs, and up to 81.5% after repairs were made. These results could be a powerful tool to convince other miners in the area to change to Hg-free techniques.
- In October 2021, Andrea José Castro (Casa Collab jewelry company) completed the first-ever purchase from AMATAF of gold made without the use of mercury, an important achievement in AMATAF’s quest to produce responsible gold.
- Over the next four years, Pure Earth and the Alliance for Responsible Mining (ARM) will work with AMATAF to pursue an Eco-Fairmined Certification. When the certification process is complete, AMATAF will be the first concessions in the Amazon to be Fairmined certified, a major accomplishment which will hopefully attract an international market to the region.
- During the workshops, AMATAF miners received information on the harmful effects of mercury on people’s health and the effects of pollution on the ecosystem.
- Pure Earth’s work in the region has also attracted the attention of governmental entities. France Cabanillas, Pure Earth Perú’s Project Coordinator, was invited in June 2022 by the Congress of Peru to a special session of the Commission of Energy and Mine’s ASGM Working Group to present on the Hg-free mining and reforestation work being done with AMATAF.
- Thanks to the focus on restoration of mined-out land through reforestation practices, which contributes to a responsible closing-out of mining concessions, the project achieved a greater visibility of this issue. Mining-related government entities began using this project and AMATAF reforestation practices as an example of good mining practices and incorporating reforestation information in their presentations.

Lessons Learned

- Complete community commitment is essential. Pure Earth initially was going to partner with another mining association on the project. Although Pure Earth did initially receive a pledge of full support from the President of this mining association, the mining association in the end did not continue with project activities as planned. In the future it may be better to gain support from multiple members of the selected mining association. This will ensure that complications with one individual do not jeopardize the entire project.
- The COVID-19 pandemic interrupted life all around the world and this project was no different. Several phases of the project, especially those related to ore characterization and mercury-free trainings, were delayed due to difficulties in national and international travel. Though frustrating, these challenges did present an opportunity to rely less on international consultants and more upon national and local expertise, such as CITE.
- Rainforest reforestation is a costly endeavor and may be expensive for many artisanal and small-scale miners, especially those in remote, difficult-to access sites. In general, miners in the area need more financial incentives to be able to reforest their land.

- There is a great, unmet need for projects that incentivize miners to sustain best practices by helping them commercialize their mercury-free gold. Several challenges exist both to sell mercury-free gold within Madre de Dios or to export gold out of the department. Miners may be unable to sell their mercury-free gold in local gold shops because of its unfamiliar appearance, because many gold shops are illegally involved in the mercury business, or because shopkeepers can pay a lower price for gold produced with mercury because of its lower purity, so they may not wish to buy more expensive mercury-free gold. Exporting gold out of Madre de Dios is difficult because there is currently no easy, safe, economically viable way to transport the mercury-free gold. It is illegal to transport gold produced in the region by airplane without proper documentation, and ground transportation, which can involve the use of an armored vehicle traveling long distances to Lima, has security risks and is costly.

Recommended Follow-up

It is recommended to continue maintaining and strengthening the good relationship with AMATAF and to continue monitoring the reforestation plots when possible.



A training with AMATAF miners on mercury-free technologies and foundry process



Shihuahuaco tree sapling planted in Linda 2 mining concession