Terminal Evaluation Review form, GEF Independent Evaluation Office, APR 2017

1. Project Data

Summary project data			
GEF project ID		4799	
GEF Agency project ID		GF/RLA/12/003 - 100271	
GEF Replenishment Phase		GEF-5	
Lead GEF Agency (include all for joint projects)		UNIDO	
Project name		Implementing integrated measures for minimizing mercury releases from artisanal gold mining	
Country/Countries		Ecuador, Peru	
Region		LAC	
Focal area		Multifocal Area	
Operational Program or Strategic Priorities/Objectives		Chemicals – POPs and International Waters	
Executing agencies involved		National Geological, Mining and Metallurgy Research Institute (INIGEMM), Ecuador Ministry of Environment, Peru	
NGOs/CBOs involvement		Through consultations	
Private sector involvement		Through consultations	
CEO Endorsement (FSP) /Approval date (MSP)		19 March 2012	
Effectiveness date / project start		18 June 2012	
Expected date of project completion (at start)		18 March 2015	
Actual date of project completion		31 August 2016	
Project Financing			
		At Endorsement (US $M)	**At Completion (US $M)**
Project Preparation Grant	GEF funding	0.99	0.99
	Co-financing		
GEF Project Grant			
Co-financing	IA own	0.05	0.05
	Government	2.47	2.47
	Other multi- /bi-laterals		
	Private sector		
	NGOs/CSOs	0.15	0.15
Total GEF funding		0.99	0.99
Total Co-financing		2.67	2.67
Total project funding (GEF grant(s) + co-financing)		3.67	3.67
Terminal evaluation/review information			
TE completion date		September 2017	
Author of TE		Paul Cordy and Rodrigo Eguiguren	
TER completion date		13 April 2018	
TER prepared by		Selin Erdogan	
TER peer review by (if GEF IEO review)		Molly Watts	

2. Summary of Project Ratings

Criteria	Final PIR	IA Terminal Evaluation	IA Evaluation Office Review	GEF IEO Review
Project Outcomes	BLIND REVIEW	BLIND REVIEW	BLIND REVIEW	MS
Sustainability of Outcomes		BLIND REVIEW	BLIND REVIEW	MU
M&E Design		BLIND REVIEW	BLIND REVIEW	S
M&E Implementation		BLIND REVIEW	BLIND REVIEW	U
Quality of Implementation		BLIND REVIEW	BLIND REVIEW	UA
Quality of Execution		BLIND REVIEW	BLIND REVIEW	MU
Quality of the Terminal Evaluation Report		BLIND REVIEW	BLIND REVIEW	MS

3. Project Objectives

3.1 Global Environmental Objectives of the project:

The project documents do not explicitly state the Global Environmental Objectives of the project, however the overall goal of the project was "to Protect human health and the environment by implementing integrated measures aimed at minimizing mercury releases from artisanal gold mining activities affecting the Puyango River basin in Ecuador and the Tumbes River basin in Peru." (CEO Endorsement, pg.2)

3.2 Development Objectives of the project:

The development objective of the project was to minimize mercury releases by >40% from artisanal gold mining activities affecting the Puyango River basin in Ecuador and the Tumbes River basin in Peru. The project also aimed to promote more cost-effective gold recovery and income enhancement through an integrated series of measures including capacity building, technology transfer and policy/legal reforms. The project components except project management are listed below:

1. Design of strategies for minimization of mercury releases and enhancement of gold recovery and income
2. Implementation of Mercury Releases Minimization Strategies in the Puyango-Tumbes River basins.
3. Implementation of Communication, Dissemination and Replication (CDR) Strategies

3.3 Were there any **changes** in the Global Environmental Objectives, Development Objectives, or other activities during implementation?

There were no changes in the Global Environmental Objectives or Development Objectives during implementation

4. GEF IEO assessment of Outcomes and Sustainability

Please refer to the GEF Terminal Evaluation Review Guidelines for detail on the criteria for ratings.

Relevance can receive either a Satisfactory or Unsatisfactory rating. For Effectiveness and Cost efficiency, a six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess. Sustainability ratings are assessed on a four-point scale: Likely=no or negligible risk; Moderately Likely=low risk; Moderately Unlikely=substantial risks; Unlikely=high risk. In assessing a Sustainability rating please note if, and to what degree, sustainability of project outcomes is threatened by financial, sociopolitical, institutional/governance, or environmental factors.

Please justify ratings in the space below each box.

4.1 **Relevance**	Rating: Satisfactory

The project is in line with the overall goal of the GEF Chemicals Focal Area to "promote the sound management of chemicals to lead to the minimization of adverse effects on human health and the environment", and with Objective 3 to “Pilot sound chemicals management and mercury reduction”. The project was also consistent with the aim of the GEF-5 Chemicals focal area to support countries in preparation for the entry into force of the internationally legally binding agreement on mercury. The GEF 5 The International Waters (IW) Strategy confirms the value of new information which shows the danger to human health and the environment from persistent toxic substances (PTS) that are released as air and water pollution. The project is also consistent with Objective 1 of the IW focal area that seeks to “catalyze multi-state cooperation to balance conflicting water uses in transboundary surfaces and groundwater basins while considering climatic variability and change”, and Outcome 1.3 as it promotes innovative solutions for reduced pollution and improved water use efficiency. (CEO Endorsement, pg.5)

The project aimed to strengthen the national capacity of both Ecuador and Peru to effectively manage mercury in the artisanal and small-scale gold mining (ASGM) sector. Ecuador and Peru had a longstanding cooperation in their border region through the Binational Plan, which was signed in 1998. Given its past success, the cooperation had been extended till 2014 at the time of project approval. (CEO Endorsement, pg.6) The Government of Ecuador, through the Ministry of Nonrenewable Natural Resources and its National Research Institute for Geology, Mining and Metallurgy (INIGEMM) has a mandate to train and reform the ASGM activities. A recent effort from the Peruvian Government was the National Plan for the Formalization of Artisanal Mining (Supreme Decree No. 045-2010-PCM) to support ASGM communities. The Plan has two main components, the formalization of the artisanal mining sector and the promotion of sustainable mining practices. (TE, pg.6)

4.2 **Effectiveness**	Rating: Moderately Satisfactory

The project results against the main objective of minimized mercury release indicate that mercury use by the processing centers (62 out of 87 centers) was reduced approximately 60%, from 4.64 tonnes/Hg/a in 2013 to 1.79 tonnes/Hg/a in 2015. The TE notes that reanalysis of the report’s numbers suggests that as much as 40% of the Puyango-Tumbes mercury emissions were reduced, mainly because of project’s promotion towards direct cyanidation, which was a service offered by most of the local processing plants.

(TE, pg. viii) However, despite impressive results, there is a major concern regarding the data accuracy since mercury reductions were determined only by interviewing miners about their mercury use, and without the validation through physical measurements as in the baseline and midterm monitoring.

Project outcomes by each component are summarized below:

The project's first component was "Design of strategies for minimization of mercury releases and enhancement of gold recovery and income": The associated outcome of this component was mercury minimization strategies and reduction targets endorsed by stakeholders in both countries. This outcome was partly achieved. Toward the end of the project, the Ecuadorian government banned mercury in mining, and based on anecdotal evidence from plant operators and miners; many miners were choosing to pay to directly use cyanide instead of mercury. This indicates that the ban has been somewhat instrumental in reducing the mercury releases however, still falls short in terms of accuracy of the actual reduction estimates. (TE, pg 17) On the other hand, TE notes that there is a risk in Ecuador, where miners who felt that they were not given suitable alternatives to mercury may hide their activities and access mercury through black market. Peru government and miners are reported to endorse reduction and voluntarily eliminate mercury completely.

The project's second component was "Implementation of mercury releases minimization strategies in the Puyango-Tumbes River basins. The related outcomes were reduction in mercury use and emissions in the targeted mining communities, through: i) local development and adoption of alternative mining technologies/ techniques; ii) increased awareness of mining communities, national & local authorities and the public, particularly women and youth, on dangers of mercury; iii) adoption of policies or programs that support the formalization of miners and promote innovative financial mechanism. This component was partly successful. The TE states that "the project also produced excellent in depth social, economic, technical appraisals of mercury use and mining waste practices in the Puyango-Tumbes basin as well as a thorough basin scale investigation of water quality and sediment contamination." (TE, pg.18) These activities also helped to inform the Binational transboundary management and recovery process for the Puyango-Tumbes. Extensive training activities were conducted in both countries reaching up to twenty training events for about 1000 miners in each of Ecuador and Peru, however post training evaluations were not performed which makes it difficult to assess the performance of these learning activities.

The project's third component was "Implementation of Communication, Dissemination and Replication (CDR) Strategies" with the outcome of project objectives and results being communicated / disseminated to achieve replication at a national, regional and international level. This was partly achieved. The project presented results at Intergovernmental Negotiating Committee (INC) however, TE notes that the final reports did not mention sharing results with other mining communities in each country. Although the TE states that many participatory workshop and demonstration events were held, there were no evidence pointing at an existing or likely replication of project results at any level because of limited proposal or demonstration of alternative methods. (TE, pg.24)

Despite the indications that mercury has been reduced significantly in the region; due to the lack of reliable monitoring of mercury use and releases as well as shortcomings in reporting of training activities and limited alternative proposals, the TER rates the effectiveness as Moderately Satisfactory.

4.3 **Efficiency**	Rating: Moderately Unsatisfactory

The TER rates the efficiency as Moderately Unsatisfactory based on the inefficient use of time and some resources as well as lapses and setbacks during the project implementation. There was an almost two-year gap between project approval date and the date of first project activities and billing.

In each implementation year, the biggest budget items were contractual services including international and national experts. The TE compares the contractual expenses incurred by project line items between UNIDO and UBC (University of British Colombia - Norman B. Keevil Institute of Mining Engineering); the main counterpart of National Geological, Mining and Metallurgy Research Institute (INIGEMM) and project coordinator in Ecuador. The overall UNIDO budget shows that 27% of the project budget went to national consultants and 12% was spent on international consultants while the corresponding spending on UBC side was 38% international consultants and staff, and 29% on national consultants and staff. (TE, pg.29) This level of spending and utilization of international consultants for periodic seminar delivery and environmental sampling was found inefficient in terms of time, money, and personnel and had negative impacts on the project implementation by slowing it down at times and causing disconnection to the needs in the field.

The project evaluation could not reliably measure the in-kind contributions of project partners since none of them reported their staff time, equipment, or other items in-kind except their cash contributions. (TE, pg.29) Still, according to the TE the project met or exceeded its co-financing goals and the in-kind contributions from most partner organizations as evident in the evaluation interviews.

4.4 **Sustainability**	Rating: Moderately Unlikely

The TER rates sustainability of the project as “Moderately Unlikely” as achieving continuous effects of the projects seems to rely on other international organizations engaging in new projects that will improve and expand the outcomes of this project with more reliable monitoring.

Financial Resources Sustainability: Unlikely The project provided a limited number of financial models and it’s not certain if they are going to prove successful. There is little chance that financing for extending project goals would be available, therefore the project sustainability would rely on other organizations engaging in similar activities utilizing the project baseline and lessons learned.

Sociopolitical Sustainability: Moderately Likely This project shaped new legislation with respect to mercury and formalization. Toward the end of the project, the Ecuadorian government banned mercury in mining and the TE notes that there were strong indications that several mining communities in Peru and mining cooperatives in Ecuador have abandoned mercury use permanently which would positively

impact long term mercury use and release in their local areas. (TE, pg.28) On the other hand, there is also an increased risk that mercury activities are being held but not reported due to the ban which might have negative health impacts.

Institutional Framework and Governance Sustainability: Moderately Unlikely TE notes that despite strong capacity and will among INIGEMM staff, the frequent changes in management made it difficult to have a continuous follow up on activities. It's also noted that "formalization remains an unattainable goal for many miners, and ARCOM, the mining regulator, is deeply mistrusted and disliked among miners." (TE, pg.30)

Environmental Sustainability: Moderately Unlikely Despite evidence towards decrease in mercury usage, water contamination continues to be an important environmental and health issue. The project has worked on characterizing the environmental conditions of the Puyango-Tumbes watershed and relevant assessments will serve to identify contamination hot spots for Governments to mitigate the impact on human health and the environment. (PIR, 2016)

5. Processes and factors affecting attainment of project outcomes

5.1 Co-financing. To what extent was the reported co-financing essential to the achievement of GEF objectives? If there was a difference in the level of expected co-financing and actual co-financing, then what were the reasons for it? Did the extent of materialization of co-financing affect project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?

The TE states that the project met or exceeded all of its co-financing goals and the in-kind contributions from most partner organizations, however the report seems to lack a comparison of the total financing breakdown at approval and completion.

5.2 Project extensions and/or delays. If there were delays in project implementation and completion, then what were the reasons for it? Did the delay affect the project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?

The project experienced some delays in implementation due to change in leadership with the executing agency (INIGEMM) in Ecuador and the change in priorities this brought; as well as some delays due to the tense situation in Peru regarding the formalization process. An extension was requested in the form of a minor amendment, with the end date revised to 31 December 2016, one year and nine months later than expected.

5.3 Country ownership. Assess the extent to which country ownership has affected project outcomes and sustainability? Describe the ways in which it affected outcomes and sustainability, highlighting the causal links:

Despite the strong efforts of INIGEMM (government institution and executing partner INIGEMM in Ecuador) to coordinate project activities with both the management and technical areas, the project implementation performance had suffered from serial management changes.
TE also notes that "mining ministries at national and regional levels were deeply involved and consulted in Peru, and this led to some concrete advancement of formalization and regulation of mining activities in the field". Overall, these government agencies were determined to be critical to the identification of problem areas and the development of technical cooperation strategies. (TE, pg.12)

6. Assessment of project's Monitoring and Evaluation system

Ratings are assessed on a six point scale: Highly Satisfactory=no shortcomings in this M&E component; Satisfactory=minor shortcomings in this M&E component; Moderately Satisfactory=moderate shortcomings in this M&E component; Moderately Unsatisfactory=significant shortcomings in this M&E component; Unsatisfactory=major shortcomings in this M&E component; Highly Unsatisfactory=there were no project M&E systems.

Please justify ratings in the space below each box.

6.1 **M&E Design at entry**	Rating: Satisfactory

The M&E design at entry is rated as satisfactory. A project coordination unit was established to be an effective monitoring and evaluation mechanism along with the project steering committee at the inception workshop composing of a fair representation of the principle stakeholders in the region.

The project results framework was created including logical methods and assumptions for the project outcomes. The project design included collection of existing data during the first phase of the project in order to establish a baseline from which specific targets for the first year would be defined, along with corresponding indicators and means of verification.
(CEO Endorsement, pg.5)

6.2 **M&E Implementation**	Rating: Unsatisfactory

The M&E design at implementation is rated as unsatisfactory. The TE notes that the monitoring and evaluation of the project was not adequately funded and the one-year project implementation report and final report did not make numerical estimates of important indicator targets as it should have based on the project design requirements. (TE, pg.x)

Mercury reduction claims were based on verbal interviews on mercury use of miners and plant operators and were reported following the mercury ban, which makes the validity of the claims questionable. No

exit surveys were conducted at the end of any training or workshop sessions, making it impossible to assess the satisfaction or learning performance of the participants.

The TE notes that the final evaluation of the project did not include any percentage or absolute number of artisanal miners that adopted alternative techniques, stating that the project itself was oriented towards effecting change among processing plant owners instead of artisanal miners. (TE, pg.31)

Overall, the inadequate monitoring hindered the full assessment of project efficiency and progress based on the logical framework or indicators identified at the beginning.

7. Assessment of project implementation and execution

Quality of Implementation includes the quality of project design, as well as the quality of supervision and assistance provided by implementing agency(s) to execution agencies throughout project implementation. Quality of Execution covers the effectiveness of the executing agency(s) in performing its roles and responsibilities. In both instances, the focus is upon factors that are largely within the control of the respective implementing and executing agency(s). A six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess.

Please justify ratings in the space below each box.

7.1 **Quality of Project Implementation**	Rating: Unable to assess

The implementing agency of the project was UNIDO. The TE notes that UNIDO and the government adequately provided most of the inputs as planned and in a timely fashion, however it is hard to determine the extent of the supervisory and decision-making role for adaptive management given the significant gaps in project monitoring. The TER is unable to fully assess the quality of project implementation.

7.2 **Quality of Project Execution**	Rating: Moderately Unsatisfactory

The executing agencies were the National Geological, Mining and Metallurgy Research Institute (INIGEMM) of Ecuador and Ministry of Environment of Peru. INIGEMM had gone through changes in its management where the project had worked with three different Executive Directors. Although coordination and communication has been maintained, the project had to adjust to the different priorities causing delays in the execution of activities.

Under the original administration the project planned to support the establishment of an International Training Center for Artisanal Miners (ITCAM) in Portovelo, where the development and introduction of improved practices would be carried out. Due to the change in priorities at INIGEMM, the establishment of the center was no longer a priority so it was eliminated. The project instead undertook a major study

of the mineral processing practices of several plants, leading to useful results that would help guide future activities aimed at reducing mercury and improving gold recovery. (TE, pg.26) Miners from Peru were also brought to Portovelo to observe and learn from the more advanced technologies being applied there. (PIR, 2016)

8. Assessment of Project Impacts

Note - In instances where information on any impact related topic is not provided in the terminal evaluations, the reviewer should indicate in the relevant sections below that this is indeed the case and identify the information gaps. When providing information on topics related to impact, please cite the page number of the terminal evaluation from where the information is sourced.

8.1 Environmental Change. Describe the changes in environmental stress and environmental status that occurred by the end of the project. Include both quantitative and qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

The project final evaluation claimed 60% reduction in mercury releases into the Puyango-Tumbes. Although this number was attained by assessing voluntary verbal responses hence questionable in accuracy, there are other indications of reduced mercury use.

8.2 Socioeconomic change. Describe any changes in human well-being (income, education, health, community relationships, etc.) that occurred by the end of the project. Include both quantitative and qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

The TE notes that although the monitoring and improvement of environmental quality aspects of this project equally benefit all people of the region, women were more effectively included in the project in Peru, where records of workshops show significant numbers of women attending training workshops. TE also notes that “other disadvantaged people tend to be disproportionately found among miners than processing plant owners, and therefore the project’s focus on the Ecuador processing plants inadvertently drew focus away from marginalized groups such as indigenous, afro-Ecuadorians, and the poor in general.” (TE, pg.11)

8.3 Capacity and governance changes. Describe notable changes in capacities and governance that can lead to large-scale action (both mass and legislative) bringing about positive environmental change. “Capacities” include awareness, knowledge, skills, infrastructure, and environmental monitoring systems, among others. “Governance” refers to decision-making processes, structures and systems, including access to and use of information, and thus would include laws, administrative bodies, trust-building and conflict resolution processes, information-sharing systems, etc. Indicate how project

activities contributed to/ hindered these changes, as well as how contextual factors have influenced these changes.

a) Capacities

The TE does not cite the changes in capacities at measurable terms

b) Governance

The Ecuadorian government banned mercury in mining toward the end of the project which aimed at demonstrable reductions in use and emissions.

8.4 Unintended impacts. Describe any impacts not targeted by the project, whether positive or negative, affecting either ecological or social aspects. Indicate the factors that contributed to these unintended impacts occurring.

TE indicates that the national mercury ban drove people to burn in their homes and hide their mercury processes, further driving them into the shadow economy. On a positive note, the project contributed to interesting information on nutritional methods for reducing mercury burden and toxicity in vulnerable populations that is useful and innovative through its collaboration with UBC. (TE, pg.25)

8.5 Adoption of GEF initiatives at scale. Identify any initiatives (e.g. technologies, approaches, financing instruments, implementing bodies, legal frameworks, information systems) that have been mainstreamed, replicated and/or scaled up by government and other stakeholders by project end. Include the extent to which this broader adoption has taken place, e.g. if plans and resources have been established but no actual adoption has taken place, or if market change and large-scale environmental benefits have begun to occur. Indicate how project activities and other contextual factors contributed to these taking place. If broader adoption has not taken place as expected, indicate which factors (both project-related and contextual) have hindered this from happening.

The countries involved in the project attended and presented project results at Intergovernmental Negotiating Committee (INC), however the TE notes that the final reports said nothing of sharing results with other mining communities in each country and that there was no evidence of existing or likely replication of project results at regional or international levels because limited alternative methods were proposed or demonstrated. (TE, pg.24)

9. Lessons and recommendations

9.1 Briefly describe the key lessons, good practices, or approaches mentioned in the terminal evaluation report that could have application for other GEF projects.

9.2 Briefly describe the recommendations given in the terminal evaluation.

The TE provides extensive and very detailed sections on project lessons and recommendations targeted at project implementers, regulators, various stakeholders and potential donors

The short summary of key lessons and recommendations derived from the project are listed below (TE, pg. x):

1. As an alternative to mercury use in Ecuador, the project promoted direct cyanidation, which is a service offered by most of the local processing plants. This eliminates mercury application and gold recovery is demonstrably far superior.

2. The project could have benefited from greater focus on technical gold recovery rather than mercury health and safety, and less reliance on intermittent discontinuous deployment of international consultants. This practice was remedied toward the end of the project.

3. This project successfully reduced mercury use in Ecuador and Peru through training campaigns that encouraged miners to eliminate mercury by selling ore directly or paying for cyanidation.

4. The national mercury-ban in Ecuador, which was likely at least partially a result of the data and awareness brought about by UNIDO's project, ensures that mercury use will continue to decline. Unfortunately, it also pushes great numbers of miners into illegality, forces them to hide their mercury use and obtain it from organized crime

10. Quality of the Terminal Evaluation Report

A six point rating scale is used for each sub-criteria and overall rating of the terminal evaluation report (Highly Satisfactory to Highly Unsatisfactory)

Criteria	GEF IEO comments	Rating
To what extent does the report contain an assessment of relevant outcomes and impacts of the project and the achievement of the objectives?	The report's assessment of outcomes and impacts was adequate and detailed.	**S**
To what extent is the report internally consistent, the evidence presented complete and convincing, and ratings well substantiated?	The report is internally consistent in assessing the outcomes and the evidence reported is complete in most areas except for financing and implementing agency performance	**MS**
To what extent does the report properly assess project sustainability and/or project exit strategy?	The projects sustainability assessment is fair, however could be a little more detailed on the institutional/governance and environmental sustainability	**MS**
To what extent are the lessons learned supported by the evidence presented and are they comprehensive?	The lessons learned and relevant recommendations are very detailed and well presented	**S**
Does the report include the actual project costs (total and per activity) and actual co-financing used?	The reporting of actual project cost at project completion is not clear	**MU**
Assess the quality of the report's evaluation of project M&E systems:	The report assesses the quality of M&E at design and implementation together but mostly focuses on the implementation side	**S**
Overall TE Rating		**MS**

11. Note any additional sources of information used in the preparation of the terminal evaluation report (excluding PIRs, TEs, and PADs).