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Agenda Item 10

EVALUATION OF GEF INTERVENTIONS IN THE ARTISANAL AND SMALL-SCALE GOLD MINING SECTOR

(Prepared by the Independent Evaluation Office of the GEF)

Recommended Council Decision

The Council, having reviewed the document GEF/E/C.59/02, “Evaluation of GEF Interventions in the Artisanal and Small-scale Gold Mining Sector” and the Management Response, endorses the following recommendations:

1. The GEF partnership and the Minamata Convention should continue to encourage high mercury use countries to become more involved in the Convention.
2. The GEF partnership should increase project focus on policy interventions that help governments put into place the necessary framework to formalize artisanal and small-scale gold miners and monitor the sector.
3. The GEF partnership should seek opportunities for multi-focal area ASGM interventions and measure co-benefits beyond the Chemicals and Waste focal area.
4. The planetGOLD global platform should make available results and lessons learned from completed ASGM projects and provide more detailed information on NAP and GOLD program child projects.

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LIST OF ABBREVIATIONS

AGC	Artisanal Gold Council
ANA	Peru National Water Authority
ASGM	artisanal and small-scale gold mining
CARING	Convening Actors to Develop and Implement Strategies to Reduce Child Labor and Improve Working Conditions in ASGM
CEO	chief executive officer
CRAFT	Code of risk-mitigation for ASM engaging in formal trade
EHPMP	Africa Environmental Health and Pollution Management Program
GEB	Global environmental benefit
GEF	Global Environment Facility
GMP	Global Mercury Project
GOLD	Global Opportunities for Long-Term Development of ASGM Sector
LSM	large-scale mining
MIA	Minamata Initial Assessment
MSP	medium-sized project
NAP	National Action Plan
NCSSMI	Philippines National Association of Small-Scale Miners
PAG	Program Advisory Group
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization

EXECUTIVE SUMMARY

1. Artisanal and small-scale gold mining (ASGM) is a diverse sector that is a critical livelihood for millions of people around the world. Despite its importance as a source of income for many who have few other options, the sector sometimes contributes to environmental problems such as contamination of water sources from mercury and other heavy metal pollution, land degradation and deforestation; and social issues such as child labor, occupational safety hazards and connections with criminal groups. To address some of these environmental issues facing ASGM, the Global Environment Facility (GEF) has invested in ASGM interventions totaling \$132 million, with an additional \$373 million in co-financing since 2002. The investments have increased significantly since the formation of the Minamata Convention. One of the largest investments to date is the Global Opportunities for Long-term Development of the ASGM Sector (GOLD) program, designed in GEF-6 and led by the United Nations Environment Program, which consists of eight projects implemented by several Agencies in eight countries that are in the early implementation phase.

2. This evaluation seeks to provide GEF stakeholders with evaluative evidence on the relevance, coherence, effectiveness, efficiency and sustainability of GEF interventions in the ASGM sector. The evaluation aims to understand the evolution over time of GEF's strategy in the sector, the sustainability of the outcomes in completed ASGM projects, and evaluate the design and early implementation of the GOLD program. The evaluation takes a deeper look at interventions in three case study areas: Burkina Faso/Senegal, Peru/Ecuador and the Philippines, to draw lessons for future GEF interventions. Methods for the evaluation include portfolio review, interviews with key stakeholders, focus group discussions and geospatial analysis.

Key Findings and Conclusions

3. **GEF ASGM interventions are highly relevant to the Minamata Convention and national government priorities related to mercury reductions.** GEF financing of ASGM has increased significantly since GEF-6 through Chemicals and Waste funding related to the Convention. Convention related interventions include at least 60 enabling activities to help countries create Initial Assessments of mercury sources in their countries and ASGM National Action Plans, as required by the Convention for countries with significant amounts of ASGM. Two GEF-6 programs related to ASGM have significant focus on mercury reductions—the GOLD program and the World Bank-implemented Africa Environmental Health and Pollution Management Program. Additionally, GEF has focused interventions in countries that are involved with the Convention, meaning these countries' governments have a focus on mercury reductions as well, aligning their priorities to those of the Convention and the GEF.

4. **Completed GEF projects had success in reducing mercury use from ASGM in project areas; there was some progress in formalization.** Mercury use reductions were reported at project completion in some project areas in the three case study completed projects including Ecuador, Senegal and Philippines. Additionally, some projects in the Philippines and Peru made progress towards reaching formalization for ASG miners. In the Philippines, the GEF project

supported the creation of a national artisanal miners' association and in Peru the project supported the formalization for several miners' associations although no miners actually achieved formalization status. Some completed projects also included activities to monitor mercury levels in humans and river sediments which led to the publishing of scientific papers, although the efforts did not lead to the establishment of long-term monitoring programs.

5. Post-completion evaluation showed that completed project outcomes were sustained with declining mercury use in some areas, and formalization continued to build momentum after project completion. Mercury use was observed to continue declining in one project area in Philippines and in Ecuador. In the cases where use continued to decline, cyanidation was the main non-mercury replacement technology, which was not a technology encouraged by the projects. In cases where mercury use did not continue to decline, the reasons were mostly due to a lack of government enforcement of mercury bans and a lack of training and availability of replacement parts for non-mercury technology. Government and miner momentum towards formalization continued after project completion as all the case study countries ratified the Minamata Convention and the number of formalized miners continued to increase.

6. The GOLD program's design incorporates the lessons learned from past GEF and non-GEF ASGM interventions and its proposed activities align with good practices in the sector. An important lesson from past initiatives was the need for access to financing for miners in order to invest in new, more efficient non-mercury technologies to spur a shift away from mercury. In response to this lesson, the GOLD program's largest component is related to improving miners' access to finance and markets while also including activities on formalization policy, introduction of non-mercury technologies and knowledge management/awareness raising. The components are all widely considered to be critical issues to address in the ASGM sector by the international mercury reduction community.

7. The GOLD program is being implemented in many of the countries with the highest mercury use in the world. The GOLD program covers the top three countries in ASGM mercury use in the world (Indonesia, Peru and Colombia) and the upcoming follow-on GEF-7 GOLD+ program will include the 4th largest user, Bolivia. Venezuela, China and Sudan are all top 10 users that are not included in either program because they have either not signed or ratified the Convention or have not notified the Convention of more than insignificant ASGM mercury use in their countries. Additionally, broad geographic representation and government buy-in, were other factors that the GOLD program considered when choosing project locations.

8. The GOLD program's global "hub" child project has promoted collaboration and learning between child projects. Child project implementation staff appreciated the hub project for its promotion of group meetings and maintaining strong communication in the early stages of implementation, resulting in collaboration across child projects. Many non-GEF stakeholders also appreciated the project's efforts at communication but noted a lack of clarity on the specifics on the status of child projects. Many hoped to be more involved in specific projects rather than at the global level, which may become more feasible once projects get further into their implementation phase. Focusing on communication will be critical as the program moves into a more intense implementation phase when early results will have to be

shown and other GEF programs, such as EMPHP and GOLD+, also begin to be implemented. Additionally, it was unclear how local gold buyers, who could be cut out of a shortened supply chain encouraged by the program, would be involved or how the effects of their loss of livelihood would be mitigated.

9. **Most of the mercury reduction targets for the GOLD program are expected to be realized through knowledge dissemination and broader adoption.** A third of the mercury use reductions targeted by GOLD are expected to occur as a direct result of child project activities. Child projects are using different strategies to measure and monitor these reductions. The rest of the reductions are to come from knowledge dissemination to non-GOLD countries and replication in GOLD countries after project completion. The project design documents do not include plans for how GEF would monitor such reductions or how the reductions would be attributed to the GOLD program.

10. **GEF ASGM interventions, including the GOLD program, are primarily focused on mercury reductions and few projects include interventions to address other environmental issues associated with ASGM.** After the formation of the Minamata Convention, GEF ASGM projects have largely been funded by the Chemicals and Waste focal area and have aimed only to address one global environmental benefit—mercury reductions. Some GOLD countries do have ASGM-caused deforestation, land degradation and biodiversity loss, and the Guyana child project includes activities directly addressing these issues. Some completed projects addressed ASGM from a watershed perspective with funding from the International Waters focal area, but this is absent from Chemicals and Waste funded projects. The GOLD program also does not include significant connection with health workers and ministries to tackle human health monitoring or community health issues.

11. **With the GOLD program, GEF ASGM initiatives are increasingly adding partnerships and links with downstream stakeholders in the gold supply chain.** Historically, most GEF ASGM interventions focused on ASG miners where mercury is used. However, the GOLD program also involves private companies such as gold refiners and jewelers and other stakeholders through its Program Advisory Group to help take a holistic supply chain focus to the sector. These stakeholders should help the program shorten the supply chain and help miners access markets for more responsibly mined gold. Additionally, they can offer new perspectives on ASGM while encouraging financial sustainability.

12. **The GOLD program addresses policies and safeguards through the planetGOLD Criteria and gender through project level gender analyses.** The program has developed a set of criteria to avoid the many potential safeguards issues in ASGM in mining operations connected to the child projects. The criteria include measures to avoid environmental degradation and social issues such as child labor. These criteria should enable gold processing linked with the project more marketable to gold buyers who the program is engaging with through its global hub project. All of the GOLD child projects include gender analyses and plan gender action plans which should help GEF address the significant gender inequalities existing in the sector.

Recommendations

13. GEF and the Minamata Convention should continue to encourage high mercury use countries to become more involved in the Convention. An increasing number of countries continue to take meaningful steps towards involvement in the Convention and thus towards eliminating mercury use. As countries with ASGM present ratify the Convention, this will unlock GEF ASGM financing, increasing the global impact of GEF and the Convention.

14. The GEF should increase project focus on policy interventions that help governments put into place the necessary framework to formalize ASG miners and monitor the sector. As GEF moves into countries where ASGM formalization isn't as advanced, it will have to address this first step in the theory of change to a larger extent than in the GOLD program. Formalization policy interventions will have to assist governments in developing a framework that not only puts formalization into laws but also creates cost-effective monitoring and institutional and engagement structures to apply the policy throughout disperse ASGM areas.

15. The GEF should seek opportunities for multi-focal area ASGM interventions and measure co-benefits beyond the Chemicals and Waste focal area. The GEF has already moved in a direction of multi-focal area, holistic solutions to environmental problems with the creation of the impact programs and integrated approaches. ASGM has links to several focal areas, depending on the characteristics of each mining area, and is therefore a sector which could combine funding from several focal areas or at least include activities related to International Waters, Biodiversity, Climate Change, and Land Degradation within a Chemicals and Waste-funded project. Additionally, as environmental health takes on a higher priority in the age of the COVID-19 pandemic, ASGM interventions should consider stronger links with government health agencies to build improved environmental health monitoring and education. These efforts could work in tandem with, rather than in competition with, funding linked to the Minamata Convention to reduce mercury use.

16. The planetGOLD global platform should make available results and lessons learned from completed ASGM projects and provide more detailed information on NAP and GOLD child projects. The focus on global knowledge management and sharing in the GOLD program is valuable and should be continued. In addition to the information already available, additional information and lessons learned on completed GEF (and non-GEF) ASGM projects, especially the GEF 5 MSPs that were designed as pilot projects, should be included. Results, documents, and lessons from the Terminal Evaluations would be useful for a broad range of stakeholders and perhaps would improve stakeholder retention of the projects' outcomes. Additionally, more frequent updates on project status (both GOLD and NAP projects) on the website would help stakeholders follow progress. The hub project should seek to ensure that the results and negative aspects of lessons learned from the GOLD program are disseminated along with positive lessons, to ensure maximum adaptive learning for the future.

I. INTRODUCTION

Overview of artisanal and small-scale gold mining

- 1. Artisanal and small-scale gold mining (ASGM) has different meanings to the many different people it touches, and it exists in many forms.** To a miner, ASGM is a livelihood—a means to make a living when, in many cases, few alternatives exist. To a government official, ASGM is often a sector that borders on illegality and needs to be better controlled. To a gold consumer, ASGM is far removed from their everyday life (often in another country), and ASGM is just one step in a long supply chain that creates a valuable metal. The sector is also diverse—it occurs all over the world and exists in many forms, from individual artisanal miners using rudimentary shovels and sifting pans to small-scale but organized businesses using heavy machinery.
- 2. This diverse sector has an economic influence in many of the countries where ASGM is present.** ASGM is estimated to involve about 10–15 million miners across 70 countries (4.5 million of whom are women and 1 million children) while directly and indirectly involving at least 100 million people. This mining results in about 20 percent of the global production of gold, producing 600–700 tons per year (IGF 2017, UNEP 2017). Estimates from 2011 show that of the major ASGM regions, Latin America produces the most artisanal and small-scale gold (50–60 percent of the global total), followed by Asia (about 25 percent) and then Africa (about 20 percent; Seccatore et al. 2014). Mining is the primary livelihood for many miners but is also a supplementary income for small-scale farmers who face diminishing yields or lack sufficient land (de Haan et al. 2020, IGF 2017). Despite the stereotype of mining as attracting “get-rich-quick” operators, ASGM is often driven by poverty and lack of other economic opportunities rather than by a desire to create quick wealth, especially in Sub-Saharan Africa (Hilson and McQuilken 2020).
- 3. Despite the economic importance of the sector for many populations, it is associated with many environmental and social issues.** When ASGM is done without consideration of good environmental practices, it can cause considerable water and air contamination and land degradation. The use of mercury to assist in separating gold from the surrounding ore leads to mercury poisoning not only of miners but of villagers who burn off the mercury sometimes in their homes (and near vulnerable children). This mercury used during processing, along with other heavy metals exposed by digging, are also released into water bodies (especially in mining of alluvial deposits in riverbeds), contaminating fish and other aquatic creatures and thus the food and water supply of downstream communities. Mercury poisoning (severe cases of which are known as Minamata disease) causes a variety of respiratory issues and even respiratory failure, neuropsychiatric problems, kidney damage, and hypertension (WHO 2016). Globally, ASGM is the largest anthropogenic emitter of mercury at an estimated 838 tons per year, accounting for 38 percent of air emissions in 2015. The sector releases an additional estimated 1,220 tons of mercury to terrestrial and freshwater environments (UNEP 2019a). Cyanide, used as an alternative or a supplement to mercury, is also a poison that causes acute impacts such as respiratory and cellular damage, though it does not persist in the environment as long as mercury (WHO 2016, Hilson and Monhemius 2006).

4. Another highly visible (especially via earth observation satellite images) environmental impact of ASGM is forest loss and land degradation. Alluvial mining in many cases causes thorough destruction of the vegetation and topsoil above gold deposits, which leads to sedimentation and leaching of heavy metals to nearby water bodies; and it can cause significant carbon emissions (contributing to climate change) if the vegetation is a carbon-rich forest. Such destruction can be difficult to reverse, because post-mining regrowth can be inhibited by chemicals used in the mining process and by the complete removal of soil layers. Some ASGM areas, especially in South America, overlap with biodiversity hotspots (Harlow et al. 2019). ASGM-related forest loss is particularly an issue in the southern Amazon rain forest, where at least 7,000 hectares of forest have been lost in Peru alone to gold mining since 2013, including in several protected areas (Finer and Mamani 2018).

5. ASGM is linked with many social and health issues as well, from occupational health hazards (exposure to dust particles from ore crushing and grinding, dangerous work environments such as tunnels and ditches, among others), child labor, exploitation of vulnerable populations, and connections with criminal human- and drug-trafficking gangs (WHO 2016, GI Network 2016, IGF 2017).

6. To address these environmental and social issues related to ASGM, international institutions such as the Global Environment Facility (GEF), national governments and civil society organizations have increasingly intervened in the sector over the past 30 years. In the 1980s, ASGM was only peripherally on the agendas of major donors such as the World Bank, which, while focusing on large-scale mining, saw ASGM through an entrepreneurial lens rather than as a livelihood (Hilson and McQuilken 2020, Hentschel et al. 2003). The late 1990s saw a higher level of interest and investment by the international community, with a greater focus on poverty alleviation and ASGM as a source of livelihood for the poor, along with some emphasis on the connection between conflict and mining. The 2000s saw more recognition of the issue of mercury use from ASGM along with other sectors, which eventually led to the adoption of the Minamata Convention on Mercury in 2013, leading to further investment (especially by GEF) in ASGM. Other investments were focused on formalization of the sector, its linkages with land degradation, and issues of child labor—though these issues were rarely all addressed together in single interventions.

GEF's interventions in ASGM

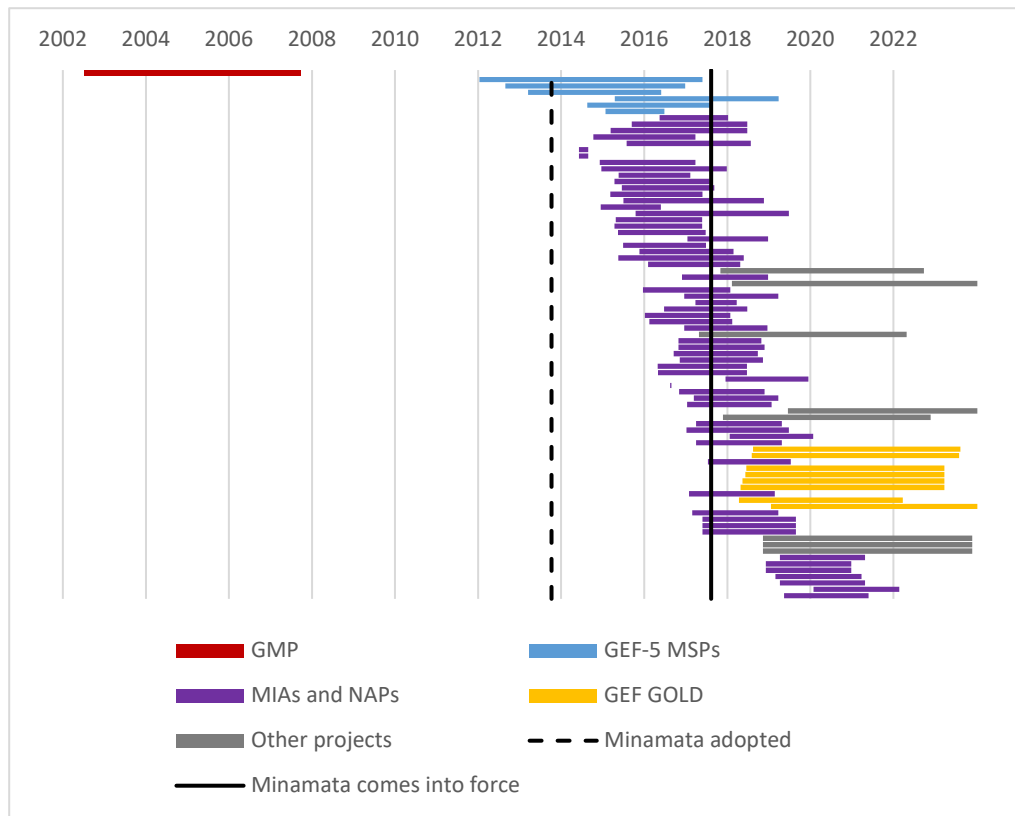
7. **Since 2002, the GEF has increasingly intervened in ASGM** (Figure 1). The GEF has financed at least \$132 million through the GEF Trust Fund with an additional \$373 million in co-financing in projects that focus on or have a component focusing on ASGM. The first major ASGM project was funded under the International Waters focal area in GEF-2 (GEF ID 1223) called “Removal of Barriers to the Introduction of Cleaner Artisanal Gold Mining and Extraction Technologies” but later came to be known as the Global Mercury Project (GMP). The project was implemented by the United Nations Development Programme (UNDP) between 2002 and 2007. After GMP, there was a pause in GEF programming as ASGM was no longer funded through International Waters and the Persistent Organic Pollutants focal area funding, a precursor to the Chemicals and Waste focal area, was focused on existing international

conventions such as the Stockholm Convention. Not until GEF-5 in 2012 with a series of ASGM-focused medium-sized projects (MSPs) did the GEF return to the sector with funding from the Strategic Approach to International Chemicals Management (SAICM). These projects were funded in anticipation of the Minamata Convention's formation, allowing the GEF to showcase its ability to fund mercury reduction projects, preparing the way for it to be included in the official financial mechanism for the Convention once it was signed. The MSPs were located in all three of the major ASGM regions—Africa, Asia, and Latin America.

8. After the adoption of the Minamata Convention, GEF funding in ASGM increased substantially and has been largely focused on reducing mercury use. GEF-5 also saw the beginning of a number of enabling activities that financed the elaboration of documents for the Convention, especially Minamata Initial Assessments (MIAs) and then in GEF-6 of ASGM National Action Plans (NAPs). These enabling activities have continued to be financed into GEF-7. In GEF-6, financing ramped up again with two major programs, one focused entirely on ASGM and another with major ASGM components. The latter is the World Bank–implemented Africa Environmental Health and Pollution Management Program (EHPMP; GEF ID 9444), a Chemicals and Waste–funded program that deals with ASGM, Persistent Organic Pollutants and e-waste in several sub-Saharan African countries. The Ghana (GEF ID 9851) and Tanzania (GEF ID 9855) child full-sized projects are the two with major ASGM components. The other major ASGM program is the Global Opportunities for Long-term Development of ASGM Sector (GOLD; GEF ID 9602). The GOLD program is led by the United Nations Environment Programme (UNEP) and has seven child projects plus a global knowledge management, communications and outreach “hub” project. The projects are implemented by several Agencies and located in eight countries in the three major ASGM regions. In addition to the seven GOLD program child projects, there is a similar chemicals management project in Ecuador that is not technically part of the program but is considered a “sister” project because it includes a component on mercury reduction in ASGM (GEF ID 9203). In June 2020, the GEF Council approved a second phase of the GOLD program known as GOLD+ (GEF ID 10569), which will be implemented in an additional eight countries. The GOLD and GOLD+ programs are referred to collectively as “planetGOLD”.

9. The GEF Small Grants Programme (SGP) has also funded many projects in the ASGM sector. The SGP has funded at least 38 projects in the ASGM sector since as early as 2001 amounting to \$1.15 million. A majority of the projects are very recent, with about 70 percent of the projects beginning in 2019 or later. Most of the project sites are in Africa, eight are in Asia (Mongolia), and three in South America (Suriname). The projects' main objectives are to reduce or eliminate mercury use in the sector through information campaigns, capacity building, and introduction of alternative technologies. A number of projects also aimed to introduce alternative livelihoods to the miners and to remediate or rehabilitate mined-out lands. Because these projects are not stand-alone GEF interventions, they have not been included in the portfolio for this evaluation.

Figure 1. Timeline of major GEF interventions in the ASGM sector



Note: Projects that were formed after November 2019, including the upcoming GOLD+ program, are not shown. GMP = Global Mercury Project; MIAs and NAPs = Minamata Initial Assessments and ASGM National Action Plans; MSP = medium-size project; GOLD = Global Opportunities for Development in the ASGM Sector.

II. OBJECTIVES, METHODS, AND SCOPE OF THE EVALUATION

10. **The purpose of this evaluation is to provide GEF stakeholders with evaluative evidence on the relevance, coherence, effectiveness, efficiency, and sustainability of GEF interventions in the ASGM sector.** The objectives include:

- (a) Understand the evolution of the GEF's strategy in the ASGM sector and evaluate the extent to which newer interventions, designed in GEF-6, respond to lessons learned from past projects.
- (b) Evaluate the outcomes and sustainability of GEF ASGM projects implemented between 2002–17—focusing on three GEF-5 MSPs completed 3–5 years ago.
- (c) Evaluate the design of the ongoing GOLD program.

11. In addition to the global view of GEF ASGM interventions, the evaluation includes three regional case studies to provide a more in-depth view of the GEF's ASGM strategy over time. This evaluation includes all GEF interventions that either have had an objective directly linked

to ASGM or had at least one major project component specifically focused on ASGM. Some projects that have ASGM-related activities but did not include a specific component on ASGM were not included in the portfolio for this evaluation but are referenced where relevant. The case study areas chosen, Burkina Faso/Senegal, Ecuador/Peru and Philippines, were the only areas with both GEF-5 MSPs that were completed between three and seven years from the start of the evaluation and current child projects from the GOLD program. All three areas have had ASGM-related enabling activities as well. All three of the GEF-5 MSPs selected for case studies were implemented by UNIDO, making the agency overrepresented in this evaluation compared to the proportion of all GEF ASGM projects UNIDO has implemented to date. However, there were no other available completed projects implemented by different Agencies that met the case study criteria.

12. The evaluation takes a mixed-methods approach using both quantitative and qualitative methods. A portfolio review first reviewed all major project documents (Chief Executive Officer [CEO] Endorsement Request documents, ProDocs and Terminal Evaluations) for all GOLD child projects and the completed projects. Special attention was given to case study projects (Table 1). Scientific and technical literature related to ASGM was also reviewed to better understand the current state of the sector along with the most innovative ideas in the sector. Interviews and focus group discussions were carried out with a wide range of stakeholders including GEF Secretariat, Agency staff, executing agency and GEF project staff, GEF project partners including government and private sector entities, GEF project beneficiaries, entities implementing non-GEF ASGM projects, and ASGM experts and academics. Geospatial analysis of subnational and national mercury use estimates along with forest loss data was carried out as well to understand how GEF project locations compared to mercury and forest loss hotspots in case study areas.

Table 1. List of focus projects in the three case study areas

ID	Title	Focal Areas	Agencies	Countries	Period	Type	ASGM-related GEF Financing (\$M)	ASGM-related Co-financing (\$M)
Africa case study (Burkina Faso and Senegal)								
4569	Improve the Health and Environment of Artisanal and Small-Scale Gold Mining (ASGM) Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management	CW	UNIDO	Burkina Faso, Senegal*	GEF-5; completed	MSP	\$1.09	\$2.45
9718	GEF GOLD: Contribution Towards the Elimination of Mercury and Improvement of the Gold Value Chain in the Artisanal and Small-Scale Gold Mining Sector	CW	UNIDO	Burkina Faso	GEF-6; ongoing	MSP	\$2.23	\$7.31

Asia case study (Philippines)								
5216	Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions	CW	UNIDO	Philippines	GEF-5; completed	MSP	\$0.61	\$1.08
9695	GEF GOLD Mongolia-Philippines: Contribution Towards the Elimination of Mercury in the ASGM sector From Miners to Refiners	CW	UNEP/UNIDO	Philippines, Mongolia	GEF-6; ongoing	FSP	\$13.08	\$48.21
Latin America case study (Ecuador and Peru)								
4799	Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining	CW, IW	UNIDO	Ecuador, Peru	GEF-5; completed	MSP	\$1.10	\$2.68
9203	National Program for the Environmental Sound Management and Live Cycle Management of Chemical Substances	CW	UNDP	Ecuador	GEF-6; ongoing	FSP	\$3.61	\$14.98
9710	GEF GOLD Peru - Integrated Sound Management of Mercury in Peru's Artisanal and Small-scale Gold Mining (ASGM)	CW	UNDP	Peru	GEF-6; ongoing	FSP	\$4.49	\$35.23

*Project 4569 originally included Mali as well, but no activities were carried out there because of security concerns.

Note: CW = Chemicals and Waste; FSP = full-sized project; IW = International Waters; UNDP = United Nations Development Programme; UNEP = United Nations Environmental Programme; UNIDO = United Nations Industrial Development Organization.

13. Originally, the IEO evaluation staff had planned to conduct in-depth field missions to the three case study areas. However, only one limited mission was completed to Ecuador before travel restrictions related to the COVID-19 pandemic prevented further field missions. This limitation on travel by IEO staff was mitigated by the inclusion of local consultants located in the three case study regions who were able to carry out local interviews and visits to a project beneficiary site. A complete list of interviewees is included in Annex II.

III. FINDINGS

1. Portfolio review

14. **GEF ASGM funding increased significantly in GEF-6 with the launch of two large programs (GOLD and EHPMP) largely through the Chemicals and Waste focal area.** Eighty-nine percent of GEF ASGM project funding was allocated in GEF-6, by far the GEF period with the heaviest ASGM investment, followed distantly by 7 percent in GEF-5 (Figure 2). When the

projects are broken down into major project and period types (GMP, GEF-5 MSPs, MIA,s and NAP enabling activities, GOLD, and all other projects), the GOLD program comprises 46 percent of all funding for GEF ASGM projects, followed closely by other projects at 37 percent (Figure 3). The MIA and NAP enabling activities make up the most projects by number, 60 out of a total of 81 included in the ASGM portfolio, but collectively make up only 9 percent of total ASGM funding. A large majority (81 percent) of financing comes from the Chemicals and Waste focal area which is a result of the influence of the Minamata Convention in GEF ASGM interventions (Figure 4). Some multi-focal projects exist, especially among the older, pre-Minamata projects.

Figure 2. GEF funding for ASGM projects by GEF period

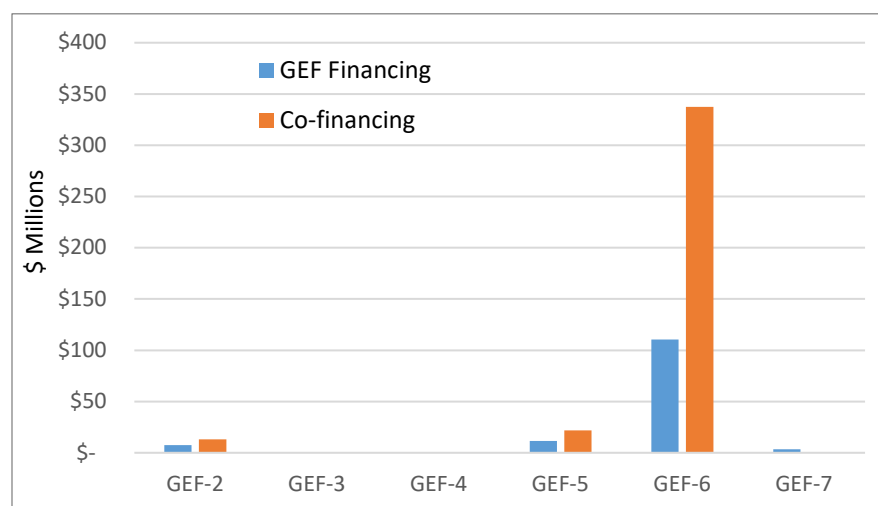
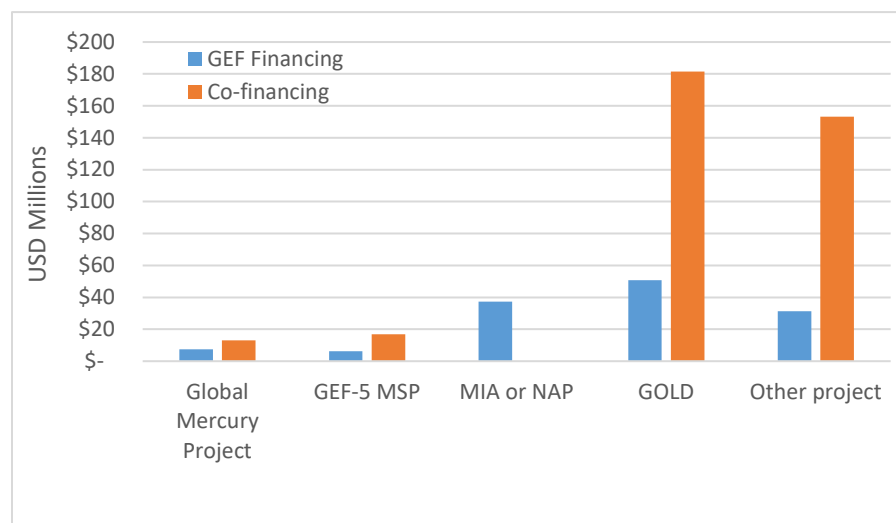
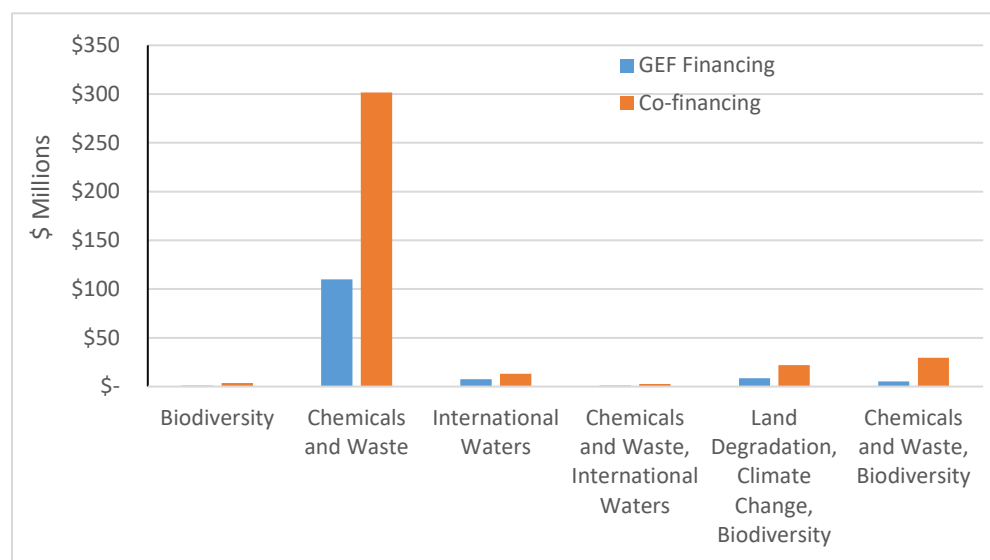


Figure 3. GEF ASGM funding by project type



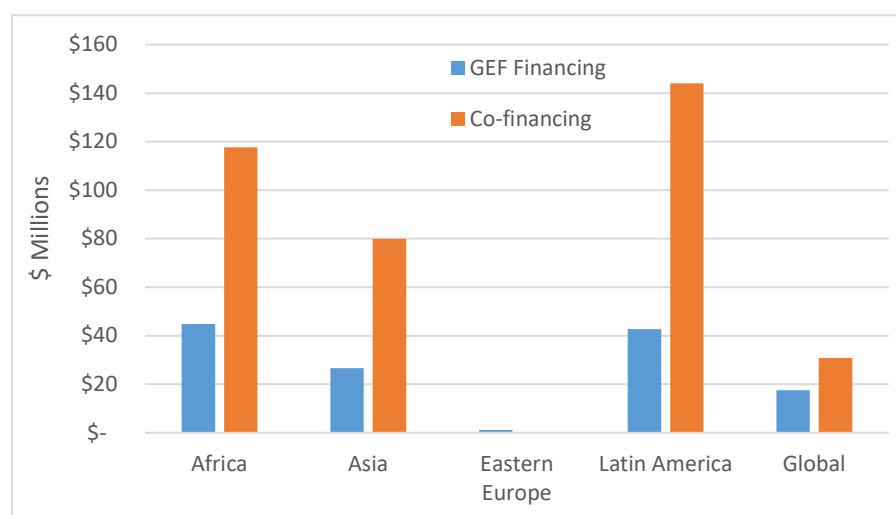
Note: IA = Initial Assessment; MSP = medium-sized project; MIA or NAP = Minamata Initial Assessment or National Action Plan; GOLD = Global Opportunities for Long-Term Development of ASGM Sector. Cofinancing is not required for enabling activities such as the Minamata Initial Assessments and National Action Plans so co-financing is not shown for those activities.

Figure 4. GEF ASGM funding by focal area



15. **Africa has received the most ASGM funding from GEF, followed closely by Latin America.** The region with the most GEF Trust Fund financing for ASGM is Africa with 34 percent of the financing followed by Latin America (32 percent) and Asia (20 percent). Africa also has the most projects by number at 36, while Latin America has 26 and Asia 13. Latin America had the most co-financing followed by Africa and Asia. (figure 5).

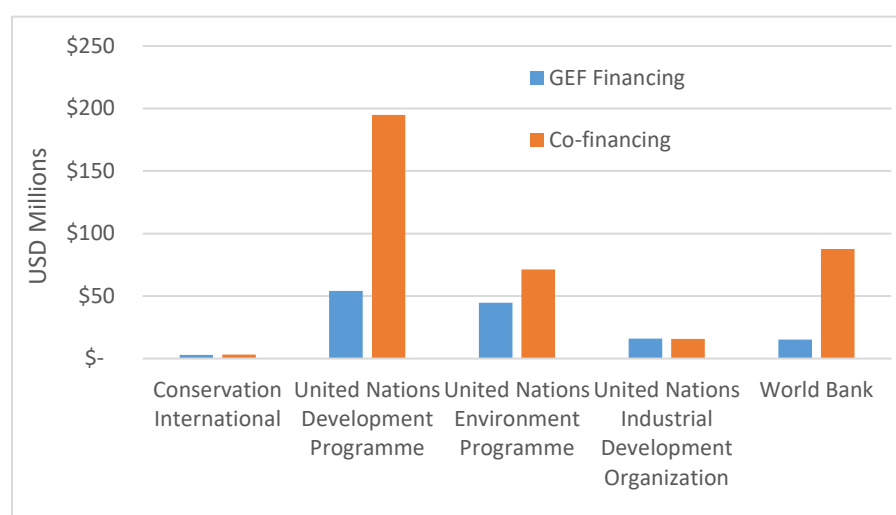
Figure 5. GEF ASGM funding by region



16. **The three original agencies of the GEF (UNDP, UNEP, and the World Bank) along with UNIDO have received most of the ASGM funding.** UNDP projects have had the most GEF Trust Fund financing at 41 percent followed by UNEP (34 percent) and UNIDO (12 percent) and the World Bank (11 percent; Figure 6). UNEP and UNIDO have implemented the most projects with UNEP implementing 30 and UNIDO 26. However, enabling activities make up majority of both UNEP and UNIDO implemented projects—28 and 22 respectively. In contrast, three of the four

ASGM World Bank projects and eight of 20 UNDP ASGM projects are full-sized projects. The World Bank has achieved the highest rate of co-financing at 85 percent of financing totals. Conservation International has been a relatively late entrant into the GEF ASGM funding arena with the implementation of the Guyana child project of the GOLD program (GEF ID 9713) but is also selected as the lead Agency of the upcoming GOLD+ program. Of the 18 Agencies, these are the five to have implemented a GEF ASGM project.

Figure 6. GEF ASGM funding by Agency



Relevance of both completed and ongoing GEF ASGM interventions to the Minamata Convention and national priorities

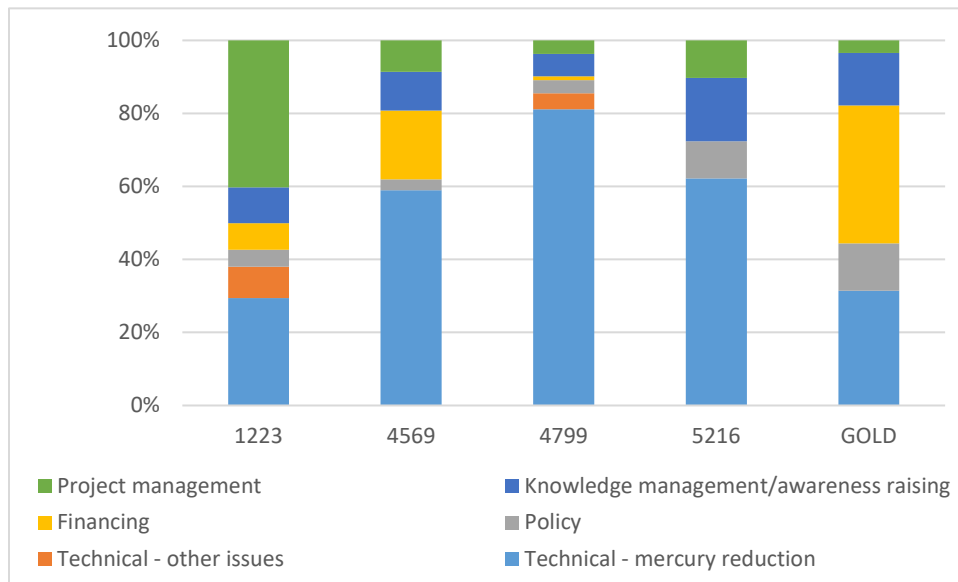
17. The GEF's ASGM interventions are very relevant and aligned to the Minamata Convention and national government priorities related to mercury reductions in ASGM. The GEF is included in the official financial mechanism for the Minamata Convention, and the ASGM interventions respond directly to the Convention's guidance and goals of reducing mercury use and emissions. Even before the Convention came into force the GEF-5 MSPs were designed to show the GEF's ability to fund mercury reduction projects in anticipation of greater funding allocation to it under the imminent Convention. The GEF worked with the interim Minamata Secretariat prior to the Convention's formation and continues to work closely with the now existing Minamata Secretariat, which was involved in the design of the GOLD and GOLD+ programs, and the Secretariat describes a very good relationship with the GEF and overall satisfaction that the GOLD program is responding to the Convention. Beyond the larger planetGOLD programs, the GEF also funds many enabling activities to create MIAs and NAPs that are specifically designed to help countries meet their commitments to the Convention. This is a major stream of GEF ASGM financing that reaches a large number of countries, furthering their interaction with the Convention and helping to mainstream ASGM mercury reduction into government priorities and strategies. Stakeholders, especially government stakeholders, mentioned that the GEF is a rare source of funding for mercury reduction where other donors and even governments do not often give much attention to the mercury issue in ASGM.

18. The Convention’s emergence has increased the level to which national governments prioritize mercury reduction. Government stakeholders in case study countries noted that mercury reduction is indeed a national priority and therefore GOLD is relevant to them in this way. NAPs especially help governments create a clear and actionable plan to reduce mercury. However, it is clear that the main ASGM priority in most GOLD countries is to combat illegal ASGM. Illegal ASGM means different things in different countries; in some, mercury is illegal, while in others ASGM is illegal in certain locations or without a proper license. In this sense, the GEF’s focus on formalization is helping to address this priority. However, addressing illegal ASGM is not something that GEF ASGM interventions focus on directly—indeed, having a project work with illegal miners is politically untenable. In one sense this is unfortunate because illegal miners are often the very miners who need the most assistance to stop using mercury. This is an especially difficult situation for the GEF in countries where mercury use in ASGM has been completely banned, since working with miners who are using mercury implies working with miners who are technically violating the law. Some bans have even been implemented in response to the Minamata Convention, although the Convention does not require such a drastic measure. For instance, Ecuador implemented the “Zero Mercury Policy” in 2013 accompanying their signing to the Convention (Gonçalves et al., 2017). In Indonesia, Law No. 11 of 2017 acts as a binding legal power for the country to the provisions of the Convention (Puluhulawa and Harun, 2019). Like Indonesia, Colombia implemented a law in 2013 the same year they signed the Convention, providing a five-year term to completely eliminate mercury in the ASGM sector (Echavarria, 2014). These cases show an unfortunate unintended consequence of the Convention: a larger focus on mercury reductions leads to a complete ban, driving ASG miners toward illegality and making it more difficult to work with them.

Evaluation of GEF completed projects at project closure

19. Early GEF ASGM projects focused mostly on the introduction and capacity building of non-mercury technologies and on awareness raising around the health impacts of mercury through the Chemicals and Waste focal area. In the earliest GEF ASGM project, the GMP, the most important components of the project were demonstrating non-mercury and low mercury use technologies and training miners and mining communities in the use of these technologies along with showing them the health dangers of mercury itself. According to project design documents, 30 percent of the budget was allocated to technological solutions to mercury reduction while 10 percent was for knowledge management and awareness raising (Figure 7). The project also budgeted about 40 percent of its funds for project management. This strategy of focusing heavily on introduction and demonstration of non-mercury technologies was a key theme for the UNIDO-implemented GEF-5 MSPs looked at in the case studies for this evaluation—the regional West Africa project titled “Improve the Health and Environment of Artisanal and Small-Scale Gold Mining (ASGM) Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management” (GEF ID 4569), the Philippines project titled “Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions” (GEF ID 5216), and the project implemented on the border between Ecuador and Peru titled “Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining” (GEF ID 4799).

Figure 7. Comparison of relative budget spent on major areas in select GEF ASGM projects



20. Some early GEF ASGM interventions also received funding from the International Waters focal area and thus included activities focusing on water resource monitoring. The ASGM sector is associated with several other environmental issues related to the GEF's other focal areas. One of the most prominent is the link with water resource contamination: ASGM causes mercury and other heavy metals to contaminate sediments found in water bodies and water sources for used by humans and other species. The GMP was entirely funded by International Waters, and project 4799, also known as the Sin Mercurio (Without Mercury) project in Peru and Ecuador was partially funded by International Waters, and each included component specifically addressed water and sediment monitoring of contaminants (especially mercury) related to ASGM. Both were linked to international freshwater watersheds where ASGM was considered a major source of contamination. Additionally, the GEF-2 project "Integrated Watershed Management Program for the Pantanal and Upper Paraguay River Basin" project in Brazil (GEF ID 583) and the GEF-5 "Integrated Water Resources Management in the Titicaca-Desaguadero-Poopo-Salar de Coipasa System" (GEF ID 5783) included some activities related to ASGM. Beyond water resources, only one of the completed projects dealt with deforestation or land degradation caused by mining, another major environmental issue related to ASGM. This project was "Enhancing Biodiversity Protection through Strengthened Monitoring, Enforcement and Uptake of Environmental Regulations in Guyana's Gold Mining Sector" (GEF ID 5846), a project in Guyana, an MSP funded under the Biodiversity focal area.

21. Some completed GEF ASGM projects also included training of health professionals and monitoring of mercury levels in beneficiary populations, but health-related programming has been mostly limited to awareness campaigns. The GEF-5 Philippines project stands out as one of the few GEF ASGM projects that completed before-and-after testing of mercury in beneficiaries (showing a significant drop in mercury levels) but this is not a common activity.

The GEF-5 West Africa regional project trained health workers to screen for and understand mercury-related illnesses.

22. Completed projects achieved mercury use reductions in specific project areas. Both the Sin Mercurio project in Peru and Ecuador and the Philippines GEF-5 project achieved mercury use reductions, which were measured by project staff rather than independent evaluators (Table 2). The reduction in Peru and Ecuador was more substantial: 1.8–2 tons per year compared to 0.3–0.4 tons per year in Philippines. This is because in Ecuador, the project worked with plants that process large amounts of ore compared to artisanal miners in Philippines. It is notable in Ecuador that even at project end most of the reductions came from a switch to cyanidation processing, though this was not a non-mercury technology encouraged by the project. The Philippines project went an extra step to show reductions of mercury levels in humans by doing before and after measurements of mercury in the blood and hair of miners. These measurements showed reduction in mercury levels. The West Africa project did not have the explicit goal of reducing mercury use or emissions, although it did successfully install a non-mercury processing plant in an area in Burkina Faso and one in Senegal. According to beneficiaries, miners used the new machinery for some processing steps but continued to use mercury for others.

Table 2. Expected outcomes for GEF ASGM case study completed projects and their status at project end.

Case study	Expected outcome/output	Achievement at project end
Mercury reductions		
Latin America	Reduction in mercury use and emissions in targeted areas through development and adoption of alternative mining technologies	Project claimed to have reduced mercury use by 60% from 4.64 tons Hg in 2013 to 1.79 tons in 2015. However, the Terminal Evaluation reports that the reduction was only 40% after recalculation. This reduction was mostly to the result of a shift towards selling ore to processing plants that use cyanidation.
Philippines	Mercury use, emissions, and exposure reduced at ASGM pilot sites	Hundreds of miners trained, some specifically in operation of non-mercury machinery. The Terminal Evaluation reports reduction of 368 kg of mercury use per year. Blood and hair measurements showed large reductions in mercury levels.
West Africa	Non-mercury technology installation pilots are replicable	Machinery was installed in one area in Burkina Faso and one in Senegal, though miners continued to use mercury for some processes at project end. Some evidence of replication in a neighboring village in Burkina Faso.
Formalization/policy		
Latin America	Mercury minimization strategies endorsed in Peru and Ecuador	Ecuador adopted a complete ban of mercury (although a complete ban was not the specific target the project advocated for). No specific target was endorsed in Peru but there is strong government support for mercury reduction.
Latin America	Adoption of policies or programs that support the formalization of miners and promote innovative financial mechanism.	Several mining organizations in Peru received assistance to further their formalization process although no miners achieved formalization status by project end.
Philippines	A formal national institution for the mining community in the Philippines is functional, and stakeholders are able to manage mercury effectively.	A national institution for the ASGM community was established. Key government stakeholders were sensitized and trained to manage mercury effectively through active participation in the project.
West Africa	National Action Plans are used for developing policy framework in Burkina Faso and Senegal.	Scope of ASGM in the two countries was evaluated and better understood, but National Action Plans were not developed by the project.
West Africa	Capacity to manage and monitor mercury increased through fair trade certification and new regulations.	Not evaluated by the Terminal Evaluation. No evidence of miners achieving certification was found.
Monitoring		

Latin America	Monitoring program for mercury levels in both humans and the environment	The project was not able to establish a long-term monitoring program although it performed water/sediment monitoring during its lifetime.
Knowledge management/awareness raising		
Latin America	Increased awareness of mining communities, national & local authorities and general public, particularly women and youth, of dangers of mercury use	A large number of miners were trained in both Ecuador and Peru on mercury dangers, but post-training evaluations were not completed.
Latin America	Project results disseminated to achieve replication at national, regional, and international level.	Several reports were completed by the project, including scientific journal publications. Miners complained that the results were not well distributed locally.
West Africa	Knowledge gained from health and technology trainings can be adopted and behavior changed.	50–100 health professionals were trained on the impacts of mercury.

23. Though formalization and policy outcomes were limited by project end, government prioritization of ASGM mercury reductions increased. By the end of the projects, case study countries were more aware of the amount of mercury use from ASGM in their countries due to baseline studies completed by the projects. Ecuador passed a law banning mercury in ASGM completely—the only case study country to do so during project implementation. The project did not advocate for this prohibition, which was passed shortly before Ecuador signed the Minamata Convention in 2016. According to stakeholders and the Terminal Evaluation, this could be counterproductive because it becomes harder to engage miners and monitor mercury use if all mercury-using miners are illegal. The projects did achieve increased government priority for formalization in Peru and the Philippines. In the Philippines a national ASGM miner’s association was established, and in Peru several ASGM organizations were engaged to begin their formalization processes. However, in Peru it was noted that formalization was not yet achieved by any miners by project end. Policy changes take time and need champions for reform as noted in previous IEO evaluations.

24. There was an increase in awareness of mercury poisoning and monitoring of mercury levels. All the completed case study projects were able to train miners on the health impacts of mercury and a more limited group on how to operate non-mercury processing machinery. The West Africa project even trained health professionals, although the Terminal Evaluation was unable to speak with any of the trainees to verify the impact of the sessions. The Peru/Ecuador project carried out a river monitoring campaign that verified the link between mercury from gold processing plants and cyanide-contaminated tailings in the Ecuadorean upper Puyango-Tumbes river watershed and poor water quality in the lower Peruvian watershed. In the Philippines, the health monitoring showed significant drops in mercury levels; the Terminal Evaluation noted that these positive results of the mercury monitoring in miners were not shared with the mining communities at project end.

Efficiency of completed GEF ASGM interventions

25. **All completed GEF ASGM projects experienced implementation delays, mostly caused by security issues at project sites, and centralized project management.** The GMP and the three GEF-5 MSPs in the case study countries experienced implementation delays: the GMP was extended for two years past its original three-year length of 2002–05, the start of the West Africa regional GEF-5 project was delayed from August 2011 to January 2012 and was extended twice for a total of 2½ years from 2015 to 2017, GEF-5 Sin Mercurio project was extended two months shy of two years from 2012 to 2013 and the GEF-5 Philippines project was extended 1½ years from 2014–16.

26. The regional West Africa project experienced two issues related to political unrest—one in Mali causing the project to abandon all activities in the country, and one later in implementation in Burkina Faso. Those along with periodic closing of mining sites by government officials caused most of the delays. The risk matrix included in the original Request for CEO Endorsement document did not include risks related to political unrest and therefore there was not a mitigation plan for such events. The TE noted that the funds originally allocated for Mali did not result in additional activities in the two remaining countries (Burkina Faso and Senegal). The Philippines project also saw a one-year delay because of a change in project site prompted by security concerns for project staff and lack of local government support. The risk matrix included in this project’s Request for CEO Endorsement document does note the risk of “security and safety issues at remote mining sites.” The mitigation measure was to take these issues into consideration during site selection; however, there was no plan for what to do if a security incident arose after site selection.

27. In the case of the GMP, the Terminal Evaluation notes that there were inefficiencies in the project due to the centralized project management design in which majority of the decisions were made at headquarters. There were no technical advisors in the six countries, and often a disconnect between the central decision-making process and the reality on the ground in the implementation countries caused slowdowns and issues in communicating with stakeholders. The limited government buy-in negatively affected co-financing and the sustainability of project outcomes. The GEF-5 projects mostly avoided this issue, as the projects were not global and centralized but implemented at the country level. Still, the reliance by the implementing agency on externally based consultants was viewed poorly by some in-country stakeholders, according to the Terminal Evaluations.

Sustainability of Outcomes based on post completion

28. **Mercury use continued to decline in some GEF-5 ASGM case study project areas after project completion (**

29.). Although quantitative data was scarce from project sites, there was broad stakeholder agreement that mercury use continued to decline after project completion in one project site for the Philippines GEF-5 project and in all sites for the Sin Mercurio (Ecuador/Peru) project. The reasons behind the decline varied by site. In both locations, increased awareness of the negative effects of mercury was a factor, but additionally the knowledge that some readily

available alternatives, namely cyanide, provided improved efficiency in extracting gold was key. In the Philippines, especially, increased government enforcement was a main factor in the Diwalwal area—this was the only project site in the Philippines that saw further use reductions after project end and was the only site that had evidence of increased enforcement. In neither case did the GEF projects promote cyanide use; the GEF instead favored mostly gravitational concentration systems that involve neither chemical contaminant. However, the methods promoted by the project were not adopted widely in the Philippines, Ecuador, or Peru—it was the cyanidation process (along with flotation in Ecuadorean processing plants) that largely replaced mercury. Cyanidation was preferred because it was more readily available and is considered very efficient. Cyanide has become a contamination issue in southern Ecuador because most processing plants in the Portovelo area do not have proper tailings facilities and dumping of toxic sediments remains common (Marshall et al. 2020, Goncalves et al., 2017). It is also present in Burkina Faso and the Philippines, but there haven't been documented cases of poor cyanide management in former GEF ASGM project sites.

30. The uptake of non-mercury technologies was limited in the GMP—where even at project end many introduced techniques were not being used (Veiga and Fadina 2020). The GEF-5 West Africa regional project was partly successful. In the two areas in Burkina Faso and Senegal where the regional project installed non-mercury processing equipment, the miners noted that some of the equipment was no longer functioning and a lack of locally available spare parts and community members trained in maintenance mean immediate repair is unlikely. Therefore, the community members have returned to using mercury, although at lower levels than before the newer equipment was introduced by the project.

31. **Miners were generally satisfied with non-mercury equipment, noting increased efficiency.** Those interviewed in all project sites mostly spoke highly of the gravitational non-mercury processing equipment that was introduced via GEF projects. This positivity was not owing to improved health from stopping the use of mercury, but instead to the improved efficiency of the newer methods. The miners' main complaint with the GEF projects was that projects were short term and continued assistance was not provided—either in the form of financing or training to maintain equipment. Frustration was also felt toward government actors in most areas—feeling that not enough support was given by local and national agencies to improve efficiency and formalize.

Sustainability of formalization and policy

32. **Government attention and prioritization of mercury reduction in ASGM has increased since the Minamata Convention.** All case study countries have seen increased prioritization given to ASGM mercury reduction by national and, in some cases, regional governments. All of the countries—Burkina Faso, Senegal, Ecuador, Peru, and the Philippines—ratified the Minamata Convention near the end of or after the GEF-5 projects finished implementation. With this ratification, the attention of the issue greatly increased as the countries moved to fulfill their requirements outlined by the Convention. The presence of the GEF-5 projects helped with this prioritization. This was especially true in West Africa, where although the regional project did not achieve its stated goal of completing the ASGM NAPs in both countries during

project implementation (additional work was needed on the NAPs to comply with Convention requirements), the project proved a catalyst for completing the NAPs with additional GEF funding. Both countries were among the first globally to complete their NAPs. While global momentum around the formation of the Convention is not directly attributable directly to GEF projects, the GEF Secretariat played a significant role in the formation of the Convention.

33. GEF ASGM project efforts to formalize miners were more successful after project implementation was completed. In Peru, the Sin Mercurio project assisted miners in the formalization process during implementation, but no miners had actually completed the process at project end. However, some of these assisted miners reported having achieved formalization status after project completion and that formalization was a continuing, though slow, trend in their communities. This is broadly true in Peru, where small numbers of miners continue to formalize but the majority of miners remain unformalized, despite continued formalization efforts by the government (Smits 2020). This is largely true in the Philippines and Burkina Faso, where governments are working to formalize miners. The Philippines project had success in this area: it helped in the formation of the National Association of Small-Scale Miners, which assists in the formalization process and has grown and increased influence since the end of the project. These results clearly illustrate that formalization takes time, and sometimes cannot be achieved within a short project timeframe.

Sustainability of knowledge management and awareness raising

34. GEF ASGM projects led the global effort to raise awareness of the health impacts of mercury in ASGM. Stakeholders pointed to the importance of the GMP as one of the first global efforts to raise awareness about the negative health impacts of mercury in ASGM. The project is credited with starting this global conversation that helped spark momentum toward including ASGM in the Minamata Convention while also training thousands of artisanal miners on these health impacts.

35. Maintaining institutional memory of projects and lessons learned was a challenge. Projects in Ecuador and Peru were unable to achieve lasting institutional memory of project results in government stakeholders. Most interviewed government stakeholders involved in ongoing GEF ASGM projects in the two Latin America countries were largely unaware of the Sin Mercurio project, were vaguely aware but uncertain what the project achieved, or did not have any data generated by the project (including monitoring results). This lack of institutional memory within the government institutions has been exacerbated by frequent staff turnover in the mining and environmental ministries that most often deal with GEF ASGM projects. However, the continued support of the GEF and other donors in the ASGM sector in both countries has helped provide continuity, because the same experts tend to be rehired by different project teams even if they do not stay inside the government.

Monitoring of mercury in the environment and human health

36. Long term monitoring of environmental and human health in GEF-5 ASGM projects after completion was limited. In both Latin America and the Philippines, where the projects performed bio-monitoring (Ecuador and Peru) and hair and blood testing (Philippines), the

monitoring efforts have not been sustained after project completion. This finding is not unique to the GEF ASGM projects. In Ecuador and Peru, several peer-reviewed academic studies were produced by the University of British Columbia (UBC) during the Sin Mercurio project as part of project monitoring; these studies linked gold processing in the upper Puyango-Tumbes river basin in Ecuador with mercury and cyanide contamination in the lower basin in Peru. Evidence on continued monitoring was limited despite capacity building efforts during the project. The Peruvian National Water Authority does in-stream water testing, which is useful for some heavy metals related to mining but not for mercury, which is more effectively tested in sediments or vertebrates (neither of which is done by the Peruvian National Water Authority). Monitoring of mercury in sediments does not appear to be done by the Ecuadorean project counterpart (the Institute of Geological and Energy Investigation). The project monitoring results by UBC created some conflict during the project because the Institute claimed it was not properly informed of monitoring results performed by the project before the results were presented publicly, leading to strained communications between the project team and its main Ecuadorean counterpart. This could be one reason for the lack of sustainability in monitoring of the program. In the Philippines, the human health monitoring was done by the Philippines Department of Health at two points during the project, but no evidence of follow-up after project completion was found. This lack of long-term monitoring makes it difficult to understand the environmental and human health impacts of measures to reduce mercury use.

Broader adoption and transformational change

37. Broader adoption has been achieved to some extent through replication in formalization and introduction of non-mercury technologies. Evidence of replication of non-mercury technologies was found in a few areas near to project areas in the Philippines and Burkina Faso. In Philippines, non-mercury techniques spread as some trained miners migrated to other regions. In Burkina Faso, it is possible that a neighboring village to the village where the non-mercury equipment was installed was inspired to purchase equipment of its own, but members of this neighboring village could not be reached for interview to verify this. Additionally, formalization has continued to spread in all case study countries. However, mercury use is still widespread in these countries and formalization processes have not reached a point where most ASG miners have secure rights and access to finance.

Table 3. Current status of major outcomes from GEF ASGM GEF-5 case study projects

Case study	Outcome	Current status	Trend
Mercury reductions			
Philippines	Installation of non-mercury technology	Miners reported continued lowering of mercury use since project completion in some project areas but no improvement in others.	Improved/ Sustained
West Africa	Non-mercury processing equipment installed and in use in one site in Burkina Faso and one in Senegal.	Only some parts of the equipment still being used because of lack of maintenance training and spare parts. Miners have thus returned to	Not sustained

		mercury use for some processing steps.	
Latin America	Estimated 40% reduction in mercury use in project area.	Stakeholders report continued mercury reduction since end of project.	Improved
Formalization/policy			
Philippines	National Association of Small-Scale Miners (NCSSMI) established	NCSSMI still operational and has grown in size, assisting formalization of miners.	Sustained
West Africa	Guidance and recommendations for NAPs written in Burkina Faso and Senegal (didn't achieve original project goal).	NAPs were completed in both countries with additional GEF funding to comply with Convention guidance.	Improved
Latin America	Peruvian and Ecuadorian governments endorsed policy to reduce mercury use, although Ecuador banned mercury in ASGM altogether.	Both countries signed Minamata Convention and have developed NAPs to reduce mercury in ASGM.	Sustained
Latin America	Miners in Peru were supported in formalization process but had not yet achieved full formalization.	Some miners have now achieved formalization and more continue in the process in the project area.	Improved
Monitoring			
Philippines	Lowered mercury levels in hair and blood of miners.	No continued biomonitoring after project completion.	Unable to assess
Latin America	Water and sediment monitoring performed during project in international watershed.	Water monitoring done in Peru but no evidence of sediment/bio monitoring which is more indicative of mercury contamination.	Not sustained
Knowledge management/awareness raising			
Latin America	Project results presented to stakeholders in Peru and Ecuador workshops.	Stakeholders report not having heard of project or not knowing its results, especially within government.	Not sustained

A formative review of the GOLD program and other ongoing GEF ASGM projects

Learning from previous interventions

38. The GOLD program projects have responded to the lessons learned from completed projects, addressing most of those projects' limitations (Table 4). The focus of GOLD on access to financing is identified as a common constraint throughout GEF ASGM project Terminal Evaluations in previous projects. This shows that GOLD is responding to the finding that non-mercury technologies often require a significant up-front investment and miners, because their mining is informal, cannot often access traditional lenders such as commercial banks. GOLD has also learned lessons on introduction of non-mercury technology: to emphasize the improved efficiency of non-mercury technology, which miners have proven to respond to more readily

than to emphasis on the health benefits of the alternate technologies. An additional unique component of GOLD that responds to lessons from previous interventions is the inclusion of a global knowledge management learning mechanism via the global hub project (GEF ID 9697). This project should help address the shortcomings on sharing knowledge and lessons within and between countries. Multiple Terminal Evaluations from the GEF-5 MSPs, including the Ecuador/Peru and Philippines projects, noted that project monitoring results were not shared with local communities, and other reports have noted the need to share lessons across countries to avoid repeating mistakes (IGF 2017).

Table 4. Lessons learned from TEs of previous projects and stakeholders and the extent to which these are addressed in the GOLD program

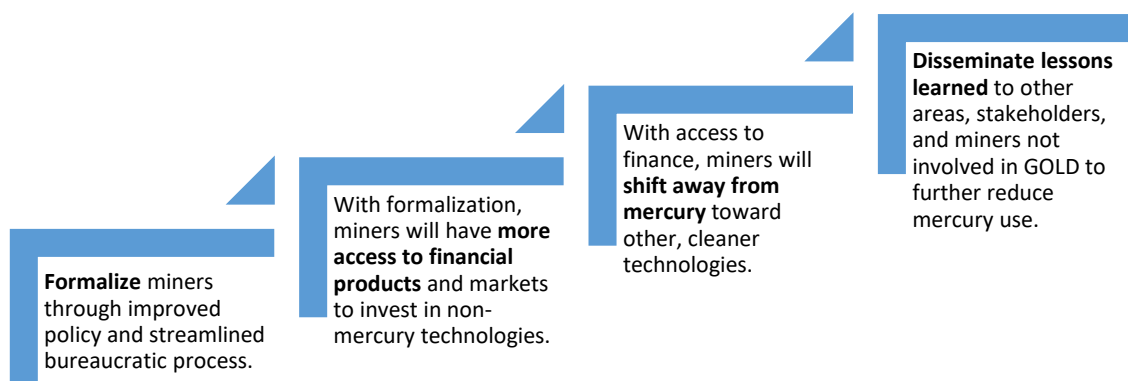
Lesson Learned from previous interventions and stakeholders	Incorporation into GOLD projects
Financing	
Financial mechanisms and access to financing are critical to facilitate miners' access to and use of non-mercury technologies	The largest component of GOLD projects is investment in financial mechanisms.
Local gold buyers should be included in supply chain activities because they are critical to miners' access to markets; legal gold buyers should be encouraged to purchase gold closer to mining areas.	Some projects enhance state buyers, but often local buyers are cut out of the supply chain to facilitate better access to markets for miners. Other local actors are included in projects, such as equipment manufacturers, ore assaying labs, local technical schools, etc.
Technical	
Hands-on practical field training (especially training-of-trainers) of non-mercury technologies is more sustainable and effective than lecture-style theory training and should be done long-term	Demonstration sites are included in almost all GOLD projects and they are hands-on processing plants in most cases. It is difficult to judge, in a formative manner, the quality of these trainings however.
Emphasizing the improved gold recovery/efficiency of non-mercury technologies encourages their use by miners more than emphasizing the negative health consequences of mercury.	The program recognizes that non-mercury technologies must be efficient and economically feasible. However, it will be difficult to address the issue that individual miners may not want to use non-mercury technologies.
Policy/Laws	
Projects should go beyond just technology transfer and encourage formalization of miners. This should include resolving issues around land tenure and mining rights and permits.	Formalization is an aspect of all projects in the program. Mining rights/permitting is included as an aspect in some projects, and land tenure issues are expected to be addressed by the governments.
Knowledge Management	
Regional and global knowledge sharing among or within projects enhances scaling-up of best practices and learning from failures.	One of the hub project's activities is global knowledge sharing and awareness raising. This design should encourage filling of a major gap in the sector which is documenting lessons learned and creating public data.

Knowledge of completed projects is difficult to maintain over time. This can be mitigated by keeping GEF Focal Points informed and involved, involving multiple government agencies and using Implementing Agencies/partners with a permanent presence in the country	Project documents point to involvement with several government agencies, and many focal points appear to be knowledgeable of the projects. However, government staff turnover is difficult to control—the planetGOLD knowledge platform will need to have updated project information to help address this issue.
Governments and communities should be informed of monitoring and scientific findings before presenting at public forums to ensure stakeholder buy-in of results.	Projects mostly do not include water or air monitoring awareness campaigns, therefore there are no findings to report to stakeholders.
Project design	
Stakeholder consultation, especially with communities, governments, and local organizations, is critical early in design to improve buy-in and sustainability.	Stakeholder consultation is now built into GEF project preparation policy and project documents list a large range of stakeholders consulted.
ASGM projects can have more impact and increase sustainability by addressing social and environmental issues, beyond just introduction of non-mercury technology.	GOLD projects are more holistic than previous GEF ASGM interventions and address formalization and financing. However, land degradation and many social issues are not addressed in most projects, other than following safeguards policies in specific demonstration sites erected through project activities.
Use of international consultants and project management can be inefficient and lead to disconnect between decisions and situations in the field	Use of local providers is a priority for many projects which should lead to improved sustainability. However, there are few local, non-government entities that are included as executing agencies.

Relevance of the GOLD program

39. The GOLD program has a clear theory of change to achieve its one global environmental benefit: the reduction in mercury use from ASGM. The program contains four main components: introduction of more efficient, non-mercury technologies, strengthening of ASGM policies and regulations, promotion of investment options and direct market access for miners, and knowledge management/communications. The four components can be seen to fit together using a simplified theory of change shown in Figure 8. As shown in previous projects, miners often have difficulty in purchasing expensive non-mercury technologies even if they are aware of the decrease in negative health impacts and the improved efficiency of these technologies. In other sectors, such a barrier could be overcome by financing through loans or investment. However, traditional lenders are very skeptical of ASG miners because they often do not have land titles or legal mineral rights to use as collateral and in some cases are operating illegally because of various government restrictions on mercury or land use. Consequently, the first step toward financial inclusion needs to be formalization of the miners so that financial entities are more willing to engage them. GOLD is working in all of these steps.

Figure 8. Simplified theory of change for the GOLD program to reduce mercury use from the ASGM sector



40. **The GOLD program has a major focus on improving access to financing for miners.** The largest component of the GOLD program is improving access to financing for miners (38 percent of the overall program budget), a theme that was almost nonexistent in earlier projects (**Error! Reference source not found.** and Figure 7). Components on non-mercury technology demonstration (31 percent of budget), knowledge management (14 percent), and improving policy and the formalization process (13 percent) are also key components. Even though formalization policy is one of the smaller components of GOLD, it still represents a higher proportion of the program’s overall budget than of the completed projects’ budgets. The GOLD program is also much larger than previous interventions, allowing it to plan for multiple components; whereas the older MSPs were more narrowly focused on introducing non-mercury technologies, awareness raising, and, in some cases, formalization.

41. **The GOLD program’s components generally align with good practices in the sector; transformational change cannot be assured due to the difficult dynamics of working in the sector.** Almost all ASGM sector experts interviewed agreed that formalization/policy, introduction of non-mercury technology, and access to finance were appropriate and pertinent topics for a global program focused on mercury reduction in ASGM. However, notwithstanding the GOLD program’s good intentions, stakeholders interviewed expressed some doubt that the program would be able to succeed on some of these fronts where previous interventions have failed to cause a transformational change, particularly in the areas of introducing non-mercury technologies and improving policy for ASG miner formalization. This is not necessarily due to a failure of design by GOLD but rather due to difficulties in working in this sector where not many ready solutions exist that could be picked up by the program and cause systematic change in the time period of the child projects’ implementation.

42. Formalization of ASGM has been tried many times by governments with support from international organizations, but such efforts have failed to lead to a large portion of ASG miners becoming formalized, except in Guyana, where ASGM has been widely legal for many years (Marshall and Veiga 2017). Governments have largely designed mining policy around large-scale mining, which brings in more revenue and, with fewer actors, is easier to regulate, while often

ignoring ASGM in what is known as the “large-scale bias” (Hirons 2020). In many cases governments see little reason to invest further resources in ASGM when its potential to create revenue is small compared to the amount of resources that would be required to adequately engage a rural and dispersed sector. Instead, they often focus on enforcement, which creates animosity. On the flip side, miners see little reason to formalize if the only result will be paying taxes. Given these inherent challenges to formalization, experts note that the issue is difficult to address. However, the GOLD program has chosen to work only in countries where formalization is already in an advanced state compared to most ASGM countries, which is why formalization is not one of the larger components of the program. The Project Identification Form for the GOLD+ program shows that the upcoming program will feature formalization more prominently in its activities.

43. Introduction of non-mercury technologies has been tried in several ASGM projects historically with limited success, but rarely along with the access to financing and knowledge management components that the GOLD program includes. However, there is evidence (see Sustainability section) that the GEF-5 MSPs, along with a global focus on the issue of mercury use with the adoption of the Minamata Convention, have led to a reduction in mercury use in some local areas. However, globally ASGM mercury use is probably rising and needs to be addressed (AMAP/UNEP 2019).

44. **Of all the components, stakeholders most often identified the access to financing component as the most innovative component of the program.** Although many aspects of financing have been tried in previous GEF and non-GEF interventions with some successes (Perks 2016), there does not seem to be clarity as to which financial mechanism works best in ASGM. It is therefore fitting that the GEF, known for new and innovative approaches, uses the GOLD program to test several financial models. The projects are approaching the financial component in different ways, from revolving funds run by government entities (Burkina Faso) to approaching local banks (most UNDP-led projects) and creating national brands of responsibly sourced gold to entice premiums from buyers (Guyana). The global knowledge management project included in the program will disseminate lessons on these financial approaches from all projects, providing future projects (such as GOLD+) with evidence on the key ingredients to a successful financial mechanism for the ASGM sector.

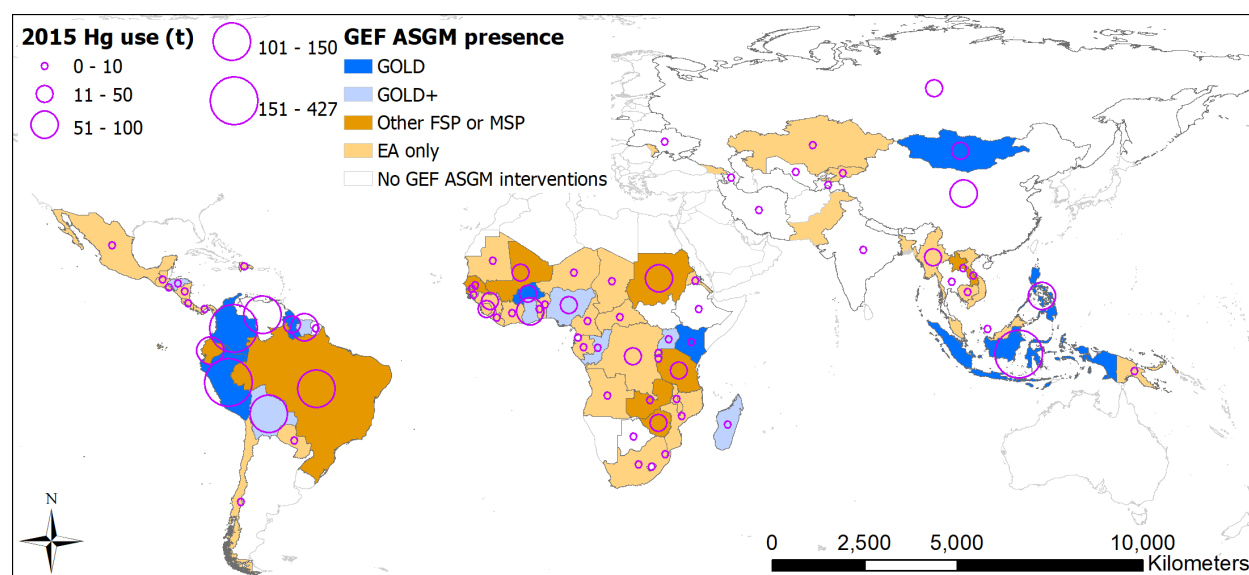
Selection of countries, subnational areas, and Agencies

45. **The GOLD program is working in many of the countries with the highest ASGM mercury use.** The GOLD program covers the top three ASGM mercury users according to AMAP/UNEP (2019) and GOLD and GOLD+ collectively cover 11 of the top 20 users (Figure 9 and Table 5). This shows good coverage of many of the major users. Most of the remaining top users are not currently eligible for GEF funding through planetGOLD based on their status with the Minamata Convention. When the GOLD program was formed, the Convention had not yet entered into force, so it was possible to include high mercury use countries that had signed the Convention but had not yet ratified it, such as Burkina Faso. For GOLD+, countries must have ratified and also notified the Convention that they have a “more than insignificant” amount of mercury use linked to ASGM. Given these stipulations, the only countries in the top 20 mercury users that

could be funded by GEF but are not currently are Brazil, Tanzania (which ratified the Convention very recently in 2020) and Guinea (Table 6). More countries continue to become involved in the Convention, so opportunities to work in new countries could become available in the future. Until the other major users sign on to the Convention, the ability of GEF to program within the highest-use countries will be limited.

46. There are other countries included in planetGOLD that have low mercury use such as Kenya (GOLD), Madagascar, and Republic of Congo (GOLD+). However, Madagascar's NAP estimates ASGM mercury use to be between 18.4-43.9 tons per year (Madagascar Ministry of Environment, Ecology and Forests ,2018), much higher than AMAP/UNEP (2019). According to the GEF Secretariat, the GOLD+ program intentionally includes low users as well given that some of these countries, although small, have significant ASGM sectors.

Figure 9. Map showing both 2015 mercury use and presence of GEF ASGM interventions at the country level



Source: AMAP/UNEP, 2019.

Table 5. Top ASGM mercury using countries and their inclusion in GOLD or GOLD+ programs (known collectively as planetGOLD)

2015 ASGM Hg use rank	Country	2015 Hg use (t)	GEF planetGOLD presence
1	Indonesia	427	GOLD
2	Peru	327	GOLD
3	Colombia	175	GOLD
4	Bolivia	120	GOLD+
5	Brazil	105	
6	Venezuela	102	
7	China	100	
8	Ecuador	85	GOLD "sister" project
9	Sudan	83	
10	Philippines	70	GOLD

11	Suriname	63	GOLD+
12	Ghana	55	GOLD+
13	Burkina Faso	35.1	GOLD
14	Tanzania	35	
15	Zimbabwe	25	
16	Nigeria	20	GOLD+
17	Guinea	19.1	
18	Democratic Republic of the Congo	15	
19	Guyana	15	GOLD
20	Myanmar	15	
Other planetGOLD countries			
	Mongolia	11.5	GOLD
	Honduras	5	GOLD+
	Uganda	4	GOLD+
	Kenya	3.5	GOLD
	Madagascar	1.5	GOLD+
	Republic of Congo	1.5	GOLD+

Source: AMAP/UNEP, 2019.

47. In addition to Convention status and being a major mercury user, the main selection criteria for the GOLD program were:

- (a) Government interest in receiving GEF funding for an ASGM project
- (b) Government commitment to the process of formalizing ASG miners
- (c) An equal global geographical distribution among the three main ASGM regions (Africa, Latin America, and Southeast Asia)

Table 6. Minamata Convention status and legality of mercury in ASGM for planetGOLD and select other countries

Country	GOLD/ GOLD+	Rank in Hg use in ASGM	Minamata Convention Status	Date	Policy on Mercury Use in ASGM						Policy response to the Minamata Convention	Source:	
					Hg is not regulated	Hg is illegal in ASGM	Mercury is legal but with restrictions						
							Allowed and regulated in some regions	Safe handling	Use of retort	Mechanism to monitor distribution and sale			License is required
Indonesia	GOLD	1	Ratified+	09/22/ 2017		✓						✓	Puluhulawa & Harun, 2019
Peru	GOLD	2	Ratified+	01/21/ 2016						✓			Smith, 2019
Colombia	GOLD	3	Ratified+	08/26/ 2019		✓						✓	Echevarria, 2014
Philippines	GOLD	10	Ratified+	07/08/ 2020		✓							Executive Order 79, s. 2012
Burkina Faso	GOLD	13	Ratified+	04/10/ 2017		✓							UNIDO, 2018
Guyana	GOLD	19	Ratified+	09/24/ 2014				✓	✓				MIA Report, 2016

Mongolia	GOLD	not in Top 20	Ratified+	09/29/2015		✓							CEO Endorsement Document
Ecuador	GOLD "sister"	8	Ratified+	07/29/2016		✓						✓	Gonçalves et al., 2017
Bolivia	GOLD+	4	Ratified+	01/26/2016					✓				IUCN, 2020
Suriname	GOLD+	11	Accession+	08/02/2018	✓								MIA Report, 2020
Ghana	GOLD+	12	Ratified	03/23/2017							✓		UNIDO, 2018
Nigeria	GOLD+	16	Ratified	01/02/2018	✓								UNIDO, 2018
Brazil		5	Ratified+	08/08/2017					✓		✓		UNEP, 2014
Venezuela		6	Signed	10/10/2013	✓								Rosales, 2019
China		7	Ratified	08/31/2016		ASGM is illegal							Telmer & Veiga, 2013
Sudan		9	Signed	09/24/2014		✓							Radio Dabanga, 2019

Note: The "+" symbol in this table signifies that the country has notified the Convention that it has a "more than insignificant" amount of mercury use in ASGM.

48. The necessity to have political buy-in for an ASGM formalization process was also a key indicator for GOLD to allow the program to test the hypothesis that financial inclusion is a major missing piece to improving the uptake of non-mercury technologies by ASG miners. As shown in Figure 8, the hypothesis is that formalization is key to financial inclusion. To test this hypothesis, it was necessary to work in countries where formalization was at least already partially in place. This criterion was dropped for GOLD+, which plans to address formalization to a greater extent than GOLD. Five out of eight GOLD countries have policies that prohibit the use of mercury in ASGM. In the remaining three countries, Indonesia, Peru, and Guyana, mercury use is legal but with restrictions. None of the GOLD+ countries have a complete ban on mercury use. In fact, it is not regulated in Suriname and Nigeria. In Bolivia and Ghana, its use is legal but with restrictions. The countries that do not have an absolute ban on mercury regulate its use through various approaches. For instance, in Peru, there are policies controlling its trade and distribution, but these policies are applied nationwide. Other regulations on mercury use include acquiring a permit from government agencies and using it under safety procedures such as requiring the use of retorts.

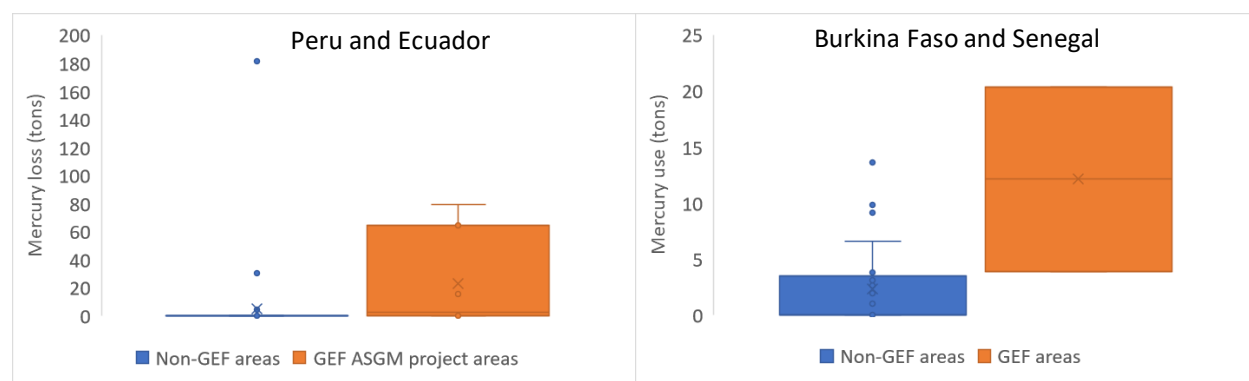
49. **In case study countries with data available (Burkina Faso, Senegal, Ecuador, and Peru), GOLD projects are also generally located in areas with high mercury use—exceptions are mostly in areas with high security risks.** According to diagnostic studies in the NAPs from Burkina Faso and Senegal, GEF ASGM projects have worked in the top mercury-using subnational areas in the two countries—Sud-Ouest in Burkina Faso and Kedougou in Senegal (Figure 10 and Figure 11). Burkina Faso has much higher mercury use, and the use is somewhat spread about the country. The Burkina Faso GOLD project (GEF ID 9718) is currently planning to work only in Sud-Ouest (where the GEF-5 regional project also worked) partially because of security concerns in the Centre-Nord province where they had originally planned to work and which also has the second-highest amount of ASGM mercury use in the country.

50. In Peru, while the GOLD project is not working in the region with the highest mercury loss, Madre de Dios, it is working in the regions with the second and third highest loss, Arequipa and Puno (Peru Ministry of Environment 2018).¹ Piura is a project area, but it was not included in the draft Peru NAP as one of the top subnational regions with the most mercury losses. However, the project design documents note that Piura has a high proximity of mining sites near residences, causing high mercury exposure. Depending on the stakeholder, several reasons were given for the exclusion of Madre de Dios from the project, including high security risk in the region, lack of subnational government support, the presence of other major donors in the area (especially the United States Agency for International Development [USAID]) and the existence of another GEF ASGM project proposal in the region during the time of the formation of the GOLD project.²

51. In Ecuador, the chemicals management project is working in Zamora Chinchipe which has by far the highest estimated mercury losses to the environment from ASGM according to the draft Ecuador NAP (Ecuador Ministry of Environment 2020). One area that the GEF could target in the future for ASGM projects would be the northern regions of Imbabura and Esmeraldas, where the GEF has never done ASGM projects. According to Ecuadorian stakeholders, ASGM has a longer history in southern Ecuador but has in recent years started to become more common in the north. This could be an opportunity for the GEF to ensure better, non- or low-mercury technologies are introduced quickly, before mercury use becomes entrenched. The knowledge dissemination aspects of the current Ecuador project and the GOLD program should assist in this if they achieve broader adoption and replication throughout the country.

52. No subnational ASGM mercury use data were available for the Philippines, because they do not yet have an ASGM NAP associated with the Minamata Convention.

Figure 10. ASGM mercury losses and use in subnational areas in case study countries where GEF ASGM projects work and areas where they do not work

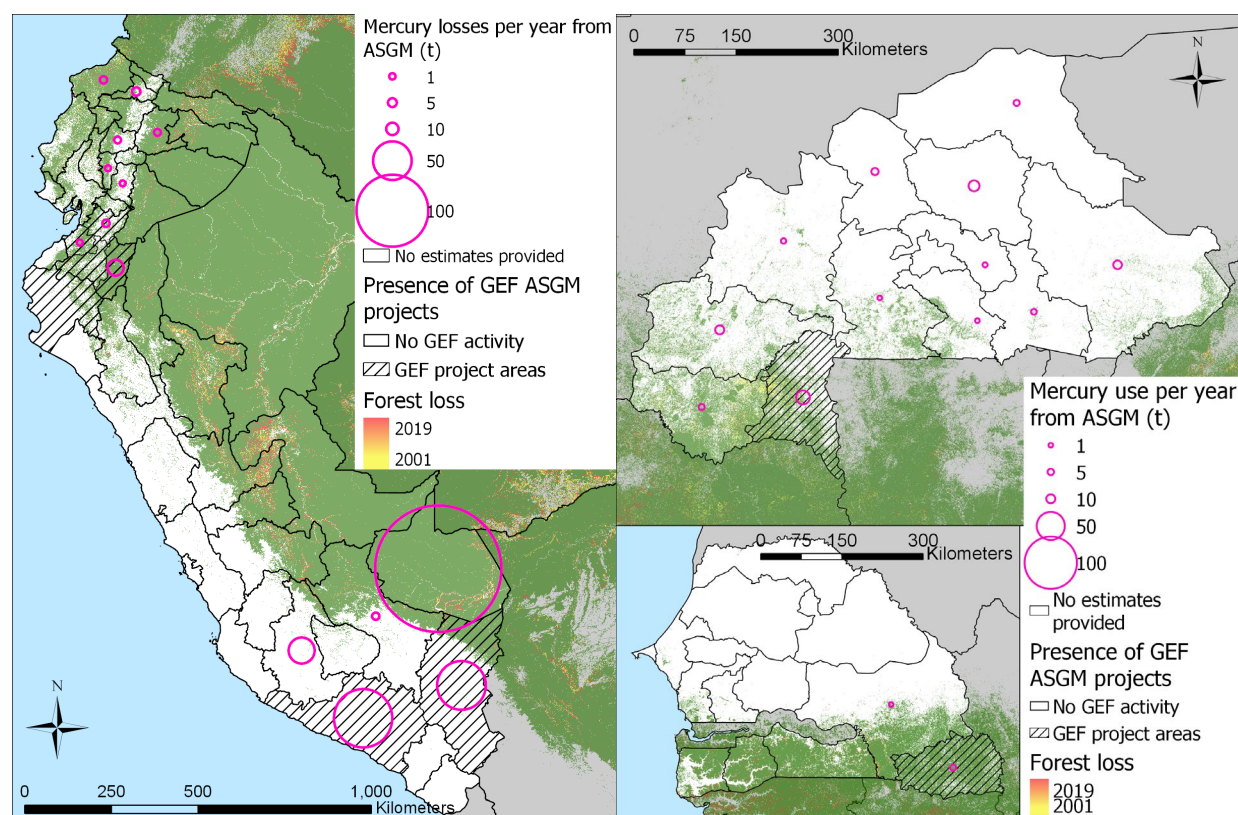


¹ The Peru Ministry of Environment considers the mercury loss estimate at the national level from this report to be preliminary and instead uses the much lower figure from UNEP (2017).

² This project was subsequently dropped.

Sources: Mercury use data are from the diagnostic reports for each country's ASGM NAP (Burkina Faso Ministry of Environment and Economy 2020, Government of Senegal 2019, Ecuador Ministry of Environment 2020, Peru Ministry of Environment 2018). The African countries' NAPs report mercury use while the South American countries' NAPs report mercury losses.

Figure 11. ASGM mercury losses and use and forest loss in Latin America and West Africa case study countries



Source: Hansen et al. 2013.

53. Agency selection for the GOLD program has been inclusive and mostly limited to existing members of the Global Mercury Partnership. The first attempt at forming the GOLD program occurred in 2016 with the World Bank as the lead. However, the Program Framework Document submitted by the World Bank was rejected. Stakeholders suggested this rejection was due to a lack of inclusivity of other Agencies by the World Bank team and an approach too focused on the World Bank's area of expertise—formalization. The next (and successful) attempt was led by UNEP, and the World Bank is not participating in GOLD (although it is leading a parallel program, EHPMP). UNEP was the ASGM co-lead of the Global Mercury Partnership, a multilateral entity that formed after the GMP which carried the figurative international baton for mercury reductions for many years before the formation of the Minamata Convention. The main Agencies involved in GOLD—UNEP, UNIDO, and UNDP, along with the National Resources Defense Council (the other ASGM co-lead and the executing agency of the GOLD global hub project)—are all part of the Partnership and were used to working together on ASGM issues prior to GOLD. This helped create a very good working relationship between the Agencies and led to an inclusive process of forming the Program Framework Document.

54. **Selection of Agencies for each country project has mostly been driven by Agency relationships with country governments.** Governments selected Agencies that they were most comfortable with in many cases, while in others the Agencies reached out to establish relationships with the governments. The only new Agency brought into the GOLD program was Conservation International, which is leading the Guyana GOLD project. According to the GEF Secretariat and multiple Agencies involved in GOLD, the inclusion of CI has been very positive for the program, because the Guyana project has been a particularly efficient project. The GEF Secretariat selected Conservation International to be the lead Agency for the GOLD+ program.

55. **There are two main types of Executing Agency arrangements within the country child projects, which rely on Agency country offices or internationally based executing agencies.** UNEP and UNIDO child projects use the modality of having a distinct executing agency, which in both Philippines/Mongolia and Burkina Faso is the Artisanal Gold Council (AGC). AGC does not have offices based in these countries, so they hired project implementation teams to carry out on-the-ground implementation while project managers at AGC headquarters in Canada provide oversight. AGC, which implemented the GEF-5 West Africa regional project as well, has been a trusted partner of the UN Agencies for some time and is one of few entities with global ASGM expertise.

56. For the UNDP and Conservation International projects, the country offices of the Agencies essentially execute concurrently with government ministries in the respective countries. UNDP uses a form of their national implementation modality in which UNDP holds and distributes the project funds but does not allocate or disburse without the consent of the governments. Project teams are embedded in host country ministries. This could potentially violate GEF policy of having a distinct division between the implementing and executing Agencies, given UNDP's strong role in executing these projects. However, the GEF does provide exceptions to their policy if executing agencies are unable to carry out certain roles. While some stakeholders believe, especially in Latin America, that Agencies provide continuity and logistical and technical expertise when government staff are constantly changing, other stakeholders feel that the GEF should work more closely with national and local entities (other than government) to build local capacity in ASGM and improve in-country ownership of projects. Working with more civil society organizations is a key component of the GEF-6 Chemicals and Waste strategy, and neither of the two dominant modalities in GOLD include civil society organizations in the executing agency role. However, many projects plan to involve civil society organizations through partnerships during implementation.

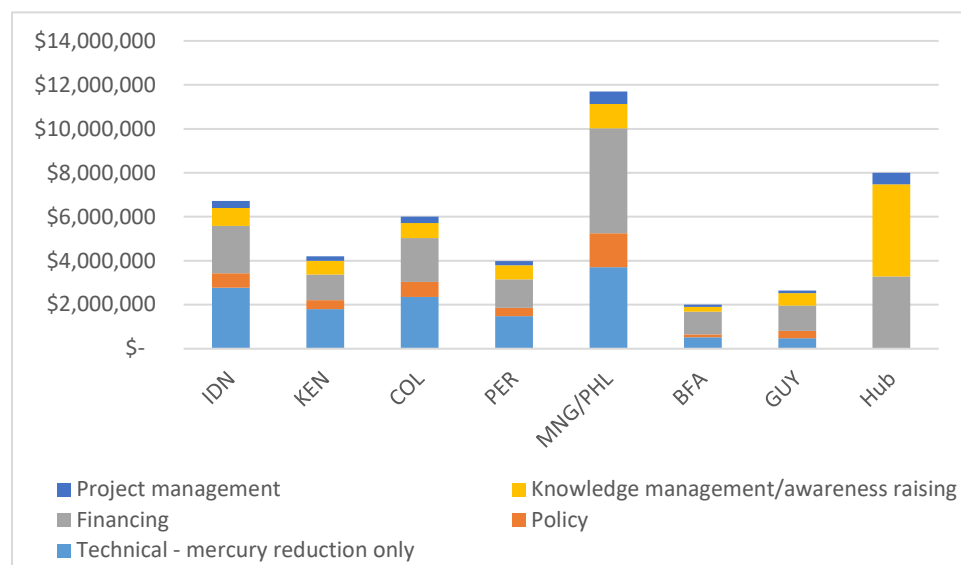
Response to country context

57. **GOLD projects all include the same major project components with differences in specific activities between projects implemented by different agencies.** All GOLD projects contain aspects of the four major program components: access to finance, policy/formalization of ASGM, introduction of non-mercury technologies, and knowledge management. The amount of funding for each project and each component varies however, with the strongest similarities being between projects implemented by the same Agencies (For the four UNDP projects (Colombia—GEF ID 9709, Indonesia—GEF ID 9707, Kenya—GEF ID 9708, and Peru—GEF ID

9710), the non-mercury technology component is the largest, taking up between 37 percent and 43 percent of the GEF Trust Fund financing, the next highest being access to finance at 29–33 percent. For the UNIDO-implemented Burkina Faso and UNEP/UNIDO implemented Philippines/Mongolia projects, finance is by far the largest at 51 percent and 41 percent respectively, and this is also true to a lesser extent for the Guyana project at 43 percent. The UNEP- and UNIDO-implemented projects in Mongolia/Philippines and Burkina Faso have the lowest percentage allocated to knowledge management and awareness raising (9-11 percent) while the global hub project, which is also UNEP-implemented, has the highest (53 percent).

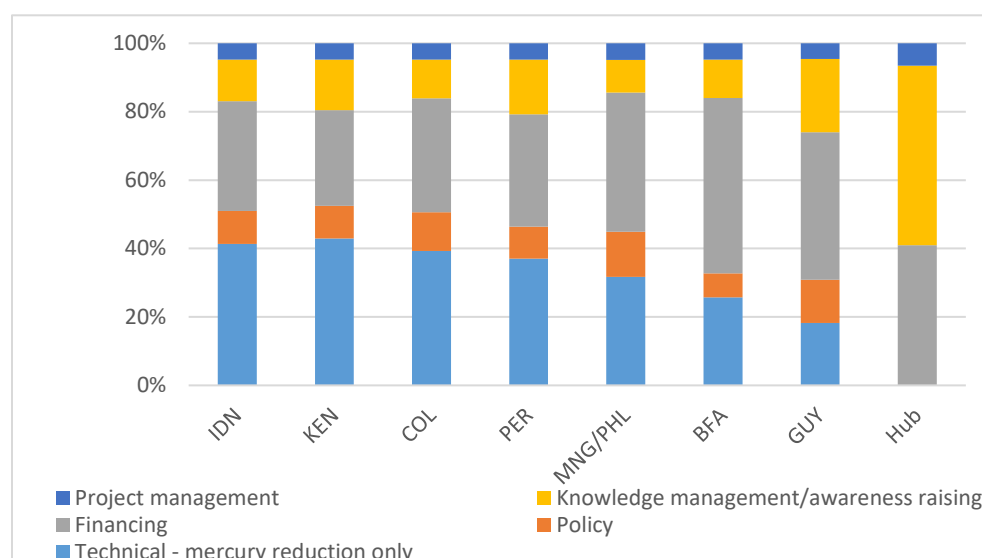
58. and Figure 13). For the four UNDP projects (Colombia—GEF ID 9709, Indonesia—GEF ID 9707, Kenya—GEF ID 9708, and Peru—GEF ID 9710), the non-mercury technology component is the largest, taking up between 37 percent and 43 percent of the GEF Trust Fund financing, the next highest being access to finance at 29–33 percent. For the UNIDO-implemented Burkina Faso and UNEP/UNIDO implemented Philippines/Mongolia projects, finance is by far the largest at 51 percent and 41 percent respectively, and this is also true to a lesser extent for the Guyana project at 43 percent. The UNEP- and UNIDO-implemented projects in Mongolia/Philippines and Burkina Faso have the lowest percentage allocated to knowledge management and awareness raising (9-11 percent) while the global hub project, which is also UNEP-implemented, has the highest (53 percent).

Figure 12. Amount of GEF Trust Fund funding in each GOLD project for each major component



Note: IDN – Indonesia; KEN = Kenya; COL = Columbia; PER = Peru; MNG = Mongolia; PHL = Philippines; BFA = Burkina Faso; Guy = Guyana; Hub = Global Hub

Figure 13. Relative amount of GEF Trust Fund funding in each GOLD project for each major component



Note: IDN – Indonesia; KEN = Kenya; COL = Columbia; PER = Peru; MNG = Mongolia; PHL = Philippines; BFA = Burkina Faso; Guy = Guyana; Hub = Global Hub

59. Within the four major components, the Guyana project stands out for its uniqueness. First, it is built around a “landscape approach” that includes elements of reducing deforestation and management of natural resources in a way that no other GOLD project does (see Impact section for more details). Second, its access to financing component is focused on building a national brand of Guyana gold and building both a domestic and an international market for that gold. No other project will attempt to create a national brand. These variations are likely owing to the fact that Conservation International, the implementer of the Guyana project, is a relative “outsider” in the program because it is not involved in the Global Mercury Partnership and because of its long history of implementing projects in Guyana, giving it a much more country focus. The project will be connected closely with another Conservation International implemented forestry-focused project in Guyana funded by the Norwegian Agency for Development Cooperation.

60. On the other hand, the four UNDP-implemented projects stand out for their similarities. The four ProDocs are written in the same manner, using the same text to describe the components and some activities. They are all very much based on the Ecuador sister project as well. This can have its advantages in that the projects can more easily compare successes and failures, but could potentially ignore country specific characteristics. However, project teams generally agree that their projects were designed with sufficient flexibility to account for country context while maintaining the four major components that are critical to ASGM globally.

Interventions designed along the gold supply chain

61. **GEF GOLD and other ASGM interventions are focused primarily on the upstream portions of the gold supply chain, but the GOLD program is beginning to involve some**

downstream stakeholders. The gold supply chain begins with miners who remove gold-bearing ore or alluvial deposits from the surrounding land and extract the gold from that ore. Because mercury is primarily used to separate the gold from the ore, and mercury is the main focus of GEF ASGM interventions, this step in the supply chain is where the GEF has focused and continues to focus most of its attention (Table 7). The introduction of non-mercury technology and the awareness-raising pieces which have historically dominated GEF interventions and still play a big role in the GOLD program focus on the miners and their communities. The policy and formalization component is also mostly focused on miners, albeit indirectly by involving the government, a major supporting actor.

62. The newer component, access to financing, is where the GOLD program is starting to involve other pieces of the supply chain. One of the main financing strategies used in GOLD is to shorten the supply chain, effectively eliminating the local gold buyers and potentially some other intermediary players so that more of the profit can be given to miners and buyers have a better understanding of the origin of their gold, allowing for a more transparent supply chain. The UNIDO implemented projects, Burkina Faso and Mongolia/Philippines, have partnered with the Swiss refiner Argor-Heraeus while some European jewelers are members of the hub project's Programme Advisory Group. The hub project actively looks for downstream buyer contacts that it can pair with child projects to encourage financing and purchase of gold from project-supported processing plants. One example of this connection-making is in Ecuador, where the GOLD sister project is in discussions with two refiners who would like to invest in project-supported processing plants and purchase gold from them.

Table 7. Steps in the gold supply chain and GOLD's planned activities in each

Supply chain step	Description	Major issues	Risk of mercury use and emissions	Planned GOLD Interventions
Mining of gold-bearing ore or alluvial deposits.	Gold-bearing ore is removed from hard rock or alluvial deposits are collected from waterbodies such as rivers. The ore or alluvial deposits collected are transported to a processing site for extraction.	• Land degradation: deforestation, destruction of agricultural land • Water pollution: sediments and heavy metals exposed to surface water and aquifers. • Dangerous working conditions: often miners are working underground and in pits with minimal safety gear. • Child labor is used in many mining sites. • Land conflict with large-scale mining companies	Mercury is not used in large quantities at this step.	Some GOLD projects have planned a geological assessment of the potential area for intervention. Very few include activities related to forest loss. Most avoided deforestation or water quality activities are only in the context of environmental impact assessments for project-constructed processing plants.
Extraction of gold from the hard	Ore is crushed and milled, and deposits are sluiced and	• Mercury and cyanide pollution: exposure to humans and aquatic life through burning and use near water bodies.	This step has a large portion of the mercury use	GOLD's objective is to reduce mercury use and associated co-benefits (reduced water pollution,

rock or alluvial deposits	panned. Mercury amalgamation or alternative methods such as cyanidation are used to extract the gold.	• Water pollution: water is intensively used in several steps of the processing steps and polluted water returns to the stream. • Poor tailings management also causes both mercury and other exposed heavy metals (lead, etc.) to leach into waterways. • Air pollution: The crushing, milling etc. releases particulate matter into the air. This sometimes occurs in communities, putting vulnerable populations such as small children at risk. • Child labor	and emissions. Humans are exposed through inhaling mercury vapor from burning amalgam or through consuming mercury contaminate fish.	improved mining efficiency from non-mercury technology).
Gold sold to local buyer	Gold or amalgam is sold to buyers on site, middlemen, and gold shops.	• Illegal activities: Some gold buyers are involved in crime, conflict, terrorism, and money laundering activities. • Mercury emissions: gold and amalgam from ASGM mining sites can still contain 2% to 40% mercury when it is sold to a gold shop for further refining or smelting. • Financing: buyers can offer predatory loans to miners, are often involved in selling or “loaning” mercury.	Gold shops generally use less mercury intensive methods than miners. But burning in gold shops can cause contamination in communities.	Projects mostly work with formalized groups and avoid illegal groups. Some project documents mention the intention to reduce supply chain length, cutting out local buyers but providing alternative and fair financing options.
Gold sold to government or international trader	If gold is sold to a middle trader, the trader will first accumulate the gold bought before selling it in bulk to a central agency/bank or exporter or will export illegally.	• Illegal activities: Some gold buyers may be involved in crime, conflict, terrorism, and money laundering activities. • Traceability: when gold is combined from multiple sources at this stage in the supply chain, it can be difficult to track and maintain the socio-environmental rigor required by some certifications.	No impact on mercury emissions.	The GOLD financing component aims to link the miners to responsible local and international gold buyers. Certification mechanisms such as CRAFT Code and OECD Due Diligence will also be introduced to improve tracking.
Gold smelted	Gold is processed: almost all remaining	• The smelting may involve small amounts of mercury emissions.	Refineries mostly use	Some refiners are involved in the program

and refined	impurities are removed. This generally occurs at a central location within the mining country or in another country.		non-mercury processes.	through the global child project.
Gold is stored or made into final product	The refined gold is generally stored at a central bank in the mining country or sold for use in industrial production (electronics etc.) or jewelry.		No direct impact on mercury emissions.	The GOLD financing component aims to address this by linking the miners to responsible local and international gold buyers.
Supporting actors				
Governments	Both national and local governments in mining countries	• Formalization: Even if governments have policies on legalizing the sector, the formalization process is often too long and resource-intensive for miners, so only a few of them can transition from informal to formal status. • Enforcement: Governments struggle to monitor and regulate dispersed and rural ASG miners.		The GOLD formalization component aims to support government entities in implementation of laws formalizing ASGM, including providing capacity building of government staff.
Local banks and international impact investors	Private banks located in mining countries, along with international investors who seek to make a socioeconomic “impact” through financing miners.	• Financing: Local banks and investors are hesitant to finance small-scale miners because of their illegal nature.		The GOLD financing component aims to engage local banks and impact investors.

63. The GOLD program projects aim to shorten the gold supply chain to give miners a higher price for their gold, cutting out predatory local buyers. Local gold buyers are a critical part of most ASGM supply chains; they fill the gap between exporters or large buyers in large cities and ports and miners in rural areas. Their main advantage is their mobility and flexibility: they are present in mining towns making it easy for miners, who don’t often have the funds to travel long distances, to sell their gold close to the mine. They also provide both financing and supplies (including mercury) to the miners, allowing miners to take out non-monetary loans

that can then be “paid back” when the gold is sold. This links the miners to the buyers and provides an incentive for them to continue to use mercury. Gold buyers are often predatory, and that fact, along with their involvement in the sale and use of mercury make them a popular target to be eliminated by a shorter supply chain. There is evidence from at least one past non-GEF project in the Philippines that noted that the sustainability of non-mercury technologies introduced by the project was thwarted when local gold buyers refused to buy gold that wasn’t produced using mercury that they sold. Impacting the livelihood of these buyers is also a safeguards issue that is noted in several project documents. The Philippines/Mongolia project is the only one to provide a clear mitigation measure—it will create alternative livelihoods plan to mitigate the impacts. However, it is noted that some GOLD projects do appear to be interfacing with local gold buyers despite a lack of specific mention of this in project design documents. The Burkina Faso and Colombia projects are both trying to include local buyers in their financial instruments for ASG miners.

64. GEF projects do not include specific plans to involve large-scale mining companies but are exploring partnerships with major LSM stakeholders in GOLD project countries. In many of the GOLD program countries and other major ASGM countries around the world, large-scale mining (LSM) companies are a major stakeholder and, in many cases, work alongside or in competition with ASGM. LSM and ASGM have a history of conflict and mistrust, but there are some cases of collaboration and these even hold the potential to help ease the burden on the government in the formalization process (Veiga and Fadina 2020). Some experts propose, instead of focusing on formalization directly between ASG miners and governments, trying to encourage partnerships between ASG miners and LSM companies or processing plants. The argument is that LSM and processing plants can be more easily monitored and regulated by government, are more able to finance non-mercury technologies, and would benefit from having good relations with ASG miners, gaining a skilled workforce to mine areas that are considered unprofitable for large machinery. This “coexistence” between LSM and ASGM could be a more effective path to formalization than working through governments (Veiga and Fadina 2020). Other experts, however, doubt that this modality will function well, given that large-scale mine strategy and leadership can change several times over the lifetime of a mine with changes in ownership and the price of gold, making it difficult to plan in-depth cooperation with ASGM (Hilson et al. 2020). An alternative modality is to encourage an autonomous coexistence where LSM and ASGM are kept separate with minimal direct interaction. The GOLD projects plan to explore partnerships with LSM via conferences and forums and through potential methodologies for ASG miners to mine tailings from LSM. However, none mention in the design phase a specific LSM partnership, making the coexistence idea a potential partnership opportunity with a key stakeholder in the gold supply chain to be further explored.

Relevance to the GEF strategies

65. The GOLD program is very relevant to the GEF-6 Chemicals and Waste focal area strategy. The GOLD program responds directly to programs in both focal area objectives in the GEF-6 CW strategy involving the reduction of the prevalence of mercury in the environment (CW2 Program 4) and creating enabling conditions for the sound management of harmful chemicals (CW1 Program 1; Table 8). The ASGM NAP enabling activities also respond to an

additional program under CW1 which involves assisting countries in developing plans and carrying out their commitments under the Minamata Convention. The GOLD program aims to contribute 369 tons and the EHPMP program 75 tons of mercury reductions to the overall GEF-6 goal of 1,000 tons. Additionally, the GEF-6 Chemicals and Waste strategy makes several mentions of the desire for projects that address several priority chemicals, address diverse other environmental challenges across several focal areas, or address climate change resilience through multiple trust funds (including the Least Developed Country Fund and the Special Climate Change Fund). The Ecuador sister project and the EHPMP program are clear examples of a multi-chemical project which brings together components on persistent organic pollutants and e-waste in addition to mercury. This allows the interventions to address both several Chemicals and Waste priority chemicals and several international conventions while potentially producing cost savings from a management perspective.

Table 8. Ways in which the GOLD program addresses the GEF-6 Chemicals and Waste strategy

Focal Area Objective	Pertinent GEF CW strategy program	Relevance of GOLD program to the program
CW1: Develop the enabling conditions, tools, and environment to manage harmful chemicals and wastes	Program 1: Develop and demonstrate new tools and regulatory approaches along with economic approaches for managing harmful chemicals and waste in a sound manner	Large components of GOLD projects are to design and test new financial mechanisms for improving access to financing for ASG miners. The projects have smaller components that deal with ASGM regulatory policy.
CW2: Reduce the prevalence of harmful chemicals and waste and support the implementation of clean alternative technologies/substances	Program 4: Reduction of anthropogenic emissions and releases of mercury to the environment	The main goals of the GOLD projects are to reduce mercury use through demonstration and capacity building of non-mercury gold extraction techniques.

66. The GOLD program seeks to explore several avenues for engaging the private sector, responding to another goal of the GEF-6 Chemicals and Waste strategy. Building engagement with the private sector is another clear goal of the GEF-6 Chemicals and Waste strategy. The GOLD projects hope to involve the private sector in multiple ways. The most obvious is through beneficiaries—miners are in many cases private sector micro or small enterprises, some of which will benefit through training or become recipients of grants. The second is through partnerships or sustainability. Several projects (especially UNDP-funded projects) note that they will attempt to develop partnerships with equipment suppliers and manufacturers, service providers, and consulting companies that assist in the transition to non-mercury technologies and processing plants. Ownership of the demonstration plants some projects plan to construct could potentially be transferred to local companies (after project completion), though state entities or universities could also take over ownership. The third could be through the financial mechanisms the projects create if the financial entities included are private banks or other investors. However, the only financial mechanism established to date is through a national, government-run bank in Ecuador. The projects also potentially benefit from connections with

private entities further downstream in the gold supply chain via connections built through the global hub project.

Coherence of the GOLD program

Coherence within the GOLD program

67. **The GOLD global hub project is encouraging collaboration among projects to develop a cohesive program that is more than the sum of its parts.** The hub project, as designed, performs several functions, one of which is to develop collaboration among child projects; for example, organizing bimonthly calls among all child project managers and regular calls between component leads such as communications and access to finance staff. Child project staff uniformly found this built-in collaboration to be one of the strongest elements of the program and noted several examples of how they had learned or benefited from knowledge imparted to them by the global project or other child projects. The hub project also maintains the planetGOLD website, which gives child projects a forum to communicate updates on their activities. The website has been especially useful at showing how the COVID-19 pandemic has affected ASGM in the different GOLD countries and how projects are adapting and helping ASG miners confront the new reality that the pandemic has brought. Other collaboration activities of the hub project, such as organizing global ASGM forums to bring different stakeholders together, have been stymied by the pandemic or forced to be virtual. Nonetheless, early evidence shows that the hub project, so far, provides a level of support and cohesiveness for the program that would not exist if the child projects were stand-alone full-sized projects.

68. The UNDP implemented projects in Spanish speaking countries in South America show the clearest example of project to project coherence and collaboration in early implementation. At the global level, the GOLD Agencies report very strong collaboration on the direction and main activities of the program. This collaboration is undoubtedly supported by the preexisting Global Mercury Partnership of which the majority of GOLD Agencies are a part. For example, there has been significant sharing of lessons among the Spanish-speaking Latin American countries. Other than shared language and proximity, part of the reason these three projects have such close contact is that they are all implemented by UNDP and thus have very similar designs. These countries have benefitted from the Ecuador sister project which started before the GOLD projects and has been able to share lessons learned with the GOLD projects in Colombia and Peru. In January 2020, Ecuador hosted staff from the Peru and Colombia projects for a field trip to the main ASGM project sites. Peru is particularly interested in the financial mechanism set up in Ecuador in which the state bank purchases gold from ASG miners and may try to copy aspects for their financial mechanism. The Ecuador project has also shared the problems they had in trying to set up a mobile processing plant, an activity they now have abandoned. Because the mobile plant is also included as a proposed activity in the Peru and Colombia projects, sharing this information allows the two newer projects to avoid similar problems faced in Ecuador or at least have an alternate plan if the mobile plants do not appear to be a feasible activity in their countries. The Guyana project is also geographically close but is not Spanish-speaking and is implemented by Conservation International. Its design is quite

different and, to date, does not seem to have as much interaction with the other UNDP Latin America projects as they have with each other.

69. The Philippines and Mongolia project teams have also collaborated within their two-country project, with weekly calls and joint design of site assessment protocols. However, there is little evidence of bilateral communication between projects implemented by different Agencies in the same region such as the Philippines and Indonesia projects or the Burkina Faso and Kenya projects.

70. **GOLD and NAP projects within the same country have strong communication which has avoided overlap in project activities even when an ideal chronological sequence was not possible.** NAP projects perform a vital task in most ASGM countries: they create scarce subnational data on the sector, including estimates on gold produced, number of people working in the sector, and mercury use. They also develop a strategy for the country to reduce mercury use. These data are valuable for GOLD projects which carry out activities designed to reduce use. In most countries where the GEF was implementing both GOLD and NAP projects, communication between the two was strong, usually coordinated by the government agency that was the counterpart for both projects. In most cases, the GOLD projects were designed before the NAPs were completed to ensure quick action, meaning the activities planned and the baseline data used did not come from the NAP. This is unfortunate, because very few countries had high-quality subnational ASGM data before the work done to create the NAPs, so the GOLD projects did not have the advantage of being aware of some of the subnational differences in ASGM practices when choosing project sites. Furthermore, it would be better for a GOLD project's design to be based on the NAP strategy to better integrate with the country's mercury reduction strategy. Instead, it was seen more often that GOLD activities were retrofitted into NAPs or that NAPs used GOLD data as part of their diagnostic data collection. NAP project completion would coincide with the design of the GOLD or other ASGM-related full-sized project. However, it is recognized that such chronological alignment is not always possible, and that the GEF projects have made efforts to ensure ongoing communication and avoidance of overlapping project activities.

71. **planetGOLD and EHPMP programs have had collaboration during the design phases, and this will become more important as EHPMP and GOLD+ enter their implementation phases.** GOLD and EHPMP, along with the upcoming GOLD+ programs represent the largest GEF interventions into ASGM, so it is important that the programs collaborate with each other. Staff of the GEF Secretariat, GOLD, and EHPMP have noted initial conversations between the programs although they have been limited so far because the EHPMP program has not yet reached the implementation phase. Both programs include a global knowledge management component which aims to accomplish very similar goals: create a knowledge platform on ASGM issues. Collaboration between the programs will be critical at the regional level as well. There is no overlap between GOLD and EHPMP countries, although the GOLD+ program will have a project in Ghana where EHPMP will also work. EHPMP will focus on formalization, which will also be the focus of GOLD+, so communication to avoid overlap or competition will be essential for the two Ghana child projects.

72. GOLD project documents include comprehensive references to other non-GEF ASGM initiatives in the countries but do not illustrate specific ways in which they will collaborate with these initiatives. There are many other ASGM initiatives in the GOLD project countries including international donors, government, and local NGO-led initiatives. Many of these are noted in the major project design documents. It is noted in some projects that GOLD project sites were chosen in part because they overlap with project sites of other completed or ongoing ASGM projects. Examples of this are in the Philippines where the GOLD project hoped to overlap with sites of the recently completed project implemented by the International Labour Organization (ILO) “Convening Actors to Develop and Implement Strategies to Reduce Child Labor and Improve Working Conditions in ASGM” (CARING) and in Peru, where the project is working in Piura, the same location where the United States Department of State is implementing the “Reducing Mercury Use and Release in Andean ASGM” project. However, beyond the descriptions of these projects, it is not clear how the GOLD projects would collaborate with these other initiatives during project implementation. Based on stakeholder interviews, it was noted that at times there appeared to be a disconnect between project design teams who wrote the design project documents and the project implementation teams. In some cases, such as Burkina Faso, project implementation teams had no contacts for some partner organizations that were listed explicitly as project collaborators in the project documents.

73. At the global level, the planetGOLD knowledge hub shares similarities with the World Bank’s DELVE platform. The DELVE platform, which was created concurrently the GOLD program’s formation, is a global online data platform on artisanal and small-scale mining (ASM) which aims to be a data repository in a sector that has a severe lack of data. As designed, it appears that the planetGOLD website, which is a repository of information for ASGM (rather than ASM in general), differentiates itself from DELVE by curating available resources for stakeholders and creating user-friendly, easy to understand qualitative briefs that stakeholders can review on specific topics. Stakeholders point out that there may be some overlaps however, and the two platforms do reference each other in many places and stakeholders note that NAP data will be integrated into DELVE. No GOLD projects show efforts to collaborate with another major World Bank-led initiative, the Forest-Smart Mining program, although this program is not specifically focused on ASGM (it also includes other minerals and large-scale mining).

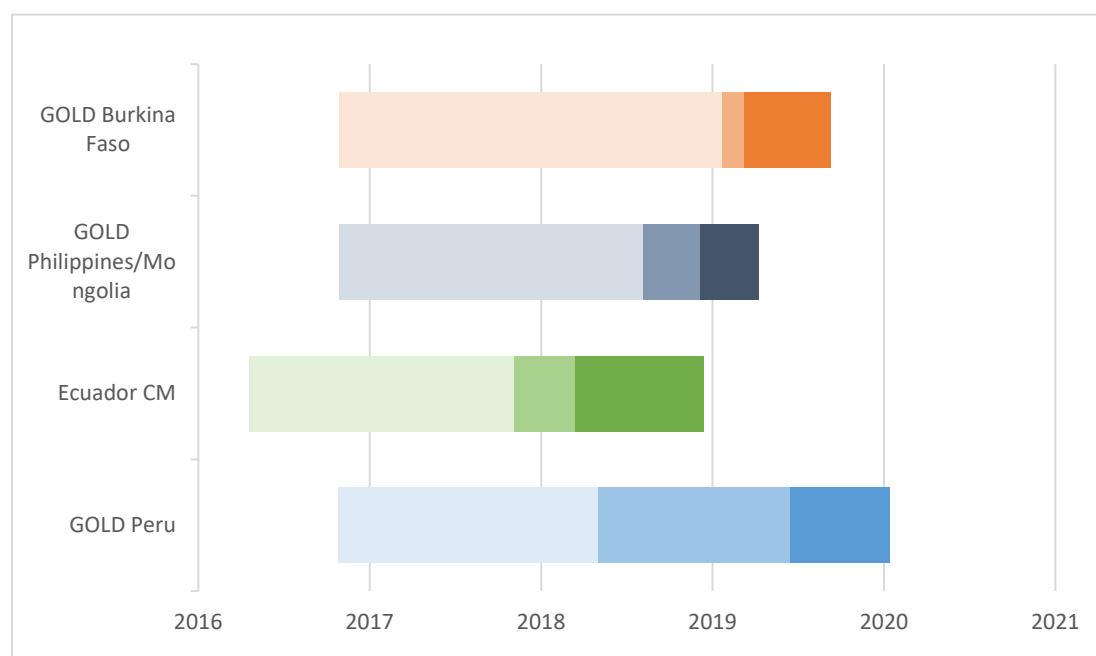
Efficiency and Monitoring of the GOLD program

Efficiency in the GOLD program design phase

74. Most GOLD projects took longer than the target 18 months between the GEF Work Program approval and CEO Endorsement. The median time between the date of the program’s approval in the work program (October 2016) and the CEO Endorsement is 580 days or about 1.59 years. The Guyana project was the quickest to CEO Endorsement at 537 days, while the Burkina Faso project was the longest at 820 days. Among the ongoing case study projects, the

average time between approval and the public project launch was 1,010 days or 2.76 years (Figure 14). The only project that has not yet hired a project team is in Kenya (GEF ID 9708). Reasons for the delay given by stakeholders were a reorganization of the UNDP office in Kenya, causing the project start-up to be managed by the UNDP office in Turkey, and procurement delays by the government.

Figure 14. Timeline of project design phases for ongoing case study countries



Note: The first phase in the lightest shade for each color is the project preparation phase between acceptance into the GEF Work Program and CEO Endorsement. The middle phase is between CEO Endorsement and Agency approval (the official start date for the project). The third, darkest shade is after Agency approval and before the official and public project launch, by which time the project has some of its project team hired. Ecuador CM = chemicals management project (GEF ID 9203).

75. Challenges in early implementation and startup of the GOLD program have been mostly caused by communication gaps between project design and implementation teams and delays due to the COVID-19 pandemic. Among the GOLD program case study projects that are now in the early implementation phase, both UNIDO/UNEP-implemented and AGC-executed projects have had issues communicating with key in-country stakeholders. In the Philippines, issuance of presidential authority to begin implementation was delayed seven months because of miscommunications between the implementing agencies and the government, and stringent requirements by government officials as to which signatures and documents need to be presented to the government to obtain authority. This, combined with government slowdowns due to the COVID-19 pandemic, made for a slow start-up process. In Burkina Faso, COVID-19 was less of an issue but gaps in communication between the design and implementation teams were noted. When interviews for this evaluation were requested with several key partner stakeholders listed in the Request for Approval document, project staff noted they were not provided with and had no contacts at those partner organizations. Such a lack of transfer of contacts could lead to delays or lack of stakeholder consultation later in implementation.

76. All of the GOLD projects have seen implementation delays due to the COVID-19 pandemic, including delays in site selection, government approval, stakeholder consultation, and travel to the field. Because most of them were at the early stages of implementation, they were able to continue with many administrative start-up activities such as hiring and consultant contracting. The Ecuador sister project provides a good example of pivoting project implementation to focus on project activities more related to the pandemic. For example, they ramped up efforts related to proper disposal of chemicals in hospital waste to help hospitals deal with increased waste resulting from increased patient loads. This was only doable because the project is a broader chemical waste management project rather than solely focused on ASGM like the GOLD projects. The GOLD projects provided good overviews of the impact (mostly decreased ability of miners to continue mining and reach gold buyers because of quarantines) and of the pandemic on the ASGM sectors in their countries through the planetGOLD website and also created mining-specific guidance on how to avoid COVID-19 infection.

Monitoring in the GOLD program

One-third of the expected mercury reductions for the GOLD program are expected to be realized through the child projects, with the rest to be generated through global knowledge dissemination and future broader adoption. According to the GOLD Project Framework Document, the program's child projects will reduce mercury use by 123 tons. Additionally, the global hub project will double this amount, reducing an additional 123 tons through global knowledge management and results dissemination in non-GOLD countries. The program also expects an additional 123 tons reduced in the GOLD countries in the two to three years after implementation is complete. This all leads to a grand total of 369 tons in expected mercury use reductions for the entire program. When the child project targets are viewed individually, however, it is not clear how the 123 tons was reached, given that the individual project CEO Endorsement Documents include mercury reduction targets that will be completed by the end of project implementation of 109.5 tons in total (Table 9). The methods for reaching these targets varied by the amount of baseline data that existed in the country prior to the beginning of the project. In countries with NAPs or previous projects, data were more reliable, and more accurate estimates could be created. The result, however, is a wide range of financing per target, where some child projects such as Kenya are spending far more to reach targets than the global hub or the program as a whole, which rely more heavily on knowledge dissemination (

77. Figure 15). This variation is partly explained by country institutional characteristics which might necessitate more or less investment to reach the same mercury reduction goals.

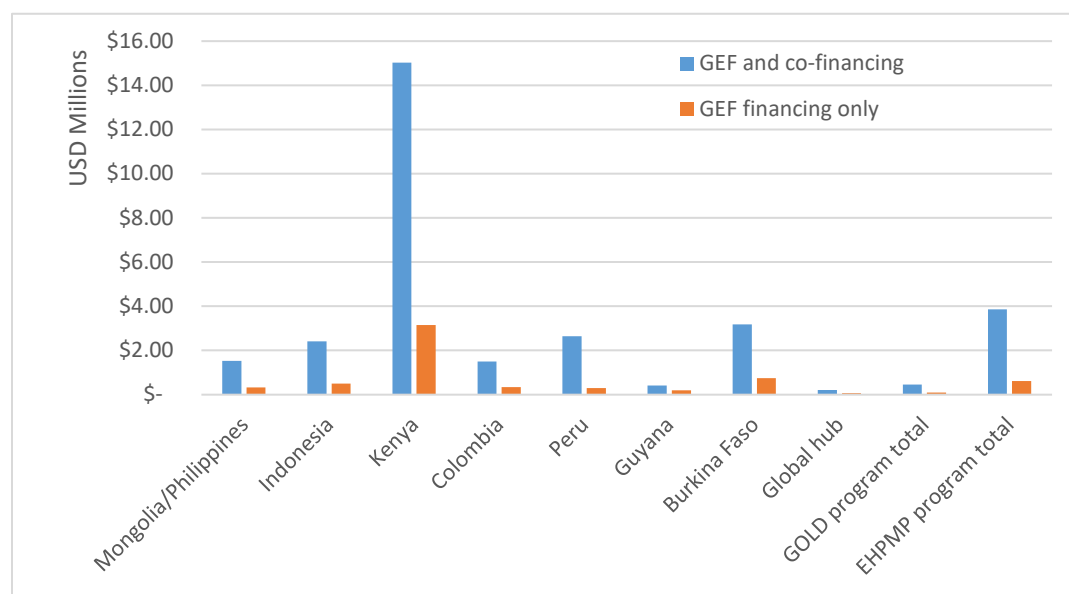
Table 9. Mercury use reductions targets for the GOLD and EHPMP programs

GEF ID	Implementing Agency	Country	Project type	Mercury reduction target (t)
9695	UNEP	Mongolia/Philippines	FSP	40
9707	UNDP	Indonesia	FSP	15
9708	UNDP	Kenya	FSP	1.5
9709	UNDP	Colombia	FSP	20
9710	UNDP	Peru	FSP	15
9713	CI	Guyana	FSP	15
9718	UNIDO	Burkina Faso	MSP	3*
9697	UNEP	Global hub	FSP	123
9602	UNEP	GOLD program	Program	369
9444	World Bank	EHPMP program	Program	75

*The Burkina Faso project's target is 10 tons but only 3 are expected to be produced during project implementation. The additional 7 are expected to be realized after project completion. All other child projects include targets only for their implementation period.

Note: CI = Conservation International; EHPMP = Environmental Health and Pollution Management Program; FSP = full-sized project; UNDP = United Nations Development Programme; UNEP = United Nations Environmental Programme; UNIDO = United Nations Industrial Development Organization.

Figure 15. GEF and cofinancing project budget per ton of mercury expected to be reduced by each GOLD project along with the EHPMP program



Note: MNG = Mongolia; PHL = the Philippines; IDN = Indonesia; KEN = Kenya; COL = Columbia; PER = Peru; GUY = Guyana; EHPMP = Environmental Health and Pollution Management Program.

78. The mercury reduction targets are seen to be too ambitious by some stakeholders and will be difficult to measure and attribute to GEF projects in the long term. The GEF-6 Chemicals and Waste strategy aims at a reduction of 1,000 tons of mercury. To achieve this

target, stakeholders in both the GOLD and EHPMP programs reported that they had to raise their projects' mercury reduction targets above those initially estimated to be reasonable to achieve by the Agencies. Several GOLD projects expressed doubt as to their ability to achieve their targets, especially with delays in field activities caused by the COVID-19 pandemic. Additionally, many of the targets will be difficult to attribute to GEF projects or the GOLD program itself—especially those that will supposedly occur via knowledge dissemination or after the project implementation periods. Projects will use methodologies that exist for carrying out mercury inventories that are accepted internationally (UNEP 2019b). However, it is unclear how the global hub project would manage to accurately monitor and attribute 123 additional tons of reductions in non-GOLD countries or how the GEF would be able to monitor an additional 123 tons of reductions in GOLD countries after projects have ceased to operate.

79. All of the mercury use reductions to be measured by the GOLD child projects are directly linked to the introduction of non-mercury technologies. This makes monitoring simpler; the projects can monitor only the processing plants with which they are associated rather than disperse monitoring across entire jurisdictions. Additional funding for the components related to access to financing, formalization and knowledge management will address the enabling environment around ASGM and mercury. Because the contribution of these components to global economic benefits will be harder to measure, the global hub project will also be collecting and collating data at the global scale on three additional indicators: number of beneficiaries, amount of money mobilized for miners, and amount of responsibly sourced gold sold. This set-up highlights the importance of the non-mercury technologies component because it is the only one directly linked to global economic benefits.

The links between the GOLD program and other environmental and socioeconomic ASGM issues other than mercury reduction

80. GEF ASGM interventions are increasingly focused solely on mercury use reductions, and very few include components addressing the ASGM intersection with deforestation, land degradation, and biodiversity. Because of the strong linkage with the Minamata Convention since its formation, GEF-5 and GEF-6 ASGM interventions have been very focused on mercury reduction and have resided almost wholly in the Chemicals and Waste focal area. However, as discussed in the Introduction section, the ASGM sector is associated with several other environmental issues related to the GEF's other focal areas. One of the most prominent is the impact that alluvial ASGM has through deforestation and land degradation. Not all types of mining or ASGM countries cause deforestation or land degradation in the same way. In some countries, such as Guyana and Peru, ASGM is a major driver of deforestation in certain areas of the country, while in others, ASGM is not listed as a driver in country-level studies (Table 10). The issue is especially pronounced when mining occurs near areas rich in biodiversity. Despite these linkages, very little funding from the Biodiversity, Climate Change, or Land Degradation focal areas goes to ASGM projects. None of the GOLD or EHPMP projects receives any funding from these focal areas (they are 100 percent Chemicals and Waste-funded) and they do not contain GEB targets related to the focal areas. According to GEF stakeholders, the GOLD+ program, which, although funded 100 percent through the Chemicals and Waste—and focused on the Minamata Convention, will have more of a focus on ecological protection than GOLD.

Conservation International will be the lead Agency which has expertise in ecological conservation, and the GEF Secretariat plans to ask the projects to report on multiple benefits beyond mercury reduction where feasible. Beyond these two large programs, two ongoing GEF ASGM projects address these issues; one in Suriname (GEF ID 9288) and one in Guyana (GEF ID 9565). The Suriname project is funded through the Land Degradation, Climate Change, and Biodiversity focal areas while the Guyana project has both Chemicals and Waste and Biodiversity funding.

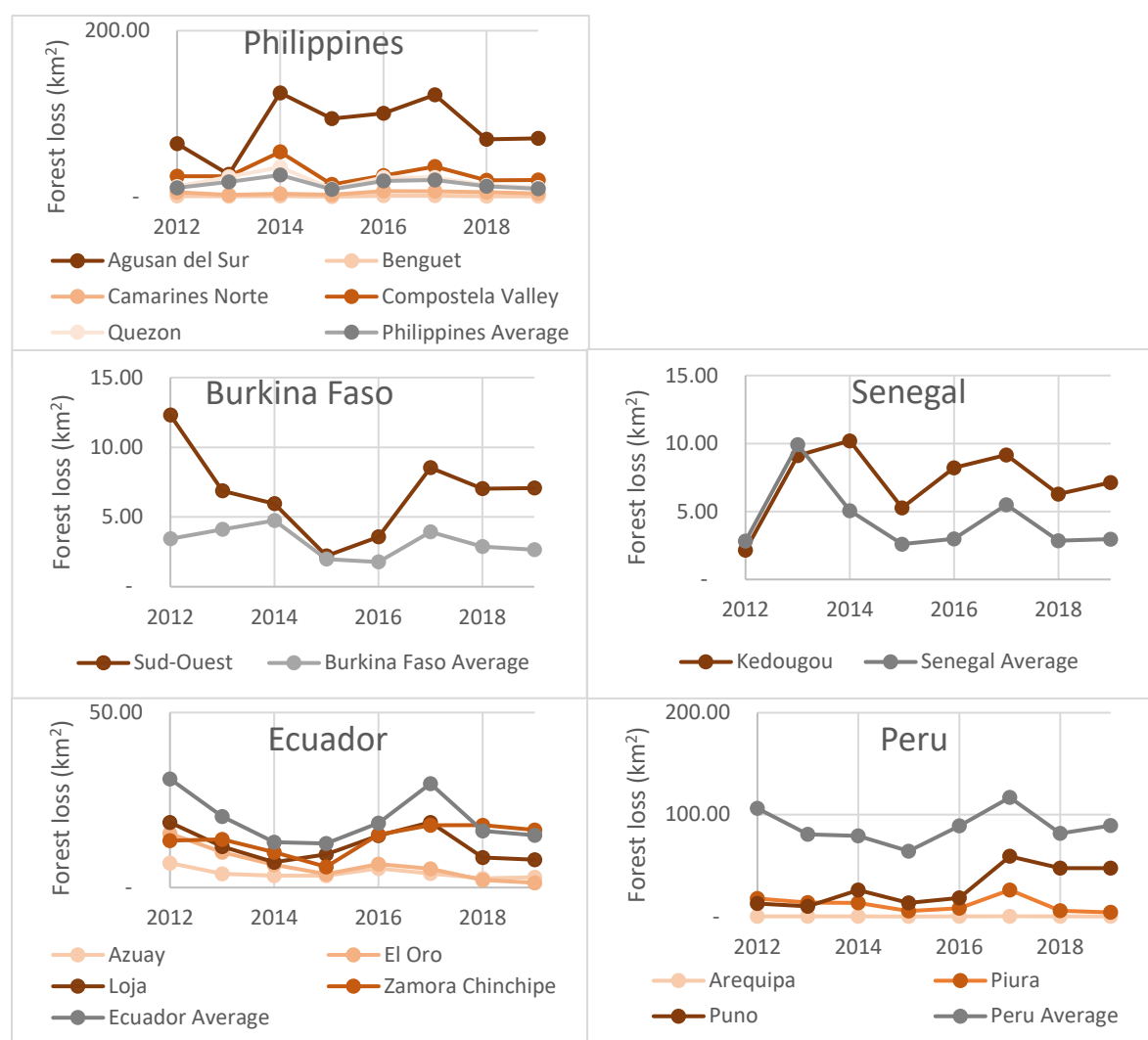
Table 10. Consideration of gold mining as a major deforestation driver in GOLD program countries

Country	Gold mining included as major deforestation or forest degradation driver?	Source
Burkina Faso	Yes	Burkina Faso Ministry of Environment and Sustainable Development (2013)
Kenya	No	Kenya Forest Service (2010)
Peru	Yes	Peru Ministry of Environment (2019)
Colombia	Yes	World Bank (2014)
Guyana	Yes	Guyana Forestry Commission (2010)
Ecuador	No	Ecuador Ministry of Environment (2016)
Indonesia	No	Indonesia Ministry of Environment and Forestry (2019)
Philippines	Yes	Carandang et al. (2013)
Mongolia	Yes	Mongolia Ministry of Environment and Tourism (2017)

81. Within the GOLD program, the Guyana project addresses the issues of deforestation and biodiversity the most, with specific activities related to creating landscape management plans, reforestation of mining sites, and non-timber product livelihood options near mining communities. Conservation International, the implementing agency, has a larger program in Guyana with other projects that focus on addressing drivers of deforestation, which it plans to link with the GOLD project. In the Amazon forest of southern Peru especially, ASGM has a strong connection with illegal deforestation, causing negative impacts on biodiversity and climate change (**Error! Reference source not found.**, Finer and Mamani, 2018). The hotspot of this nexus between ASGM and deforestation is the Madre de Dios region, the subnational region with the most mercury losses and also a large amount of deforestation resulting from ASGM. However, the Peru GOLD project is not working in Madre de Dios, and the only mention of activities related to forest management is a planned pilot soil remediation site in an undetermined location.

82. Among the case study countries, GEF ASGM subnational project areas in Latin America are mostly below the country averages for forest loss, although in West Africa and the Philippines many GEF ASGM project areas are above the national averages (Figure 16). In Peru, the areas where the GEF has worked on ASGM are generally mountainous zones with little forest cover and thus low forest loss since 2012. This is also true for Ecuador, except for the Zamora Chinchipe area, which has high forest cover but low deforestation. This shows that if the GEF were to focus on the nexus of deforestation and biodiversity and ASGM, it would likely be in other areas of the two countries, such as Madre de Dios, Peru or Esmeraldas, Ecuador (Figure 16), but ASGM is not considered a major deforestation driver compared to agriculture. In the Philippines, only one province where the GEF ASGM projects have worked, Agusan del Sur, has high deforestation. The major drivers of deforestation in Agusan del Sur are not known for certain, but logging was mentioned by stakeholders as being a large issue. In fact, an initial visual analysis of project sites noted that ASGM is not a major driver of deforestation in GEF ASGM sites. This doesn't mean, however, that the issue is not pronounced in other areas of the countries where the GEF works.

Figure 16. Forest loss in GEF ASGM subnational areas compared to national averages for case study countries



Note: For Peru, Ecuador, and the Philippines, a canopy cover of 30 percent was used to define forest while in Burkina Faso and Senegal, a canopy cover of 10 percent was used.

83. **The GOLD program ensures a “do no harm” approach through the planetGOLD Criteria, even though GEF ASGM projects do not focus on social issues related to ASGM.** Some ASGM projects in the wider donor community are focused on social aspects of ASGM rather than environmental issues, especially child labor, such as the International Labour Organization’s CARING project in Ghana and the Philippines. The GOLD program and other GEF ASGM interventions do not focus on such issues, but GOLD has addressed these issues from a safeguards perspective through the planetGOLD Criteria for Environmental and Socially Responsible Operations (the Criteria). The Criteria, based on the code of risk mitigation for ASM engaging in formal trade (CRAFT), set a series of guidelines that must be followed by all mining operations supported by planetGOLD projects. They include environmental as well as social requirements, ensuring that planetGOLD projects do not contribute to biodiversity or forest loss, water body contamination, child labor, or illegal/illicit trade, among other requirements. In this way, the GOLD program ensures that it will not contribute to any of the social or

environmental issues beyond mercury use in ASGM even if it is not actively trying to address these issues.

84. GEF GOLD program projects do not typically focus on monitoring of sediments in water bodies and mercury levels in humans. Once the Minamata Convention shifted ASGM funding to the Chemicals and Waste focal area, the linkages to water resource management have not been the focus of ASGM projects. The GOLD program does not fund any water or sediment monitoring, and some stakeholders believe that it is not the role of GEF projects to fund this type of long-term monitoring, considering the projects exist for only about five years. Most GOLD projects claim to be reducing water body contamination through mercury use reductions, but do not include indicators to measure such a reduction. One newer GEF-7 International Waters project that does address ASGM, despite the sector not being their focus, is the “Integrated watershed management of the Putumayo-Içá river basin” project (GEF ID 10531).

85. GEF GOLD projects do not include activities related to helping countries establish or improve monitoring programs of health outcomes related to chemicals projects. Some other GEF ASGM interventions do have links with monitoring, however, such as the EHPMP program which plans on procuring equipment for air, water, and soil monitoring and training health workers, and the Minamata NAP projects which interface with health ministries to gather related data. Non-GEF stakeholders note that the GEF could do more in the nexus of ASGM, water, and community health related to working with vulnerable downstream communities who consume mercury-contaminated fish and drink water contaminated by mining despite not mining themselves. GOLD does not work in such communities directly, although it could potentially reach them through knowledge dissemination.

GEF Policies

Gender equality in the GOLD program

86. The GOLD program projects included or planned for gender analyses and action plans in project design. Gender is a common theme in GOLD project design documents because all projects point to the gender differences and disparities in the ASGM sector in their countries. In the Latin America projects, a common theme is that women are often involved in collecting ore that is left by other mining operators as tailings to see if there is any remnant gold to be salvaged. In the Philippines, the project notes that mining cooperatives often have high representation of women but that women are involved in smelting, which puts them at higher risk of inhaling toxic fumes. In Burkina Faso, it is noted that women are often involved in the lowest-paying jobs around the mining sites. Most projects completed gender analyses in the project preparation phase, giving the projects a head start on identifying these gender issues. Some projects included gender action plans with clear indicators; others had very little detail in their action plans. Common strategies to mainstream gender into project activities were trainings to all miners to improve gender awareness in ASGM and financial trainings specifically targeted to women miners. However, it wasn’t clear what specific gender aspects non-training activities would include, that is, how policies would be designed to take into account gender issues or how financial mechanisms would be altered to respond to gender issues , other than

ensuring that groups that received financing would have women representation. These details will need to be worked out during the project implementation phase.

87. GOLD projects include indicators that will provide sex-disaggregated information and ensure participation of women's groups and women miners. Results frameworks of GOLD projects show an effort to ensure sex-disaggregated data collection for indicators such as number of miners having access to capital, number of miners trained, and number of miners adopting government incentives. There is also a clear effort to ensure that miner groups that receive GOLD project support through a grant mechanism have representation of women or are women-specific. Some projects such as Ecuador have already highlighted their work with women's miner groups on the planetGOLD website. However, there are very few indicators listed in the results frameworks to demonstrate improvement of gender equality or the empowerment of women. Some projects that have gender action plans list additional indicators in those plans, but it isn't clear how these additional indicators fit into the larger project results framework. Additionally, there does not seem to be a global effort to collect common gender indicators, other than number of sex-disaggregated beneficiaries, across projects to allow program-level reporting.

Safeguards in the GOLD program

88. The principal mechanism in GOLD program for responding to social and environmental safeguards is the planetGOLD Criteria. The Criteria, building off of CRAFT, is a comprehensive list of rules that must be followed by processing or mining facilities associated with the GOLD projects. These Criteria ensure a global standard of adherence that will help the projects sell "responsible" gold to downstream buyers in a manner similar to a certification program. The Criteria include strict measures to avoid child labor, involvement of conflict areas and armed groups and human rights abuses on the social side and minimizing biodiversity loss and critical habitats on the environmental side.

89. Project design documents also included risk tables that had some mention of safeguards along with agency-specific safeguards tool application. The risk tables commonly identified environmental risk (along with political and other risks) associated with mining operations that the projects would be associated with, and the Criteria should be used to mitigate such risks within processing sites. However, it was generally considered beyond the scope of the projects to address environmental damage that might be done by ASGM beyond the specific sites where the project works. An additional common risk mentioned was a potential loss of livelihood for local gold buyers who might be cut out of the supply chain by the project. Only one project (Philippines/Mongolia) mentioned a potential alternative livelihoods mitigation measure. Others tended to view the buyers as predatory and mentioned the risk only in terms of the potential damage the buyers might inflict in the form of violence or disruption to the miners themselves.

90. Most GOLD projects note that their processing facilities will likely not be located on indigenous peoples' land and therefore avoid the safeguards issues related to land rights for indigenous peoples. Although many project design documents note ongoing conflict between

indigenous peoples and ASG miners in some areas (such as the Amazon region of South America), the program is largely not working in those areas and thus not addressing this issue. However, some projects, especially in the Philippines and Colombia, do note that some processing plant owners or miners that the projects interact with will likely be indigenous. There is no specific plan yet formed by the projects as to whether or how any specific measures must be taken to support these stakeholders specifically, but they are aware of the issue and plan to look into national policy to ensure that indigenous rights are respected.

Stakeholder engagement in the GOLD program

91. GOLD projects have clear stakeholder management plans for implementation and involve a variety of stakeholders. All of the case study GOLD projects included stakeholder management plans in their project design documents, noting major stakeholders including government, mining communities, private sector companies, and civil society. Especially noteworthy from a sustainability standpoint is the plan of UNDP projects to involve ASGM service providers in the processing process of project activities, including universities, ore assay laboratories, geoscience consulting firms, and equipment providers. This approach should help build a sustainable support network for miners beyond project completion.

92. Stakeholders were well informed on the broad goals of GOLD but noted limited verbal communication on the progress of individual projects. Members of the GOLD Programme Advisory Group noted that although they were well informed of the broad goals and design of GOLD, they found it difficult to keep up with the progress of specific projects. This caused gaps in knowledge: some Programme Advisory Group members were not aware that GOLD projects were working in subnational areas where members had separate initiatives that could benefit from collaboration, although this information is available on the planetGOLD website, and some members felt they did not have enough information on specific projects to promote GOLD with country-level counterparts. This lack of communication has led to some missed connections between potential investors, gold buyers, and projects. The sentiment of a lack of communication was also felt for NAPs; stakeholders were unclear as to the status of the NAPs financed by the GEF and suggested an online dashboard, monthly newsletters, or website updates to give updates and progress of both GOLD and NAP projects. It is noted however that most projects remain in the early stages of implementation (and in the middle of the COVID pandemic) and are not thus able to report substantial progress.

IV. CONCLUSIONS AND RECOMMENDATIONS

1. Conclusions

93. GEF ASGM interventions are highly relevant to the Minamata Convention and national government priorities related to mercury reductions. GEF financing of ASGM has increased significantly since GEF-6 through Chemicals and Waste funding related to the Convention. Convention related interventions include at least 60 enabling activities to help countries create Initial Assessments of mercury sources in their countries and ASGM National Action Plans, as required by the Convention for countries with significant amounts of ASGM. Two GEF-6 programs related to ASGM have significant focus on mercury reductions—the GOLD program

and the World Bank-implemented Africa Environmental Health and Pollution Management Program. Additionally, GEF has focused interventions in countries that are involved with the Convention, meaning these countries' governments have a focus on mercury reductions as well, aligning their priorities to those of the Convention and the GEF.

94. Completed GEF projects had success in reducing mercury use from ASGM in project areas; there was some progress in formalization. Mercury use reductions were reported at project completion in some project areas in the three case study completed projects including Ecuador, Senegal and Philippines. Additionally, some projects in the Philippines and Peru made progress towards reaching formalization for ASGM miners. In the Philippines, the GEF project supported the creation of a national artisanal miners' association and in Peru the project supported the formalization for several miners' associations although no miners actually achieved formalization status. Some completed projects also included activities to monitor mercury levels in humans and river sediments which led to the publishing of scientific papers, although the efforts did not lead to the establishment of long-term monitoring programs.

95. Post-completion evaluation showed that completed project outcomes were sustained with declining mercury use in some areas, and formalization continued to build momentum after project completion. Mercury use was observed to continue declining in one project area in Philippines and in Ecuador. In the cases where use continued to decline, cyanidation was the main non-mercury replacement technology, which was not a technology encouraged by the projects. In cases where mercury use did not continue to decline, the reasons were mostly due to a lack of government enforcement of mercury bans and a lack of training and availability of replacement parts for non-mercury technology. Government and miner momentum towards formalization continued after project completion as all the case study countries ratified the Minamata Convention and the number of formalized miners continued to increase.

96. The GOLD program's design incorporates the lessons learned from past GEF and non-GEF ASGM interventions and its proposed activities align with good practices in the sector. An important lesson from past initiatives was the need for access to financing for miners in order to invest in new, more efficient non-mercury technologies to spur a shift away from mercury. In response to this lesson, the GOLD program's largest component is related to improving miners' access to finance and markets while also including activities on formalization policy, introduction of non-mercury technologies and knowledge management/awareness raising. The components are all widely considered to be critical issues to address in the ASGM sector by the international mercury reduction community.

97. The GOLD program is being implemented in many of the countries with the highest mercury use in the world. The GOLD program covers the top three countries in ASGM mercury use in the world (Indonesia, Peru and Colombia) and the upcoming follow-on GEF-7 GOLD+ program will include the 4th largest user, Bolivia. Venezuela, China and Sudan are all top 10 users that are not included in either program because they have either not signed or ratified the Convention or have not notified the Convention of more than insignificant ASGM mercury use in their countries. Additionally, broad geographic representation and government buy-in, were other factors that the GOLD program considered when choosing project locations.

98. **The GOLD program’s global “hub” child project has promoted collaboration and learning between child projects.** Child project implementation staff appreciated the hub project for its promotion of group meetings and maintaining strong communication in the early stages of implementation, resulting in collaboration across child projects. Many non-GEF stakeholders also appreciated the project’s efforts at communication but noted a lack of clarity on the specifics on the status of child projects. Many hoped to be more involved in specific projects rather than at the global level, which may become more feasible once projects get further into their implementation phase. Focusing on communication will be critical as the program moves into a more intense implementation phase when early results will have to be shown and other GEF programs, such as EMPHP and GOLD+, also begin to be implemented. Additionally, it was unclear how local gold buyers, who could be cut out of a shortened supply chain encouraged by the program, would be involved or how the effects of their loss of livelihood would be mitigated.

99. **Most of the mercury reduction targets for the GOLD program are expected to be realized through knowledge dissemination and broader adoption.** A third of the mercury use reductions targeted by GOLD are expected to occur as a direct result of child project activities. Child projects are using different strategies to measure and monitor these reductions. The rest of the reductions are to come from knowledge dissemination to non-GOLD countries and replication in GOLD countries after project completion. The project design documents do not include plans for how GEF would monitor such reductions or how the reductions would be attributed to the GOLD program.

100. **GEF ASGM interventions, including the GOLD program, are primarily focused on mercury reductions and few projects include interventions to address other environmental issues associated with ASGM.** After the formation of the Minamata Convention, GEF ASGM projects have largely been funded by the Chemicals and Waste focal area and have aimed only to address one global environmental benefit—mercury reductions. Some GOLD countries do have ASGM-caused deforestation, land degradation and biodiversity loss, and the Guyana child project includes activities directly addressing these issues. Some completed projects addressed ASGM from a watershed perspective with funding from the International Waters focal area, but this is absent from Chemicals and Waste funded projects. The GOLD program also does not include significant connection with health workers and ministries to tackle human health monitoring or community health issues.

101. **With the GOLD program, GEF ASGM initiatives are increasingly adding partnerships and links with downstream stakeholders in the gold supply chain.** Historically, most GEF ASGM interventions focused on ASG miners where mercury is used. However, the GOLD program also involves private companies such as gold refiners and jewelers and other stakeholders through its Program Advisory Group to help take a holistic supply chain focus to the sector. These stakeholders should help the program shorten the supply chain and help miners access markets for more responsibly mined gold. Additionally, they can offer new perspectives on ASGM while encouraging financial sustainability.

102. The GOLD program addresses policies and safeguards through the planetGOLD Criteria and gender through project level gender analyses. The program has developed a set of criteria to avoid the many potential safeguards issues in ASGM in mining operations connected to the child projects. The criteria include measures to avoid environmental degradation and social issues such as child labor. These criteria should enable gold processing linked with the project more marketable to gold buyers who the program is engaging with through its global hub project. All of the GOLD child projects include gender analyses and plan gender action plans which should help GEF address the significant gender inequalities existing in the sector.

2. Recommendations

103. GEF and the Minamata Convention should continue to encourage high mercury use countries to become more involved in the Convention. An increasing number of countries continue to take meaningful steps towards involvement in the Convention and thus towards eliminating mercury use. As countries with ASGM present ratify the Convention, this will unlock GEF ASGM financing, increasing the global impact of GEF and the Convention.

104. The GEF should increase project focus on policy interventions that help governments put into place the necessary framework to formalize ASG miners and monitor the sector. As GEF moves into countries where ASGM formalization isn't as advanced, it will have to address this first step in the theory of change to a larger extent than in the GOLD program. Formalization policy interventions will have to assist governments in developing a framework that not only puts formalization into laws but also creates cost-effective monitoring and institutional and engagement structures to apply the policy throughout disperse ASGM areas.

105. The GEF should seek opportunities for multi-focal area ASGM interventions and measure co-benefits beyond the Chemicals and Waste focal area. The GEF has already moved in a direction of multi-focal area, holistic solutions to environmental problems with the creation of the impact programs and integrated approaches. ASGM has links to several focal areas, depending on the characteristics of each mining area, and is therefore a sector which could combine funding from several focal areas or at least include activities related to International Waters, Biodiversity, Climate Change, and Land Degradation within a Chemicals and Waste-funded project. Additionally, as environmental health takes on a higher priority in the age of the COVID-19 pandemic, ASGM interventions should consider stronger links with government health agencies to build improved environmental health monitoring and education. These efforts could work in tandem with, rather than in competition with, funding linked to the Minamata Convention to reduce mercury use.

106. The planetGOLD global platform should make available results and lessons learned from completed ASGM projects and provide more detailed information on NAP and GOLD child projects. The focus on global knowledge management and sharing in the GOLD program is valuable and should be continued. In addition to the information already available, additional information and lessons learned on completed GEF (and non-GEF) ASGM projects, especially the GEF 5 MSPs that were designed as pilot projects, should be included. Results, documents, and lessons from the Terminal Evaluations would be useful for a broad range of stakeholders

and perhaps would improve stakeholder retention of the projects' outcomes. Additionally, more frequent updates on project status (both GOLD and NAP projects) on the website would help stakeholders follow progress. The hub project should seek to ensure that the results and negative aspects of lessons learned from the GOLD program are disseminated along with positive lessons, to ensure maximum adaptive learning for the future.

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VI. ANNEX I: LIST OF INTERVENTIONS IN THE GEF ASGM PORTFOLIO

ID	Title	Focal Areas	Implementing Agency	Countries	Period	Type	Grant (\$ millions)	Cofinancing (\$ millions)
1223	Removal of Barriers to the Introduction of Cleaner Artisanal Gold Mining and Extraction Technologies	IW	UNDP	Brazil, Indonesia, Lao PDR, Sudan, Tanzania, Zimbabwe	GEF-2	FSP	\$7.51	\$13.05
4569	Improve the Health and Environment of Artisanal and Small Scale Gold Mining (ASGM) Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management	CW	UNIDO	Burkina Faso, Mali, Senegal	GEF-5	MSP	\$1.09	\$2.45
4799	Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining	IW, CW	UNIDO	Ecuador, Peru	GEF-5	MSP	\$1.10	\$2.68
5216	Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions	CW	UNIDO	Philippines	GEF-5	MSP	\$0.61	\$1.08
5484	Environmental Sound Management of Mercury and Mercury Containing Products and their Wastes in Artisanal Small-scale Gold Mining and Healthcare	CW	UNDP	Honduras	GEF-5	MSP	\$1.42	\$6.22
5583	Reducing Environmental Health Impacts of Harmful Pollutants in Africa Region	CW	WB	Ghana, Tanzania, Zimbabwe, Mali, Senegal, Burkina Faso, Uganda, Nigeria	GEF-5	MSP	\$1.10	\$1.00
5846	Enhancing Biodiversity Protection through Strengthened Monitoring, Enforcement and Uptake of Environmental Regulations in Guyana's Gold Mining Sector	BD	UNDP	Guyana	GEF-5	MSP	\$0.88	\$3.54
5859	Strengthen national decision making towards ratification of the Minamata Convention and build capacity towards implementation of future provisions	CW	UNDP	Georgia	GEF-5	EA	\$0.20	\$0.00
5861	Development of Minamata Convention on Mercury Initial Assessment in Brazil	CW	UNEP	Brazil	GEF-5	EA	\$0.90	\$1.69
5863	Development of Minamata Initial Assessment in Three Asian Countries	CW	UNEP	Cambodia, Philippines, Pakistan	GEF-5	EA	\$0.80	\$1.70
5864	Development of Minamata Initial Assessment in Moldova	CW	UNEP	Moldova	GEF-5	EA	\$0.20	\$0.05
5865	Development of Minamata Initial Assessment in Mexico	CW	UNEP	Mexico	GEF-5	EA	\$0.50	\$0.04
5870	Minamata Convention Initial Assessment in Vietnam	CW	UNIDO	Vietnam	GEF-5	EA	\$0.55	\$0.05

5871	Minamata Convention Initial Assessment in the Federal Republic of Nigeria	CW	UNIDO	Nigeria	GEF-5	EA	\$1.10	\$0.18
5875	Development of Minamata Initial Assessment in Madagascar	CW	UNEP	Madagascar	GEF-5	EA	\$0.20	\$0.20
5879	Development of Minamata Initial Assessment in LAC	CW	UNEP	Bolivia, Chile, Dominican Republic, Paraguay	GEF-5	EA	\$0.80	\$0.94
5881	Minamata Initial Assessment for Costa Rica	CW	UNDP	Costa Rica	GEF-5	EA	\$0.20	\$0.00
6985	National Action Plan on Mercury in the Mozambican Artisanal and Small-Scale Gold Mining sector	CW	UNIDO	Mozambique	GEF-6	EA	\$0.55	\$0.08
6939	Minamata Initial Assessment for Guyana	CW	UNDP	Guyana	GEF-6	EA	\$0.22	\$0.00
6944	Development of Minamata Convention on Mercury Initial Assessment in Africa	CW	UNEP	Angola, Malawi, Zimbabwe	GEF-6	EA	\$0.60	\$0.51
6959	Strengthen national decision making towards ratification of the Minamata Convention and build capacity towards implementation of future provisions	CW	UNDP	Bangladesh, Guinea-Bissau, Mauritania, Mozambique, Samoa	GEF-6	EA	\$1.10	\$0.00
8007	Minamata Convention Initial Assessment (MIA) in the Republic of Colombia	CW	UNIDO	Colombia	GEF-6	EA	\$0.22	\$0.01
8026	Minamata Initial Assessment for Panama	CW	UNDP	Panama	GEF-6	EA	\$0.22	\$0.00
9098	Minamata Convention Initial Assessment in Francophone Africa II	CW	UNIDO	Burkina Faso, Benin, Niger, Togo	GEF-6	EA	\$0.88	\$0.13
9100	Minamata Convention Initial Assessment in Chad	CW	UNIDO	Chad	GEF-6	EA	\$0.22	\$0.08
9101	Minamata Convention Initial Assessment in Francophone Africa I	CW	UNIDO	Guinea, Mali, Senegal	GEF-6	EA	\$0.66	\$0.18
9144	Minamata Convention Initial Assessment in Malaysia	CW	UNDP	Malaysia	GEF-6	EA	\$0.27	\$0.25
9164	National Action Plan on Mercury in the Artisanal and Small-Scale Gold Mining sector in Gabon	CW	UNIDO	Gabon	GEF-6	EA	\$0.55	\$0.16
9172	Development of Minamata Initial Assessment in Cameroon	CW	UNEP	Cameroon	GEF-6	EA	\$0.22	\$0.00
9173	Development of Minamata Convention Mercury Initial Assessment in Africa	CW	UNEP	Burundi, Central African Republic, Congo, Cote d'Ivoire, Gabon	GEF-6	EA	\$1.10	\$0.06
9188	Development of Minamata Initial Assessment in Papua New Guinea	CW	UNEP	Papua New Guinea	GEF-6	EA	\$0.33	\$0.00
9203	National Program for the environmental Sound Management and Live Cycle Management of Chemical Substances	CW	UNDP	Ecuador	GEF-6	FSP	\$3.61	\$14.98
9276	Regional Project on the Development of National Action Plans for the Artisanal and Small Scale Gold Mining in Africa	CW	UNEP	Burundi, Central African Republic, Congo, Kenya,	GEF-6	EA	\$4.38	\$0.05

				Eswatini, Uganda, Zambia, Zimbabwe				
9288	Improving Environmental Management in the Mining Sector of Suriname, with Emphasis on Gold Mining	LD, CC, BD	UNDP	Suriname	GEF-6	FSP	\$8.43	\$22.13
9345	Minamata Convention: Initial assessment in the Republic of Sudan	CW	UNIDO	Sudan	GEF-6	EA	\$0.22	\$0.12
9349	Minamata Initial Assessment for Suriname	CW	UNDP	Suriname	GEF-6	EA	\$0.22	\$0.00
9350	Development of National Action Plans for Artisanal and Small Scale Gold Mining in Paraguay	CW	UNEP	Paraguay	GEF-6	EA	\$0.55	\$0.00
9351	Development of Minamata Initial Assessment and National Action Plan for Artisanal and Small Scale Gold Mining in Honduras	CW	UNEP	Honduras	GEF-6	EA	\$0.77	\$0.00
9353	Minamata Convention: Initial Assessment in Guatemala	CW	UNIDO	Guatemala	GEF-6	EA	\$0.22	\$0.08
9358	National Action Plan on Mercury in the Nigerian Artisanal and Small-Scale Gold Mining sector	CW	UNIDO	Nigeria	GEF-6	EA	\$0.55	\$0.37
9381	Development of Minamata Convention Initial Assessment (MIA) for Ghana	CW	UNDP	Ghana	GEF-6	EA	\$0.22	\$0.00
9453	Development of Minamata Initial Assessment and National Action Plan for Artisanal and Small Scale Gold Mining in Democratic Republic of Congo (DRC)	CW	UNEP	Congo DR	GEF-6	EA	\$1.10	\$0.00
9454	Development of Minamata Initial Assessment and National Action Plan for Artisanal and Small Scale Gold Mining in Sierra Leone	CW	UNEP	Sierra Leone	GEF-6	EA	\$0.77	\$0.00
9456	Development of National Action Plans for Artisanal and Small Scale Gold Mining in the United Republic of Tanzania	CW	UNEP	Tanzania	GEF-6	EA	\$0.55	\$0.00
9457	Development of National Action Plan for Artisanal and Small Scale Gold Mining in Madagascar	CW	UNEP	Madagascar	GEF-6	EA	\$0.55	\$0.00
9475	National Action Plan on Mercury in the Artisanal and Small-Scale Gold Mining Sector in Peru	CW	UNIDO	Peru	GEF-6	EA	\$0.55	\$0.22
9478	National Action Plan on Mercury in the Artisanal and Small-scale Gold Mining Sector in Ghana	CW	UNIDO	Ghana	GEF-6	EA	\$0.55	\$0.06
9489	Artisanal and Small-Scale Gold Mining (ASGM) National Action Plan (NAP) for Suriname	CW	UNDP	Suriname	GEF-6	EA	\$0.55	\$0.00
9494	Development of Minamata Initial Assessment in South Africa	CW	UNEP	South Africa	GEF-6	EA	\$1.10	\$0.00

9533	Development of National Action Plan for Artisanal and Small Scale Gold Mining Mali and Senegal	CW	UNEP	Mali, Senegal	GEF-6	EA	\$1.10	\$0.00
9535	Development of National Action Plan for Artisanal and Small Scale Gold Mining	CW	UNEP	Mongolia	GEF-6	EA	\$0.55	\$0.00
9547	Development of National Action Plan for Artisanal and Small Scale Gold Mining in Guinea and Niger	CW	UNEP	Guinea, Niger	GEF-6	EA	\$1.10	\$0.00
9565	Strengthening the Enabling Framework for Biodiversity Mainstreaming and Mercury Reduction in Small and Medium-scale Gold Mining Operations	CW, BD	UNDP	Guyana	GEF-6	FSP	\$5.12	\$29.66
9622	Development of Minamata Initial Assessment and Updating of National Action Plan for Artisanal and Small Scale Gold Mining	CW	UNEP	Lao PDR	GEF-6	EA	\$0.77	\$0.00
9641	Development of Minamata Initial Assessment and National Action Plan for Artisanal and Small Scale Gold Mining in Eritrea	CW	UNEP	Eritrea	GEF-6	EA	\$0.77	\$0.00
9644	Development of Minamata Initial Assessment and Updating of National Action Plan for Artisanal and Small Scale Gold Mining	CW	UNEP	Kyrgyz Republic	GEF-6	EA	\$0.77	\$0.00
9680	Advanced Minamata Initial Assessment in Mongolia	CW	UNIDO	Mongolia	GEF-6	EA	\$0.22	\$0.02
9695	GEF GOLD Mongolia-Philippines: Contribution Towards the Elimination of Mercury in the ASGM sector From Miners to Refiners	CW	UNEP/UNIDO	Mongolia, Philippines	GEF-6	FSP	\$13.08	\$48.21
9697	Global Knowledge Management and Exchange of Child Project Results Through Networking and Outreach Activities for the GEF GOLD Program	CW	UNEP	Burkina Faso, Colombia, Guyana, Indonesia, Kenya, Mongolia, Peru, Philippines	GEF-6	FSP	\$8.94	\$17.77
9701	Minamata Initial Assessment	CW	UNDP	Kazakhstan	GEF-6	EA	\$0.44	\$0.00
9707	Integrated Sound Management of Mercury in Indonesia's Artisanal and Small-scale Gold Mining (ISMIA)	CW	UNDP	Indonesia	GEF-6	FSP	\$7.49	\$28.60
9708	Integrated Sound Management of Mercury in Kenya's Artisanal and Small-scale Gold Mining (ASGM) or IMKA	CW	UNDP	Kenya	GEF-6	FSP	\$4.73	\$17.82
9709	GEF GOLD Colombia: Integrated Sound Management of Mercury in Colombia's ASGM sector	CW	UNDP	Colombia	GEF-6	FSP	\$6.70	\$23.44
9710	GEF GOLD Peru - Integrated Sound Management of Mercury in Peru's Artisanal and Small-scale Gold Mining (ASGM)	CW	UNDP	Peru	GEF-6	FSP	\$4.49	\$35.23
9711	National Action Plan on Mercury in the Artisanal and Small-Scale Gold Mining Sector in Burkina Faso	CW	UNIDO	Burkina Faso	GEF-6	EA	\$0.55	\$0.22
9713	A GEF GOLD/ Supply Chain Approach to Eliminating Mercury in Guyana's ASGM Sector: El Dorado Gold Jewelry Made in Guyana	CW	CI	Guyana	GEF-6	FSP	\$3.00	\$3.14

9718	GEF GOLD: Contribution Towards the Elimination of Mercury and Improvement of the Gold Value Chain in the Artisanal and Small-Scale Gold Mining Sector	CW	UNIDO	Burkina Faso	GEF-6	MSP	\$2.23	\$7.31
9737	National Action Plan on Mercury in the Artisanal and Small-Scale Gold Mining Sector in Ecuador	CW	UNIDO	Ecuador	GEF-6	EA	\$0.55	\$0.08
9751	Development of a Minamata Initial Assessment in El Salvador	CW	UNEP	El Salvador	GEF-6	EA	\$0.22	\$0.00
9755	Development of Minamata Initial Assessment and National Action Plan for Artisanal and Small Scale Gold Mining in Indonesia	CW	UNEP	Indonesia	GEF-6	EA	\$0.77	\$0.00
9805	Development of Minamata Initial Assessment and National Action Plan for Artisanal and Small Scale Gold Mining in Myanmar	CW	UNEP	Myanmar	GEF-6	EA	\$0.77	\$0.00
9850	Africa Environmental Health and Pollution Management Program	CW	WB	Tanzania	GEF-6	FSP	\$8.00	\$35.30
9851	Africa Environmental Health and Pollution Management Project - Ghana	CW	WB	Ghana	GEF-6	FSP	\$4.13	\$45.80
9855	KNOWLEDGE EXCHANGE AND INSTITUTIONAL PARTNERSHIPS TO REDUCE ENVIRONMENTAL HEALTH RISKS FROM EXPOSURE TO HARMFUL CHEMICALS AND WASTE	CW	WB	Tanzania, Ghana, Zambia, Kenya, Senegal	GEF-6	FSP	\$2.02	\$5.43
10132	Minamata Convention: Initial assessment for Rwanda	CW	UNIDO	Rwanda	GEF-7	EA	\$0.22	\$0.02
10133	Minamata Convention: Initial assessment for Liberia	CW	UNIDO	Liberia	GEF-7	EA	\$0.22	\$0.02
10134	National action plan on mercury in the artisanal and small-scale gold mining sector in Liberia	CW	UNIDO	Liberia	GEF-7	EA	\$0.55	\$0.04
10135	National action plan on mercury in the artisanal and small-scale gold mining sector in Angola	CW	UNIDO	Angola	GEF-7	EA	\$0.55	\$0.06
10136	National action plan on mercury in the artisanal and small-scale gold mining sector in Rwanda	CW	UNIDO	Rwanda	GEF-7	EA	\$0.55	\$0.06
10148	Minamata initial assessment and national action plan on the artisanal and small-scale gold mining sector in Nicaragua	CW	UNIDO	Nicaragua	GEF-7	EA	\$0.77	\$0.03
10153	Development of National Action Plan for Artisanal and Small Scale Gold Mining in the Co-operative Republic of Guyana	CW	UNEP	Guyana	GEF-7	EA	\$0.55	\$0.00

VII. ANNEX II: LIST OF INTERVIEWEES

	Name	Organization	Location
1	Evelyn Swain	GEF Secretariat	USA
2	Anil Sookdeo	GEF Secretariat	USA
3	Gustavo Fonseca	GEF Secretariat	USA
4	Claude Gascon	GEF Secretariat	USA
5	Alice Vanni	Italpreziosi	Italy
6	Anna Loucah	Anna Loucah Jewelry	United Kingdom
7	Eduard Cornew	Mwamba Mining	Tanzania
8	Miranda Werstiuk	OCIM Precious Metals	Canada
9	Robert Donofrio	Futura Jewelry	USA
10	Yves Bertran	Alliance for Responsible Mining	Colombia
11	Jane Dennison	US State Department	USA
12	Rodges Ankrah	US EPA/Global Mercury Partnership	USA
13	Adam Rolfe	Levin Sources	United Kingdom
14	Phaedon Stamatopoulos	Argor Heraeus	Switzerland
15	Ludovic Bernaudat	UNEP	Switzerland
16	Jerome Stucki	UNIDO	Austria
17	Kasper Koefed	UNDP	Panama
18	Monica Gaba Kapadia	UNDP	USA
19	Free De Koning	Conservation International	USA
20	Ian Kissoon	Conservation International	USA
21	Courtney McGeachy	Conservation International	USA
22	Abdelaziz Lagnaoui	World Bank	USA
23	Gayatri Kanungo	World Bank	USA
24	Philippe Ambrosi	World Bank	USA
25	Susan Kaine	NRDC	USA
26	Marianne Bailey	UNEP/Minamata Secretariat	Switzerland
27	Eisaku Toda	UNEP/Minamata Secretariat	Switzerland
28	Rachel Perks	World Bank	USA
29	Nicole Smith	Colorado School of Mines	USA
30	Marcello Veiga	University of British Columbia	Canada
31	Gavin Hilson	University of Surrey	United Kingdom
32	Oscar Restrepo	National University of Colombia	Colombia
33	Oseas Garcia	Independent	Colombia
34	Barbara Martinez	Conservation X Labs	USA
35	Sunday Leonard	STAP Secretariat	USA
36	Jamidu Katima	STAP/Kampala International University	Tanzania
37	Saleem Ali	STAP/University of Delaware	USA
38	Monica Andrade	UNDP	Ecuador
39	Mario Rodas	Ministry of Environment/UNDP	Ecuador
40	Diana Cabrera	Ministry of Environment/UNDP	Ecuador
41	Enrique Gallegos	Ministry of Mines	Ecuador
42	Fabricio Caicedo Vera	Ministry of Mines	Ecuador

43	Carlos Borja	Ministry of Mines	Ecuador
44	Paola Carrera	Ministry of Environment	Ecuador
45	Maria Belen Duran	Ministry of Environment	Ecuador
46	Daniela Guerrero	Central Bank of Ecuador	Ecuador
47	Martin Cordovez	IIGE	Ecuador
48	Luis Collahuazo	IIGE	Ecuador
49	Paola Hermosa	IIGE	Ecuador
50	Daniela Rueda	IIGE	Ecuador
51	Juan Diego Variela	ARCOM	Ecuador
52	Alejandro Jaramillo	ARCOM	Ecuador
53	Colon Velasquez	CIRDI	Ecuador
54	Jose Piedra	Ministry of Environment/Artisanal Gold Council	Ecuador
55	Carolina Gonzalez-Mueller	UNIDO	Ecuador/Peru
56	Xavier Arcos	UNIDO	Ecuador
57	Luis Chinchay	UNIDO/INIGEMM	Ecuador
58	Jose Antonio Mendoza	UNIDO	Peru
59	Danilo Castillo	APROPLASMIN	Ecuador
60	Percy Chevez	Direccion Regional de Energia y Minas	Peru
61	Nery Granda	Processing Plant La Orquidea	Ecuador
62	Carlos Alvarado	Direccion General de Formalizacion Minera	Peru
63	Isidora Jimenez	Artisanal miner	Peru
64	Wilson Carrion	Artisanal miner	Peru
65	Franco Arista	Ministry of Environment/UNDP	Peru
66	Jorge Alvarez	Ministry of Environment/UNDP	Peru
67	Nicolás Chavez	Ministry of Environment/UNDP	Peru
68	Sandra Guzman	Ministry of Environment/UNDP	Peru
69	Jonatan Soto	Ministry of Environment/UNDP	Peru
70	Javier Camargo	Better Gold Initiative/UNDP	Peru
71	Paul Cordy	Artisanal Gold Council	Peru
72	Camila Avila	Ministry of Environment	Peru
73	Vilma Morales	Ministry of Environment/Ministry of Energy	Peru
74	Beatriz Torres	USAID Peru	Peru
75	Thomas Hentschel	Better Gold Initiative	Peru
76	Abigail Ocate	Artisanal Gold Council	Philippines
77	Rebar Jaff	Artisanal Gold Council	Canada
78	Emmaleah Pequit	Artisanal Gold Council	Philippines
79	Jacklyn Belo-Enricoso	Artisanal Gold Council	Philippines
80	Analiza Rebuelta	Department of Environment and Natural Resources	Philippines
81	Angelito V. Fontanilla	Department of Environment and Natural Resources	Philippines
82	Conrado Bravante, Jr.	Department of Environment and Natural Resources	Philippines

83	Eddie Abugan, Jr.	Department of Environment and Natural Resources	Philippines
84	Elma M. Eleria	Department of Environment and Natural Resources	Philippines
85	Alvin Josue Reyes	Department of Environment and Natural Resources	Philippines
86	Myra Fe Barquilla	Department of Environment and Natural Resources	Philippines
87	Sarah Marie P. Aviado	LGU Jose Panganiban, Camarines Norte	Philippines
88	Engr. Teodorica Sandoval	Mines and Geosciences Bureau	Philippines
89	Engr. Joven Battung	Mines and Geosciences Bureau	Philippines
90	Elaine Kate Asia	Bangko Sentral ng Pilipinas	Philippines
91	Giovanni Soledad	ILO CARING Gold	Philippines
92	Arleen Tagumba	ILO CARING Gold	Philippines
93	Joylan Babia	Environmental Management Bureau	Philippines
94	Jimbea Lucino	Ban Toxics	Philippines
95	Arlene Galvez	Ban Toxics	Philippines
96	Richard Gutierrez	Ban Toxics	Philippines
97	Gil Endino	National Coalition for Small Scale Miners, Inc. (NCSSMI)	Philippines
98	Jun Anayo, Jr.	National Coalition for Small Scale Miners, Inc. (NCSSMI)	Philippines
99	Arleen Honrade	National Coalition for Small Scale Miners, Inc. (NCSSMI)	Philippines
100	Reynaldo San Juan	National Coalition for Small Scale Miners, Inc. (NCSSMI)	Philippines
101	Alma Andoy	Miner; Diwalwal	Philippines
102	Precila Tuling	Miner; Diwalwal	Philippines
103	Ranilo P. Piodo	Miner; Diwalwal	Philippines
104	Avelino L. Ayeng, Jr.	Miner; Diwalwal	Philippines
105	Dolores D. Villagra	Diwalwal - Barangay Women's Development Council	Philippines
106	Mateo Magallanes	Samahan Magkakabod ng Dalas	Philippines
107	Jose Fortez	Samahan ng mga Magkakabod ng Mambulao	Philippines
108	Sally de Guzman-Papa	Batang Bantay Toxics, Labo, Camarines Norte	Philippines
109	Bryan Chicano	Batang Bantay Toxics, Labo, Camarines Norte	Philippines
110	Noel O. Lantin	Magkamatao Small-scale Miners Association, Malaya	Philippines
111	Rodolfo Garay	Samahan ng mga Magkakabod ng Masalong	Philippines
112	Chinica Chen	Samahan ng mga Magkakabod ng Benit	Philippines
113	Medelyn Apolinar Antones	Samahan ng mga Kababaihang Magkakabod ng Ultra	Philippines
114	Rodrigo Belleza	Malaya, Labo, Camarines Norte	Philippines
115	Julius Cabajar	Labo, Camarines Norte	Philippines

116	Emiljhon Ocmer	Labo, Camarines Norte	Philippines
117	Lorna Barcelona	Dalas, Labo, Camarines Norte	Philippines
118	Senen V. Inocalla	Capacuan Small-scale Miners Association	Philippines
119	Teresita Barrameda	Dalas, Labo, Camarines Norte	Philippines
120	Serafin E. Dasco	SAMACANO (Camarines Norte Small-scale Miners Provincial Federation)	Philippines
121	Demver Suzara	Samahan ng mga Minero ng Barangay Casalugan (applicant for a mining contract in the Minahang Bayan of Brgy. Casalugan)	Philippines
122	Abner Mantangob of Brgy. Gumaus	Paracale Federation	Philippines
123	Charito Elcano	Pinuhan Small-scale Miners Association	Philippines
124	Moussa Bouboucari	Artisanal Gold Council	Burkina Faso
125	Kenneth Porter	Artisanal Gold Council	Canada
126	Salofou Trahore	ANEEMAS	Burkina Faso
127	Roger Baro	Ministry of Environment	Burkina Faso
128	Cherif Sow	UNIDO	Burkina Faso
129	Aliou Bakhom	UNIDO	Senegal
130	Patrice Dabire	Ministry of Mines	Burkina Faso
131	Baba Drame	Minsitry of Environment and Sustainable Development	Senegal
132	Ibrahima Ba	Mining Regional Service - Kedougou	Senegal
133	Alioune Sarr	Department of Mining and Geology	Senegal
134	Aita Seck	Minsitry of Environment and Sustainable Development	Senegal
135	Kassa Keita	Foukhaba GIE	Senegal
136	Wally Camara	Foukhaba GIE	Senegal
137	Fode Samoura	Foukhaba GIE	Senegal
138	Diba Keita	Foukhaba GIE	Senegal
139	Cheikh Diop	Miner	Senegal
140	Liliana Alvarado	Ministry of Energy	Colombia
141	Diego Olarte	UNDP	Colombia
142	Ingrid Sarabo	Conservation International	Guyana
143	Curtis Bernard	Conservation International	Guyana
144	Rene Edwards	Conservation International	Guyana
145	Baiq Dewi Krisnayanti	UNDP	Indonesia
146	Anton Probiyantono	UNDP	Indonesia
147	Francis Kihumba	Ministry of Environment and Forestry	Kenya
148	Cyrus Mageria	Ministry of Environment and Forestry	Kenya
149	Altanbagana Bayarsaikhan	Artisanal Gold Council	Mongolia