

# Global Opportunities for Long-term Development of artisanal and small-scale gold mining (ASGM) Sector Plus - GEF GOLD + Child Projects

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## GEF-7 CHILD PROJECT CONCEPT

CHILD PROJECT TYPE: Full-sized Child Project

PROGRAM: Other Program

Child Project Title:	GEF GOLD+: Global coordination, knowledge management and outreach
Country:	Global
Lead Agency	Conservation International
GEF Agency(ies):	UNEP and Conservation International

### PROJECT DESCRIPTION

Global Context (*maximum 500 words*)

**Describe the country's relevant environmental challenges and strategic positioning relative to the systems transformation proposed for the program, including relevant existing policies, commitments, and investment frameworks.**

**How are these aligned with the proposed approach to foster impactful outcomes with global environmental benefits?**

Artisanal and small-scale gold mining (ASGM) is, globally, the largest source of anthropogenic mercury releases into the environment with about 38% of total releases from a multitude of sites in over 70 countries (UNEP Global Mercury Assessment, 2018)<sup>1</sup>, and accounts for about 15% of the world's annual gold production (Metal Focus, 2019)<sup>2</sup>. It occurs almost entirely in developing countries and countries with economies in transition.

Due to poor practices of the ASGM sector, mercury is released directly into the environment. Consumption of mercury-contaminated fish exposes communities to methyl-mercury. Children are the most susceptible to the negative developmental effects of mercury exposure. The uncontrolled loss of mercury, especially released from whole ore amalgamation in ASGM can travel long distances around the globe, contributing to global mercury pollution and contaminating the world's ecosystems and fisheries. In about 70 countries mercury is still the mainstream method ASGM miners use to recover gold. It is estimated that nearly 100% of all mercury used in ASGM is released into the environment (Global Mercury Project, UNIDO 2007). The UNEP Global Mercury Partnership, estimates that the amount of mercury used by the sector annually is conservatively evaluated at 1,500 tonnes, making the ASGM sector the largest user and emitter of mercury into the environment, accounting for 38% of total annual anthropogenic mercury emissions into the atmosphere (UNEP Global Mercury Assessment, 2018). Experts estimate that 12-15 million people are currently involved in the sector, of which 4.5 million are women and 600,000 are children.

There are on-going global efforts to reduce mercury use in general (The Minamata Convention) and projects targeting the ASGM sector more specifically which involve the GEF (planetGOLD) and several multi-lateral, bilateral and private sector initiatives. A few successful mercury-free pilots have been

<sup>1</sup> <https://wedocs.unep.org/bitstream/handle/20.500.11822/27579/GMA2018.pdf?sequence=1&isAllowed=y>

<sup>2</sup> <https://www.europeangoldforum.org/wp-content/uploads/sites/8/2019/04/Gold-Focus-2019-compressed.pdf>

carried out, though their upscaling has been limited in comparison to the scale of global mercury release from the ASGM sector.

## **Project Overview and Approach (maximum 1250 words)**

### **A. Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed;**

The GOLD+ program, aims to deepen mercury reduction in ASGM through holistic multisectoral integrated formalization innovations. *The Global Knowledge Management and Outreach Global Child Project* aims to facilitate the sharing of technical information and engage in outreach to relevant stakeholders to reduce and where feasible eliminate mercury use in ASGM. It has been designed to ensure that lessons learned from the 10 individual GOLD+ country child projects will be captured and shared between the child projects and other ASGM stakeholders globally. This knowledge sharing will assist countries where ASGM is present to increase capacity to formalize ASGM and approach the process in a holistic manner; provide technical advice with respect to access to finance for the ASGM sector; and increase technical capacity to support mercury reduction efforts.

Previous efforts to reduce mercury use in ASGM have provided insight into the major barriers preventing the uptake of sustainable mining technologies and practices, namely: i) informality; ii) a lack of access to finance in the ASGM sector; iii) low technical capacity in countries to support formalization and mercury reduction; iv) approaches to ASM formalization have not been holistic, multisectoral and integrated. The GOLD+ program aims to reduce mercury use in ASGM by targeting these barriers.

### **B. Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration;**

A few key baseline investments relating to knowledge management have been identified and this Global Child project will build on these existing initiatives:

1. **The planetGOLD program** – GOLD+ will build directly on the current GEF-funded planetGOLD Program and will continue many of its areas of action. PlanetGOLD (2019-2024) supports the eight countries in the program to fulfil their commitments under the Minamata Convention on mercury, by responding to the concrete target of contributing to the reduction of the emissions and release of 369 tons of mercury into the environment over the period of implementation. The focus of planetGOLD's global component – "knowledge management, communication and outreach" is to "unify and coordinate efforts among all the GEF GOLD child projects and disseminate knowledge generated to a wider audience to help Parties achieve the Minamata Convention obligations to reduce and where feasible eliminate mercury use in ASGM". Under this sub-component, a dedicated planetGOLD website has been developed, hosting a knowledge repository which has materials in the knowledge areas of formalization, technical solutions, awareness raising and access to finance. The website also has links to each of the child project countries and provides a summary of the ASGM situation in the country.

2. **The Minamata Convention on Mercury** – This convention made National Action Plans (NAPs) the centerpiece of Parties’ obligations on ASGM. NAPs should involve all the relevant national government ministries and other stakeholders, and enable them to agree on a plan, with strategies to address all the major components of ASGM, such as baseline mercury inventories, worst practices, formalization, health impacts, and availability of mercury. Using the NAPs, Parties, donors and other stakeholders can make informed decisions about future interventions to reduce mercury use in ASGM. NAPs have been funded by the GEF as enabling activities under the Minamata Convention, and some countries have embarked on the NAP development process with support from UNDP, UNEP and UNIDO.
3. **The UNEP Global Mercury Partnership** – This partnership formalized in 2007, is a voluntary group of stakeholders that shares the objective of taking immediate action to reduce the harmful effects of mercury pollution on human health and the environment. The Partnership’s ASGM area, led by Natural Resources Defense Council (NRDC), UNEP, and UNIDO, includes 52 partner organizations including governments, academia, civil society, and industry. It plays an active role in sharing information, case studies, best practices, and project information among the partners and within the broader community of ASGM practitioners.
4. Many partners of the ASGM partnership area are also engaged in knowledge sharing projects of their own, on topics such as technical capacity building, awareness-raising, health aspects, and formalization. These projects include:
  - Artisanalmining.org (former Communities and Artisanal and Small Scale Mining (CASM) archives (<http://artisanalmining.org/>))
  - Africa Minerals Development Centre (AMDC-UNECA website: <https://www.uneca.org/amdc>)
  - PACT’s Artisanal Mining Database and Mapping Platform (Delve) which is funded by the World Bank (see: <https://delvedatabase.org/>)
  - The Alliance for Responsible Mining’s on-line ASM Training Center (see: <https://www.responsiblemines.org/en/our-services/training-center>)
  - Solidaridad’s Gold Program which supports ASGM miners is a good resource for knowledge on the sector (see: <https://www.solidaridadnetwork.org/supply-chains/gold>)
  - GOXI, a sharing platform on governance (GO) in the extractive industries (XI) including ASGM (<http://goxi.org/>)
5. Another initiative that provides opportunities for collaboration with the Global Child program, is the Global **Landscapes Forum**<sup>3</sup>: It is the world’s largest knowledge-led platform on sustainable land use, dedicated to achieving the Sustainable Development Goals and Paris Climate Agreement. The forum is developing innovative finance mechanisms to invest in sustainable supply chains and believes in taking a holistic, fact-based approach to the most pressing global challenges: restoring billions of hectares of idle, degraded land; tackling insecure tenure, community and gender rights.

<sup>3</sup> <https://www.globallandscapesforum.org/about/what-is-the-landscape-approach/>

The global child project proposed here will share knowledge resources with these initiatives and others to widen the impact of the lessons learned from the GOLD+ program.

**C. Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits;**

The GOLD+ program aims to deepen mercury reduction in ASGM through holistic multisectoral integrated formalization innovations. This takes into account all facets of gold production and supply chain and consideration of all sectors that enable an optimally functioning ASGM sector with capacity to reduce mercury use and support sustainability.

The integrated approach proposed responds to and reflects the Theory of Change by designing interventions that focus on the earlier mentioned major barriers preventing the uptake of sustainable mining technologies and practices. As described in the Program Framework Document, activities in the project are premised on a formalisation approach that includes the following Key Success Factors:

- ☐ Appropriate legal framework, that promotes management of spaces not people.
- ☐ A holistic integrated approach, which means taking into account all facets of the gold production and supply chain and how they work together optimally for viable ASGM operations.
- ☐ Multisectoral, which means considering all sectors (e.g. forestry, water, health, environment that are important for enabling an optimally functioning ASGM sector with capacity to reduce mercury-free use and support sustainability).
- ☐ Inclusivity in policy formulation processes that include all stakeholders, including gender mainstreaming.
- ☐ Inclusion of local context in the institutional arrangements (i.e. miners' organisations, traditional and local authorities).
- ☐ Local capacity for sustainable change.

Innovative models including jurisdictional/landscape approaches (JA/LA) and regional approaches, ASGM financial inclusion and upscaling mercury free technologies are embedded in the theory of change to drive formalization and resultant ASGM good practices that reduce mercury use and realizes biodiversity protection outcomes. Knowledge sharing around this approach to formalization creates an opportunity for replication and scaling up, and lays the groundwork for sustainable change in the ASGM sector ensuring the global environmental benefits that the project aims for.

**D. Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.**

Current efforts of the planetGOLD program are allowing practitioners and researchers to identify the root causes and barriers of the mercury use problem and are beginning to tailor solutions that can assist in the adoption of sustainable practices in the sector. The GOLD+ program presents an opportunity to deepen mercury reduction in ASGM through a holistic approach to formalization and the Global child project is key to providing the technical support and scaling up the successes with required research, information, networking and knowledge exchange.

The Global child project is one component under the program (see PFD table B) and will have two sub-components: 1) Knowledge management and communication 2) Coordination, monitoring and evaluation of the GEF GOLD+ program.

***Project sub-component 1: Knowledge management and communication***

The objective of this sub-component will be the knowledge management and increased access to information among project partners and the wider ASGM community, particularly on the topics of formalization, market access and technology transfer. Through the implementation of communication strategies and activities, it will also inform and educate the general public and decision makers on the mayor issues, challenges and solutions related to the ASGM sector.

Through this sub-component, the Global child project will:

- ☐ Continue supporting and contributing to the planetGOLD knowledge sharing platform and website which will continue to be maintained by the UNEP Global Mercury Partnership.
- ☐ Synthesize, curate and disseminate legal, technical and intervention related information and resources to aid the formalization processes, market access and technology transfer of country-level child projects and the country-level efforts of those outside of the GOLD+ program.
- ☐ Continue the efforts of the planetGOLD Global Forum by organizing a two-yearly learning and sharing event that will facilitate face-to-face meetings between ASGM experts and practitioners, governments, gold buyers and miners in support of ongoing exchange of experiences and development of global expertise and capacity building on ASGM issues, in order to influence the global ASGM dialogue agenda and policy development.
- ☐ Work with relevant partners to disseminate information and create a network for ongoing outreach. The global project will assist the country-level child projects in working with universities, technology centers and schools in ASGM countries to disseminate relevant information, for example, by augmenting existing curricula with ASGM specific understanding and knowledge.
- ☐ Continue to support the online community of practitioners that was established under the planetGOLD program which promotes and maintains channels of communication among all planetGOLD project teams, and important external but related initiatives on ASGM.
- ☐ Explore collaboration between GOLD+ and other relevant knowledge platforms that support program objectives such as the Global Landscape Forum.
- ☐ Explore information exchange and outreach through regional coordination mechanisms.
- ☐ Where jurisdictional/landscape approaches are used, the project will facilitate knowledge sharing on ASGM topics amongst relevant stakeholders of the landscape.
- ☐ Provide the enabling environment for country-level child projects to create locally developed communication materials that educate the public on ASGM (this could include radio programs, and videos and video programs suitable for airing at public events and on television).
- ☐ Develop marketing materials for ASGM miners that help them clearly communicate the economic benefits of their sector and the benefits of responsible mining to their communities.
- ☐ Develop and maintain extensive social media coverage and campaigns for a range of audiences that provide awareness of the social, economic and environmental dimensions of the sector
- ☐ Invite and guide mainstream media outlets to highlight stories and successful projects that illustrate how the ASGM sector can be mercury free and governed responsibly.
- ☐ Facilitating information exchange amongst government stakeholders on success stories related to formalization, access to finance and mercury free transition.

Expected outcomes:

- ☐ Project-participating countries and the wider ASGM community increasingly share, access and apply knowledge
- ☐ Governments, mining communities and the general public have a shared and more sophisticated understanding of the ASGM sector

***Project sub-component 2: Coordination, monitoring and evaluation of the GEF GOLD+ program***

The objective of this sub-component will be to ensure overall coordination, monitoring and evaluation of the GEF GOLD+ Program as a whole. This is separate from the monitoring and evaluation that will be performed by each country-level child project.

Through this sub-component the Global child project will:

- ☐ Implement a monitoring and evaluation (ME) system that will capture and track progress regarding attainment of the program's results, adherence to the results framework, program functioning as an integrated effort, and how well all child projects are working together and complementing each other.
- ☐ Inform GEF and Implementing Agencies on program implementation gaps, need for re-alignment and adjustment of the original results framework.

Expected outcomes:

- ☐ GOLD+ program participating countries and communities understand successes and lessons learned from the Program as a whole.
- ☐ Program results are monitored and evaluated

**Engagement with the Global / Regional Framework (maximum 500 words)**

**Describe how the project will align with the global / regional framework for the program to foster knowledge sharing, learning, and synthesis of experiences. How will the proposed approach scale-up from the local and national level to maximize engagement by all relevant stakeholders and/or actors?**

This Child project will provide the coordination framework for the program. Its aim is to enable knowledge sharing, coordinate activities and synthesize learning between the country-level child projects and the rest of the global ASGM community. The Child project lends itself to the scale-up of the successful approaches that are established during the implementation of GOLD+ by:

- ☐ Creating and disseminating knowledge and communication products that are tailor-made for use by countries seeking to formalize their own ASGM sector in order to eliminate mercury use in ASGM and fulfill their commitments under the Minamata Convention.
- ☐ Demonstrating a portfolio of country-level projects that will provide a larger assortment of examples of how different countries can approach the issue of ASGM formalization.

- Allowing for the creation of regional modes of cooperation to deal with the issue of mercury use in ASGM. If successful, these regional initiatives will provide the framework for maximizing scale-up of lessons and processes learned during GOLD+.



## GEF-7 CHILD PROJECT CONCEPT (BOLIVIA)

CHILD PROJECT TYPE: Full-sized Child Project

PROGRAM: Other Program

Child Project Title:	GEF GOLD+ Bolivia: Enhancing the formalization and mercury reduction in artisanal and small-scale gold mining in the Plurinational State of Bolivia
Country:	Bolivia
Lead Agency	United Nations Industrial Development Organization (UNIDO)
GEF Agency(ies):	

### PROJECT DESCRIPTION (maximum 500 words)

**Describe the country's relevant environmental challenges and strategic positioning relative to the systems transformation proposed for the program, including relevant existing policies, commitments, and investment frameworks. How are these aligned with the proposed approach to foster impactful outcomes with global environmental benefits?**

Bolivia has a long tradition of gold mining activities. Gold is the third largest commodity exported and hence is a considerable asset to the Bolivian economy<sup>1</sup>. Despite the decline of large-scale mining (LSM), the overall gold production has doubled in the last decade, mainly due to artisanal and small-scale gold mining (ASGM) and to a sustained rise in gold prices. In 2018, 37 tonnes of gold were produced by 150,000 formal miners<sup>2</sup>. An estimated additional 100,000 miners operate informally or illegally in the country.

Currently, the use of mercury in mining activities is legal in the country and it is a widespread practice among miners. Additionally, environmental degradation and social issues linked to ASGM activities are witnessed in many sites threatening local communities.

In 1997, the Mining Code<sup>3</sup> (Law 1777) was promulgated and in July of the same year, the Environmental Regulation for Mining Activities (ERMA) was approved. Furthermore, in 2014 Law 535 on Mining and Metallurgy<sup>4</sup> was enacted in order to update and broaden the scope of the legislation covering ASGM activities. Despite several governmental initiatives to regulate and formalize the sector, in practice, mercury use is still permitted, and significant work is required in order to address gaps and weaknesses that hamper the sustainable development of the sector.

The following initiatives to address the negative impacts of mercury on human health and the environment have been taking place in Bolivia in the last decade:

- ✦ (2004) Swiss Agency for Development and Cooperation (SDC) project on mercury reduction in ASGM sector;
- ✦ (2008-2010) Strategic Approach to International Chemicals Management (SAICM) project on protection of children and women's health through mercury reduction;
- ✦ (2009) SAICM project on a regional project to reduce mercury emissions in the ASGM sector;
- ✦ (2010) World Wildlife Fund (WWF) and the Institut de Recherche pour le Développement on mercury usage, as well as emissions and pollutions of mercury in country;
- ✦ (2013) Inter-american Development Bank (IDB) and the Alliance for Responsible Mining (ARM) on a regional project strengthening incentives for formalization of ASGM sector based on Fairmined certification; and,
- ✦ (2017 - current) Swiss State Secretariat for Economic Affairs (SECO) – Better Gold Initiative regional project, promoting access to gold certification schemes in four mining cooperatives in the country.

Bolivia is well positioned to support the systems transformation designed by the GOLD+ programme, which plans to pilot landscape and jurisdictional approaches (JAs) as a framework for structuring formalization interventions in a holistic, multi-sectoral and integrated way. The importance of the sector for the country as well as all the above mentioned initiatives imply a clear interest to receive support towards a sustainable and responsible ASGM sector. There is a strong need to work on strategies that will reduce the abusive use of mercury through formalization, promotion of investment and proper technology.

### Project Overview and Approach (maximum 1250 words)

<sup>1</sup> Minamata Initial Assessment (2017).

<sup>2</sup> COMTRADE (2018) and FERENPROMIN (2019) Sustitución de Hg en explotación de Au por métodos compatibles con el medioambiente.

<sup>3</sup> Mining Code (1997). Available at:

[http://www.udape.gob.bo/portales\\_html/portalSIG/atlasUdape1234567/atlas09\\_2007/documentos/C%C3%B3digo%20de%20Mineria.pdf](http://www.udape.gob.bo/portales_html/portalSIG/atlasUdape1234567/atlas09_2007/documentos/C%C3%B3digo%20de%20Mineria.pdf)

<sup>4</sup> Mining and Metallurgy Law (2014). Available at: <http://www.fofim.gob.bo/attachments/article/19/Ley%20535.pdf>

**A. Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed.**

The country has a wide geographical distribution of gold deposits<sup>5</sup> with a clear concentration of both mining concessions and mining cooperatives in the department of La Paz (Figure 1).

Private companies and mining cooperatives are active in the sector, the latter representing the vast majority, with a total of 1,406 gold mining cooperatives in 2018<sup>6</sup>. Although they are not recognized by Bolivian law, “barranquilleros” or individuals also play a role in the extraction and commercialization of the artisanal gold.

In terms of gold ore deposits, there are approximately 490 hard rock sites and 1,270 alluvial deposits contributing proportionally to gold production. The level of administrative organization and extractive processes used vary greatly. Some cooperatives are well administered, and use machinery valued at over USD 1 Mio while others barely meet the legal requirements to be granted a concession. Whole ore amalgamation (WOA) is used by the most miners<sup>7</sup> with estimated mercury to gold ratio of 1 to 3. Lack of technical knowledge and resources combined with lack of investments results in minimum concern for health and environmental safety<sup>8</sup> and a low recovery of gold.

Potential project areas or sites are depicted in Figure 1:

- ✦ La Paz where most of the cooperatives and mining districts are located (26 out of 53<sup>9</sup>), especially areas such as Apolobamba, Yani, and Sorata;
- ✦ San Ramón mining area located in the department of Santa Cruz; or
- ✦ River Madre de Dios that is located in the Amazon area of the departments of Pando and La Paz, at the border between Bolivia and Peru.

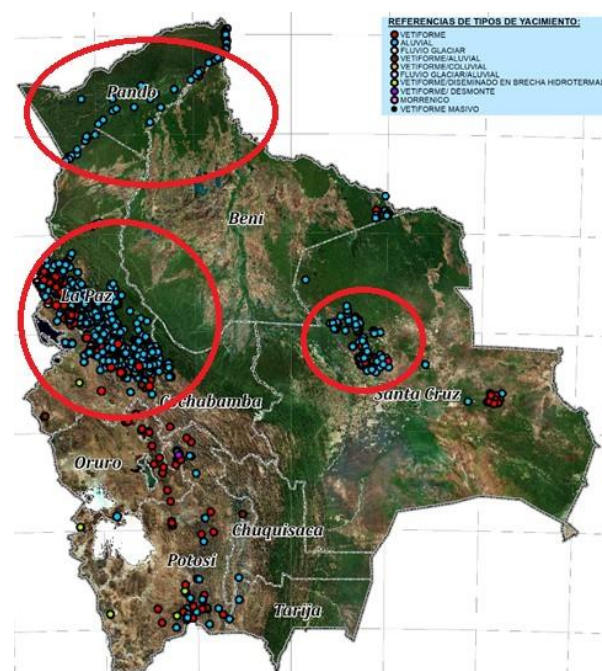


Figure 1. Geological distribution of Bolivia (MEDMIN)

In Bolivia, ASGM is considered as one of the most harmful activities for the environment and the ecosystems resulting in soil and water contamination, deforestation, biodiversity loss, and air pollution<sup>10</sup>.

The estimated quantity of mercury use in the ASGM sector is at 120 tonnes annually<sup>11</sup>. This figure is well aligned with WOA processes and an estimated annual gold production of 30-40 tons. The use of mercury in ASGM is still legal in Bolivia, which poses a serious threat to the environment and the health of Bolivian citizens but also enables the diversion of the toxic substance to other countries in the region where legal importation is banned such as Ecuador or Colombia<sup>12</sup>.

Furthermore, in recent years there has been an increase in the emergence of conflicts among cooperatives and communities (farmers, herders and other rural individuals). These clashes are caused either by illegal occupation of a territory or by conflicts over land use, access to water or environmental degradation.

Miners are also flouting regulations, as cooperatives freely—and illegally—associate with companies to get investment and machinery while operating without environmental licenses.

<sup>5</sup> MEDMIN (2015) – Inventario de la minería aurífera primaria y descripción de otros sectores auríferos de Bolivia.

<sup>6</sup> SERGEOTECMIN – VCM y ACFOOP.

<sup>7</sup> Artisanal Gold Council (AGC), (2017).

<sup>8</sup> MEDMIN (2015) – Inventario de la minería aurífera primaria y descripción de otros sectores auríferos de Bolivia.

<sup>9</sup> SENARECOM, (2019).

<sup>10</sup> Molina, C. and Pouilly, M. (2014) Generalidades sobre el mercurio en Bolivia. In Mercurio en Bolivia: Línea base de usos, emisiones y contaminación, Chapter: CAPÍTULO I, Editors: Ministerio de Relaciones Exteriores & Ministerio de Medio Ambiente y Agua.

<sup>11</sup> UN Environment, 2017. Global mercury supply, trade and demand. United Nations Environment Programme, Chemicals and Health Branch. Geneva, Switzerland.

<sup>12</sup> UNEP (2018). Global Mercury Assessment (2018). Available at: <https://www.unenvironment.org/resources/publication/global-mercury-assessment-2018>

The gold supply chain is currently mainly informal if not illegal. After production and despite legislative requirement to register the origin of the gold, it is sold with erroneous information on origin either to “rescatadores”, who buy on site before further selling as individuals, or to trading entities that buy gold to refine it or melt it. The gold is then either sold locally or exported by specialized companies. In response to increased due diligence procedures by traditional buyers from the USA, Bolivian gold exports shifted recently to countries with less scrutiny. This situation is enabling the entrance of gold of questionable origin in the gold trade.

**B. Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration;**

Bolivia completed its Minamata Initial Assessment (MIA) in 2017. In line with the requirements of Minamata Convention, Bolivia intends to initiate the development of a National Action Plan (NAP) on ASGM in 2020.

In order to formalize the ASGM sector, the government created SENARECOM in 2007 as a decentralized public entity in charge of the register and control of commercialization of minerals in both the domestic and foreign markets. In complement SINACOM, was established as a National System of Information to process and store all the information on trade of minerals in the country. In 2010, the Empresa Boliviana de Oro (EBO), a state company was created to i) purchase gold produced by cooperatives and ii) store it in the National Bank of Bolivia, strengthening thus the national currency and giving a central role to the State in the ASGM sector. Due to differed payment for the gold, the initiative was not very successful as most of miners prefer to sell to retailers. In 2014, the Autoridad Jurisdiccional Administrativa Minera (AJAM) was created as an entity under the Ministry of Mining and Metallurgy in charge of receiving and granting permits to extract and commercialize minerals.

The Grupo Interinstitucional de Trabajo en Oro Responsable (GIT – Oro Responsable), was formed in 2018 with the objective of bringing together stakeholders who are working in different aspects of the sector to achieve sustainable development. This platform could be used to develop the multi-stakeholder approach to generate synergies and benefits for all the stakeholders involved (government actors, regional and municipal state representatives, mining federations and confederations, cooperatives, miners, and local communities).

At this stage, the Project Executing Entity will be either a governmental entity (from the Ministry of Environment and Water or the Ministry of Mines and Metallurgy) or a national entity with experience in the sector (tentatively Medmim or Fundación Jubileo). This will be further assessed and confirmed during the PPG phase.

Strategies to mitigate gender inequality will build on experience from stakeholders such as Red Nacional de Mujeres y Minería de Bolivia (RNMM). Women's participation in the ASGM sector is high in Bolivia. They perform all kinds of tasks and can work as members of a mining cooperative; independently with an agreed salary; as "volunteers" receiving 20-30% of their production; or as "barranquilleras", workers at the base of the hierarchy, who undertake precarious, disorganized and clandestine services<sup>13</sup>.

**C. Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits;**

The GOLD+ programme's Theory of Change (see PFD) has been developed around:

- ✦ Optimizing formalization strategies through integrated, holistic, and multi-sector approaches at the landscape scale through commodity-specific JAs;
- ✦ Accelerating financial inclusion and creation of responsible supply chains;
- ✦ Enhancing uptake of mercury-free technologies through sustainable business models; and,
- ✦ Foster knowledge sharing, learning, and synthesis of experiences.

The integrated approach proposed for the Bolivia child project fully responds to and reflects the GOLD+ Programme's ToC, as can be derived from the results framework (see page 1). The project and programme components are the same, and the child project outputs directly contribute to the PFD. In line with the GOLD+ Program's ToC, this child project will expand on the work initiated under the GEF-funded planetGOLD programme.

<sup>13</sup> MEDMIN (2001). Bolivia Estudio Regional/Nacional sobre Pequeña Minería y Artesanal. Available at: <https://pubs.iied.org/pdfs/G00714.pdf>

The project will pilot a Jurisdictional Approach (JA), following territorial boundaries of mining areas with a commodity focus on responsible gold. As a tool to transform commodity supply chains focused on making the link between supply chains and multifunctional landscapes, the JA appears to be a suitable method for tackling the systemic challenges in Bolivia. ASGM sector in Bolivia faces social inequalities that will benefit from inclusive multi-stakeholder consultation processes, strengthening the capacity of local government and building trust with miners.

Furthermore, the project will improve access to financing for ASGM miners to help them operate more sustainable and profitable businesses. Increased investment in the ASGM sector will encourage responsible mining practices. Formalized mining cooperatives with better practices will lead to transparent mineral supply chains that will contribute to higher income for the miners.

The planned integrated approach is designed to generate mercury reduction of 16 tons by project completion. Contribution to other core indicators will be assessed during the PPG phase.

**D. Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.**

Despite efforts to regulate and manage the ASGM sector, mercury use in gold extraction remains a major concern in Bolivia. Therefore, addressing issues related to small-scale mining has required, and will continue to require, mobilization of resources, from government budgets as well as assistance from the GEF. Currently there is no LSM present in the country although there are leaching plants in operation. Furthermore, financial mechanisms need to be institutionalized through a multi-stakeholder approach in order to ensure that miners can purchase Hg-free technologies and maintain financial sustainability. GEF resources will be applied to support the advancement of ASGM formalization efforts by piloting a commodity-specific JA on responsible gold and following territorial boundaries of designated mining areas. The intervention will be designed to be cost effective with a ratio of USD146/kg Hg reduction.

The GEF GOLD+ programme presents a new opportunity to try innovative solutions in reducing mercury usage and emissions in the ASGM sector. The uptake at the local and national level will translate into positive regional and global impact based on the transparent mineral supply chain approach.

**Engagement with the Global / Regional Framework (maximum 500 words)**

**Describe how the project will align with the global / regional framework for the program to foster knowledge sharing, learning, and synthesis of experiences. How will the proposed approach scale-up from the local and national level to maximize engagement by all relevant stakeholders and/or actors?**

All knowledge sharing, lessons learning, and synthesis of experiences will be completed in close consultation with government counterparts to build their capacity in improving the ASGM economy in Bolivia. Positive impacts and results achieved under ongoing initiatives and outcomes of the MIA and, in time, the NAP on ASGM will be highlighted and these lessons will be integrated in GOLD+. Knowledge generated under the project will capture results of piloting the JA as a strategy for holistic, integrated and innovative means to optimize formalization, while mainstreaming capacity building and gender equality for project results will be included. In addition, coordination with the global child project on knowledge management will be carefully implemented to ensure the most effective and highest efficiency for the entire programme. Knowledge products and lessons learned at the local and national level will be shared with the global project, which will make these experiences available through the planetGOLD platform and other outreach strategies. This will foster a community of practice among participating countries and will allow for the sharing of successful models with a wide range of global actors and stakeholders. The child project will participate actively in international meetings and events, such as the Global Forum (organized by the global project), a two-yearly learning and sharing event that will facilitate face-to-face meetings between ASGM experts and practitioners, governments, gold buyers and miners to support ongoing exchange of experiences, as well as development of global expertise and capacity building on ASGM issues and networking and learning, to influence the global ASGM dialogue agenda and policy development.

In line with core components of the holistic multisectoral integrated approach to formalization, the project as a pilot of JAs will document lessons learned from each component. Through multi-stakeholder consultation, UNIDO will assess the viability of different communication tools to ensure investments under the global knowledge management component are resource efficient and inclusive of local stakeholder needs, recognizing miners are often excluded from strategies to maximize engagement between mining communities across regional or national geographies. Our approach to the global knowledge and communication component of GOLD+ will also include an increased focus on maximising the impact of communications at the local miner level.

Media campaigns and communication tools will be used to inform the general public, ASGM communities and schools on the dangers of mercury and possible solutions on the one hand, and the significant development potential of formal ASGM, taking gender-based risks and the unique circumstance of Bolivia into account.

## GEF-7 CHILD PROJECT CONCEPT

CHILD PROJECT TYPE: Full-sized Child Project

PROGRAM: Other Program

Child Project Title:	Global Opportunities for Long-term Development of ASGM (GOLD+) in the Republic of the Congo
Country:	Republic of the Congo
Lead Agency	United Nations Environment Programme (UNEP)
GEF Agency(ies):	UNEP and Conservation International

### PROJECT DESCRIPTION

Global Context (*maximum 500 words*)

**Describe the country's relevant environmental challenges and strategic positioning relative to the systems transformation proposed for the program, including relevant existing policies, commitments, and investment frameworks.**

**How are these aligned with the proposed approach to foster impactful outcomes with global environmental benefits?**

Artisanal and small-scale gold mining (ASGM) is the largest source of anthropogenic mercury releases globally. Once in the environment, mercury can be cycled through upper troposphere posing an ecological and human health risk far from the initial release. Approximately 30 % of the 838 tons of ASGM mercury emissions annually originate from Sub-Saharan Africa.<sup>1</sup>

The Republic of the Congo ratified the Minamata Convention, which prohibits the use of mercury in ASGM, in 2014. However the practice remains widespread. More than 5,000 Congolese are employed in the sector, which comprises most (15 kg/ year) of the country's gold production. The vast majority of these miners utilize mercury amalgamation to extract gold from ore, releasing approximately 50 kg of mercury into the environment annually.<sup>2</sup>

The relevant regulatory framework does not provide adequate clarity on issues related to mercury use in ASGM. The key laws and regulations (Republic of the Congo: Law No. 4-2005; No. 24 2010; No. 274-2007 of 21 May 2007; Decree No. 91 of 1966; No. 003-1991 of 1991) do not make any mention of mercury use. They further establish a prohibitively expensive pathway for small-scale miners to acquire mining rights. Accordingly, nearly all small-scale gold miners operate outside of the formal sector, thereby complicating intervention.

To date GEF resources have been utilized for the development of the MIA and NAP only. The draft of the NAP is currently circulating and is expected to be finalized mid-2020. ASGM was introduced in the region by the French in the middle of the 20<sup>th</sup> century, resulting in extensive contamination of human and natural environments. There has been minimal action on the part of government and NGOs to mitigate the adverse impacts of the sector. As part of the NAP a steering committee was established (memorandum no°0628/MEFDDE/CAB/DGE of April 25, 2017) to oversee progress. This body could be an entry point for possible intervention. Given the relatively little work conducted in the region to date, the global

<sup>1</sup> UNEP, 'Global Mercury Assessment' 270 <<http://www.unep.org/gc/gc22/Document/UNEP-GC22-INF3.pdf>>.

<sup>2</sup> Republic of the Congo, 'National Action Plan (DRAFT)' (2019).

Additionally, the country participates in the Congo Basin Impact Programme, underlining the importance of the biodiversity in the region and the necessity to avoid mercury emissions.

**A. Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed:**

More than a half century of mining in the region has resulted in significant contamination of human and natural environments. Environmental and biological samples were not collected and analysed as part of the NAP, but extensive monitoring of comparable operations globally indicates that levels in the region exceed human health and environmental guidelines. More than 19 kg of mercury are released into the environment in the Republic of the Congo annually.

The majority of mining in the region is alluvial with operations characterized by rudimentary panning, amalgamation and open burning. Irresponsible management of mercury is common. Information on mining techniques collected as part of the NAP indicate that a remarkable 1.25 kg of mercury are released for every 1 kg of gold produced. More responsible use and a reduction in emissions would benefit the miners as mercury is one of the more costly inputs into the system.

**B. Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration;**

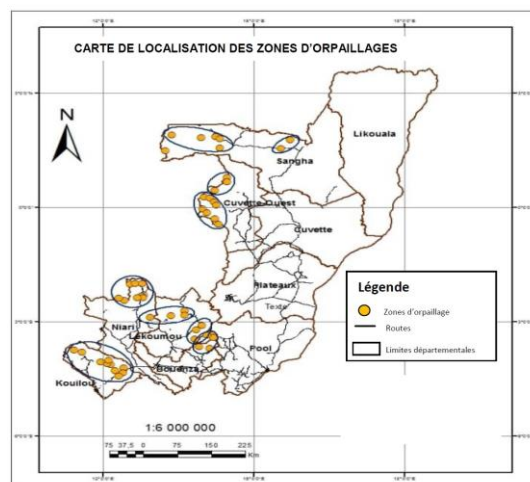


Figure 1: ASGM areas in the Republic of the Congo  
disaggregated by extent of mercury use

This project will be implemented by UNEP and executed by the Basel Convention Regional Centre in Dakar which has the expertise and mandate to assist francophone countries in the implementation of the chemicals conventions.

Consistent with the Convention, the Republic of the Congo completed a Minamata Initial Assessments (MIAs) in December 2018 and have more recently conducted a National Action Plans (NAP). The Republic of the Congo's draft NAP was completed in December 2019.

The French first identified significant gold deposits in the region in the early 20<sup>th</sup> century. Exploitation initially focused on the district Dimonika of the Mayombe region in the western part of the Republic of the Congo. By the 1960s international mining companies were producing from 1–2,000 tons of gold annually with the use of mercury amalgamation, resulting in significant contamination of human and natural environments. Gold production then slowed in the latter part of the 20<sup>th</sup> century. Small-scale gold mining increased in lockstep with increased international gold prices in the early 2000s and has remained high since.

At present the 221 mines identified as part of the Republic of the Congo NAP are located in Sangha, Cuvette-Ouest, Pool, Lékoumou, Niari, Bouenza, Likouala, and Kouilou districts. Approximately 95 % of miners are male. Only 3 % of the workforce is female with most women engaged in ancillary activities such as meal preparation or other services. Children, whom compose ~2 % of the workforce, are likewise rarely involved in heavy labour at sites.

A steering committee was formed in the Republic of the Congo in 2017 to oversee NAP activities. This body is comprised of representatives from the Directorate Generals of Environment, Mines, and Industry and includes focal points for Basil, Minamata, Rotterdam and SAICM. The steering committee includes one NGO, *Association Action sur Environnement and Development*. Despite decades of gold mining in the region, the NAPs were unable to identify any projects carried out that targeted this sector. Thus the steering committee is likely the best entry point for a project.

Gender considerations will be integral to all major project outputs. To help ensure equal application of gender considerations across the project, budget will be allocated for the contracting of a gender specialist who will form a key part of the project management team. The Republic of the Congo child project will produce a series of deliverables related to gender considerations, consistent with the GEF's Guidance to Advance Gender Equality. These will include: stakeholder consultations; social and environmental screening; a gender baseline analysis; a gender action plan; and a stakeholder engagement plan. The project will also include gender-disaggregated reporting on all relevant outputs and activities.

Similarly, the project's main focus is on formalisation, therefore, the most marginalised miners will be the primary target.

**C. Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits;**

The Gold+ programme has been developed around four components to be executed through child projects. The components are intended to comprise a holistic approach addressing root causes while enabling miners to improve their livelihoods and reduce mercury emissions. The four components are as follows:

- Component 1: Formalisation optimisation;



- Component 2: Financial Inclusion and Responsible Supply Chains;
- Component 3: Enhancing uptake of Mercury-free technologies;
- Component 4: Knowledge sharing, communication and local capacity building support.

The informal nature of the ASGM sector in the region governs its interaction with the broader economy. Miners require the assistance of better-capitalized intermediaries or other formal actors to access resources essential to their operations. Each of these intermediaries extracts a fee which drives down miners' incomes, limits their ability to capitalize, and ultimately increases their reliance on predatory actors. Perversely this system results in decreased incomes throughout the supply chain as informally produced gold fetches a lower price on the market.

The proposed alternative as part of Component 1 is a 'jurisdictional approach' whereby interests of disparate actors are aligned and coordinated to facilitate formalisation. This will include exploring mutually beneficial relationships with large scale mining operations. Component 2 then is intended to raise the value of the entire supply chain by promoting transparency and encouraging the purchase of responsibly produced gold in OECD countries. Coupled with improved access to capital for small-scale miners, this component will facilitate a transition to mercury free technologies introduced as part of Component 3. The project will focus on transferring and demonstrating the increased efficiency of the non-mercury techniques. Demonstration sites will be selected and replication of the intervention in other mining areas designed. Accordingly lessons learned will be shared in a structured manner across government agencies, key actors nationally, and through the knowledge management child project globally through component 4.

The child project will be closely aligned with the global coordination, knowledge management and outreach project of the program. Knowledge products and lessons learned at the local and national level will be shared with the global project, which will make these experiences available through the planetGOLD platform and other outreach strategies. This will foster a community of practice among participating countries and will allow for the sharing of successful models with a wide range of global actors and stakeholders. The child project will participate actively in international meetings and events, such as the Global Forum (organized by the global project), a two-yearly learning and sharing event that will facilitate face-to-face meetings between ASGM experts and practitioners, governments, gold buyers and miners to support ongoing exchange of experiences, as well as development of global expertise and capacity building on ASGM issues and networking and learning, to influence the global ASGM dialogue agenda and policy development.

**D. Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.**

The more than 5,000 miners and their families dependent on ASGM in the Republic of the Congo are distributed along the country's western border. Within this area most activity is concentrated in the West Basin, followed by Kouilou and Niari. These areas would likely form the focus on any initial intervention.

The gold supply chain in the region suffers from a series of inefficiencies that result in a significant percentage of lost value. Among them the mercury intensive mining techniques used at the local level are expensive and manually difficult to carry out. Owing in part to work done on behalf of the Convention, the price of mercury continues to increase. Thus there is a clear incentive on the part of the miners to adopt the alternatives introduced as part of the project. Improvements at the local level will

allow miners to engage more robustly with formal markets. This will be supported through the financial mechanisms and supply chain improvements supported by the project.

The Republic of the Congo government's ongoing engagement with Minamata through their completion of MIAs and NAPs are indicative of a fertile environment for a broader intervention. The proposed child project links these disparate activities to promote a mutually reinforcing integrated approach of which the UN system and the GEF are uniquely capable of supporting.

Engagement with the Global / Regional Framework **(maximum 500 words)**

**Describe how the project will align with the global / regional framework for the program to foster knowledge sharing, learning, and synthesis of experiences. How will the proposed approach scale-up from the local and national level to maximize engagement by all relevant stakeholders and/or actors?**

The basic components of the project are eminently scalable in the region. At present the significant value contained in the ore is unevenly distributed up the value chain with rent and fee-seeking behaviour characterizing intermediary actors. By promoting transparency the project will highlight the predatory nature of that arrangement and facilitate corrective action. Specifically, the project will seek to increase the already incrementally higher cost paid for responsibly produced gold in OECD countries. This increased price will in turn incentivise responsible production and transparent supply chains. Financial mechanisms cultivated by the project will be sustained by a better capitalized and organized ASGM sector.

There are obvious challenges associated to implementing and scaling up a project of this complexity. To address this the project sits within a larger programme connected through a knowledge management child project. Parallel projects will inform execution of work in the region and vice versa. On a practical level the knowledge management project will result in a de facto cost sharing for the development of information or technical tools. One immediately deployable example of this is a mobile phone app developed by a private mining company (Wazi Gold) that connects miners with buyers further down the supply chain thereby reducing reliance a number of brokers and other intermediaries.

The present project is based on decades of experience with the ASGM sector and identifies and prioritizes the most significant financial, operational and legal barriers to the miners themselves. It relies on a deep integration of key sectors and actors through the proposed jurisdictional approach. It has been designed to self-reinforcing to change the sector as whole while allowing an exit strategy for implementors.

During the project design, the UN Country Team and all international and local actors will be consulted and a stakeholder analysis undertaken to assess potential collaboration and additional co-financing.

## GEF-7 CHILD PROJECT CONCEPT (GHANA)

CHILD PROJECT TYPE: Full-sized Child Project

PROGRAM: Other Program

Child Project Title:	GEF GOLD+ in Ghana: Advancing formalization and mercury-free gold in Ghana
Country:	Ghana
Lead Agency	United Nations Development Programme (UNDP)
GEF Agency(ies):	United Nations Development Programme (UNDP) (lead agency) and United Nations Industrial Organization (UNIDO)

### PROJECT DESCRIPTION

**Describe the country's relevant environmental challenges and strategic positioning relative to the systems transformation proposed for the program, including relevant existing policies, commitments, and investment frameworks. How are these aligned with the proposed approach to foster impactful outcomes with global environmental benefits?**

Ghana faces multiple environmental challenges, including land degradation, soil erosion, river pollution, deforestation, biodiversity loss, and chemical contamination, driven by informal gold mining activities. Artisanal and Small-scale Mining (ASM) represents more than an emerging rural economy but a way of life, providing direct employment for at least one million Ghanaians and an estimated 4.5 million dependents<sup>1</sup>. The ASGM sector is legalized in Ghana through the Small-Scale Gold Mining Act of 1989<sup>2</sup>; the Minerals and Mining Act, 2006 (Act 703)<sup>3</sup>; and National Mining Policy, 2014 but remains largely informal. In 2018, ASGM contributed 43% of total gold production, accounting for nearly 2,100,000 ounces<sup>4</sup> (equivalent to 65 tonnes). Mercury (Hg) use in ASGM is widespread accounting for 42.5-62 tonnes per year where the majority of miners operate illegally or informally, without security of a license<sup>5</sup>. Experts agree that informality is a root cause of many problems in Ghana's ASGM sector, where unlicensed, unregulated and undercapitalized operations have little concern for the environment or protecting human health. Furthermore, weak regulation keeps the sector unbanked, limiting access to the financial mechanisms needed to improve productivity and transition from mercury. In an effort to improve management and regulation of the sector in 2019, the Minerals Commission established an additional four district offices and eighteen satellite offices in designated mining areas to compliment the existing nine district offices<sup>6</sup>. Formalizing Ghana's ASGM sector represents a significant and pressing developmental opportunity for millions of Ghanaian people, especially after the ban on unlicensed mining in 2017-2018.

Ghana is well positioned to support the systems transformation designed by the GOLD+ programme, which plans to pilot landscape and jurisdictional approaches (JAs) as a framework for structuring formalization interventions in a holistic, multi-sectoral and integrated way. Ghanaian policymakers have tested strategies to legalize small-scale miners since<sup>7</sup>, including ASM zones. Without cohesive strategies on financial inclusion and technology transfer however, uncontrolled mercury emissions and releases will continue, endangering local communities, and through the transboundary movement of contaminated waterways (e.g., Volta River Basin) and long-range atmospheric transport result in global impact. In Ghana, integrated formalization approaches are urgently needed to reduce mercury use and improve mining livelihoods, with the aim of balancing land-use between sectors, thus promoting sustainable land and forest management<sup>8</sup> to deliver global environmental benefits.

### Project Overview and Approach

- A. Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed.**

<sup>1</sup> McQuilken, J. & Hilson, G. (2016). Artisanal and small-scale gold mining in Ghana. Evidence to inform an 'action dialogue.' Pubs.lied.Org. <https://doi.org/10.13140/RG.2.2.36435.99368>

<sup>2</sup> Small Scale Gold Mining Act (1989). Retrieved from: [https://asgmresearch.weebly.com/uploads/3/0/1/6/30160743/small-scale\\_gold\\_mining\\_act1989.pdf](https://asgmresearch.weebly.com/uploads/3/0/1/6/30160743/small-scale_gold_mining_act1989.pdf)

<sup>3</sup> Mineral and Mining Act (2006). Retrieved from: <https://resourcegovernance.org/sites/default/files/Minerals%20and%20Mining%20Act%20703%20Ghana.pdf>

<sup>4</sup> Minerals Commission (2019)

<sup>5</sup> Artisanal and Small-Scale Mining Legal Regime in Ghana (2017). United Nations Development Programme (UNDP). Accra, Ghana. Retrieved from: [https://www.gh.undp.org/content/dam/ghana/docs/Communications/Report%20on%20illegal%20mining\\_Final.pdf](https://www.gh.undp.org/content/dam/ghana/docs/Communications/Report%20on%20illegal%20mining_Final.pdf)

<sup>6</sup> Minerals Commission (2019)

<sup>7</sup> Davidson, J. 1993; International Labour Organization (ILO). 1999. *Social and labour issues in small-scale mines*. International Labour Office, Geneva; Hentschel, T., Hruschka, F., Priester, M., 2002. *Global Report on Artisanal and Small-scale Mining, Minerals Mining and Sustainable Development (MMSD) Project*. International Institute for Environmental Development, London.

<sup>8</sup> REDD+ is fairly well developed in Ghana, with a national strategy published. However, there is relatively little focus on forests and small-scale mining to date. Within the context of landscape approaches for ASGM, Ghana appears well suited to pilot commodity-specific JAs for responsible and/or mercury-free gold.

While ASGM is an important source of livelihood in Ghana, mercury is widely used to help separate gold from whole or concentrated ore. During mining and processing activities by ASGM, mercury losses to the environment occur at two stages, during amalgamation and the amalgam roasting process. Due to poor practices of ASGM, mercury is released directly into the environment, contaminating air, land, and soils. Women of childbearing age and children are the most susceptible to the negative effects of mercury exposure, as vulnerable populations. The uncontrolled mercury releases can travel long distances around the globe, contributing to global mercury pollution and contaminating the world's terrestrial and aquatic ecosystems, including fisheries. Consumption of contaminated fish exposes vulnerable communities to methylmercury, an organic neurotoxic form of mercury that bio-accumulates

and bio-magnifies along the food chain to harmful levels. Proposed geographical targets are concentrated in Northern and South-Western mining regions of Ghana, shown in Figure 1.



Figure 1. Minerals Commission Regional and District Offices. District Offices are marked with red stars as follows (from NE to SW): Bolgatanga (Upper East), Wa (Upper West), Kumasi, Kononongo, Bibiani (Ashanti), Koforidua, Akim Oda (Eastern), Assin Fosu, Dunkwa (Central), Asankrangwa, Tarkwa, Takoradi (Western).

Features of the geographic target areas in South-Western and Northern Ghana are summarized in tables 1 and 2, respectively. Selection criteria include geologic potential, mining district offices, land-use intensity, stakeholder relations and other factors.

Table 1. Major mining communities of the Ashanti Gold Belt in SW Ghana, communities are grouped by geographic proximity.

Community	Region	ASGM context	Operating LSM gold mines and stakeholder relations
OBUASI	Ashanti	<ul style="list-style-type: none"> <li>Primarily alluvial</li> <li>Some underground mining (illegal connected to AngloGold tunnels)</li> <li><b>10,000 – 20,000 ASM miners<sup>i</sup></b></li> <li>Existence of Obuasi Municipal Small-Scale Miners Association.</li> </ul>	Obuasi Mine (AngloGold) <ul style="list-style-type: none"> <li>Open pit &amp; underground</li> <li>Ongoing ASM conflict (ceded part of concession to ASM in 2016)</li> </ul>
AKROFUOM/ AMANKYIM			

<b>DUNKWA</b>	Central	<ul style="list-style-type: none"> <li>Primarily alluvial</li> <li><b>3000+ licensed operators<sup>ii</sup>;</b></li> <li><b>~10,000 ASM miners likely</b></li> </ul>	Edikan Mine (Perseus Mining) <ul style="list-style-type: none"> <li>Open pit, hard rock</li> <li>Ongoing ASM conflict</li> <li>Primarily Ghanaian employees (2,750 including contractors)</li> </ul>
<b>WASSA AKROPONG</b>	Western		
<b>TARKWA</b>	Western	<ul style="list-style-type: none"> <li>Primarily alluvial</li> <li>Mining of abandoned hard-rock tailings not uncommon</li> <li>Some hard-rock outcrop mining &amp; mining of abandoned underground tunnels</li> <li>ASM-LSM conflict prevalent (highest concentration of LSM mines in Ghana)</li> <li><b>2000+ registered miners<sup>ii</sup></b></li> <li><b>~20,000 ASM miners likely</b></li> </ul>	Tarkwa & Damang Mines (Gold Fields Ltd) <ul style="list-style-type: none"> <li>Open pit, hard rock Iduapriem/Teberebie Mine (AngloGold)</li> <li>Open pit, hard rock</li> <li>Bogoso, Prestea &amp; Wassa Mines (Golden Star Resources)</li> <li>Underground; (Wassa also has open pit)</li> </ul>

Table 2. Mining community of Nangodi Greenstone Belt in Northern Ghana.

<b>BOLGATANGA</b>	Upper East	<ul style="list-style-type: none"> <li>Hard rock/quarrying</li> <li>Historic roots, high numbers of ASM more recently (&gt;1990's)</li> <li>In 2004, Minerals commission set aside 72 km<sup>2</sup> for registered ASM miners to operate</li> <li><b>10,000+ ASM miners in NE region<sup>iii, iv</sup></b></li> <li>Official ASM gold production averaged 77 Kg /a ('00 – '07)<sup>v</sup></li> <li>High incidence of child labor<sup>iv</sup></li> </ul>	<ul style="list-style-type: none"> <li>Many exploration projects by international companies, however no operating mines</li> <li>Namdini &amp; Ndongo in feasibility &amp; exploration, respectively (Cardinal Resources, Canada)</li> <li>ASM-LSM activity overlap, mostly cordial relations to date (some violence)<sup>vi</sup></li> </ul>
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In Ghana, systemic challenges related to ASGM differ with geologic context and geographic location, including access to infrastructure, inland waters and residential settlements. Shallow (dig and wash) alluvial operations typically have non-mechanized and dredging techniques at a depth of 0-3 meters and deep alluvial ranging from 7-12 meters. Due to severe river siltation, soil erosion and adverse impacts on riparian habitats from dredging operations, these technologies are to be avoided during the project. Primary extraction techniques of gold-bearing rock (usually quartz) involve sinking of shafts, drifts, and digging pits, with higher overall technical requirements compared to placer (alluvial) deposits. Extraction of hard rock ores range from manual (non-mechanized) crushing techniques to the use of jaw crushers, hammer mills, ball mills and modified corn mills. Higher degrees of mechanization have been observed, especially in the Twarka region of Western Ghana. Within potential geographic targets, environmental and livelihood challenges vary with local circumstance, generating unique needs for each district mining center. Ore characterization will be key to design efficient recovery and/or leaching circuits and reduce mine pollution hazards<sup>9</sup>.

Extraction in land-based alluvial and hard rock deposits will be tested in line with technical criteria and requirements. Best available grinding and milling, gravity concentration, and mercury-free recovery methods will be determined based on ore deposits, mineralogy and other factors, including mine effluent and tailings seepage to mitigate impacts on land, surface and groundwater. Direct smelting shows promise for refining gold, however systemic challenges will ultimately depend on the quality and grade of concentrates, presence of sulphides, and experience level of local trainers. To ensure resource efficiency across the mine lifecycle, the project will emphasize ore characterization to optimize production circuits, process control and mitigate risks.

#### B. Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration;

The Minerals Commission had consistently taken steps to reduce mercury use in the small-scale gold mining industry before, during

<sup>9</sup> Mine-waste characterization and designing a mine-waste management plan are key aspects in assessing the potential for adverse impacts on inland waters.

and after the Minamata Convention on Mercury came into force. In line with Minamata Convention<sup>10</sup>, Ghana is developing a National Action Plan (NAP) on ASGM, expected to be finalized by May 2020. A Minamata Initial Assessment (MIA) was also completed and submitted to the Minamata Convention Secretariat in 2018. Existing investment frameworks also include a Ghana child project under the GEF-financed, World Bank-led “Environmental Health and Pollution Management Program in Africa” (\$8.7 million USD) grant targeting mercury abatement in ASGM and e-waste sectors. The project promotes (i) institutional strengthening, knowledge, and capacity building of the minerals commission, EPA, and security services; and (ii) facilitates policy dialogue, regulatory reform, and technical capacity building to promote environmentally sound practices toward Hg reductions. As well, the WB is implementing a Forestry Investment Program (FIP), grant (\$12.4 million) and loan (\$7 million) supporting rehabilitation of abandoned mines in forested ASM regions at the pilot-scale, to advance safe post-mining land use and enhance private sector engagement in plantations across Brong-Ahafo, Ashanti, Eastern and Western regions. As a compliment, the WB are leading an Extractive Industries Transparency Initiative (EITI) grant (\$2 million) from the Extractive Global Programmatic Support (EGPS) Trust Fund, designed to strengthen the capacity of the Ghanaian EITI to mainstream ASM into the EITI reporting and develop tools and initiatives, such as beneficial ownership of ASM ventures, to improve the governance and transparency of the sub-sector. Furthermore, the WB is developing an IDA credit project (ca. <\$40 million) on ASM Formalization with complementary aims to (i) enhance regulations and policies at the national level on legalization and formalization; (ii) strengthen institutional capacity and inter-institutional coordination; and (iii) promote sustainable ASM practice by professionalizing the sector through multi-stakeholder dialogue, development of sustainable community-based mining practices, and enabling outcomes, such as strengthening District mining committees, enhancing ASM zone management and livelihood diversification.

The GEF SGP is piloting formalization of mineral rights and duties for ASGM in Gbane (Kejetia, Obuasi and Bantam); Datoko, Talensi Nabdum District of the Upper East Region; and Nadowli/Kaleo District of the Upper West Region. In addition, the USDOS is supporting responsive management and collective learning approaches to inform mercury substitution in ASGM (\$500,000). As well, an ongoing project (\$200,000) is aimed at developing and testing mercury-free technologies (with the University of Mines and Technology), facilitating the organization of the miners into registered groups, promoting access to finance and capital for ASGM and provisioning mineral rights and responsibilities for small-scale gold miners.

To address illegal mining in Ghana, the government has taken various measures including, the creation of an Inter-Ministerial Committee on Illegal Mining (IMCIM); District Committees against Illegal Mining (DCIMs), joint military and police taskforce Operation Vanguard, #Galamstop campaign; and formed a National Security apparatus. To effectively implement measures on illegal mining, the Ghanaian government through the Minister of Lands and Natural Resources, placed a ban on all forms of small-scale mining, where military and police forces were deployed to Ashanti, Western and Eastern Regions. The IMCIM Secretariat was commissioned on 28<sup>th</sup> December 2017, oversaw implementation of the ban, which was lifted in December 2018.

The IMCIM is mandated to strengthen stakeholder agencies related to the ASM sector, i.e., Minerals Commission, Environmental Protection Agency (EPA), Water Resources Commission and Forestry Commission. Act, 1993 (Act 450), mandates the Minerals Commission as the statutory agency responsible for the management and regulation and the coordination of policies for the country’s minerals and mining industry. The Environmental Protection Agency Act, 1994 (Act 490), empowers Ghana’s EPA to issue environmental permits for mining operations, and to ensure compliance of regulations. The Water Resources Commission Act, 1996 (Act 552) and Water Use Regulations (2001), govern water use. The Water Commission, in consultation with the EPA, can require water users, including miners, to provide an environmental management plan. National Land Policy (1999) includes laws and regulations related to land used for extractive industries. This policy provides a framework for issues such as: land ownership, security of tenure, land use and development, and environmental conservation.

In addition to other duties, the IMCIM is mandated to implement the Community Mining Program (CMP), one of Government’s flagship projects aimed at creating sustainable livelihood opportunities for small-scale gold miners whose limited financial means limit ownership of mine concessions, by designating mineable land<sup>11</sup>. The CMP also helps miners to reduce mercury use (e.g. retorts) and adopt mercury-free processing technologies to mitigate human health risks and environmental pollution; strengthen mineral value chain linkages within the small-scale mining industry; and actively encourage local community participation. The Community Mining Scheme is a novel mining model developed by the Minerals Commission and other stakeholders to address some of the underlying factors for illegal mining (galamsey), especially illegal SSM. The community mining model is based on the small-scale mining provisions (sections 81- 99) of the Minerals and Mining Act, 2006 (Act 703) and the Tributer System provisions (regulations 493 – 506) in the Minerals and Mining (Health, Safety and Technical) Regulations, 2012 (L.I. 2182).

Gender equality is intrinsically linked to sustainable development and fundamental to transform the ASGM sector into a vehicle for inclusive growth. Gender is an overarching variable, in the sense that it is often an intersection of identity factors, including sex,

<sup>10</sup> Ghana ratified the convention 23/03/2017. Minamata Convention Secretariat. Retrieved from: <http://www.mercuryconvention.org/Countries/Parties/tabid/3428/language/en-US/Default.aspx>

<sup>11</sup> Reforms in 1986 paved the way for legalizing the ASM sector, enabling artisanal and small-scale miners to apply for concessions up to 25 acres within designated ASM Zone. Before mining occurs in a designated zone, the Minerals Commission conducts a Strategic Environmental Assessment (SEA) and mineral exploration to unlock geologic potential and assess the economic viability of small-scale gold mining concessions, before to parcelling a small-scale concession into plots.

race, class, age, ethnic group, education level etc. Gender norms are established in different socio-cultural contexts, which ultimately determine what is expected, allowed and valued in a woman/man and girl/boy in specific settings. In ASGM systems, gender roles are learned through socialization processes that can change overtime. Gendered perspectives will be captured, including disaggregated data collection through baseline surveys documenting risks and opportunities for men, women, boys and girls, or tribal and indigenous peoples effected by the project.

**C. Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits;**

The GOLD+ programme's Theory of Change (see PFD) has been developed around:

- Optimizing formalization strategies through integrated, holistic, and multi-sector approaches at the landscape scale through piloting of commodity-specific JAs;
- Accelerating financial inclusion and creation of responsible supply chains;
- Enhancing uptake of mercury-free technologies through sustainable business models;
- Foster knowledge sharing, learning, and synthesis of experiences.

The integrated approach proposed for the Ghana Child project fully responds to and reflects the GOLD+ Programme's ToC, as can be deduced from the results framework (see page 1). All four child project components align with the programme components, and the child project outputs directly contribute to the PFD and child project outcomes as described in the project's results framework. In line with the GOLD+ Program's ToC, this child project will expand on the work initiated under the GEF-funded PlanetGOLD programme. It will explore the various options for financial mechanisms to provide financial products suited to the ASGM sector and pilot a Jurisdictional Approach (JA), following territorial boundaries of mining areas with a commodity focus on responsible gold. JAs serve as a tool to transform commodity supply chains and have led to the development of a variety of initiatives focused on making the link between supply chains and multifunctional landscapes. The JA appears to be a suitable method for tackling the systemic challenges in Ghana, given the designated mining areas and district mining offices. Furthermore, the ASGM sector is recoiling from political turmoil surrounding the ban in 2017/18, which can benefit from inclusive multi-stakeholder consultation processes, strengthening the capacity of local government and building trust with miners.

In line with the integrated approach of GOLD+, Ghana offers potential to test a commodity-specific JA with goals to (1) pilot integrated land-use planning tools to establish ASGM zones with private sector and government partners; (2) map business and operational risks for responsible sourcing in target mining jurisdictions/territories; (3) partner with district mining centers and local government to scale mercury-free technology deployment based on ore characterization; (4) mobilize knowledge with a focus on institutional capacity building for local government, mining organizations and private sector, emphasizing inclusive skills educational techniques, and engage miners directly through consultation to assess the best platform or mobile app strategies, if any, to engage stakeholders and share updates and alerts; and (5) in line with the draft Public Health Strategy for the ASGM NAP, develop awareness raising campaigns on the adverse health impacts of mercury, emphasizing risks for vulnerable populations.

**D. Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.**

Despite taking steps to improve the regulation and management of the ASGM sector, mercury use in gold extraction remains a major challenge in Ghana. According to the draft NAP on ASGM, ASGM is widely practiced in thirteen out of the sixteen regions of Ghana and provides an important source of livelihood for both proximate and surrounding communities. As of 2017, the Minerals Commission estimated there were about 1 million small-scale miners in Ghana; consistent with Hilson (2010), who estimated between 500,000 - 1,000,000 small-scale gold miners nationwide, mostly in rural areas. Addressing issues related to small-scale mining has required, and will continue to require, significant mobilization of resources, from government budgets, alongside financial assistance from the GEF and additional donors. Furthermore, financial mechanisms must be instituted to ensure miners can purchase Hg-free technologies, improve local incomes and maintain financial sustainability. GEF resources will support the advancement of ASGM formalization efforts by piloting a commodity-specific JA on responsible gold, following territorial boundaries of designated mining areas and promoting peaceful and symbiotic ASM-LSM coexistence.

Notwithstanding commitment and political will to reducing, and where feasible, eliminating mercury use, achieving goals of this ambitious program will be major challenge without inclusive finance and investing in human capital (skills, knowledge, abilities) of miners and their representative organizations to achieve legalization and facilitate the process of formalization. Of which, financial inclusion, business innovation and technology-assisted mineral supply chain due diligence are critical elements.



## Engagement with the Global / Regional Framework (maximum 500 words)

**Describe how the project will align with the global / regional framework for the program to foster knowledge sharing, learning, and synthesis of experiences. How will the proposed approach scale-up from the local and national level to maximize engagement by all relevant stakeholders and/or actors?**

All knowledge sharing, learning, and synthesis of experiences will be completed in close consultation with government counterparts to build their capacity in balanced storytelling toward the ASGM economy in Ghana. Outcomes of the MIA and the NAP on ASGM will be highlighted and these lessons will be integrated in GOLD+. This project will coordinate closely with other key partners such as the World Bank, GEF SGP and others to ensure coordination and synergies among our ASGM activities in Ghana. Knowledge generated under the project will capture results of piloting the JA as a strategy for holistic, integrated and innovative means to optimize formalization, while mainstreaming capacity building and gender equality for project results will be ensured. In particular, close coordination and exchange of information and sharing of best practices will be ensured with the GEF GOLD project and with the GEF planetGOLD project in the neighbouring countries of Burkina Faso and Kenya.

The child project will also be closely aligned with the global coordination, knowledge management and outreach project of the program. Knowledge products and lessons learned at the local and national level will be shared with the global project, which will make these experiences available through the planetGOLD platform and other outreach strategies. This will foster a community of practice among participating countries and will allow for the sharing of successful models with a wide range of global actors and stakeholders. The child project will participate actively in international meetings and events, such as the Global Forum (organized by the global project), a two-yearly learning and sharing event that will facilitate face-to-face meetings between ASGM experts and practitioners, governments, gold buyers and miners to support ongoing exchange of experiences, as well as development of global expertise and capacity building on ASGM issues and networking and learning, to influence the global ASGM dialogue agenda and policy development.

In line with the core components of the holistic multisectoral integrated approach to formalization, the project as a pilot of JAs will document lessons learned from each component on: (1) formalization optimization, (2) financial inclusion and responsible supply chains, (3) and enhancing uptake of Hg-free technologies, and (4) participatory approaches to fostering knowledge sharing, learning, and synthesis of experiences, specifically engaging miners and local government actors to ensure balanced perspectives are shared. Through multi-stakeholder consultation, the GEF agencies will assess the viability of different communication tools to ensure investments under the global knowledge management component are resource efficient and inclusive of local stakeholder needs, recognizing miners are often excluded from strategies to maximize engagement between mining communities across regional or national geographies. Our approach to the global knowledge and communication component of GOLD+ will also include an increased focus on maximising the impact of communications at the local miner level.

Media campaigns and communication tools will be used to inform the general public, ASGM communities and schools on the dangers of mercury and possible solutions on the one hand, and on the other hand, the significant development potential of formal ASGM, taking gender-based risks and the unique circumstance of Ghana into account. A communication strategy will be developed, and key stakeholders identified. The presence of the UNDP Accelerator Lab will be utilised in using behavioural insights tools and techniques to inform communication and awareness creation activities.

- i. I Okoh, G. A., & Hilson, G. (2013). Artisanal Mining in Ghana: Institutional Arrangements, Resource Flows and Poverty Alleviation. In B. Campbell (Ed.), *Modes of Governance and Revenue Flows in African Mining* (pp. 138–162). New York: Springer International Publishing. *TWNAfrica*. (2017). *Obuasi Model for Small Scale Mining*. <http://twnafrica.org/wp/2017/?p=1809>
- ii. Opoku-Antwi, G. L., Amofah, K., & Nyamaah-Koffuor, K. (2012). Comparative Study In The Bibiani, Bolgatanga, Dunkwa And Tarkwa Mining Districts Of The Minerals Commission Of Ghana. *Journal of International Energy Policy (JIEP)*, 1(1), 19–34. <https://doi.org/10.19030/jiep.v1i1.7160>
- iii. Hilson, G. (2010). Child labour in African artisanal mining communities: Experiences from Northern Ghana. *Development and Change*, 41(3), 445–473. <https://doi.org/10.1111/j.1467-7660.2010.01646.x>
- iv. Ntewusu, S. A. (2017). A Social History of Gold Mining in Bole, Northern Ghana: From Pre-Colonial to Recent Times. *Transactions of the Historical Society of Ghana*, 17(17), 1–26. <https://doi.org/https://www.istor.org/stable/10.2307/26512468?seq=1&cid=pdf>
- v. Okoh, G. A., & Hilson, G. (2013). Artisanal Mining in Ghana: Institutional Arrangements, Resource Flows and Poverty Alleviation. In B. Campbell (Ed.), *Modes of Governance and Revenue Flows in African Mining* (pp. 138–162). New York: Springer International Publishing.
- vi. Blakley, I. T., Horan, S. D., & Altman, K. A. (2017). Technical Report on the Namdini Gold Project, Ghana (Vol. 1). Retrieved from <https://tinyurl.com/to6vr6j>



# GEF-7 CHILD PROJECT CONCEPT

CHILD PROJECT TYPE: Full-sized Child Project

PROGRAM: Other Program

Child Project Title:	GEF GOLD+: Advancing formalization and mercury-free gold in Honduras
Country:	Honduras
Lead Agency	United Nations Development Programme (UNDP)
GEF Agency(ies):	United Nations Development Programme (UNDP) (lead agency)

## PROJECT DESCRIPTION

Global Context (*maximum 500 words*)

**Describe the country's relevant environmental challenges and strategic positioning relative to the systems transformation proposed for the program, including relevant existing policies, commitments, and investment frameworks. How are these aligned with the proposed approach to foster impactful outcomes with global environmental benefits?**

Honduras is a global biodiversity hotspot situated at the convergence of tropical and subtropical ecosystems in northern Central America<sup>1</sup>. With diverse ecosystems ranging from rainforest and mangroves to montane forests and barrier reefs, Honduras has significant conservation and world heritage value but remains one of Central America's poorest countries<sup>2</sup>. In 2016, the mining sector contributed 1% to national GDP (369 million Lempiras or USD 15.6 million) and made up 5% of the country's exports<sup>1</sup>. While the Honduran mining sector is small, there is growing interest in expanding investments and linking to downstream partners<sup>2</sup>, especially in scaling small and medium scale mining.<sup>3</sup>

Artisanal and Small-scale Gold Mining (ASGM) has provided a modest income to rural communities in Honduras since ancient times. Today the sector is widespread in 61 communities across 48 municipalities, providing direct employment for at least 2500-3000 miners<sup>4</sup>, 2000 of whom use mercury (Hg) to process gold ore<sup>5</sup>. Total mercury use is roughly 9.5 MT per year, with annual gold production estimated at nearly 1.8 MT (1:5 ratio), often utilizing traditional methods that uses large amounts of mercury and inefficient techniques.

ASGM has been legalized in Honduras since 2013. However, the sector has proven difficult to regulate due to its wide geographic distribution, diverse mining practices, and lack of information. In Honduras, ASGM is varied in terms of mining techniques, level of mechanization, organization and relations with foreign actors<sup>6</sup>. For instance, mechanized operations tending toward the 'small scale' often coexist with 'Güiriseros' (local term for miners) who pan ore waste (tailings) in nearby rivers. In other areas, hard rock miners use rudimentary tools leading to worst environmental practices. In Choculteca/ El Corpus, traditional 'rastras' (a whole ore mercury amalgamation technique) are widely used, using significant amounts of mercury<sup>7</sup>.

Honduras is strategically positioned to undergo the systems transformation envisioned under the GOLD+ programme. Within the framework for implementation of the Minamata Convention<sup>8</sup> and through GEF financing, with joint support of UNDP and UN Environment, Honduras has committed to improving ASGM governance. With GEF financing, Honduras is finalizing its National Action Plan (NAP) on ASGM where the government has set goals to regulate and formalize the ASGM sector over a 6-year term targeting 48 municipalities. To accelerate formalization efforts and bring responsible mines to market, Honduras will draft and implement a 'formalization diagnostic' based on the CRAFT Code to identify 'Tier 1' priorities, within the 8 priority areas (see Figure 1). These will serve as pilots

<sup>1</sup> World Bank. 2019. Environmental indicators. Retrieved from: <https://www.worldbank.org/en/country/honduras/overview>

<sup>2</sup> Central Bank of Honduras: <https://www.bch.hn/eng/index.php>

<sup>3</sup> World Bank. 2019. Honduras country profile. Retrieved from: <https://www.worldbank.org/en/country/honduras/overview>

<sup>4</sup> Large scale mining is temporarily banned in Honduras. Foreign owned medium-scale gold mining operations have expanded.

<sup>5</sup> Data on direct and indirect employment for ASGM in Honduras, especially the role of women or child labour is extremely limited in Honduras.

<sup>6</sup> Both practices are found in Honduras, where whole ore amalgamation (worst environmental practice under Article 7 on Minamata) is endemic to certain regions. Especially, Choculteca/El Corpus where the use of *rastras* leads to very high Hg:Au ratios and severe contamination issues.

<sup>7</sup> ASM-LSM conflict does not exist per se, as LSM is not currently permitted. However, conflicts exist especially on environmental issues.

<sup>8</sup> Dr. Paul Cordy (*personal communication, February 19, 2020*)

<sup>9</sup> Honduras became a party to the Minamata Convention on March 3rd, 2017.

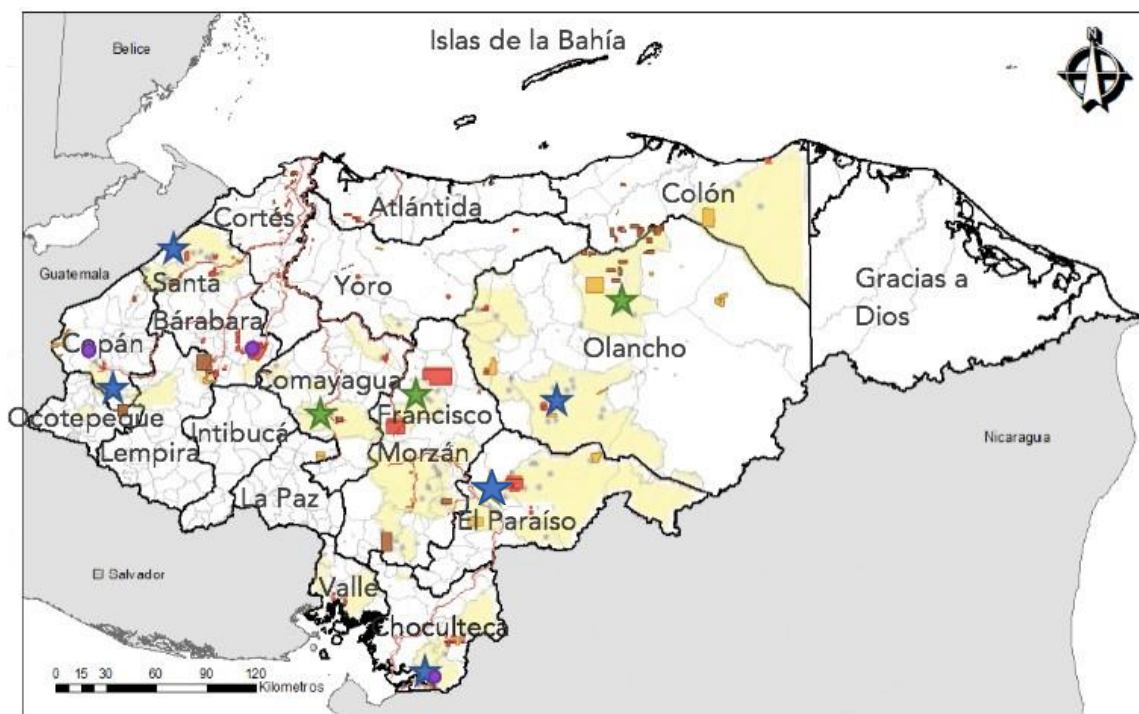
for commodity-specific focus JAs (responsible gold). This diagnostic will serve as a transparent selection criterion for project sites and engage stakeholders early on in the project cycle. While potential for mercury reductions will be the key criteria, other factors (i.e., financial access, ore grade, biodiversity, carbon, water gains ect.) will also be considered when selecting priority sites under this project. The GOLD+ child project in Honduras aims for the reduction of 6 metric tonnes of mercury over a four year period, in alignment with Hg inventories and the Honduran NAP on ASGM.

## Project Overview and Approach (maximum 1250 words)

### A. Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed;

Project targets include eight ASGM communities, with additional support to the El Corpus community as shows in Figure 1. Due to geographic, geologic and difference in mine production system, scale and stakeholder relations these communities will be assessed under the project by a ‘formalization diagnostic’ (output 1.1). Systemic challenges for ASGM hotspots are outlined in Annex 1. Based on the assessment of ‘formalization readiness’, the project plans to pilot a commodity-specific approach to reduce mercury use, support inclusive finance of miners organizations, certify origin and enhance mineral supply traceability for responsible gold through simple technology-assisted measures in Tier 1 sites will be selected and create incentives for improved organization and/or permitting.

**Figure 1:** Mining activity in Honduras; mineral exploitation concessions shown in red, mineral exploration concessions shown in dark yellow; areas of eported ASM activity shown in light yellow (metallic and non-metallic); potential TIER 1 ASGM intervention sites marked with blue stars (established ASGM activity); potential TIER 2 ASGM intervention sites marked with green stars (ASGM activity known, more data required before intervention). Source: ASGM Overview Honduras MIA NAP Project (UN Environment, 2017).



Please see ANNEX 1 for a summary of findings on TIER 1 and 2 ASGM activity hotspots that could serve as potential sites under the GOLD+ child project.

**B. Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration;**

Honduras has consistently demonstrated political commitment to harnessing the potential of the ASGM formalization as a vehicle for sustainable and inclusive development. In 2013, a new Mining Law was enacted establishing a definition of ASM, including daily production thresholds and provisions for regulation of non-metallic and metallic resources. National Regulation on ASGM was adopted in April of 2019 as a result of the GEF-funded project “Environmental Sound Management of Mercury and Mercury Containing Products and their Wastes in Artisanal Small-scale Gold Mining and Healthcare” (implemented by UNDP) and the NAP on ASGM will form the basis for formalization efforts. Pending approval of the Technical Guidelines for ASGM, the government of Honduras plans to accelerate efforts on domesticating the CRAFT code to certify the origin and advance mineral-supply chain traceability efforts in Honduras.

Access to information on the gendered nature of ASGM livelihood in Honduras is extremely limited. To ensure that gender is mainstreamed effectively throughout the project, even at PIF submission stage a preliminary Social and Environmental Screening Procedure (pre-SESP) will flag all potential risks. Risks identified in the pre-SESP include, potential reinforcement of discrimination against women and other forms of gender inequality. In the PPG, this will be examined through extensive engagement with local communities and a Gender Action Plan developed to mainstream gender throughout the project’s activities, to upscale the opportunities for women benefit from training and employment opportunities and develop gender-disaggregated data, accounting for multiple factors (i.e., race, ethnicity, nationality, education level, indigenous status). To ensure equality of results, the project will actively engage women and other vulnerable groups, as change agents and participants, not only as victims of inequalities or forms of discrimination.

**C. Describe how the integrated approach proposed for the child project responds to and reflects the Program’s Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits;**

The GOLD+ programme’s Theory of Change (see PFD) has been developed around:

- ✦ Optimizing formalization strategies through integrated, wholistic, and multi-sector approaches at the landscape scale through commodity-specific JAs;
- ✦ Accelerating financial inclusion and creation of responsible supply chains;
- ✦ Enhancing uptake of mercury-free technologies through sustainable business models.
- ✦ Foster knowledge sharing, learning, and synthesis of experiences.

The integrated approach proposed for the Honduras Child project fully responds to and reflects the GOLD+ Programme’s ToC, as can be deduced from the results framework (see page 1). All four child project components fully align with the programme components, and the child project outputs directly contribute to the PFD and child project outcomes as described in the project’s results framework.

As such, the proposed child project offers suitable and appropriate options to tackle systematic challenges for countries where the ASGM sector is a more than significant source of mercury and environmental harm. This child project, as reflected through expected outputs and corresponding outcomes will achieve tangible and desired transformation including multiple global environmental benefits. This child project will explore the various options for financial mechanisms to provide financial products suited to the ASGM sector and utilizing a territorial governance framework for JAs, Honduras has the opportunity to customize strategies for certificate of origin and traceability measures through technology-assisted mineral supply chain ensuring it is fit for purpose, in line with national priorities.

**D. Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.**

National Regulation on ASGM was adopted in April of 2019 as a result of GEF funded Mercury project (GEF V Mercury project implemented by UNDP). Following support from GEF investments and projects, an ASM Unit within the mining authority organizational structure was created and Mining Regulation has been formulated, including specific provisions on the ASGM sector, which was approved in April 2019. and establishes the obligation of all ASGM activities to be regulated by April 2020. Within the context of the landscape approach, Honduras has shown interest and potential in utilizing a territorial governance framework for the management of natural resources but lacks the resources and institutional capacity to apply this approach to mercury reductions in ASGM.

According to the Extractive Industries Transparency Initiative (EITI), informal mining activities in Honduras are estimated to be three to four times larger than those of the commercial mining sector<sup>9</sup>. In EITI reporting, the Government on Honduras has demonstrated political will in the creation of an artisanal mining park (El Corpus) through a public-private-community alliance, supported by the State to organize and improve mineral resource development to increase people's quality of life. Advancing ASGM formalization efforts through ASM zones or parks, has been an aspiration yet to be fully realized. Without support from the GEF, the creation of legal ASM zones through JAs would not be possible and thus limit the government's ability to achieve its current priorities on formalization.

Despite commitment and political will to reducing, and where feasible, eliminating mercury use, achieving this will be a major challenge without inclusive finance and investing in human capital (skills, knowledge abilities) of miners and their representative organizations to achieve legalization and facilitate the process of formalization, of which financial inclusion and business innovation are critical elements.

**Engagement with the Global / Regional Framework (maximum 500 words)**

**Describe how the project will align with the global / regional framework for the program to foster knowledge sharing, learning, and synthesis of experiences. How will the proposed approach scale-up from the local and national level to maximize engagement by all relevant stakeholders and/or actors?**

Lack of access to information on the ASGM sector in Honduras has been one of its greatest challenges for communicating the sector's challenges and opportunities to local, national, regional and global stakeholders. Honduras's extractive sector is small, but there has been interest in expanding mining investments<sup>10</sup>. Understanding the environmental, social and economic challenges faced at the mine and community level, is essential to identify the needs for financial inclusion, organization strengthening and capacity building for miners to adopt mercury-free recovery techniques.

The project will ensure adequate investments are made to ensure a miner-centric perspective is captured and viewed through a 360 lens of the community. For example, each mine has a story to tell in land-use history, levels of miner organization, stakeholder relations, especially where site invasion or concession sharing conflicts occur, and resource sharing challenges related to water, forests and other values assets. To sustainably attract and retain future investments in the ASGM sector, local stakeholders, the investment community and tourism industry of Honduras can find a point of convergence in capturing the lessons learned to date, those during the project by exploring, documenting and translating the culture of gold mining in Honduras into a positive narrative.

During recent years, Honduras has registered the second highest economic growth rates in Central America, only behind Panama. Honduras possesses multiple strengths with the potential to propel the country towards faster growth and higher shared prosperity, with its strategic location, a growing industrial base, ongoing efforts to diversify its exports, and a young and growing population. Consequently, knowledge sharing, learning, and synthesis of

<sup>9</sup> Extractive Industries Transparency Initiative (EITI) Honduras. 2020. Retrieved from: <https://eiti.org/honduras>

<sup>10</sup> World Bank. 2019. Honduras country profile. Retrieved from: <https://www.worldbank.org/en/country/honduras/overview>

experiences, especially Honduras's formalization strategies, will be an important tool for financial institutions to understand the risks and opportunities ASGM can offer.

Close coordination and exchange of information and sharing of best practices will be ensured with the GEF GOLD+ project and with the GEF PlanetGOLD projects in the neighbouring countries of Colombia, Ecuador, and Peru. The child project will be closely aligned with the global coordination, knowledge management and outreach project of the program. Knowledge products and lessons learned at the local and national level will be shared with the global project, which will make these experiences available through the planetGOLD platform and other outreach strategies. This will foster a community of practice among participating countries and will allow for the sharing of successful models with a wide range of global actors and stakeholders. The child project will participate actively in international meetings and events, such as the Global Forum (organized by the global project), a two-yearly learning and sharing event that will facilitate face-to-face meetings between ASGM experts and practitioners, governments, gold buyers and miners to support ongoing exchange of experiences, as well as development of global expertise and capacity building on ASGM issues and networking and learning, to influence the global ASGM dialogue agenda and policy development.

Engagement with government officials, regulators, miners and their families, mining communities, civil society, foreign mining companies, and international partners and/or downstream actors, especially the private sector, will be participatory to generate various forms of media (i.e. short films, animations, infographics). Communications under the project will be co-designed and developed in coordination with global knowledge component standards, themes and outreach strategies.

**ANNEX 1: Note alignment with Figure 1.**

*Table 1. Summary of findings on TIER 1 ASGM activity hotspots (areas with established ASGM presence); data limitations as the table is not comprehensive and to be further scoped during the PPG phase.*

Location	# of miners	Notes	Risks & Opportunities
Choluteca  El Corpus	1,000 - 1,500 miners	<ul style="list-style-type: none"> <li>- Mining sector is well established (primary economic activity)</li> <li>- Hard rock mining with fairly mechanized practices; high use of Hg</li> </ul>	Risks: <ul style="list-style-type: none"> <li>- High number of miners make for a chaotic industry</li> </ul> Opportunities:

(San Juan Arriba, San Judas, Agua Fría, San Juan Abajo)	1 tonne Au/annum (estimate)	<ul style="list-style-type: none"> <li>- Alluvial mining of tails from hard rock operations (dumped into the river)</li> <li>- Government promise to develop “industrial mining park”</li> <li>- Several trainings and interventions previously conducted</li> </ul>	<ul style="list-style-type: none"> <li>- Strong existing cooperatives and associations</li> <li>- Presence of foreign mining operations working well with local ASGM miners</li> <li>- Hg recovery plant operated by Raptor mining<sup>11</sup></li> </ul>
<b>Santa Barbara</b>  Macuelizo  (San Antonio de Chiquila, Sula, Santa Cruz Milna, La Playa)	Approx. 500 miners	<ul style="list-style-type: none"> <li>- Mostly hard rock mining of old, abandoned “Vuelta de Rios” Mine</li> <li>- Rudimentary with low levels of mechanization</li> <li>- “Empresa Minas Y Cuevas” in Vuelta de Rios (in the Municipality of Macuelizo) is the first formal ASGM cooperative (processing done at communal gravimetry plant)</li> </ul>	Risks: <ul style="list-style-type: none"> <li>- Environmental impacts from old mine (eg. acid rock drainage)</li> <li>- Low grade deposits</li> </ul> Opportunities: <ul style="list-style-type: none"> <li>- Continued cooperation with Lundin foundation</li> <li>- Organization of Minas y Cuevas could be replicated</li> </ul>
<b>Copán</b>  La Unión  (Azacualpa, Aldea Nueva, La Vegona, Ojos de Agua)		<ul style="list-style-type: none"> <li>- Hard rock</li> <li>- ASGM miners are highly transient between Copán and Santa Barbara</li> <li>- presence of ASGM miners around San Andres mine, however details about their activity is limited</li> </ul>	Risks: <ul style="list-style-type: none"> <li>- Severe conflict between San Andres mine and local communities regarding environmental impact</li> </ul> Opportunities: <ul style="list-style-type: none"> <li>- Regional approach with Santa Barbara</li> <li>- MSM-ASM cooperation with San Andres</li> </ul>
<b>Olancho</b>  Juticalpa, Guayape, Concordia, Campamento	500 – 1,000 miners	<ul style="list-style-type: none"> <li>- Alluvial &amp; hard rock mining</li> <li>- Operated on an individual basis or in small groups</li> <li>- Minimal associativity, however, this has increased since access to land has been threatened by foreign concessionaries</li> </ul>	Risks: <ul style="list-style-type: none"> <li>- Overlapping land claims</li> </ul> Opportunities: <ul style="list-style-type: none"> <li>- Examples of MSM-ASM cooperation (Goldlake &amp; alluvial miners on Guayape)</li> <li>- Demonstrated interest to formalize</li> </ul>
<b>El Paraiso</b>  Danlí (communities along the Quebrada del oro) Pajarillos.	400 miners estimated (50 families)	<ul style="list-style-type: none"> <li>- Mostly alluvial mining of riverbeds</li> </ul>	Opportunities: <ul style="list-style-type: none"> <li>- Good placer gold potential</li> </ul>

Table 2. Summary of findings on TIER 2 ASGM activity hotspots (data limited ASGM activity)

<b>Francisco Morzán</b>	TBD	<ul style="list-style-type: none"> <li>- Hard rock mining</li> <li>- San Martin legacy mine</li> </ul>	Risks:
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<sup>11</sup> <https://www.youtube.com/watch?v=U8gAcALmLaQ>

			- Harsh environmental damage and health consequences from San Martin mine remain
<b>Comayagua</b>	TBD	<ul style="list-style-type: none"> <li>- Historical mining area (Rosario)</li> <li>- Presence of ASGM alluvial mining &amp; interest to expand and organize</li> <li>- Presence of ASGM hard rock mining</li> </ul>	<p>Opportunities:</p> <ul style="list-style-type: none"> <li>- Close to national capital, Tegucigalpa</li> </ul>

## GEF-7 CHILD PROJECT CONCEPT (MADAGASCAR)

CHILD PROJECT TYPE: Full-sized Child Project

PROGRAM: Other Program

Child Project Title:	GEF GOLD+ in Madagascar: Enhancing the formalization and mercury reduction in artisanal and small-scale gold mining in Madagascar
Country:	Madagascar
Lead agency:	United Nations Industrial Organization (UNIDO)
GEF Agency(ies):	

### PROJECT DESCRIPTION (maximum 500 words)

**Describe the country's relevant environmental challenges and strategic positioning relative to the systems transformation proposed for the program, including relevant existing policies, commitments, and investment frameworks. How are these aligned with the proposed approach to foster impactful outcomes with global environmental benefits?**

Informal gold mining activities have caused widespread environmental degradation in Madagascar, including deforestation, land degradation, wetland destruction, biodiversity loss, and chemical pollution. However, artisanal and small-scale gold mining (ASGM) represents a livelihood and provides direct employment for an estimated 600,000 Malagasies including more than 30% women and 20% children<sup>1</sup>, and indirect jobs for 2.5 millions persons. The ASGM sector is regulated in Madagascar through the Mining Code of 1999 further amended in 2005 and its operationalization Decree 2006-910. However, the sector remains largely informal. Furthermore, the gold regime decree 2015-1035 stipulates that any chemical process is prohibited. This is further clarified in order 1453/2015 where mercury use is specifically prohibited. The same goes for the use of dredges.

Annual gold production from the ASGM sector is estimated at 14 tonnes at least. While ASGM has been a traditional activity, the use of mercury was introduced by foreign miners around 10 years ago. Currently, the annual mercury consumption in the sector at national level is over 18 tons. Experts agree that informality is a root cause of many problems in Madagascar's ASGM sector, where unlicensed, unregulated and undercapitalized operations have little concern for the environment or protecting human health. Around 60,000 miners are organized in about 500 miner groups.

Furthermore, weak regulation and unsteady revenues keeps the sector unbanked, limiting access to financing mechanisms to improve productivity and transition from mercury. Formalizing Madagascar's ASGM sector represents a significant and pressing developmental opportunity, especially after the completion of the National Action Plan (NAP) in 2019. In order to implement its NAP, the government prioritized (i) strengthening of legislation operability, (ii) awareness raising and capacity building on mercury risks, (iii) supporting formalization and simplifying the legislation of the sector, and (iv) scaling up increased-yield and mercury-free technologies.

Madagascar is well positioned to support the system transformation designed by the GOLD+ programme, which plans to pilot landscape and jurisdictional approaches (JAs) as a framework for structuring formalization interventions in a holistic, multi-sectoral and integrated way. Without cohesive strategies on financial inclusion and technology transfer however, uncontrolled mercury emissions and releases will continue, endangering local communities, and through the transboundary movement of contaminated waterways and long-range atmospheric transport can result in global impact. In Madagascar, integrated formalization approaches are urgently needed to reduce mercury use and improve mining livelihoods, with the aim of balancing land-use between sectors and promoting sustainable land and forest management to deliver global environmental benefits.

### Project Overview and Approach (maximum 1250 words)

**A. Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed.**

Proposed geographical targets are concentrated in four provinces in Madagascar as illustrated in Figure 1.

<sup>1</sup> Plan d'Action National pour réduire et/ou éliminer l'utilisation du mercure dans l'Extraction Minière Artisanale et à Petite échelle de l'or, Madagascar,



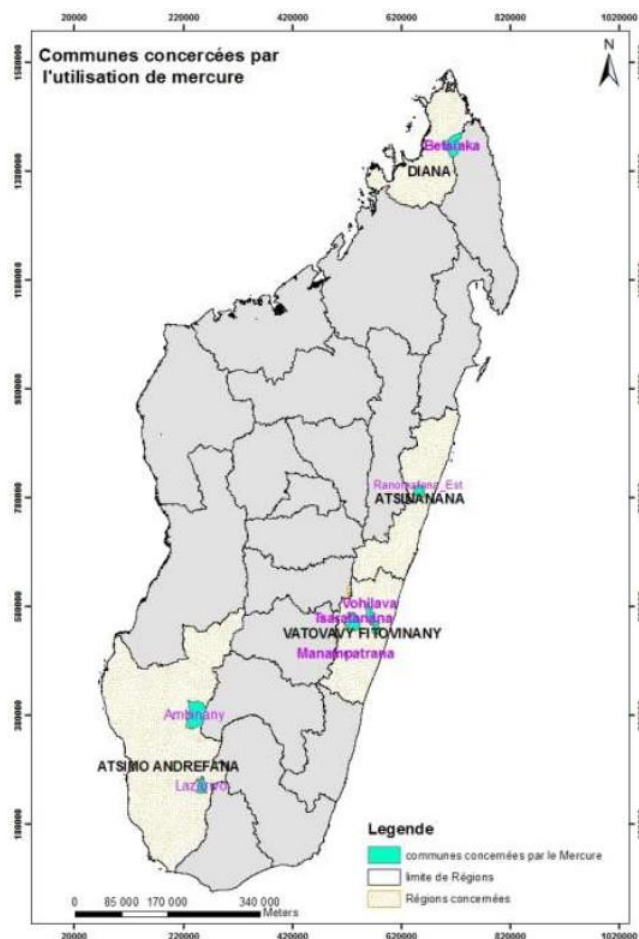


Figure 1: Potential project sites using mercury in turquoise

Features of the geographic target areas are summarized in the below table 1.

Communities	Province	Number of miners	Hg/Au ration	Gold production
Farezy Maninday	Atsimo Andrefana	11,000 miners	3	24 kg/year
Antongobato	Atsinanana	60,000 miners	3	328 kg/year
Andrafialava Ankatoko	Diana	21,000 miners	3	296 kg/year
Ambaladara Ambalamanasa Antongona Manambato Melokovy Sandrakely	Vatovavy Fitovinany	Largest ASGM province in terms of miners (130,000)	3	1,400 kg/year

Table 1: Key information on the major mining communities using mercury in Madagascar.

Traditionally, artisanal miners organized themselves around families and neighbors with the land or license owner. Seasonal rainfall influences the activity and number of miners. When organized in groups, miners have operating and management rules established by an internal governing body. In alluvial deposits, most miners are using rudimentary equipment to extract gold bearing ore before washing it and panning it to concentrate the gold particles. In hard rock deposits, wells and galleries are dug before crushing the ore with hammers.

According to the NAP, foreigners using dredges to extract gold from river sediments use most of the mercury. All mercury trade is illegal as no mercury is officially imported in Madagascar.

**B. Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration**

In line with Minamata Convention on Mercury, Madagascar was the first country to complete a National Action Plan (NAP) on ASGM in 2019. Previously, a Minamata Initial Assessment (MIA) was also completed and submitted to the Minamata Convention Secretariat in 2017.

GIZ is implementing a 5-year programme entitled “*Programme d’Appui à la Gestion de l’Environnement*” (Support Programme for Environmental Management, PAGE acronym in French) that started in 2015 and aims at environmental protection while supporting sustainable and resilient use of natural resources in and around protected areas. The EUR 40 Mio programme has six components, including one dedicated to the introduction of practices leading to Fairtrade certification in pilot ASM sites. Out of four target areas, the programme targets two provinces highlighted in Figure 1, namely Atsimo Andrefana and Diana. Designed around a sectorial approach combined with crosscutting themes such as spatial planning, governance and gender, the GIZ programme provides an excellent basis for the proposed GOLD+ Madagascar project to build on.

Created in 2015 by decree 2015-663, the administrative supervision of the ASGM sector is under the responsibility of the national *Agence de l’Or* (ANOR). This governmental agency is in charge of (i) technical assistance and capacity building to gold miners in terms of production, environmental management, and occupational health and safety, as well as (ii) licensing. The agency lacks resources to cover all ASGM sites. Actually, during the site inventory part of the NAP development, no miner interviewed reported benefiting from ANOR’s support. This results in poor mining practices, limited knowledge on occupational health and safety, and environmental degradation.

There is currently a lack of willingness from miners to get organized and increase their bargaining power with intermediaries and gold buyers. Furthermore, there are no women miner associations, although women are very much involved in the mining operations. They are typically responsible for panning and collecting water while mining site leaders are men, heading their family. In addition, women undertake agricultural activities or local trading to complement the family’s revenues. More generally, gender norms are established in different socio-cultural contexts, which ultimately determine what is expected, allowed and valued in a woman/man and girl/boy in specific settings. In ASGM systems, gender roles are learned through socialization processes that can change overtime. Gendered perspectives will be further captured, including data collection through baseline surveys documenting risks and opportunities for men, women, boys and girls, or tribal and indigenous peoples affected by the project.

The proposed jurisdictional approach (JA) is a multi-stakeholder consultation process, encouraging private sector, authorities, and local stakeholders to create shared goals for responsible commodity sourcing and enable sustainable development at scale. To ensure equality of results for JA, gender must be understood as a cross-cutting socio-cultural variable. Finally, the JA will be used to foster stakeholder engagement throughout the proposed intervention.

Based on a government request and on the successful execution of the NAP in Madagascar, the *Bureau National Mercure* is currently identified as Project Executing Entity. This will be validated during the PPG phase with the main stakeholders.

**C. Describe how the integrated approach proposed for the child project responds to and reflects the Program’s Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits;**

The GOLD+ programme’s Theory of Change has been developed around:

- ✦ Optimizing formalization strategies commodity-specific JAs;
- ✦ Accelerating financial inclusion and creation of responsible supply chains;
- ✦ Enhancing uptake of mercury-free technologies through sustainable business models; and,
- ✦ Foster knowledge sharing, learning, and synthesis of experiences.

The integrated approach proposed for the Madagascar Child project is fully aligned with the GOLD+ Programme’s ToC, as can be deduced from the results framework (see page 1). The project and programme components are the same, and the child project outputs directly contribute to the PFD. In line with the GOLD+ Program’s ToC, this child project will expand on the work initiated

under the GEF-funded PlanetGOLD programme by adapting financial mechanisms to provide financial products suited to the ASGM sector and by piloting a Jurisdictional Approach (JA), following territorial boundaries of mining areas with a commodity focus on responsible gold. The JA appears to be a suitable method for tackling the systemic challenges in Madagascar. Furthermore, the implementation of the completed NAP will benefit from inclusive multi-stakeholder consultation processes, strengthening the capacity of local government and building trust with miners.

In line with the integrated approach of GOLD+, Madagascar has the potential to test a commodity-specific JA that will (i) pilot land-use planning tools to foster stakeholders' engagement, (ii) support responsible sourcing and traceability, (iii) scale up mercury-free technology deployment, (iv) mobilize knowledge with a focus on institutional capacity building for local government, mining organizations and private sector. Inclusive skills and educational techniques combined with direct miner involvement to assess the best advocacy platform or mobile app strategies will contribute to enhanced stakeholder engagement and communication. In line with the draft public health strategy part of the NAP, the project will develop awareness raising campaigns on the adverse health impacts of mercury, emphasizing risks for vulnerable populations.

The planned integrated approach is designed to generate mercury reduction of 5 tons by project completion. Contribution to other core indicators will be assessed during the PPG phase.

**D. Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.**

Despite taking steps towards addressing the regulation and management of the ASGM sector, mercury use in gold extraction remains a major issue of concern in Madagascar. According to the statistics from ANOR, ASGM is widely practiced in 388 out of 1670 municipalities in Madagascar and provides an important source of livelihood for both proximate and distant communities. Addressing issues related to small-scale mining has required, and will continue to require, mobilization of resources, from government budgets as well as assistance from the GEF. Furthermore, financial mechanisms need to be instituted in order to ensure that miners can purchase Hg-free technologies and maintain financial sustainability. GEF resources will be applied to support the advancement of ASGM formalization efforts by piloting a commodity-specific JA on responsible gold, following territorial boundaries. The intervention will be designed to be cost effective with a ratio of USD350/kg Hg reduction.

Despite commitment and political will to reducing, and where feasible, eliminating mercury use, achieving this will be a major challenge without inclusive finance and investing in human capital (skills, knowledge abilities) of miners to achieve legalization and facilitate the process of formalization, of which financial inclusion, business innovation and technology-assisted mineral supply chain due diligence are critical elements.

**Engagement with the Global / Regional Framework (maximum 500 words)**

**Describe how the project will align with the global / regional framework for the program to foster knowledge sharing, learning, and synthesis of experiences. How will the proposed approach scale-up from the local and national level to maximize engagement by all relevant stakeholders and/or actors?**

All knowledge sharing, learning, and synthesis of experiences will be completed in close consultation with government counterparts to build their capacity in balanced storytelling toward the ASGM economy in Madagascar. Positive impacts and results achieved under the *Programme d'Appui à la Gestion de l'Environnement* (PAGE), outcomes of the MIA and the NAP on ASGM will be highlighted and these lessons will be integrated in GOLD+. Knowledge generated under the project will capture results of piloting the JA as a strategy for holistic, integrated and innovative means to optimize formalization, while mainstreaming capacity building and gender equality. In addition, coordination with the global child project on knowledge management will be carefully implemented to ensure the most effective and highest efficiency for the entire programme. Knowledge products and lessons learned at the local and national level will be shared with the global project, which will make these experiences available through the planetGOLD platform and other outreach strategies. This will foster a community of practice among participating countries and will allow for the sharing of successful models with a wide range of global actors and stakeholders. The child project will participate actively in international meetings and events, such as the Global Forum (organized by the global project), a two-yearly learning and sharing event that will facilitate face-to-face meetings between ASGM experts and practitioners, governments, gold buyers and miners to support ongoing exchange of experiences, as well as development of global expertise and capacity building on ASGM issues and networking and learning, to influence the global ASGM dialogue agenda and policy development.

In line with core components of the holistic multisectoral integrated approach to formalization, the project will document lessons learned from each component. It will specifically engage miners and local government actors to ensure balanced perspectives are shared. Through multi-stakeholder consultation, UNIDO will assess the viability of different communication tools to ensure

investments under the global knowledge management component are resource efficient and inclusive of local stakeholder needs, recognizing miners are often excluded from strategies to maximize engagement between mining communities across regional or national geographies. Based on the global knowledge and communication component of GOLD+, the child project will also have an increased focus on maximising the impact of communications at the local miner level.

Media campaigns and communication tools will be used to inform the general public, ASGM communities and schools on the dangers of mercury and possible solutions on the one hand, and on the other hand, the significant development potential of formal ASGM, taking gender-based risks and the unique circumstance of Madagascar into account.

## GEF-7 CHILD PROJECT CONCEPT (NIGERIA)

CHILD PROJECT TYPE: Full-sized Child Project

PROGRAM: Other Program

Child Project Title:	GEF GOLD+ in Nigeria: Enhancing the formalization and mercury-free gold in Nigeria
Country:	Nigeria
Lead Agency	United Nations Industrial Development Organization (UNIDO)
GEF Agency(ies):	

### PROJECT DESCRIPTION (maximum 500 words)

**Describe the country's relevant environmental challenges and strategic positioning relative to the systems transformation proposed for the program, including relevant existing policies, commitments, and investment frameworks. How are these aligned with the proposed approach to foster impactful outcomes with global environmental benefits?**

Nigeria faces significant environmental and economic challenges from informal gold mining activities. Some of these environmental challenges lead to water, soil and air pollution, biodiversity loss, deforestation, erosion, siltation of dams and water bodies, loss of arable lands, death traps due to waterlogged abandoned mining pits. Unsustainable mining practices have led to the destruction of the ecosystem and chemical pollution of people working and living around mining communities. Nonetheless, the Artisanal and Small-Scale Mining (ASM) sector is responsible for more than 90% of all solid mineral extraction in Nigeria and provides direct and indirect livelihood for approximately 500,000 and more than 2 million people, respectively.

The Nigerian Minerals and Mining Act of 2007 recognizes ASM in Nigeria. Under the Ministry of Mines and Steel Development (MMSD), the ASM Department is the official institution dedicated to artisanal gold mining. With gold being a priority mineral in Nigeria, there is considerable commitment and investments from both government and the private sector. Amidst other investments, in 2017, the Government of Nigeria through the Ministry of Mines and Steel Development obtained a loan of USD 150 million from the World Bank to develop the "Mineral Sector Support for Economic Diversification Project (MINDIVER)". In order to improve the sector and its contribution to the GDP, the government made gold one of the seven priority minerals in the country. This also propelled the MMSD to issue the first ever license for a national gold refinery in Nigeria in 2017. In 2018, a second license was issued. Within the informal mining sector, gold extraction represents a major source of income where economic opportunities are limited, especially in rural communities. Commercial quantities of gold are available in Osun, Oyo, Kwara, Kogi, FCT, Zamfara, Kebbi, Niger, and Kaduna states in the North and South Western regions, where ASGM is active.

Nigeria is well positioned to support systems transformation designed by the GOLD+ programme. The presence of a legal and institutional framework to support the objectives of the GOLD+ is in place to support a sector that had a sharp increase of activities in the recent years. However, little to nothing in revenue is realized by the government from gold mining because of the informal nature and smuggling of the mineral outside the country. For such a significant revenue-generating sector, adequate provisions for the sustainability of the environment and the health of the people are essential. Informal mining with uncontrolled mercury emissions and releases has deprived Nigeria huge revenues and devastated its environment with cases of chemical poisoning which has claimed the lives of many women and children.

### Project Overview and Approach (maximum 1250 words)

- A. Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed.**

Concentration of gold mining activities lies across the North West to the South West region in Nigeria. This is the schist belt of gold veins and statistics show that the highest concentration of gold mining occurs in Zamfara State along with Kaduna, Niger, Kebbi, Osun States as illustrated on Figure 1.

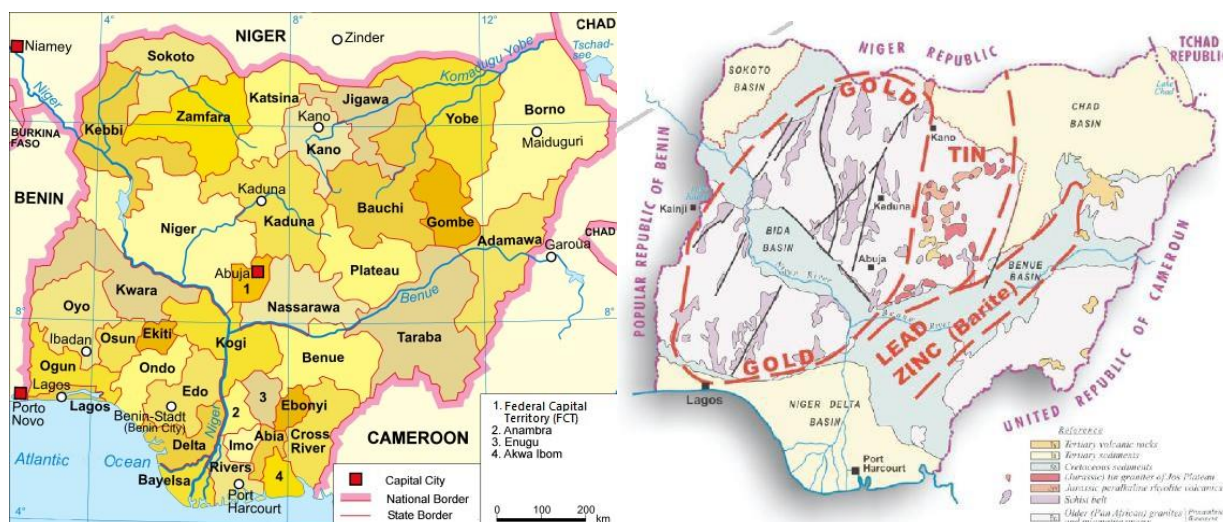


Figure 1: States of Nigeria (right) and metallogenic belts (left)

Zamfara, Kebbi and Niger States are agrarian states and mining activities have caused deforestation, erosion and pollution of the water bodies as decommissioned gold mining sites typically have no restoration plans. With lead naturally occurring in some of the ore and miners using mercury for amalgamation, Zamfara experienced a rare case in 2010 where unregulated gold mining accounted for the death of over 500 people. The tragedy in Zamfara remains the worst case of lead poisoning from artisanal gold mining in modern history, where contaminated soils and dust continue to afflict large numbers of men, women and children.

Nigeria mainly practices two types of gold mining: (i) alluvial mining with panning, mostly practiced in the South West region, and (ii) hard rock mining mostly practiced in the North West (Table 1). Miners in the Niger State engage in both methods even though hard rock mining is predominant.

Many Northwest States are experiencing water scarcity due to arid nature, compounding with deforestation and desertification contributed by unregulated gold mining. Polluted underground water from chemicals usage and crude methods are also contributing to the shortage of clean and affordable water.

S/N	States	No of Miners	Type of Mining	Ore type	Au Prod./y. (kg)	Hg Usage/y (kg).	Other Sources of Livelihood.
1	Niger	58,429.00	Hard rock mining with use of diggers and chisels to break off gold bearing veins  Alluvial mining of river sediments by panning.	Primary ore and placers deposit.	2,275.75	2,797.12	Agriculture: food crops.
2	Osun	31,182.00	Alluvial mining of river sediments by panning.	Placer ore deposit.	1,922.50	2018.1	Agriculture: food crop and cash crop (cocoa plantations)
3	Zamfara	125,202.00	Hard rock mining with use of diggers and chisels to break off gold bearing veins	Primary ore deposit	8,649.06	8,836.08	Rural Agriculture: food crop and cattle rearing).
4	Kebbi	7,600.00	Hard rock mining with use of diggers and chisels to break off gold bearing veins		484.22	591.67	Agriculture (food crops and cattle rearing).

Table 1: Main ASGM related features on the potential four target States

**B. Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration;**

Nigeria became a party to the Minamata Convention in February 2018 but prior to that, Nigeria had already started developing its Minamata Initial Assessment (completed) and currently finalizing its NAP on ASGM (April 2020). Much of the investments are targeted at the ASM level as it represents more than 90% of mining in Nigeria.

**INSTITUTIONS** - Minerals in Nigeria are governed at the Federal level but there are now stronger engagements between the Federal and the State governments. The MMSD is responsible for ASGM in Nigeria and the Federal and States Ministry of Environment are responsible for the Environmental sustainability of the gold mines and communities. The government also has other Departments that are responsible for licencing, mines inspectorate, geological survey, mining cadastral and waste management. Together, these stakeholders will work to ensure coherent implementation of new policies and long term sustainability of introduced interventions.

**REFINING CAPACITY**- in 2017, the Nigerian government through the Ministry of Mines and Steel Development (MMSD) approved Nigeria's first gold refinery to Kian Smith that is located at Ogun State in the South West region of the country. In June 2019, Kian Smith organized a Gold West African conference in Lagos with the objective to develop a regional supply chain.

**TECHNOLOGY DEPLOYMENT**- The Ministry of Mines and Steel has made attempts to test and provide mercury free technologies in Zamfara State through the application of the Igoli technology: leaching the gold concentrate with dilute hydrochloric acid and bleach. In Osun State, the MMSD has issued a contract to install a shaking table for the processing of gold by an indigenous company by late 2020.

**MINING DATA** - The Minerals Utilization and Industrialization project was recently approved by the government and aims at providing mining information and initial minerals deposits information to prospective investor and/or industries.

**INVESTMENT** - the Government secured a loan of 150 million US dollars in 2017 to implement a project called the Mineral Sector Support for Economic Diversification Project (MINDIVER). The objective of this project is to enhance the mining sector's contribution to the economy by strengthening key government institutions, improving information infrastructure and knowledge, and fostering domestic investment in the sector.

**OTHER GOVERNMENT INITIATIVES** – In an effort to diversify the economy towards non-oil industry, the Government developed the Economic Recovery and Growth Plan (ERGP) that identified mining as one of the key areas. The MMSD then developed a roadmap for the Growth and Development of the Nigerian Mining Industry in 2016. This Roadmap identified gold as one of the Country's "7 Strategic Minerals" and gave a projection for mining's contribution to the GDP at 0.33% in 2015 to 7% by the year 2031. MMSD intends to formalize and create processing clusters for artisanal and small-scale miners. Recently, MMSD initiated a programme called National Gold Purchase scheme designed to promote the production and refining of gold for purchase by the Central Bank of Nigeria. The scheme is aimed at facilitating formal gold production, trade and exports to ensure regular payment of royalties and taxes. This project will work with the government and private sector to promote a sustainable gold supply chain structure.

In terms of **stakeholder engagement**, there are a few coordinated ASM groups in the country like the Miners Association of Nigeria, the Mines Workers Association of Nigeria and some mining focused NGOs. Recently and due to the goal of the government to diversify the economy through minerals and mining, ASM has come under scrutiny from stakeholders. This project will engage the miner's associations and NGOs in creating more awareness for sustainable and formalized gold mining sector. It will also work to improve the **gender integration** in ASGM, a planned strategy of the draft NAP.

The proposed **executing entity** is the Basel Convention Coordinating Centre for the Africa Region in Nigeria (BCCC Africa) located in Ibadan, Nigeria. However, this arrangement will be confirmed during the PPG phase.

**C. Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits;**

The GOLD+ programme's Theory of Change (see PFD) has been developed around:

- ✦ Optimizing formalization strategies through integrated, holistic, and multi-sector approaches at the landscape scale through commodity-specific JAs;

- ✦ Accelerating financial inclusion and creation of responsible supply chains;
- ✦ Enhancing uptake of mercury-free technologies through sustainable business models.
- ✦ Foster knowledge sharing, learning, and synthesis of experiences.

The integrated approach proposed for the Nigeria child project fully responds to and reflects the GOLD+ Programme's ToC, as can be deduced from the results framework (see page 1). The project and programme components are the same, and the child project outputs directly contribute to the PFD. In line with the GOLD+ Program's ToC, this child project will expand on the work initiated under the GEF-funded PlanetGOLD programme. It will explore the various options for financial mechanisms to provide financial products suited to the ASGM sector and pilot a Jurisdictional Approach (JA), following territorial boundaries of mining areas with a commodity focus on responsible gold. The JA appears to be a suitable method for tackling the systemic challenges in Nigeria.

The planned integrated approach is designed to generate mercury reduction of 4 tons by project completion. Contribution to other core indicators will be assessed during the PPG phase.

**D. Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.**

Despite taking steps towards the management of ASGM, mercury use in gold extraction remains a major issue of concern in Nigeria, while also considering the unprecedented co-contamination history. According to the draft NAP, ASGM is widely practiced in about thirteen States and provides an important source of livelihood for both proximate and distant communities. Most of the gold mining sites and communities are located in the rural areas but there are pockets of processing centres in the cities. Addressing issues related to small-scale mining has required, and will continue to require, mobilization of resources, from government budgets as well as assistance from the GEF. Furthermore, financial mechanisms need to be instituted in order to ensure that miners can purchase Hg-free technologies and maintain financial sustainability. GEF resources will be applied to support the advancement of ASGM formalization efforts by piloting a commodity-specific JA on responsible gold, following territorial boundaries of designated mining areas and developing ASGM-leaching plants coexistence. In addition, the project will support continuous development of geological analysis of ores that can help to prevent future catastrophes similar to Zamfara. The intervention will be designed to be cost effective with a ratio of USD333/kg Hg reduction.

Despite commitment and political will to reduce and eliminate mercury use, Nigeria will need a technology assisted transparent supply chain, inclusive finance and investment in human capital (skills, knowledge abilities) of miners and their representative organizations to achieve legalization and facilitate the process of formalization.

**Engagement with the Global / Regional Framework (maximum 500 words)**

**Describe how the project will align with the global / regional framework for the program to foster knowledge sharing, learning, and synthesis of experiences. How will the proposed approach scale-up from the local and national level to maximize engagement by all relevant stakeholders and/or actors?**

All knowledge sharing, learning, and synthesis of experiences will be completed in close consultation with government counterparts to build their capacity in balanced storytelling toward the ASGM economy in Nigeria. Positive impacts and results achieved under the previous and on-going national initiatives, outcomes of the MIA and the NAP on ASGM will be highlighted and these lessons will be integrated in GOLD+. Knowledge generated under the project will capture results of piloting the JA as a strategy for holistic, integrated and innovative means to optimize formalization, while mainstreaming capacity building and gender equality for project results will be ensured. In addition, coordination with the global child project on knowledge management will be carefully implemented to ensure the most effective and highest efficiency for the entire programme. Knowledge products and lessons learned at the local and national level will be shared with the global project, which will make these experiences available through the planetGOLD platform and other outreach strategies. This will foster a community of practice among participating countries and will allow for the sharing of successful models with a wide range of global actors and stakeholders. The child project will participate actively in international meetings and events, such as the Global Forum (organized by the global project), a two-yearly learning and sharing event that will facilitate face-to-face meetings between ASGM experts and practitioners, governments, gold buyers and miners to support ongoing exchange of experiences, as well as development of global expertise and capacity building on ASGM issues and networking and learning, to influence the global ASGM dialogue agenda and policy development



In line with core components of the holistic multisectoral integrated approach to formalization, the project as a pilot of JAs will document lessons learned from each component specifically engaging miners and local government actors to ensure balanced perspectives are shared. Through multi-stakeholder consultation, UNIDO will assess the viability of different communication tools to ensure investments under the global knowledge management component are resource efficient and inclusive of local stakeholder needs, recognizing miners are often excluded from strategies to maximize engagement between mining communities across regional or national geographies. Our approach to the global knowledge and communication component of GOLD+ will also include an increased focus on maximising the impact of communications at the local miner level.

Media campaigns and communication tools will be used to inform the general public, ASGM communities and schools on the dangers of mercury and possible solutions on the one hand, and on the other hand, the significant development potential of formal ASGM, taking gender-based risks and the unique circumstance of Nigeria into account. A communication strategy will be developed, and key stakeholders identified.

## GEF-7 CHILD PROJECT CONCEPT

CHILD PROJECT TYPE: Full-sized Child Project

PROGRAM: Other Program

Child Project Title:	GEF GOLD+ in Suriname
Country:	Suriname
Lead Agency	United Nations Development Programme (UNDP)
GEF Agency(ies):	United Nations Development Programme (UNDP) (lead agency)

### PROJECT DESCRIPTION (*maximum 500 words*)

***Describe the country's relevant environmental challenges and strategic positioning relative to the systems transformation proposed for the program, including relevant existing policies, commitments, and investment frameworks. How are these aligned with the proposed approach to foster impactful outcomes with global environmental benefits?***

Suriname's gold deposits are part of the Guiana Shield, a geologic formation spanning 415,000 km<sup>2</sup> across Venezuela, the Guianas, and Brazil<sup>2</sup>. Artisanal and Small-scale Gold Mining (ASGM) represents a major economic sector for Suriname, accounting for approximately two thirds of national gold exports<sup>3</sup>. ASGM employs between 20,000-40,000<sup>4</sup> miners, some of which are registered<sup>5</sup>, with substantial economic benefits for transport, equipment fabrication, and service sectors near mine operations<sup>6</sup>. Suriname's ASGM labour force is dominated by Brazilian (*Garimpeiros*) and Surinamese Maroons (tribal peoples of African descent) who are underrepresented among legal concession title holders<sup>7</sup>. ASGM sites are either part of formal concessions, titled to multinational companies, Suriname firms, or individuals; or encroach upon Indigenous<sup>8</sup> or Maroon land claims<sup>9</sup>. Formal and customary title holders solicit fees, usually for 10-12.5% of miner earnings, while large-scale mining (LSM) operations struggle for peaceful coexistence.

<sup>2</sup> Heemskerk, M., (2000). Driving Forces of Small-scale Gold Mining Among the Ndjuka Maroons: a Cross-scale Socioeconomic Analysis of Participation in Gold Mining in Suriname, Graduate School of the University of Florida. University of Florida.

<sup>3</sup> Suriname, Centrale Bank van. (2014). Leading Sectors of Suriname: The Impact of Mining, Agriculture and Tourism Activities on the Economy. Paramaribo.

<sup>4</sup> Data on employment in Suriname's ASGM sector vary significantly and due to high rates of migration are unreliable. Values presented here compile different sources including Veiga (1997); Heemskerk, 2010; CIRDI 2016; Seccatore, 2017; OGS, 2018; cross-referenced with GEF-financed projects (MIA, NAP on ASGM).

<sup>5</sup> Communications with mining stakeholders and informants and based upon draft Minamata Initial Assessment (MIA), noting an estimated 40,000 persons are directly and indirectly involved with ASGM in Suriname, roughly 7342 miners were registered according to 2018 data (see OGS, 2018).

<sup>6</sup> Seccatore, J., & de Theije, M. (2017). Socio-technical study of small-scale gold mining in Suriname. *Journal of Cleaner Production*, 144, 107–119.

<sup>7</sup> Heemskerk, M., Negulic, E., & Duijves, C. (2016). Reducing the Use and Release of Mercury by Artisanal and Small - Scale Gold Miners in Suriname. Retrieved from: <http://www.artisanalgold.org/past-projects/>

<sup>8</sup> The term 'Indigenous Peoples' is applied to the first, original inhabitants, who populated Suriname prior to colonial times, also referred to as Amerindians.

<sup>9</sup> World Bank. (2019). Suriname – Competitiveness and Sector Diversification Project : Environmental Assessment : Environmental and Social Management.

Despite the sector's importance, Suriname lacks adequate legal, environmental and social frameworks and the majority of ASGM is informal or illegal. Consequently, operations are driving land degradation, deforestation, and pollution of inland waters<sup>10</sup> where mercury releases and poor tailings management, endanger human and ecosystem health.<sup>11</sup> According to Suriname's draft mercury inventory (GEF ID 9349) primary mining and processing of gold ores represent the largest source of releases to land (44.57 Kg), water (23.83 Kg), and air (16.87 Kg), accounting for 97%<sup>12</sup> of annual mercury releases<sup>13</sup>. Data on mercury content in raw ore, mercury flows and mass balances, both in ASGM and LSGM operations however is uncertain, creating discrepancies in Hg-Au ratios<sup>13</sup>. Despite data gaps, it appears that small-scale and artisanal gold miners use large volumes of water and mercury, where it is estimated that each kilogram of gold recovered discharges between 1-3 kilos of Hg into the environment<sup>13</sup>. In recent years, small-scale surface and underground gold mining, including mechanized excavation, hydraulic monitoring and river dredging (Skalian) techniques degrade land, forests, and aquatic ecosystems<sup>14</sup>, while mercury pollution from ASGM is further aggravated by the lack of tailings management facilities. As a result, increased mobility of Hg-contaminated sediments enhances mercury exposure risks for downstream communities, industries and wildlife in the interior<sup>13</sup>.

Suriname is well positioned to support the systems transformation designed under the GOLD+ programme, which plans to pilot innovative formalization strategies in a holistic, multi-sectoral and integrated ways, including the landscape approach, while emphasizing ASM-LSM coexistence and/or 'tributer' systems. The government of Suriname has tested different strategies to organize small-scale gold miners<sup>15</sup>, including ASM zones. Multinational mining companies, including Newmont and IAMGOLD, have provided financial support to the GEF-funded project (GEF ID 9288) on environmental management in the gold mining sector, with complimentary outcomes to amplify formalization, financial inclusion and business models proposed under this project. Without cohesive strategies to reconcile land-use conflicts, enhance financial access and promote technology transfer, mercury pollution will continue unabated endangering vulnerable populations, fisheries and wildlife, and through drainage of major waterways into the Atlantic Ocean generate global impact. In Suriname, structural ASM zones and ASM-LSM coexistence are urgently needed to reduce mercury use and improve mining livelihoods, with the aim of balancing land-use between sectors to reduce pollution hazards, while promoting sustainable land, forest and water management, thus enabling global environmental benefits. The GOLD+ project in Suriname aims for the reduction of 6 MT of mercury over a four year period in alignment with draft mercury inventories and National Action Plan (NAP) on ASGM.

## **Project Overview and Approach (maximum 1250 words)**

### **A. Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed;**

Suriname is part of the Guiana Shield region with critical forest carbon and biological diversity that can play a significant role in global efforts to mitigate climate change, protect global biodiversity and wilderness areas. Systemic challenges in ASGM vary with the geologic, geographic, ecological and cultural context, however nearly all ASGM sites are either part of a formal concession or operate on traditional land claims (Indigenous or Maroon). Consequently, equipment owners typically recognize these claims and comply with the regulations required by the mining titleholder or landlord<sup>16</sup>. Thus, security of mineral tenure and allocation of rights are an ongoing challenge.

<sup>10</sup> Mol, J. H., Ramlal, J. S., Lietar, C., & Verloo, M. (2001). Mercury contamination in freshwater, estuarine, and marine fishes in relation to small-scale gold mining in Suriname, South America. *Environmental Research*, 86(2), 183–197. <https://doi.org/10.1006/enrs.2001.4256>

<sup>11</sup> WWF Suriname. (2014).

<sup>12</sup> Gold and silver extraction (using mercury-amalgamation processes) account for 89% of total Hg releases to air, alongside informal waste dumping and burning (including tailings residue and dumping from ASGM and LSGM), which contributes 6%, and initial gold processing techniques not using mercury account for 3%.

<sup>13</sup> Data provided by UNDP Country Office in Suriname (February, 2020) as per draft Minamata Initial Assessment (MIA) inventory report.

<sup>14</sup> Asner, G. P., Lactayo, W., Tupayachi, R., & Luna, E. R. (2013). Elevated rates of gold mining in the Amazon revealed through high-resolution monitoring. *Proceedings of the National Academy of Sciences of the United States of America*, 110(46), 18454–18459. <https://doi.org/10.1073/pnas.1318271110>

<sup>15</sup> Steinmüller, K. (2017). Concepts and Strategies for the Designation and Management of ASM zones: A Contribution to the Formalization of the ASM Sector. Retrieved from: [https://www.bgr.bund.de/EN/Themen/Min\\_rohstoffe/Downloads/studie\\_management\\_ASM\\_zones.pdf?\\_blob=publicationFile&v=2](https://www.bgr.bund.de/EN/Themen/Min_rohstoffe/Downloads/studie_management_ASM_zones.pdf?_blob=publicationFile&v=2)

The majority of ASGM takes place on legal mining concessions under illegal circumstances. In many cases, title holders of an exploration or reconnaissance right permit miners to work on a mining concession in exchange for a share of earnings 10-12.5%. While common, this practice is not permitted without explicit consent from the Minister of Natural Resources. With the establishment of ASM zones, governments expect to enable better supervision and administration of ASM and to prevent conflicts with LSM, as their mineral rights often overlap and reduce workable land for ASM<sup>22</sup>. Possessing the right to mine and access to an economically viable deposit makes the ASGM sector predictable and manageable. This is beneficial both for the miners and government.

To reduce the negative impacts caused by ASGM, access to geologic data and characterizing ores will be key to build the capacity of miners and promote resource efficiency across the mine life cycles. Geologic data can help to forecast revenue of the mine, the life of mine indicates how long mining can initially be sustained and better inform land use planning. Having such information on hand, a mine business plan, including a cash flow model, can be developed, that allows predicting the economics of the future mine. In Suriname, ASGM is a vital source income but the sector is limited by lack of technical capacity. Technical capacity in ASGM areas is weak and support is required to assist the sector to professionalize, train on mercury free techniques and build capacity. Therefore, a review of legislation on mining, especially ASM-LSM coexistence, alongside a better understanding of ongoing educational programs targeting miners and workforce dynamics will be assessed to understand the most viable business models.

Unregulated small-scale gold mining is a major threat to forest conservation in Suriname. Between 2000 and 2015 ASGM accounted for 73% of total deforestation (59,554 ha) and 95.5% of all mining-induced deforestation<sup>17</sup>. According to REDD+ programme report, gold mining as a driver of deforestation doubled between 2008 and 2014, as compared to the 2001-2008 period (+97%)<sup>18</sup>. Therefore, improving regulation and enabling the adoption of mining practices to reduce adverse impacts on critical ecosystems and inland waters is critical. Including strategies for build capacity toward safe post-mining land-use through mine rehabilitation and closure.

While large-scale gold mining firms, specifically IAMGOLD (i.e., Rosebel Gold Mines) and Newmont, represent 35% of the total gold production, ASGM still remains vital to Suriname's economy. Site invasion between small-scale gold miners onto large-scale concessions are a regular occurrence. ASM-LSM coexistence models through the establishment of assay labs, processing plants and training centers, offers one strategy to engage miners directly via ASM-LSM zones of known geologic potential, address land allocation issues and promote land-use planning to minimize environmental impacts and improve the management of mine waste, effluent and tailings.

Proposed interventions could include the following regions, and ASGM hotspots:

Region	ASGM hotspots	Type of Deposit
Brokopondo	Nieuw Koffiekamp	Alluvial, Colluvial
	Brownsweeg, Matawai, Sara Creek, Gross Rosebel, Kleine Commewijne River	
Sipaliwini	Lawa River, Tapanahony River, Nassau, Brokolonko, Nieuw Jacobkondre, Tempati Creek, Merian Creek, Toso Creek, Sella Creek, Benzdorp, Gran Creek, Marowijne River, Goliath River	Alluvial, Colluvial
Para	Goliath River	Alluvial, Colluvial

<sup>17</sup> NIMOS et al, (2017).

<sup>18</sup> Rahm et al. (2015).

**B. Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration;**

In recent years, the Government of Suriname and national and international partner organizations have become increasingly aware of the necessity to take action to reduce, and where feasible, eliminate the use of mercury. In line with the Minamata Convention on Mercury, Suriname is developing a MIA (GEF ID 9349) NAP on ASGM (GEF ID 9452), both with support from UNDP. An additional GEF-funded programme on 'Improving Environmental Management in the Mining Sector of Suriname' (GEF ID 9288) also places strong emphasis on the ASGM sector and engaging LSM actors. This project aims to improve environmental management in the ASGM by introducing responsible gold mining methods and will be established by ASM-LSM mining centers where leading practice training and pilot demonstrations can occur.

The Commission for Regulation of the Gold Sector, hereafter called OGS (*Ordering Goudsector*), was installed in January 2011 with a mandate to re-establish government authority in small-scale gold mining areas in Suriname. In an effort to fight illegality in the ASGM areas, OGS started with a gold miners' registration program, both in the interior and in Paramaribo city. In different mining areas the Commission OGS has established Mining Service Centers (MSC). The initial thought behind the MCS was that at these locations, ASGM would be able to register and access services such as technical training, health services, and selling gold<sup>19</sup>.

In 2015, the SGMT at UNASAT started offering a 6-month bachelor level course on mercury-free gold mining technologies for graduates of the secondary technical school NATIN and bachelor students of mining. The course teaches competencies to work mercury-free in exploration, concentration and purification phases of gold mining. Field training for students takes place in Brokopondo district within OGS installed mining reserves (Km. 58 and Km. 68 of the Atjoni road) and in the Paamaka gold mining reserve near Snesi Kondre/Merian), which the OGS allocated to UNASAT.

Stakeholder engagement will continue and intensify during the preparation of the Suriname GOLD+ project. During the PPG phase, stakeholders will be analyzed according to a standardized framework based on the following factors: influence; priority; contribution; and engagement methods. Like the other Child projects, this project will standardize stakeholder engagement plans, to be developed in alignment with the Knowledge Management and Communications child project defining regional, national and local stakeholders and roles in the Suriname project.

Gender equality is intrinsically linked to sustainable development and fundamental to transform the ASGM sector into a vehicle for inclusive growth. Gender is an overarching variable, in the sense that it is often an intersection of identity factors, including sex, race, class, age, ethnic group, education level etc. Gender norms are established in different socio-cultural contexts, which ultimately determine what is expected, allowed and valued in a woman/man and girl/boy in specific settings. In ASGM systems, gender roles are learned through socialization processes that can change overtime. Gendered perspectives will be captured, including data collection through baseline surveys documenting risks and opportunities for men, women, boys and girls, or tribal and indigenous peoples effected by the project.

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<sup>19</sup> Heemskerk, M., Negulic, E., & Duijves, C. (2016). Reducing the Use and Release of Mercury by Artisanal and Small - Scale Gold Miners in Suriname, 82.

**C. Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits; (300)**

The GOLD+ programme's Theory of Change (see PFD) has been developed around:

- ✦ Optimizing formalization strategies through integrated, holistic, and multi-sector approaches at the landscape scale through commodity-specific JAs;
- ✦ Accelerating financial inclusion and creation of responsible supply chains;
- ✦ Enhancing uptake of mercury-free technologies through sustainable business models;
- ✦ Foster knowledge sharing, learning, and synthesis of experiences.

The integrated approach proposed for the Suriname Child project fully responds to and reflects the GOLD+ Programme's ToC as can be deduced from the child project's results framework. All child project components fully align with the programme components, and the child project outputs directly contribute to the PFD and child project outcomes as described in the project's results framework. As such the proposed child project proposes suitable and appropriate options to tackle systematic challenges for countries where the ASGM sector is a more than significant source of mercury and environmental harm. The child project will achieve tangible and desired transformation including multiple global environmental benefits, highlighting co-benefits of environmental management and compliance of the gold mining sector toward accelerating progress on the Minamata Convention, REDD+, the Convention on Biological Diversity (CBD), Climate Change (UNFCCC), the Treaty for Amazonian Cooperation, and the RAMSAR Convention in Suriname. As aforementioned, gender mainstreaming will be critical to all project activities, and a Gender Action Plan will be developed to support this.

**D. Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.**

ASGM represents a major economic sector for Suriname, accounting for approximately two thirds of national gold exports and mercury use in gold extraction remains a major issue of concern in Suriname. Addressing issues related to small-scale mining has required, and will continue to require, mobilization of resources, from government budgets as well as assistance from the GEF. Furthermore, financial mechanisms need to be instituted in order to ensure that miners can purchase Hg-free technologies and maintain financial sustainability. GEF resources will be applied to support the advancement of ASGM formalization efforts by piloting a LA on responsible gold and promoting peaceful and symbiotic ASM-LSM coexistence.

Notwithstanding commitment and political will to reducing, and where feasible, eliminating mercury use, achieving this will be a major challenge without inclusive finance and investing in human capital (skills, knowledge abilities) of miners and their representative organizations to achieve legalization and facilitate the process of formalization, of which financial inclusion, business innovation and technology-assisted mineral supply chain due diligence are critical elements.

**Engagement with the Global / Regional Framework (maximum 500 words)**

**Describe how the project will align with the global / regional framework for the program to foster knowledge sharing, learning, and synthesis of experiences. How will the proposed approach scale-up from the local and national level to maximize engagement by all relevant stakeholders and/or actors?**

UNDP is the UN's global development network, advocating for change and connecting countries to knowledge, experience and resources to help people build better lives. All knowledge sharing, learning, and synthesis of experiences will be completed in close consultation with government counterparts to build their capacity in balanced

storytelling toward the ASGM economy in Suriname. Outcomes of the MIA and the NAP on ASGM will be highlighted and these lessons will be integrated in GOLD+. Knowledge generated under the project will capture results of piloting the LA as a strategy for holistic, integrated and innovative means to optimize formalization, while mainstreaming capacity building and gender equality for project results will be ensured. In particular, close coordination and exchange of information and sharing of best practices will be ensured with the GEF GOLD+ project and with the GEF PlanetGOLD projects in the neighbouring countries of Colombia, Ecuador, and Peru.

The child project will be closely aligned with the global coordination, knowledge management and outreach project of the program. Knowledge products and lessons learned at the local and national level will be shared with the global project, which will make these experiences available through the planetGOLD platform and other outreach strategies. This will foster a community of practice among participating countries and will allow for the sharing of successful models with a wide range of global actors and stakeholders. The child project will participate actively in international meetings and events, such as the Global Forum (organized by the global project), a two-yearly learning and sharing event that will facilitate face-to-face meetings between ASGM experts and practitioners, governments, gold buyers and miners to support ongoing exchange of experiences, as well as development of global expertise and capacity building on ASGM issues and networking and learning, to influence the global ASGM dialogue agenda and policy development.

In line with core components of the holistic multisectoral integrated approach to formalization, the project as a pilot of LAs will document lessons learned from each component (1) ASM-LSM coexistence optimization, (2) financial inclusion and responsible supply chains, (3) enhancing uptake of Hg-free technologies, and (4) the project will take a participatory approach to fostering knowledge sharing, learning, and synthesis of experiences, specifically engaging miners, district government, CSOs, indigenous groups, and LSM actors to ensure balanced perspectives are shared. Through multi-stakeholder consultation, UNDP will assess the viability of different communication tools to ensure investments under the global knowledge management component are resource efficient and inclusive of stakeholder needs, recognizing miners are often excluded from strategies to maximize their engagement. Our approach to the global knowledge and Communication component of GOLD+ will also include an increased focus on maximising the impact of communications at the miner level, emphasizing the formalization of spaces, not people.

Media campaigns and communication tools will be used to inform the general public, ASGM communities and schools on the dangers of mercury and possible solutions, taking the unique circumstance of Suriname into account. A communication strategy will be developed, and key stakeholders identified. The UNDP Accelerator Labs will be utilised in using behavioural insights tools and techniques to inform communication and awareness creation activities.

## GEF-7 CHILD PROJECT CONCEPT

CHILD PROJECT TYPE: Full-sized Child Project

PROGRAM: Other Program

Child Project Title:	Global Opportunities for Long-term Development of ASGM (GEF GOLD+) in Uganda
Country:	Uganda
Lead Agency	United Nations Environment Programme (UNEP)
GEF Agency(ies):	UNEP and Conservation International

### PROJECT DESCRIPTION

Global Context (*maximum 500 words*)

**Describe the country's relevant environmental challenges and strategic positioning relative to the systems transformation proposed for the program, including relevant existing policies, commitments, and investment frameworks.**

**How are these aligned with the proposed approach to foster impactful outcomes with global environmental benefits?**

Artisanal and small-scale gold mining (ASGM) is the largest source of anthropogenic mercury releases globally. Once in the environment, mercury can be cycled through upper troposphere posing an ecological and human health risk far from the initial release. Approximately 30 % of the 838 tons of ASGM mercury emissions annually originate from Sub-Saharan Africa.<sup>1</sup>

Uganda ratified the Minamata Convention, which prohibits the use of mercury in ASGM, in January 2019. However the practice remains widespread. More than 30,000 Ugandans are employed in the sector, which comprises > 90 % (7 tons/ year) of the country's gold production. The vast majority of these miners (~73 %) utilize mercury amalgamation to extract gold from ore, releasing approximately 18 tons of mercury into the environment annually.<sup>2</sup>

The relevant regulatory framework does not provide adequate clarity on issues related to mercury use in ASGM. Neither Mining Act of 2003 nor the Mining and Mineral Policy of 2018 make any mention of mercury use. They further establish a prohibitively expensive pathway for small-scale miners to acquire mining rights. Accordingly, nearly all small-scale gold miners operate outside of the formal sector, thereby complicating intervention. A draft 2019 update of the 2003 law (The Mining and Minerals Bill, 2019) corrects for these issues, but has yet to be formally adopted.

A number of projects have been executed in Uganda to reduce mercury emissions from ASGM. The majority of these have been managed by local NGOs in collaboration with international partners. To date GEF resources have been utilized for the development of the MIA and NAP only. The following relevant projects were identified as part of the NAP:

<sup>1</sup> UNEP, 'Global Mercury Assessment' 270 <<http://www.unep.org/gc/gc22/Document/UNEP-GC22-INF3.pdf>>.

<sup>2</sup> NEMA, 'The National Action Plan for Artisanal and Small Scale Gold Mining in Uganda'.



- The Sustainable Management of Mineral Resources Project (SMMRP). Government of Uganda and financed by the World Bank, the Nordic Development Bank, the African Development Bank and the Government of Uganda. 2004.
- Development of mercury free processing centre in Namayingo district. Environmental Women in Action for Development (EWAD); Fairtrade Africa; Syanyonja Artisan Miners' Alliance (SAMA). 2012–present.
- Promotion of mercury free ASGM. The National Association of Professional Environmentalists (NAPE); Uganda National Association of Community Occupational Health (UNACOH); Ban Toxics (Philippines); Dialogos (Denmark). Implemented in Mubende, Buhweju, Bugiri, Namayingo, Busia, Moroto and Nakapiripirit districts. 2015–present.
- Africa Centre for Energy and Mineral Policy (ACEMP). Promotion of ASGM formalisation. Mubende and Buhweju districts. 2016–present.

Each of the projects identified as part of the NAP resulted in measurable achievements, albeit with challenges related to sustainability and consistent financing. There is clearly an interest on the part of miners and civil society to receive sustained and significant support related to mercury alternatives. Likewise the recent ratification of the Convention and subsequent efforts at legal reform are indicative of government's serious intention to make progress in this area. Support as part of the larger Gold+ programme will facilitate important steps toward removing mercury from ASGM.

### Project Overview and Approach (maximum 1250 words)

#### A. Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed;

ASGM is the primary livelihood of > 30,000 miners in Uganda residing in all four provinces. Of these nearly half (~14,000) reside in the Karamoja subregion of Northern Province, along Kenya's western border. The balance is mostly distributed between Central (~8,600) and Eastern (~7,000) Provinces. Mercury use is not equally utilized among miners. While only comprising a quarter of the workforce, Central province accounts for more than half of total mercury use. An estimated 100 % of gold here (as well as in Eastern Province) is mined with mercury, compared to 27 % in Northern and 31 % in Western Province. Moreover whole ore amalgamation, open burning and burning in residential areas are all commonly conducted.

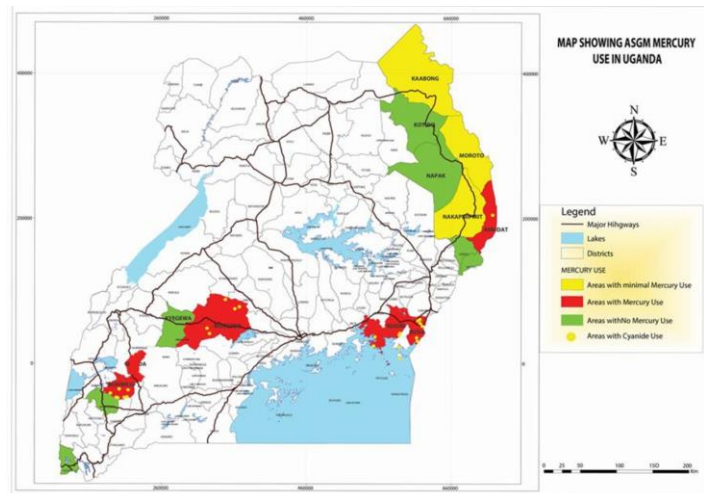


Figure 1: ASGM areas in Uganda disaggregated by extent of mercury use

Central Province is also the largest producer of gold, with total production of 2,559 kg in 2018 compared with 1,796 kg in Eastern Province, 1,452 kg in Northern and 1,274 kg in Western. Figure 1 presents the approximate borders of active ASGM areas in Uganda disaggregated by their extent of mercury use.

A number of ASGM sites are located proximate to water bodies including Lake Victoria. Borehole samples identified as part of the NAP in Namayingo along Lake Victoria's northern border had a mean mercury in water concentration of 10 µg/ L compared to applicable guidelines < 1 µg/ L and 2 µg/L for the WHO and USEPA, respectively. River water in Busia (30 km north of Lake Victoria) had concentrations as high as 230 µg/ L mercury in water. Elemental mercury can be converted to methyl mercury in the environment which is lipophilic and can bioaccumulate and biomagnify. Fish analysed as part of the NAP, including Nile perch, tilapia, mad fish, and silver fish had mercury concentrations ranging from < 1 – 297 µg/ g methyl mercury compared to an FAO guideline of 0.5 µg/ g. Likewise elevated concentrations of mercury in a range of foodstuffs, including potato, cassava and yams were found near mining areas as part of the NAP. Lake Victoria borders Kenya and Tanzania in addition to Uganda and is a significant source of fish for the region.

In addition to environmental samples, the NAP also collected and analysed biological samples from humans. Urine and blood samples were collected from 160 miners from 6 different districts located across the four provinces. Miners from both Western and Northern Provinces had biological mercury levels below the limits of detection. By contrast miners from Eastern and Central Provinces had mean mercury concentration of 43–136 µg/ L and 58–105.5 µg/ L in blood and urine respectively. The miners were also surveyed to identify potential adverse health impacts. Miners with elevated mercury levels were 11 times more likely to have vision problems and 24 times more likely to have hand tremors than their unexposed matched counterparts.

The ASGM workforce is approximately 55 % male, with female participation highest in the alluvial mining areas of Karamoja in Northern Province. Mining in Central Province is characterized by tunnelling and a higher percentage of participation by men. Data on child labour were available for Karamoja only and estimated that 20–30 % of the workforce was comprised of children.

Ore quality in Uganda is highly variable by region. Northern Province is characterized by sedimentary rock and alluvial deposits with mean gold in ore concentrations of around 8.5 g/ ton in Karamoja. By contrast the relatively rich ore deposits of Eastern and Central Provinces are comprised of hard rock with mean gold concentrations around 19.8 g/ ton. Finally Western Province, having both alluvial and hard rock deposits, has concentrations ranging from 0.8 g/ ton (Kigezi) to 8.7 g/ ton (Ankole). As context the richest industrially operated mines globally have concentrations typically exceeding 10 g/ ton and up to 40 g/ ton. These mines therefore present an economically significant natural resource, however much of that value is extracted in unnecessary fees and rent seeking behaviour up the value chain. Once the ore is refined it moves up the value chain with profits being extracted at each step. The incomes of the miners themselves, which range from USD 2–6/ day, are somewhat mediated by their informality. Miners are compelled to rely on fee-collecting intermediaries to access benefits afforded to formal actors such as access to capital.

**B. Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration;**

This project will be implemented by UNEP and executed by the Groundwork, an NGO which already accompanied Uganda in the execution of their MIA.

Consistent with the Convention, the National Environment Management Authority completed a Minamata Initial Assessment (MIA) in 2018. The MIA estimated approximately 31 tons of annual mercury

releases in Uganda with the majority (18 tons) being from ASGM. A draft National Action Plan (NAP) was completed in January 2019 and serves as the basis for this proposal. The NAP includes extensive mapping of key actors and likely partners, including NGOs, government agencies, and international organizations.

As part of the 2004 Sustainable Management of Mineral Resources Project (SMMRP) a number of mining areas were organized into workers' associations with formal leadership. In the absence of sustained support however many of these became idle or disbanded. The 2016 ACEMP project endeavoured to revive the effort and encourage sustainability, in part by developing a regional superstructure. These associations provide an obvious entry point for the proposed intervention however represent a minority of miners. The remainder are informally organized, though could be broadly characterized into seven distinct roles ranging from day labourer to leaseholder.

The workers' associations have been encouraged by NGOs to include a gender balance in their executive leadership and as a result typically have some female representation. However, women generally remain drastically underrepresented, particularly given that they account for nearly half of the workforce. Accordingly, the project will actively seek out and engage female actors in the decision making process an effort to more accurately represent the target beneficiaries. The unique health risks mercury poses to women due to both their roles on mine sites and the potential adverse effects of prenatal mercury exposure will be highlighted in community level communications; and women will be strongly encouraged to participate in all ASGM miner training activities, from business skills to clean technology skills transfer.

Gender considerations will be integral to all major project outputs. To help ensure equal application of gender considerations across the project, budget will be allocated for the contracting of a gender specialist who will form a key part of the project management team. The Uganda child project will produce a series of deliverables related to gender considerations, consistent with the GEF's Guidance to Advance Gender Equality. These will include: stakeholder consultations; social and environmental screening; a gender baseline analysis; a gender action plan; and a stakeholder engagement plan. The project will also include gender-disaggregated reporting on all relevant outputs and activities.

Similarly, the project's main focus is on formalisation, therefore, the most marginalised miners will be the primary target.

**C. Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits;**

The Gold+ programme has been developed around four components to be executed through child projects. The components are intended to comprise a holistic approach addressing root causes while enabling miners to improve their livelihoods and reduce mercury emissions. The four components are as follows:

- Component 1: Formalisation optimisation;
- Component 2: Financial Inclusion and Responsible Supply Chains;
- Component 3: Enhancing uptake of Mercury-free technologies;
- Component 4: Knowledge sharing, communication and local capacity building support.

The informal nature of the ASGM sector in Uganda governs its interaction with the broader economy. Miners require the assistance of better-capitalized intermediaries or other formal actors to access

resources essential to their operations. Each of these intermediaries extracts a fee which drives down miners' incomes, limits their ability to capitalize, and ultimately increases their reliance on predatory actors. Perversely this system results in decreased incomes throughout the supply chain as informally produced gold fetches a lower price on the market.

The proposed alternative as part of Component 1 is a 'jurisdictional approach' whereby interests of disparate actors are aligned and coordinated to facilitate formalisation. This will include exploring mutually beneficial relationships with large scale mining operations. Component 2 then is intended to raise the value of the entire supply chain by promoting transparency and encouraging the purchase of responsibly produced gold in OECD countries. Coupled with improved access to capital for small-scale miners, this component will facilitate a transition to mercury free technologies introduced as part of Component 3. The project will focus on transferring and demonstrating the increased efficiency of the non-mercury techniques. Demonstration sites will be selected and replication of the intervention in other mining areas designed. Accordingly, lessons learned will be shared in a structured manner across government agencies, key actors nationally, and through the knowledge management child project globally through component 4.

The child project will be closely aligned with the global coordination, knowledge management and outreach project of the program. Knowledge products and lessons learned at the local and national level will be shared with the global project, which will make these experiences available through the planetGOLD platform and other outreach strategies. This will foster a community of practice among participating countries and will allow for the sharing of successful models with a wide range of global actors and stakeholders. The child project will participate actively in international meetings and events, such as the Global Forum (organized by the global project), a two-yearly learning and sharing event that will facilitate face-to-face meetings between ASGM experts and practitioners, governments, gold buyers and miners to support ongoing exchange of experiences, as well as development of global expertise and capacity building on ASGM issues and networking and learning, to influence the global ASGM dialogue agenda and policy development.

**D. Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.**

The more than 30,000 miners and their families dependent on ASGM in Uganda are widely distributed across the country's four provinces. Obvious priority areas have been identified and assessed as part of the NAP. These include mercury-intensive hard rock mining operations in Central, Eastern and Western Provinces. In these regions nearly a kilogram of mercury (0.67–0.9 kg) is released by each worker annually, compared to 0.27 hg in Northern Province. These miners also tend to be better organized with active associations.

Several other projects have proven the concept that mercury-free or reduced technologies are feasible in the local social and environmental context. That is, both the workers and the ore are amenable to these approaches. Other projects have demonstrated that improved organization of workers is both welcome and sustainable. Finally, the Ugandan government's ongoing engagement with Minamata and their recent legal and regulatory changes are indicative of a fertile environment for a broader intervention. The proposed child project links these disparate activities to promote a mutually

reinforcing integrated approach of which the UN system and the GEF are uniquely capable of supporting.

Engagement with the Global / Regional Framework **(maximum 500 words)**

**Describe how the project will align with the global / regional framework for the program to foster knowledge sharing, learning, and synthesis of experiences. How will the proposed approach scale-up from the local and national level to maximize engagement by all relevant stakeholders and/or actors?**

The basic components of the project are eminently scalable in the region. At present the significant value contained in the ore is unevenly distributed up the value chain with rent and fee-seeking behaviour characterizing intermediary actors. By promoting transparency the project will highlight the predatory nature of that arrangement and facilitate corrective action. Specifically, the project will seek to increase the already incrementally higher cost paid for responsibly produced gold in OECD countries. This increased price will in turn incent responsible production and transparent supply chains. Financial mechanisms cultivated by the project will be sustained by a better capitalized and organized ASGM sector.

There are obvious challenges associated to implementing and scaling up a project of this complexity. To address this the project sits within a larger programme connected through a knowledge management child project. Parallel projects will inform execution of work in Uganda and vice versa. On a practical level the knowledge management project will result in a de facto cost sharing for the development of information or technical tools. One immediately deployable example of this is a mobile phone app developed by a private mining company (Wazi Gold) that connects miners with buyers further down the supply chain thereby reducing reliance a number of brokers and other intermediaries.

The present project is based on decades of experience with the ASGM sector and identifies and prioritizes the most significant financial, operational and legal barriers to the miners themselves. It relies on a deep integration of key sectors and actors through the proposed jurisdictional approach. It has been designed to self-reinforcing to change the sector as whole while allowing an exit strategy for implementors.

During the project design, the UN Country Team and all international and local actors will be consulted and a stakeholder analysis undertaken to assess potential collaboration and additional co-financing.

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- i Okoh, G. A., & Hilson, G. (2013). Artisanal Mining in Ghana: Institutional Arrangements, Resource Flows and Poverty Alleviation. In B. Campbell (Ed.), *Modes of Governance and Revenue Flows in African Mining* (pp. 138–162). New York: Springer International Publishing.
- TWNAfrica. (2017). Obuasi Model for Small Scale Mining. <http://twnafrica.org/wp/2017/?p=1809>
- ii Opoku-Antwi, G. L., Amofah, K., & Nyamaah-Koffuor, K. (2012). Comparative Study In The Bibiani, Bolgatanga, Dunkwa And Tarkwa Mining Districts Of The Minerals Commission Of Ghana. *Journal of International Energy Policy (JIEP)*, 1(1), 19–34. <https://doi.org/10.19030/jiep.v1i1.7160>
- iii Hilson, G. (2010). Child labour in African artisanal mining communities: Experiences from Northern Ghana. *Development and Change*, 41(3), 445–473. <https://doi.org/10.1111/j.1467-7660.2010.01646.x>
- iv Ntewusu, S. A. (2017). A Social History of Gold Mining in Bole, Northern Ghana: From Pre-Colonial to Recent Times. *Transactions of the Historical Society of Ghana*, 17(17), 1–26. <https://doi.org/https://www.jstor.org/stable/10.2307/26512468?seq=1&cid=pdf>
- v Okoh, G. A., & Hilson, G. (2013). Artisanal Mining in Ghana: Institutional Arrangements, Resource Flows and Poverty Alleviation. In B. Campbell (Ed.), *Modes of Governance and Revenue Flows in African Mining* (pp. 138–162). New York: Springer International Publishing.
- vi Blakley, I. T., Horan, S. D., & Altman, K. A. (2017). Technical Report on the Namdini Gold Project, Ghana (Vol. 1). Retrieved from <https://tinyurl.com/to6vr6j>